

Panasonic

Industrial Components & Devices Line Card Catalog

Wireless Connectivity

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Capacitors

Resistors

Semiconductors

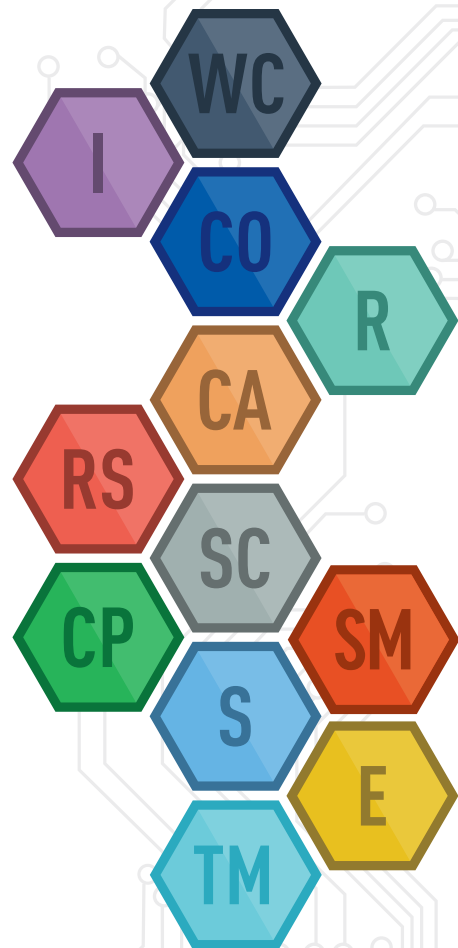
Storage Media

Circuit Protection

Sensors

Electromechanical

Thermal Management



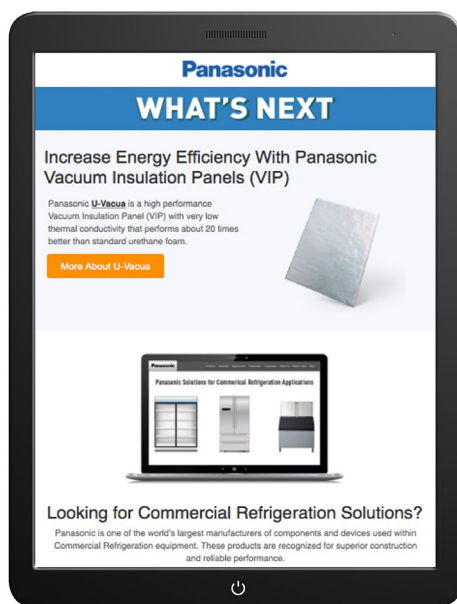
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Industrial Components & Devices

Line Card Catalog



Many products sold by Fortune 500 companies use Panasonic technology, and we are proud to provide manufacturers with the performance, quality, and reliability that are synonymous with the Panasonic brand.

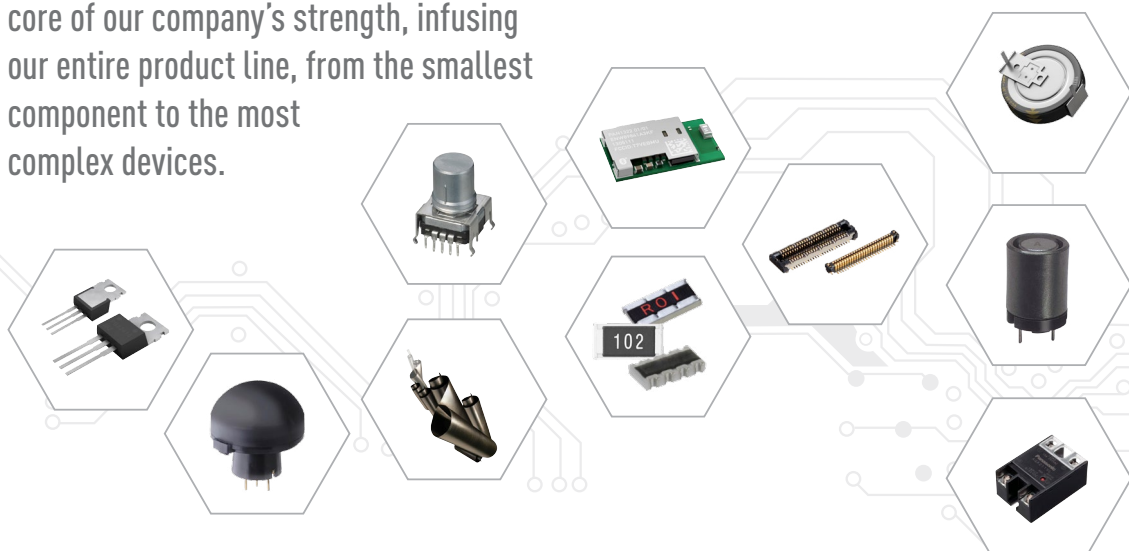
Panasonic brings strategic innovations to our customers' product development process. We provide the technology and engineering resources to enable manufacturers to plan and build world-class solutions to meet their customer needs.

Engineering and manufacturing form the core of our company's strength, infusing our entire product line, from the smallest component to the most complex devices.

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CA

CAPACITORS

OS-CON™ Polymer Aluminum; SP-Cap™ Polymer Aluminum	7
POSCAP™ Polymer Aluminum; Gold Cap Electric Double Layer Radial Lead	8
Aluminum Electrolytic, Leaded	9
Aluminum Electrolytic, Surface Mount	10
Film, Leaded; Film, Surface Mount Chip	11

E

ELECTROMECHANICAL

Light Touch Switches	13-14
Detector Switches	15
Snap Action Switches	16-17
Interlock Switches; Operation Switches	18
Encoders; Potentiometers	19

WC

WIRELESS CONNECTIVITY

RF Modules: <i>Bluetooth</i> ®; Mesh Networking (802.15.4); ISM; WiFi	21
---	----

RS

RESISTORS

Chip Resistors	23
Current Sensing Resistors	24
High Precision Chip Resistors; Anti-Sulfurated Chip Resistors	25
Wide Terminal Chip Resistors; Axial Leaded Resistors	26
Resistor Arrays & Networks	27

I

INDUCTORS

Power Choke Coils	29-31
EMI Filters; Chip Choke Coils	31

R

RELAYS

Power	33-35
PhotoMOS®	36-37
PhotolC Coupler; Solid State	38
Automotive	39
Microwave Devices	40
Signal	41



CONNECTORS

Narrow Pitch Board to FPC; Narrow Pitch Board to Board	43-44
FPC Connectors	44
Active Optical Connectors; Stacking Connectors for High Current	45



STORAGE MEDIA

SD Cards	47
----------	----



SENSORS

Passive Infrared	49
Infrared Array: Grid-EYE®; Air Pressure	50



SEMICONDUCTORS

Diodes; ASSP	53
MOSFETs	54



CIRCUIT PROTECTION

Thermistors; ZNR Surge Absorbers; Varistors	57
EMI Filters	58
Fuse Resistors; ESD Suppressors	59



THERMAL MANAGEMENT

Pyrolytic Graphite Sheet (PGS)	61-63
Soft PGS; Semi-Sealing Material (SSM), Graphite-PAD	64
NASBIS Insulating Sheet	65



OS-CON™ Polymer Aluminum
SP-Cap™ Polymer Aluminum
POSCAP™ Polymer Tantalum
Gold Cap Electric Double Layer Radial Lead
Aluminum Electrolytic, Leaded
Aluminum Electrolytic, Surface Mount
Film, Leaded
Film, Surface Mount

	Series	Voltage	Capacitance	ESR
OS-CON: Surface Mount	SVP	2.5 – 25 VDC	3.3 - 1500 μ F	12 - 260 m Ω
	SVPC	2.5 – 16 VDC	39 - 2700 μ F	9 - 35 m Ω
	SVPF	16 – 50 VDC	10 - 1000 μ F	12 - 40 m Ω
	SVPE	2 – 16 VDC	150 - 1200 μ F	8 - 20 m Ω
	SVPA	4 – 20 VDC	47 - 680 μ F	19 - 28 m Ω
	SVPD	25 – 30 VDC	10 - 82 μ F	28 - 65 m Ω
	SVPG	16 VDC	47 μ F	8 m Ω
	SVPS	6.3 – 25 VDC	10 - 330 μ F	20 - 60 m Ω
	SVQP	6.3 – 10 VDC	56 - 220 μ F	10 - 45 m Ω
	SVPB	2.5 - 20 VDC	15 - 120 μ F	35 - 45 m Ω
	SVF	16 - 50 VDC	27 - 1000 μ F	12 - 40 m Ω
	SVPK	25 - 50 VDC	10 - 470 μ F	14 - 80 m Ω
	SEF	16 - 35 VDC	22 - 1000 μ F	12 - 35 m Ω
	SEP	2.5 – 25 VDC	6.8-1500 μ F	12 - 80 m Ω
OS-CON: Radial Lead	SEPC	2.5 – 16 VDC	100-2700 μ F	5 - 24 m Ω
	SEPF	16 – 35 VDC	22-1000 μ F	12-35 m Ω
	SEQP	6.3 – 32 VDC	15-330 μ F	20 - 80 m Ω

	Series	Operating Temperature	(Working Voltage) Capacitance	Features
SP-CAP: Polymer Aluminum - Surface Mount	EEF-CD	-40 ~ +105°C	(2 – 16 VDC) 2.2 – 220 μ F	- Low ESR, high ripple current 1.8 mm height, ESR 18 mΩ maximum
	EEF-CS		(4 – 35 VDC) 68 – 120 μ F	1.2mm height - Low ESR 15mΩ
	EEF-CT		(4 – 35 VDC) 100 – 180 μ F	1.5mm height - Low ESR 15mΩ
	EEF-CX		(2 – 35 VDC) 100 – 560 μ F	- Low ESR, high ripple current 1.9 mm height, ESR 15 mΩ maximum
	EEF-SR		(2 – 6.3) 68 – 220 μ F	1 mm max height; Low ESR
	EEF-LR		(2 – 6.3) 68 – 220 μ F	1mm max height; Low ESR, 3 terminals
	EEF-UD		(2 – 8 VDC) 68 – 470 μ F	- Low ESR, high ripple current 2.8 mm height, ESR 15 mΩ maximum
	EEF-UE		(2 – 8 VDC) 100 – 560 μ F	- Low ESR, high ripple current 4.2 mm height, ESR 12 mΩ maximum
	EEF-GX		(2 VDC) 330 – 470 μ F	Super low ESR 3mΩ
	EEF-LS, -LT		(2 – 2.5 VDC) 180 – 330 μ F	- Low ESL by structure of SP-Cap 50% ESL of current products
	EEF-LX		(2 – 2.5 VDC) 330 – 560 μ F	- Low ESL by structure of SP-Cap 50% ESL of current products
	EEF-SS, -ST		(2 – 2.5 VDC) 180 – 330 μ F	1.2mm (SS), 1.5mm (ST) height - Low ESR 6mΩ
	EEF-SL, -SX		(2 – 6.3 VDC) 56 – 560 μ F	- Excellent noise absorbent characteristics - Super low ESR (4.5mΩ - 9mΩ)

POSCAP: Polymer Aluminum - Surface Mount	Series	Voltage	Capacitance	ESR
	TPE	2 - 10 VDC	47 - 1500 μ F	7 - 35 m Ω
	TQC	16 - 35 VDC	3.9 - 150 μ F	40 - 150 m Ω
	TQS	16 - 35 VDC	6.8 - 3.3 μ F	70 - 150 m Ω
	TPF	2 - 10 VDC	150 - 1000 μ F	5 - 15 m Ω
	TPSF	2 VDC	270 μ F	6 - 9 m Ω
	TPB	4 - 10 VDC	33 - 470 μ F	35 - 70 m Ω
	TPC	6.3 - 12.5 VDC	10 - 330 μ F	40 - 80 m Ω
	TPG	2.5 - 12.5 VDC	33 - 220 μ F	30 - 70 m Ω
	TPU	2.5 - 10 VDC	4.7 - 150 μ F	100 - 300 m Ω
	TA	2.5 - 6.3 VDC	47 - 220 μ F	9 - 70 m Ω
	TH	2.5 - 10 VDC	68 - 470 μ F	15 - 40 m Ω
	TPH	6.3 VDC	47 μ F	150 m Ω

Gold Cap: Electric Double Layer Radial Lead	Series	Operating Temperature	(Working Voltage) Capacitance	Features
	EEC-S0HD EEC-S5R5	-25 ~ +70°C	(5.5 VDC) 0.22 ~ 0.33F (5.5 VDC) 0.47 ~ 1.5F	- General purpose, 1,000 hours at 70°C μA range IC memory back-up
	EEC-S0HD EEC-S5R5	-40 ~ +70°C	(5.5 VDC) 0.22 ~ 0.33F (5.5 VDC) 0.47 ~ 1.5F	Can handle as low as -40°C
	EEC-S0H	-25 ~ +70°C	(5.5 VDC) 0.22F	1,000 hours at 70°C - Lead taping for auto insertion
	EEC-S0HN	-40 ~ +70°C	(5.5 VDC) 0.22F	Can handle as low as -40°C
	EEC-SG	-25 ~ +70°C	(5.5 VDC) 0.47 ~ 1.5F	- General Purpose, 70°C - Tabbed Leads*
	EEC-SGN	-40 ~ +70°C	(5.5 VDC) 0.47 ~ 1.5F	- General Purpose, 70°C - Tabbed Leads - Can handle as low as -40°C
	EEC-NF	25 ~ +70°C	(5.5 VDC) 0.22 ~ 1.5F	- General Purpose, 70°C - Flat Body
	EEC-NFN	40 ~ +70°C	(5.5 VDC) 0.22 ~ 1.5F	- General Purpose, 70°C - Flat Body - Can handle as low as -40°C
	EEC-RG EEC-RF	-25 ~ +85°C	(3.6 VDC) 0.22 ~ 1.5F (5.5 VDC) 0.10 ~ 1.0F	2,000 hours at 85°C, general purpose - High Reliability - Backup for mA-A range
	EEC-RGN EEC-RFN	-40 ~ +85°C	(3.6 VDC) 0.22 ~ 1.5F (5.5 VDC) 0.10 ~ 1.0F	Can handle as low as -40°C
	EEC-HWDD	-25 ~ +70°C -25 ~ +60°C	(2.3 VDC) 22 ~ 50F (2.1 VDC) 70F	- Large capacitance - Backup for mA - A range
	EEC-HZDD	-25 ~ +60°C	(2.5 VDC) 3.3~10F	- Large Capacitance - Lower ESR than HW
	EEC-HL	-40 ~ +65°C	(2.7 VDC) 50 and 100 F	- Can handle discharge current in the 10 to 15Amp range. 10 amps for the 50°F part. 15 amps for the 100°F part*

		Aluminum Electrolytic, Leaded				
		Series	Operating Temperature	(Working Voltage) Capacitance	Features	
	General Purpose	85°C	ECA-__M	-40 ~ +85°C (-25°C: 160-450 VDC)	(6.3 ~ 450 VDC) 0.1 ~ 22,000 µF	- General purpose, 2000 hours at 85°C - Compact size
		105°C	ECA-__HG	-55 ~ +105°C (-25°C: 160-450 VDC)	(6.3 ~ 450 VDC) 0.1 ~ 22,000 µF	- Long life: 1,000-2,000 hours at 105°C - Compact size
			EEA-GA	-55 ~ +105°C	(10 ~ 50 VDC) 0.1 ~ 220 µF	- Long life: 1000 hours at 105°C 7mm height
			EEU-HD	-55 ~ +105°C	(10 ~ 50 VDC) 0.1 ~ 22000 µF	- Long life: 1000-2000 hours at 105°C - Case Size : 5mm x 11mm to 18mm x 35.5mm
		Miniature	ECE-A__KA	-40 ~ +85°C	(4 ~ 50 VDC) 0.1 ~ 470 µF	- General purpose, 1,000 hours at 85°C 7 mm height
			ECE-A__KK/KS	-40 ~ +85°C	(4 ~ 50 VDC) 0.1 ~ 330 µF	- General purpose, 1000 hours at 85°C 5 mm height
		Bi-Polar	ECE-A__N__U/X	-40 ~ +85°C	(6.3 ~ 50 VDC) 0.47 ~ 6,800 µF	2,000 hours at 85°C - Bi-Polar general purpose
	Long Life	High Voltage	EEU-EB	-40 ~ +105°C (-25°C: 160-450 VDC)	(10 ~ 450 VDC) 0.47 ~ 3,300 µF	5,000-10,000 hours at 105°C - Very long life
			EEU-ED	-25 ~ +105°C	(160 ~ 450 VDC) 10 ~ 330 µF	- Very long life 8,000-10,000 hours at 105°C - High Ripple Current
			EEU-EE	-25 ~ +105°C	(160 ~ 450 VDC) 10 ~ 330 µF	- Very long life 8,000-10,000 hours at 105°C - High Ripple Current at high frequency
		Low Impedance	EEA/U-FC	-55 ~ +105°C	(6.3 ~ 100 VDC) 1.0 ~ 15,000 µF	1,000-5,000 hours at 105°C - Low impedance, miniature
			EEU-FM	-40 ~ +105°C	(6.3 ~ 50 VDC) 22 ~ 6,800 µF	- Long life, 2,000-7,000 hours at 105°C - Low ESR, approximately half of FC
			EEU-FR	-40 ~ +105°C	(6.3 ~ 63 VDC) 18 ~ 8,200 µF	- Ultra Low ESR: 12mΩ (20°C/100kHz) 5000 hours (case sizes 5 and 6mm Ø) ~10,000 hours at 105°C
		125°C - 135°C	EEU-TA	-40 ~ +125°C	(10 ~ 63 VDC) 1 ~ 4,700 µF	2,000 hours at 125°C - Automotive applications
			EEU-TP	-40 ~ +135°C	(25 ~ 35 VDC) 100 ~ 5,100 µF	- Low ESR: 16mΩ (20°C/100kHz) - Long Life: 125°C 2000 to 5000 hours (135° 1000 hours to 2000 hours)

		Series	Operating Temperature	(Working Voltage) Capacitance	Features
Surface Mount Aluminum Electrolytic	General Purpose	EEE-_A/S	-40 ~ +85°C	(4 ~ 100 VDC) 0.1 ~ 1,500 µF	- General purpose, 2,000 hours at 85°C - Very compact size - High Temperature Reflow (260°C)
	Long Life	EEE-HA	-40 ~ +105°C	(6.3 ~ 100 VDC) 0.1 ~ 1,500 µF	- Long life, 1000~2,000 hours at 105°C - Very compact size
		EEE-HB	-40 ~ +105°C	(4 ~ 50 VDC) 0.1 ~ 470 µF	- Long life, 2,000 hours at 105°C 5.8 mm height (< Ø 6)
		EEE-HC	-40 ~ +105°C	(6.3 ~ 50 VDC) 33 ~ 1,000 µF	- Long life, 3,000~5,000 hours at 105°C 5.8 mm height (< Ø 6)
		EEE-HD	-40 ~ +105°C	(6.3 ~ 50 VDC) 0.1 ~ 1000 µF	- Very long life, 5,000 hours at 105°C - Industrial grade
		EEV-EB	-25 ~ +105°C	(160 ~ 450 VDC) 2.2 ~ 100 µF	Large can size
		EEE-TG EEV-TG	-40 ~ +125°C	(10 ~ 100 VDC) 10 ~ 4,700 µF	- High temperature, 2,000 hours at 125°C - Low ESR at low temperature
		EEE-TK	-40 ~ +125°C	(10 ~ 35 VDC) 47 ~ 4700 µF	- High temperature, 3,000 hours at 125°C - Low ESR at low temperature
		EEE-TP	-40 ~ +125°C	(10 ~ 35 VDC) 47 ~ 470 µF	- Low ESR at Low Temperatures 2,000~3,000 hours at 125°C
	Low ESR, Long Life	EEE-FT	-55 ~ +105°C	(6.3 ~ 50 VDC) 10 ~ 2,200 µF	2000 hours at 105°C - Low ESR in smaller package - High Temperature Reflow (260°C)
		EEE-FP	-55 ~ +105°C	(6.3 ~ 35 VDC) 100 ~ 1,800 µF	- Very Low ESR, tantalum replacement - High Temperature Reflow (260°C)
		EEE-FK EEV-FK	-55 ~ +105°C	(6.3 ~ 100 VDC) 3.3 ~ 6,800 µF	- Long Life, 2,000~5,000 hours at 105°C - Low ESR, Tantalum replacement - Compact, wide size range: 4~18 mm (Ø)
		EEE-FKS	-55 ~ 105°C	(6.3 ~ 50 VDC) 39 ~ 1800µF"	One size smaller than FK Series
		EEE-FC	-40 ~ +105°C	(6.3 ~ 50 VDC) 1 ~ 1,500 µF	1,000 hours at 105°C - Low impedance
	Bi-Polar	EEE-__A__N	-40 ~ +85°C	(6.3 ~ 50 VDC) 0.22 ~ 47 µF	- General Purpose 5.4 mm height (< Ø 6)
		EEE-HP	-40 ~ +105°C	(6.3 ~ 50 VDC) 0.22 ~ 47 µF	- Industrial Grade 5.8 mm height
	Hybrid	EEH-ZA	-55 ~ +105°C	(25 ~ 63 VDC) 10 ~ 330 µF	- Up to 5,000 Hours at 105°C - Open Circuit Failure Mode - Low ESR, High Ripple Current
		EEH-ZC	-55 ~ 125°C	(25 ~ 80 VDC) 10 ~ 330uF	- Up to 4000 hours at 125°C - Open Circuit Failure Mode
		EEH-ZK	-55 ~ 125°C	(25 ~ 35 VDC) 33 ~ 470uF	- Large Capacitance - High Ripple Current"

NOTE:

Surface Mount Type RoHS Compliant Part Number Prefix:

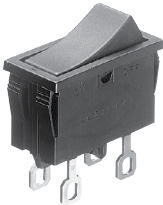
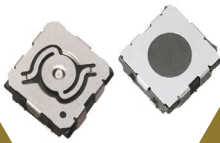
- EEE (Diameter: 3~10mm)
- EEV (Diameter: 12.5~18mm)

For higher temperature reflow, use EEE (A_) suffix:

- 260°C Max. Reflow: AP & AR (4~10mm Ø)
- 245°C Max. Reflow: AQ & AM (12.5~18mm Ø)

		Series	Operating Temp.	Ratings	Features	Applications
Metallized Film, Leaded	Plastic	ECW-FE	-40 ~ +105°C	0.1 ~ 4.7 μ F 450 and 630VDC	Boxed construction	- Active Filter Circuits - High Frequency - High Current Circuits
	Polyester	ECQ-E(H)	-40 ~ +105°C	0.1 ~ 2.2 μ F 450 VDC	Smaller Size	Active filtering circuit
		ECQ-E(F)	-40 ~ +85°C	0.001 ~ 10 μ F 100 ~ 1250 VDC	- Wide capacitance range - Compact size	General purpose applications
		ECQ-E(B)	-40 ~ +85°C	0.01 ~ 4.7 μ F 250 VDC	- Wide capacitance range - Miniaturized	General purpose applications
	Polypropylene	ECW-F(L)	-40 ~ +105°C	0.022 ~ 2.4 μ F, 400 VDC 0.01 ~ 1.3 μ F, 630 VDC	- Low Dissipation Factor - High Voltage	- High Frequency - High Current Circuits
		ECW-F(B)	-40 ~ +105°C	0.022 ~ 0.47 μ F 400 VDC	Low Dissipation Factor	- High Frequency - High Current Circuits
		ECW-H(V)	-40 ~ +105°C	0.001 ~ 0.1 μ F 800 ~ 2000 VDC	Low Dissipation Factor	High pulse circuits (TV, display, electronic ballast)
		ECW-F(A)	-40 ~ +105°C	0.1 ~ 6.8 μ F 250/450/630 VDC	- Miniaturized Size - High Reliability Design	Active Filter in PFC Circuits
		ECW-F(D)	-40 ~ +105°C	0.47 ~ 2.2 μ F 450 VDC	- Miniaturized Size - Flame Retardant Case - Low Hum Noise	- High Frequency - High Current Circuits
		ECW-H(A)	-40 ~ +105°C	0.001 ~ 0.047 μ F 800/1600 VDC	- Miniaturized Size - High Product Safety - Low Hum Noise	- Resonance circuits found in AC to DC Power Supplies - Active Filter in PFC Circuit
		ECW-H(C)	-40 ~ +85°C	0.18 ~ 0.33 μ F 630 VDC	- Miniaturized Size - High Product Safety - Low Hum Noise	Resonance-Microwave & Infrared Heat Cooker
		EZP-E	-40 ~ +70°C	10 μ F ~ 60 μ F 800/1100 VDC	- Rectangle type - High safety - Low hum noise	DC Linkage
	Metallized Polyester	ECQ-U(G)	-40 ~ +100°C	0.01 ~ 1.0 μ F 300 VAC (IEC384-14)	- Flame retardant case - Equipped with safety mechanism - UL, CSA, SEMKO, DEMKO, NEMKO, FIMKO, VDE, SEV approved (Class X1)	Noise suppressor for AC line
		ECQ-U(L)	-40 ~ +100°C	0.001 ~ 2.2 μ F 250 VAC (M, CSA) 275 VAC (IEC384-14)	- Smaller size than ECQ-U(V) or ECQ-U(G) - UL, CSA, VDE approved (Class X2) - Equipped with safety mechanism	High performance, Fuse Function in AC Line
		ECQ-U(A)	-40 ~ +100°C	0.1 ~ 2.2 μ F 275 VAC	- Smaller size than ECQ-U(V) or ECQ-U(G) - UL, CSA, VDE approved (Class X2) - Equipped with safety mechanism	High performance, fuse function in AC line

		Series	Operating Temp.	Ratings	Features	Applications
Film, Surface Mount Chip	Stacked Metallized	ECH-U(X)	-55 ~ +105°C	0.0001~0.22 μ F 16/50 VDC	- Non-inductive, stacked - Miniature - Reflow soldering	High density mounting SMD (industrial grade)
		ECH-U(C)	-55 ~ +105°C	0.01~0.22 μ F 100 VDC	- Non-inductive, stacked - Miniature - Reflow and flow solderability	- High density mounting SMD - Industrial Use - Filters; oscillators
		ECW-U(C)	-55 ~ +105°C -55 ~ +125°C	0.001 ~ 1.0 μ F 100, 250, 630 VDC	- Non-inductive, stacked - Miniature - Reflow Soldering	High density mounting SMD (commercial grade)
		ECW-U(V16)	-55 ~ +85°C	0.001~0.12 μ F 250 VDC	- Non-inductive, stacked - Miniature - Similar to polyester film cap	High density mounting SMD (commercial grade)
		ECW-U(X)	-55 ~ +105°C	0.001 ~ 0.01 μ F 100 VDC	- Non-inductive, stacked - Reflow soldering	- Electronic exchange - Ringer circuit telephone & PBX
		ECP-U(A)	-40 ~ +85°C	0.1 ~ 1.0 μ F 16 VDC	- Non-inductive, stacked - Reflow soldering	Coupling, filtering & PLL



E

ELECTROMECHANICAL

Light Touch Switches

Detector Switches

Snap Action Switches

Interlock Switches

Operation Switches

Encoders

Potentiometers

		Series	L x W x H (mm)	Operating Force	Features
Light Touch Switches	Top Push	EVP-AW	3.0 x 2.0 x 0.6	1.6N (160 gf) 2.4N (240 gf) 3.3N (330 gf)	- Laser welding technology - Built in actuator - Super small sized - IP67 rated
		EVP-BD	6.0 x 6.0 x 4.0	3.5 N (350 gf)	Tactile feeling with low audible sound;
		EVP-AY	3.4 x 2.9 x 1.7	1.6 N (160 gf) 2.4 N (240 gf)	- Built in Actuator - IP67 Rated
		EVP-BB	2.6 x 1.6 x 0.53	1.6 N (160 gf)	- Smallest switch in lineup - Laser Welded Design - Built in Actuator - IP67 Rated
		EVP-AF	3.0 x 2.6 x 0.65 3.0 x 2.6 x 0.70	1.6 N (160 gf) 2.4 N (240 gf) 3.4 N (340 gf)	Built-in actuator for consistent tactile performance
		EVP-AA	3.5 x 2.9 x 1.7	1.0 N (100 gf) 1.6 N (160 gf) 2.4 N (240 gf) 3.5 N (350 gf) 5.0 N (500 gf)	- Super small-sized, thin profile - J-bent terminal - Wide range of operating force - Long operating life
		EVQ-P6	4.1 x 4.1 x 0.35 4.1 x 4.1 x 0.43 4.1 x 4.1 x 0.58	1.0 N (100 gf) 1.6 N (160 gf) 2.4 N (240 gf)	- Compact/Thin Profile - Long-life: up to 1,000,000 cycles min. - Optional push-plate for improved actuation - Optional ground terminal for ESD protection
		EVQ-P2 EVQ-3P2 EVQ-P9	4.7 x 3.5 x 2.5 4.7 x 3.5 x 2.1	1.0 N (100 gf) 1.6 N (160 gf) 2.4 N (240 gf) 2.5 N (250 gf) 3.5 N (350 gf) 5.0 N (500 gf)	- J-bent terminals - Ground terminal optional - Middle Push: 0.7 mm - Short Push: 0.25 mm
		EVQ-PL	4.9 x 4.9 x 0.8 4.9 x 4.9 x 1.5	1.0 N (100 gf) 1.6 N (160 gf) 2.6 N (260 gf)	- Optional push-plate for improved actuation - GND terminal included
		EVQ-P0 EVQ-Q2 EVP-BF	6.5 x 6.0 x 2.0 6.5 x 6.0 x 2.5 6.5 x 6.0 x 3.1 6.0 x 6.0 x 3.5	0.5 N (50 gf) 1.3 N (130 gf) 1.6 N (160 gf) 2.0 N (200gf) 2.6 N (260 gf) 3.5 N (350 gf) 5.0 N (500 gf)	- Low cost - Wide selection of height and force - Wide push plate for reliable actuation - Over-stroke & GND type available - Long operating life
		EVQ-PA EVQ-PB	6.0 x 6.0 x 4.3 6.0 x 6.0 x 5.0 6.0 x 6.0 x 7.0 6.0 x 6.0 x 9.5	1.0 N (100 gf) 1.3 N (130 gf) 1.6 N (160 gf) 2.6 N (260 gf)	- Without ground terminal (EVQ-PA) - With ground terminal (EVQ-PB)
		EVQ-2	6.0 x 6.0 x 4.3 6.0 x 6.0 x 5.0 6.0 x 6.0 x 7.0 6.0 x 6.0 x 9.5	1.0 N (100 gf) 1.3 N (130 gf) 1.6 N (160 gf) 2.6 N (260 gf)	- With or without ground terminal - Wide selection of height and force
		EVQ-PE/PN/SP	6.0 x 3.5 x 4.3 6.0 x 3.5 x 5.0	1.0 N (100 gf) 1.6 N (160 gf) 2.4 N (240 gf)	- Narrow width for space saving - SMT, bulk, radial-tape terminal types available
		EVQ-11	6.0 mm dia. x 4.3 6.0 mm dia. x 5.0 6.0 mm dia. x 7.0 6.0 mm dia. x 9.5	1.0 N (100 gf) 1.3 N (130 gf) 1.6 N (160 gf) 2.6 N (260 gf)	- Radial Taping - Forged terminals to improve mounting efficiency - Round shape for improved packaging density
		EVQ-P0	6.2 x 6.2 x 7.45	0.74 N (74 gf) 1.3 N (130 gf)	- Knob shape: De-centering, centering - Ideal for frequent usage such as mouse button
		EVQ-PV	6.1 x 6.0 x 5.0	1.6 N (160 gf) 2.0 N (200 gf) 2.2 N (220 gf) 2.5 N (250 gf) 3.5 N (350 gf)	- Push travel: 1.0 mm, 1.3 mm - Forged terminals - Large push plate for superior actuation

		Series	L x W x H (mm)	Operating Force	Features
Light Touch Switches	Top Push, Long Travel	EVQ-P1 EVQ-9P	6.1 x 6.0 x 5.0	1.6 N (160 gf) 2.0 N (200 gf) 2.2 N (220 gf) 2.5 N (250 gf) 3.0 N (300 gf) 3.5 N (350 gf)	• Push travel: 1.0 mm, 1.3 mm • Popular for automotive applications • J-bent terminal • Large push plate for superior actuation
		EVQ-Q1	8.5 x 8.5 x 6.5	4.0 N (400 gf) 5.0 N (500 gf)	• Ultra high force • Popular for automotive applications • Large push plate for superior actuation • J-Bent Terminal
	Top Push, Center Space, Long Travel	EVP-AD	19.8 x 9.8 x 4.7	4.0 N (400 gf)	• World's first open Center Space for LED • Long travel of 1.0mm • 100K life
	Double Action, Top Push	EVP-AX	3.0 x 2.6 x 0.7	0.7N/2.0N (70gf/200gf)	• Laser welding technology • Built in actuator • Super small sized • IP67 rated
	Side Push	EVP-AT	3.4 x 1.7 x 1.6	1.6 N (160 gf)	• Low profile • High peel off strength • Edge mount • Built in actuator • IP67 rated
		EVP-AV	2.8 x 2.3 x 1.95	1.6 N	• High Peel off strength • Super small sized • Edge Mount • Built in actuator
		EVP-AK	3.8 x 1.9 x 1.6	1.6 N (160 gf)	• Edge Mount Design • Laser Welded Design • IP67 Rated
		EVQ-P7 EVQ-P3 EVQ-9P7	3.5 x 2.9 x 1.35	1.6 N (160 gf) 2.2 N (220 gf)	• High impact resistance • Boss and L-terminal available
		EVP-AN	3.5 x 2.9 x 1.2	1.6 N (160 gf) 2.2 N (220 gf)	• High mounting strength • Allows for slim profile
		EVP-AE	4.5 x 2.25 x 2.9	1.6 N (160 gf)	• Improved soldering strength in the operating direction • Long operational life • Edge Mount
		EVQ-PU	4.7 x 3.5 x 1.65	1.6 N (160 gf) 2.2 N (220 gf)	• High impact resistance • Straight or J-bent terminals
		EVQ-P4	6.2 x 2.55 x 3.5	1.0 N (100 gf) 1.6 N (160 gf) 2.4 N (240 gf) 2.5 N (250 gf) 3.5 N (350 gf) 5.0 N (500 gf)	• Optional edge mount for ultra high impact resistance • 0.25 mm, 0.70 mm travel • Life: 200 K to 1 Million cycles
		EVQ-PC EVQ-PF	PC: 7.5 x 7.1 x 9.25 PF: 7.5 x 7.1 x 7.15 PF: 7.5 x 7.1 x 7.85 PF: 7.5 x 7.1 x 9.85 PF: 7.5 x 7.1 x 12.35	1.0 N (100 gf) 1.3 N (130 gf) 1.6 N (160 gf) 2.6 N (260 gf)	• Without ground terminal • Bulk (EVQ-PF) or radial taping (EVQ-PC) • Wide selection of height and force

		Series	Dimensions (mm)	Operating Force	Features
Detector Switches	Horizontal Detector	ESE-58	3.5 x 3.0 x 0.9	300 mN max (30 gf)	• Small form factor and thin profile • Normal close or normal open style • Positioning boss optional • Multiple actuation methods for design flexibility
	1HW Detector	ESE-23	Mounting height: 1.4 mm Outer dimensions: 5.0 mm x 4.15 mm	300 mN (30 gf)	• Small/thin profile • Long over-travel • Usable as an operation switch (an input device)
	2W Detector	ESE-24	7.5 mm x 5.6 mm x 3.0 mm 7.5 mm x 5.6 mm x 4.65 mm	350 mN (35 gf)	• Compact/thin profile • Long over-travel • Usable as an operation switch (an input device)
	Vertical Detector	ESE-16	3.35 x 2.2 x 1.5	250 mN max (25 gf)	• Small projected size
	2 mm Size Type 2N	ESE-22	Vertical mounting height: 4.1 mm Horizontal mounting height: 2.1 mm Horizontal with frame height: 2.85 mm	300 mN (30 gf)	• Wiping contact construction • Operable in two directions: X-X or Y-Y • Extremely thin profile, SMD
	Super Thin	ESE-13 ESE-18	Mounting height: 1.2 mm	300 mN (30gf)	• For horizontal and vertical mounting (ESE-13) • For left and right side operation (ESE-18)
	Horizontal Thin	ESE-31	Mounting strength: 80 N Switch body height: 1.7 mm	390 mN max.	• Increased the contact reliability and lifespan. • Lifespan: 100,000 operations or more

		Series	Op. Force (gF max.)	Max. Contact Rating	Low Resistive Load Ratings	Expected Electrical Life	Contact Material	Ratings	Features
Snap Action Switches	Non-Sealed (micro)	AEQ	1.2N (Pin plunger) 1.7N (Leaf lever) 1.5N (Simulated leaf lever)	100 µA at 3 VDC to 100 mA 30 VDC [Min. switching capacity 10 µA at 1 VDC]	10 µA at 1 VDC	2×10^5 3V DC 0.1mA 10^6 30V DC 100mA	—	IP40	Handles low level load 100 µA at 3 VDC to 100 mA 30 VDC
		AH1	0.74N 1.47N	1.47N 3 A 125 V AC 2 A 30 V DC 0.74N 1 A 125 V AC 1 A 30 V DC	Au-clad contact 5 mA 6 VDC 2 mA 12 VDC 1 mA 24 VDC	3×10^4	Standard: Ag alloy Low-level: Au-clad Ag alloy	IP40 UL/CSA	- Ultra-miniature size (12.8 × 6 × 6.5 mm 12.7 × 6 × 6 mm) - Flux-resistant construction - Flat terminal
		AM1	0.69N to 5.30N	10 A 125, 250 VAC or 1 A 480 VAC 1/8HP 125 VAC 1/4HP 250 VAC 1/2A 125 VDC 1/4A 250 VDC	—	5×10^5	Ag alloy	IP40 UL/C-UL	Versatile range for all applications
		AV3	1.47N	3 A 30 VAC	—	10^4	Ag alloy	IP40 UL/C-UL, ENEC/VDE	- Contact gap of greater than 1mm - Door inter-lock switch for OA equipment
		AV4	0.98N	Ag contact: 0.5 A 30 VDC Au contact: 0.1 A 30 VDC	—	2×10^4 (Au type: 2×10^5)	Standard: Ag alloy Low-level: Au plating	IP40	- Super miniature size (7.5 × 2.5 × 5 mm) - Solder terminal type with mounting holes available - Mechanical life 3×10^5
		AV6	0.50N 1.50N	0.1 A 30 VDC	—	2×10^5	Au-clad Ag alloy	IP40 UL/C-UL, TÜV	- Using a connector for connections significantly improves operation effectiveness - Contact reliability by using a simple dust prevention guard and gold-clad double layer contacts
		AVT3 AVL3 AVM3	Standard: 0.25N Gold-clad: 0.49N 0.98N Long life version: 1.47N	Standard: 3 A 250 VAC 3 A 30 VDC 0.4 A 125 VDC Long life version: 5 A 250 VAC 5 A 30 VDC 0.4 A 125 VDC Au clad contact: 0.1 A 250 VAC Triple layer: 0.1 A 30 VDC	Double layer: 1 to 100 mA, 5 to 30 VDC Triple layer: 1 to 100 mA, 5 to 250 VAC	5×10^4	Standard: Ag alloy Low-level: Au-clad triple layer, double layer	IP40 UL/C-UL, ENEC/VDE	- Consistent quality and high precision through sophisticated automatic fabrication system - Low-level circuit types available - Long life version available

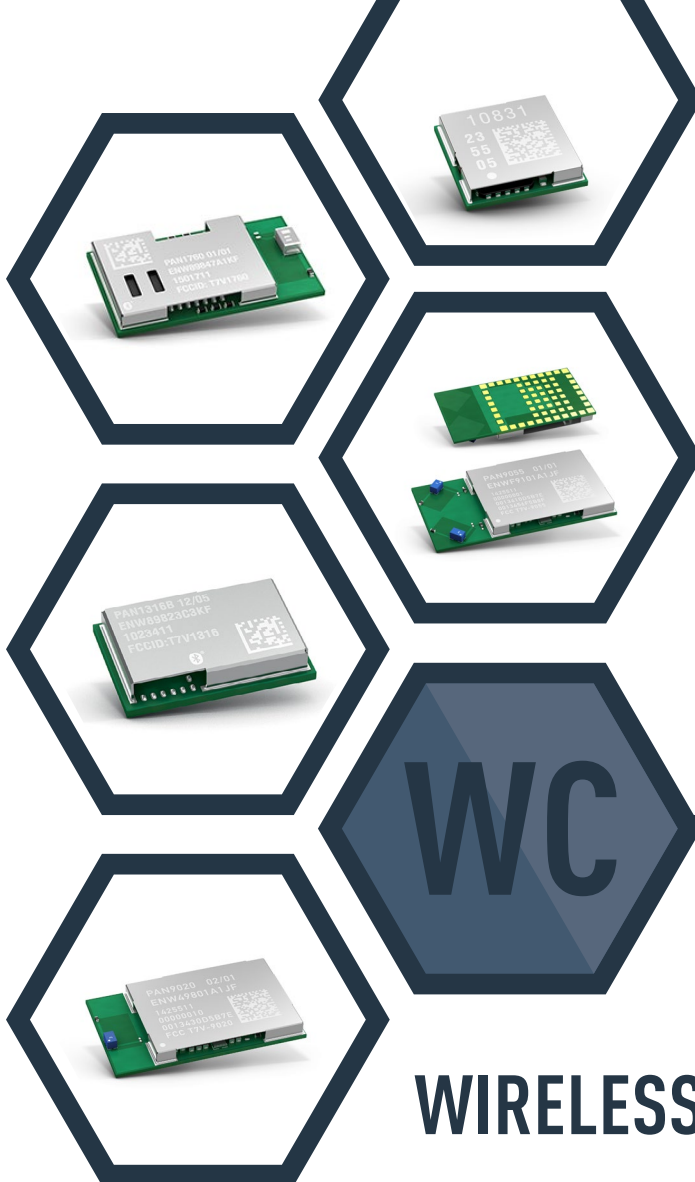
Snap Action Switches		Series	Op. Force (gF max.)	Max. Contact Rating	Low Resistive Load Ratings	Expected Electrical Life	Contact Material	Ratings	Features
Sealed (turquoise)	ASQ		1.5N (Pin plunger) 1.7N (Leaf lever) 1.5N (Simulated leaf lever)	100 mA 30 VDC	1 mA 5 VDC	2 × 105 (Nominal)	Au-clad	IP67	- Compact size and ultra-long stroke - IP67 - Silent operation
						2 × 105 (Low-level)			
	ASQM		1.2N (Pin Plunger) 1.5N (Simulated Roller)	50mA 16 VDC	1mA 5 VDC	1.5X10 ⁵ (nominal)	Au-Clad	1P67	- Miniaturization - Contact pressure does not depend on the operation stroke - High contact reliability - High effective sealing for resistance against adverse environments
						3x10 ⁵ (low level)			
	ABJ		1.23N 1.96N 2.45N (Long stroke)	Ag Alloy Contact: 1.23N 1 A 125 VAC 1 A 30 VDC 1.96N 2 A 125 VAC 2 A 30 VDC 2.45N (Long stroke) 1 A 125 VAC 1 A 30 VDC	5 mA 6 VDC 2 mA 12 VDC 1 mA 24 VDC	3 × 104 (Ag alloy contact)	Standard: Ag alloy Low-level: Au-clad	IP67 UL/CSA	- Ultra-miniature size (12.8 × 6 × 6.5 mm) - Adoption of elastomer double molding technology and Ultrasonic swaging technology to uniform sealing in high production quantities - High environmental resistance (IP67)
				Au Clad Contact: 0.1 A 125 VAC 0.1 A 30 VDC		105 (Au-clad contact)			
	ABS		0.98N 1.47N	Ag Alloy Contact: 2 A 125 VAC 2 A 250 VAC 2 A 30 VDC 0.4 A 125 VDC	5 mA 6 VDC 2 mA 12 VDC 1 mA 24 VDC	5 × 104 (Ag alloy contact)	Standard: Ag alloy Low-level: Au-clad	IP67 UL/C-UL ENEC/VDE	- Sub-miniature size (19.8 × 6.4 × 11.1 mm) - Adoption of Elastomer double molding technology and Ultrasonic swaging technology to uniform sealing in high production quantities - High environmental resistance (IP67)
				Au Clad Contact: (triple, double layer) 0.1 A 125 VAC 0.1 A 250 VAC 0.1 A 30 VDC		2 × 105 (Au-clad contact)			
	ABV		0.98N 1.96N	Ag Alloy Contact: 5 A 250 VAC (O.F. min. 1.96N) 3 A 250 VAC (O.F. 0.98N)	5 mA 6 VDC 2 mA 12 VDC 1 mA 24 VDC	105 (Nominal)	Standard: Ag alloy Low-level: Au-clad	IP67 UL/C-UL ENEC/VDE	- Miniature size (33 × 10.3 × 15.9 mm) - Adoption of Ultrasonic swaging technology and epoxy sealing to uniform sealing in high production quantities - High environmental resistance (IP67)
				Au Clad Contact: 3 A 250 VAC (O.F. min. 1.96N) 1 A 250 VAC (O.F. 0.98N)		106 (Low-level)			

	Series	Op. Force (gF max.)	Max. Contact Rating	Expected Electrical Life	Contact Material	Ratings	Features
Interlock Switches	AGX	<Standard> 1 Form A: 3.92N 2 Form A: 3.92N 3 Form A: 5.88N High capacity: 1 Form A: 4.90N 2 Form A and 3 Form A: 5.88N	Standard: 10.1 A 250 V AC	1×10^5	Ag alloy	IP40 UL/C-UL, ENEC/VDE	• Snap-in mounting • 14 mm depth • Contact gap of greater than 4 mm
	AV1	1 Form A: 4.90N 1 Form B: 2.94N 1 Form A 1 Form B: 5.88N 2 Form A: 7.85N 3 Form A: 9.81N	10.1 A 250 V AC	5×10^4	Ag alloy	IP40 UL/C-UL, ENEC/VDE	• Dual restoration spring mechanism • Insulation distance 8 mm (snap-in mounting 2 form A and 3 form A)

	Series	Contact Arrangement	Contact Rating	Op. Force	Load	Mounting Method	Features
Operation Switches	AJ7	1a, 2a	10A (Resistive) 4A (Motor load) 250VAC	2.2N - 4N	10A 250V AC 6A 250V AC	Snap-in, Square hole 12.9 x 19.4 mm (Panel thickness 1.25 to 2.0 mm)	• 0.187 quick-connect • Soldering • PC board • Right and left angle terminals
			TV Rating 5/78A 120VAC 10A (Resistive) 4A (Motor load) 100A (Capacitor) 250VAC				
	AJ8	1a, 2a	16A (Resistive) 4A (Motor load) 250VAC	2.45N - 4.5N	16A 250V AC	Snap-in, Square hole 12.9 x 19.4 mm (Panel thickness 1.25 to 2.0 mm)	• 0.250 quick-connect • Soldering • PC board • Right and left angle terminals
			TV Rating 8/117A 120VAC 16A (Resistive) 4A (Motor load) 160A (Capacitor) 250VAC				
Power Rocker Switches	AJ8 (Trip Function Upgrade)	1a, 1c, 2a	16A (Resistive) 125 VAC 10A (Resistive) 4A (Motor load) 250 VAC	4.9N (or less) 6.86N (After reset)	16A 125V AC 10A 250V AC	Snap-in, Square hole 22 x 31.1 mm (Panel thickness 1.8 to 2.3 mm)	• Electromagnetic reset function • Comfortable operation • CT terminals adopted for coil terminals • Long life • Ability to withstand inrush current
	AJ8S	3a	16A (Resistive) 4A (Motor load) 250 VAC 10mA 5 VDC	4.9N (or less)	Power section: 16A 250V AC Signal section: 10mA 5V DC	Snap-in, Square hole 22 x 31.1 mm (Panel thickness 1.8 to 2.3 mm)	• Incorporates a contact for low level circuit protection • High inrush current resistance • Light touch Operation • Cadmium-free contact compatibility

		Series	Life (cycles)	Rotation Torque	Features
Encoders	18mm Square Waterproof	EVQ-V9	30,000	50 mN-m	- Water resistant - Highly responsive click sound and feel - High precision and reliability
	11 mm Square GS Encoders	EVE-V EVE-Y	30,000	3 to 20 mN-m	- Low Profile - Reflow Type 3.5mm Body Height - Through-Hole Type 4mm Body Height - Integrated Push Switch 0.4mm or 1.5mm Travel - Minimum-Wobble Type Available
	16 mm Square High Grade	EVE-P	1,000,000	3 to 25 mN-m	- Smooth operating feel with minimal wobble - Integrated Switch - Long Life: 1,000,000 cycles minimum
	Center Space 20/12mm, 27/18mm, 60/40mm	EVQ-V/W	30,000	3 to 20 mN-m 35 mN-m	- Open center space for LED and switch - Allows for large knob design

		Series	Life (cycles)	Rotation Torque	Features
Potentiometers	9mm Rotary	EVU-E/F	10,000	1 to 20 mN-m	- Multiple Bushing & Height Configurations - Midpoint detent optional
	10mm Sensor	EVW-AE	1,000,000	3 mN-m max.	- Low profile, small size, long life <3% linearity
	Center Space 39/20mm	EWV-YE/YG/YJ/YK	30,000	20 mN-m	- Large center space for switch and LED - Low wobble of 0.25mm max - Multiple detent options (5, 8, 29) - Automotive grade - With built-in LED option



WIRELESS CONNECTIVITY

Bluetooth® RF Modules

802.15.4 (Mesh) RF Modules

ISM (Industrial, Scientific, Medical) RF Modules

WiFi, WiFi + BT RF Modules

		Series	Size (mm)	Receiver Sensitivity	Max. Output Power	Power Supply	Freq. Range	I/Os	Interfaces	Max. Data Rate	Dev Kit	Dev Module
Bluetooth	Classic	PAN1315B/ PAN1325B	9.0 x 6.5 x 1.8 9.0 x 9.5 x 1.8	-93 dBm	+10.5 dBm	1.8 - 4.8V	2.4 GHz	N/A	PCM, UART, I2S	3M bits/sec	Yes	Yes
		PAN1315A/ PAN1325A ** ***	9.0 x 6.5 x 1.8 9.0 x 9.5 x 1.8	-93 dBm	+10.5 dBm	1.8 - 4.8 V	2.4 GHz	2	PCM, UART, I2S	3Mbits/s	Yes	Yes
		PAN1322 ***	15.6 x 8.7 x 1.8	-86 dBm	+4 dBm	2.9 - 4.1 V	2.4 GHz	>15	GPIO, UART, JTAG	720K bits/s	Yes	Yes
		PAN1455/ PAN1555 *	13.5 x 18.75 x 2.85 mm 18.8 x 13.5 x 2.5	-86 dBm	+4 dBm	2.7 - 3.6 V	2.4 GHz	18	3x UART, I ² C, SPI, ADC	3M bits/sec	Yes	No
	Bluetooth Smart Ready (Multi-Mode)	PAN1026	15.6 x 8.7 x 1.8	-88 dBm	+4 dBm	1.8 - 3.3V	2.4GHz	N/A	GPIO, UART	720K bits/s	Yes	Yes
		PAN1316B/ PAN1326B	9.0 x 6.5 x 1.8 9.0 x 9.5 x 1.8	-93 dBm	+10.5 dBm	1.8 - 4.8V	2.4 GHz	N/A	PCM, UART, I2S	3Mbits/sec	Yes	Yes
		PAN1316A/ PAN1326A ** ***	9.0 x 6.5 x 1.8 9.5 x 9.0 x 1.8	-93 dBm	+10.5 dBm	1.8 - 4.8 V	2.4 GHz	2	PCM, UART, I2S	3Mbits/s	Yes	Yes
	Bluetooth Smart (Low Energy)	PAN1740	9.0 x 9.5 x 1.8	-93 dBm	0 dBm	2.35 - 3.3	2.4 GHz	2	GPIO, UART, SPI, PC, 3-axis QD, ADC	< 10K bit/sec	Yes	Yes
		PAN1760	15.6 x 8.7 x 1.8	-88 dBm	+4 dBm	1.8 - 3.3V	2.4 GHz	10	GPIO, UART	< 10K bit/sec	Yes	Yes
		PAN1720/ PAN1720BR *	15.6 x 8.7 x 1.8	-94 dBm	+3 dBm	2.0 - 3.6 V	2.4 GHz	19	GPIO, UART (USB)	< 10K bit/sec	Yes	No
		PAN1711/ PAN1711BR/ PAN1721/ PAN1721BR *	11.6 x 8.7 x 1.8 15.6 x 8.2 x 3	-94 dBm	0 dBm	2.0 - 3.6 V	2.4 GHz	19	I ² C, GPIO, UART	< 10K bit/sec	Yes	No
	Triple Mode	PAN1323 **	9.0 x 9.5 x 1.8	-93 dBm	+10 dBm	1.7 - 4.8 V	2.4 GHz	2	PCM, UART, I2S	3Mbits/s	Yes	Yes
	Mesh Networking (802.15.4)	PAN4561 *	35.0 x 15.0 x 3.8	-98 dBm @ 250 kbps	+18.5 dBm/ 0 dBm	2.7 - 3.4 V	2.4 GHz	39	GPIO, UART, A/D	250Kbs	Yes	Yes
	ISM	PAN235x *	8.0 x 8.2 x 1.9	-104 dBm @ 2.4kBits/s	+10 dBm	1.8 - 3.6 V	303MHz - 2.4GHz	2 Output	GPO, SPI	500K bits/sec	No	No

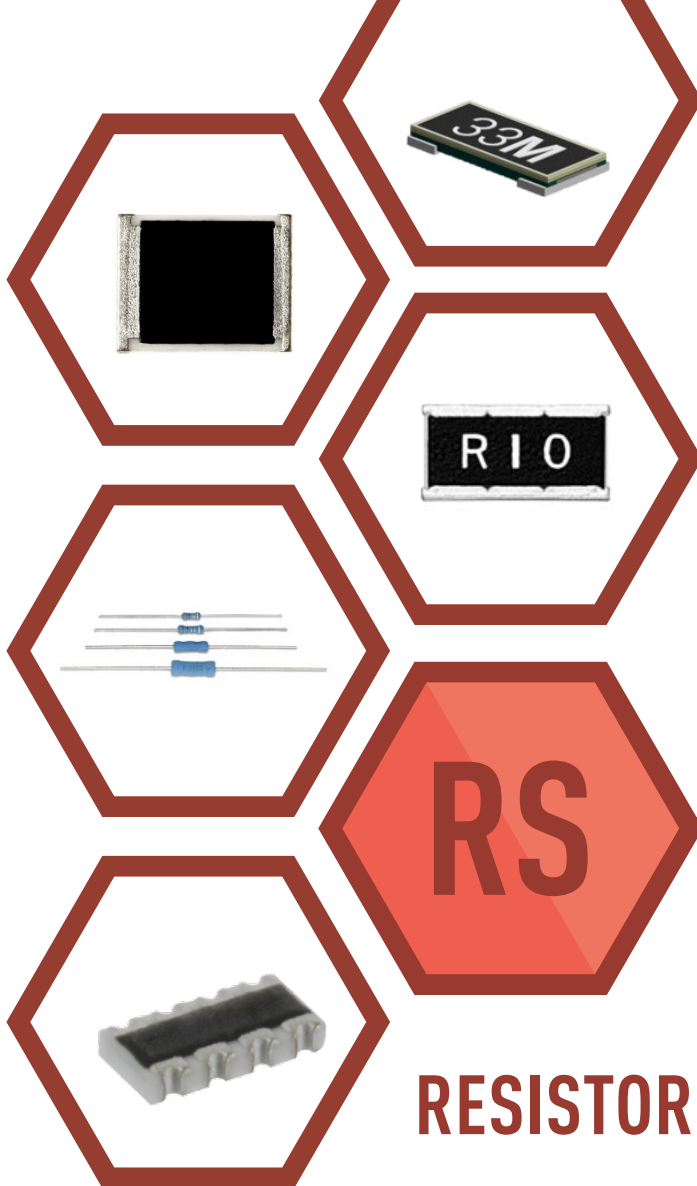
* = Operating Temp: -40 to +85° C

** = Operating Temp: -20 to +70° C (-40 to +85° C Optional)

*** = Not Recommended For New Designs

	Series	Size (mm)	Receiver Sensitivity	Max. Output Power	Power Supply	Freq. Range	GPIO	Interfaces	Max. Data Rate	Dev Kit	Dev Module
WiFi (b/g/n) (Non Embedded)	PAN9010/ PAN9020	22.75 x 13.5 x 2.42	-98 dBm	+18 dBm	3.0 - 3.6 V	2.4 GHz	N/A	USB 2.0 or SDIO	150Mbps	Yes	Yes
WiFi (b/g/n) (Embedded)	PAN9320 *	29.0 x 13.5 x 2.66	-98 dBm	+18 dBm	3.0 - 3.6 V	2.4 GHz	8	2 UARTs, QSPI	300Mbps	Yes	Yes
WiFi (b/g/n) + BT + BLE (Non Embedded)	PAN9045/ PAN9055	26.0 x 13.5 x 2.40	-98 dBm	+18 dBm	3.0 - 3.6 V	2.4 GHz	N/A	USB 2.0, SDIO 3.0, HS UART	300Mbps	Yes	Yes

* = Operating Temp: -30 to +70° C



RESISTORS

Chip Resistors

Current Sensing Resistors

High Precision Chip Resistors

Anti-Sulfurated Chip Resistors

Wide Terminal Chip Resistors

Axial Leaded Resistors

Resistor Networks & Arrays

		Series	Case Size	Power Rating (W)	Resistance Range (Ω)	Resistance Tolerance (%)	T.C.R. (ppm/°C)	LxWxT Dimensions (mm)	Qty. 7" Reel (pcs.)	Features
Chip Resistors	Thick Film Chip	ERJ-XGNJ, 0*	01005	1/32 W	0, 10 ~ 1 M	± 5, jumper	± 200*	0.40 x 0.20 x 0.13	20,000	• Small size and lightweight • High reliability using metal glaze thick film resistive element and three layers of electrodes • Compatible with automatic placement of bulk taping and bulk case packaging • Meets ISO-9001 & TS16949 standards • AEC Q200 Certified • Halogen Free
		ERJ-XGNF*	01005	1/32 W	10 ~ 1 M	± 1	± 200			
		ERJ-1GNJ, 0	0201	1/20 W	0, 1.0 ~ 1 M	± 5, jumper	± 200*	0.60 x 0.3 x 0.23	15,000	
		ERJ-1GNF	0201	1/20 W	10 ~ 1 M	± 1	± 200			
		ERJ-1RHD	0201	1/20 W	1 K to 1 M	± 0.5	± 50			
		ERJ-2GEJ, 0	0402	1/16 W	0, 1.0 ~ 2.2 M	± 5, jumper	± 200*	1.0 x 0.5 x 0.35	10,000	
		ERJ-2RKF	0402	1/16 W	10 ~ 1 M	± 1	± 100			
		ERJ-2RHD	0402	1/16 W	100 to 100 K	± 0.5	± 50			
		ERJ-2RKD	0402	1/16 W	10 to 97.6 & 102 K to 1 M	± 0.5	± 50			
		ERJ-3GEJ, 0	0603	1/10 W	0, 1.0 ~ 10 M	± 5, jumper	± 200*	1.6 x 0.8 x 0.45	5,000	
		ERJ-3KEF	0603	1/10 W	10 ~ 1 M	± 1	± 100			
		ERJ-3RBD	0603	1/8 W	100 to 100 K	± 0.5	± 50			
		ERJ-3RED	0603	1/8 W	10 to 97.6 & 102 K to 1 M	± 0.5	± 100			
		ERJ-PB3	0603	1/5 W	200 to 200 K	± 0.1, ± 0.5	± 50			
		ERJ-6GEJ, 0	0805	1/8 W	0, 1.0 ~ 10 M	± 5, jumper	± 200*	2.0 x 1.25 x 0.6	5,000	
		ERJ-6ENF	0805	1/8 W	10 ~ 2.2 M	± 1	± 100			
		ERJ-6RBD	0805	1/8 W	100 to 100 K	± 0.5	± 50			
		ERJ-6RED	0805	1/8 W	10 to 97.6 and 102 K to 1 M	± 0.5	± 100			
		ERJ-PB6	0805	1/4 W	200 ~ 1 M	± 0.1, ± 0.5	± 50			
		ERJ-8GEJ, 0	1206	1/4 W	0, 1.0 ~ 10 M	± 5, jumper	± 200*	3.2 x 1.6 x 0.6	5,000	
		ERJ-8ENF	1206	1/4 W	10 ~ 2.2 M	± 1	± 100			
		ERJ-14YJ, 0	1210	1/4 W	0, 1.0 ~ 10 M	± 5, jumper	± 200*	3.2 x 2.5 x 0.6	5,000	
		ERJ-14NF	1210	1/4 W	10 ~ 1 M	± 1	± 100			
		ERJ-12ZYJ, 0	2010	1/2 W	0, 1.0 ~ 10 M	± 5, jumper	± 200	5.0 x 2.5 x 0.6	5,000	
		ERJ-12SF	2010	1/2 W	10 ~ 1 M	± 1	± 100			
		ERJ-1TYJ, 0	2512	1 W	0, 1.0 ~ 1 M	± 5, jumper	± 200*	6.4 x 3.2 x 0.6	4,000	
		ERJ-1TNF	2512	1 W	10 ~ 1 M	± 1	± 100			
	Anti-Surge Thick Film Chip	ERJ-PA2	0402	1/5 W	10 ~ 1 M	±0.5, ±1 +5	±100 ±200	1.0 x 0.5 x 0.35	10,000	• Anti-Surge characteristics superior to standard metal film resistors • High reliability • High Power in Small Packages • High Temperature • Meets ISO-9001 & TS16949 standards • AEC Q200 Certified
		ERJ-P03	0603	1/5 W	10 ~ 1 M	±0.5, ±1	±150, ±200	1.60 x 0.8 x 0.45		
					1 ~ 1 M	+5	R>10 Ω: ±200 R<100: -150 to 400			
		ERJ-PA3	0603	1/4 W	10 ~ 1 M	±0.5, ±1	±100	1.6 x 0.8 x 0.45		
					1 ~ 1.5 M	+5	±200			
		ERJ-P06	0805	1/2 W	1 ~ 1 M	±0.5, ±1	R≥30 Ω: ±100 R<300: ±300	2.0 x 1.25 x 0.60		
					1 ~ 3.3 M	+5	R≥30 Ω: ±200 R<300: ±300			
		ERJ-P08	1206	2/3 W	10 ~ 1 M	±0.5, ±1	±100	3.2 x 1.6 x 0.60		
					1 ~ 10 M	+5	R>10 Ω: ±200 R<100: -100 to +600			
		ERJ-P14	1210	1/2 W	10 ~ 1 M	±0.5, ±1	±100	3.2 x 2.5 x 0.60		
					1 ~ 1 M	+5	R>10 Ω: ±200 R<100: -100 to +600			
	Anti-Pulse Thick Film Chip	ERJ-P6W	0805	1/2 W	10 ~ 1 M	±1	±200	2.0 x 1.25 x 0.65		• Pulse Tolerant • High Reliability • High Power • Meets ISO-9001 & TS16949 standards • AEC Q200 Certified
					1 ~ 1 M	+5	R < 10 : -100 to +600 10 < R : +200			
		ERJ-T06	0805	1/4 W	1 ~ 1 M	+5	R≥33 Ω: ±200 R<300: ±300 R<100: -100 to +600	2.0 x 1.25 x 0.60	5,000	
		ERJ-T08	1206	1/3 W	1 ~ 1M	+5	R>10 Ω: ±200 R<100: -100 to +600	3.2 x 1.6 x 0.60		
		ERJ-T14 ERJ-T14L	1210	1/2 W	1 ~ 1M	+5 ±10, ±20	R>10 Ω: ±200 R<100: -100 to +600	3.2 x 2.5 x 0.60		

*TCR listed is for 10 ~ 1M Ω.

Check data sheet for less than 10 Ω and greater than 1M Ω.

*Not AEC Q200 Certified.

		Series	Case Size	Power Rating (W)	Resistance Range (Ω)	Resistance Tolerance (%)	T.C.R. (ppm/°C)	LxWxT Dimensions (mm)	Qty. 7" Reel (pcs.)	Features
Current Sensing Resistors	Thick Film Chip	ERJ-2BS	0402	1/8 W	0.1 ~ 0.2	± 1, ± 5	± 300	1.0 x 0.5 x 0.35	10,000	• Low Ohmic • Small size and lightweight • High reliability using metal glaze thick film resistive elements and three layers of electrodes • Compatible with automatic placement of bulk taping and bulk case packaging • Meets ISO-9001 & TS16949 standards • AEC Q200 Certified • Halogen Free
		ERJ-2BQ	0402	1/8 W	0.22 ~ 1.0	± 1, ± 5	± 250		10,000	
		ERJ-3RS	0603	1/10 W	0.1 ~ 0.2	± 1, ± 2, ± 5	± 250	1.6 x 0.8 x 0.45	5,000	
		ERJ-3RQ	0603	1/10 W	0.22 ~ 9.1	± 1, ± 2, ± 5	± 200, ± 250		5,000	
		ERJ-3BS	0603	1/4 W	0.1 ~ 0.2	± 1, ± 2, ± 5	± 300		5,000	
		ERJ-3BQ	0603	1/4 W	0.22 ~ 0.91	± 1, ± 2, ± 5	± 200, ± 300	2.0 x 1.25 x 0.6	5,000	
		ERJ-6RS	0805	1/8 W	0.1 ~ 0.2	± 1, ± 2, ± 5	± 250		5,000	
		ERJ-6RQ	0805	1/8 W	0.22 ~ 0.91	± 1, ± 2, ± 5	± 200, ± 250		5,000	
		ERJ-6BS	0805	1/3 W	0.1 ~ 0.2	± 1, ± 2, ± 5	± 250	3.2 x 1.6 x 0.6	5,000	
		ERJ-6BQ	0805	1/3 W	0.22 ~ 0.91	± 1, ± 2, ± 5	± 200, ± 250		5,000	
		ERJ-8RS	1206	1/4 W	0.1 ~ 0.2	± 1, ± 2, ± 5	± 250	3.2 x 1.6 x 0.6	5,000	
		ERJ-8RQ	1206	1/4 W	0.22 ~ 0.91	± 1, ± 2, ± 5	± 200, ± 250		5,000	
		ERJ-8BS	1206	1/2 W	0.1 ~ 0.2	± 1, ± 2, ± 5	± 200		5,000	
		ERJ-8BQ	1206	1/2 W	0.22 ~ 0.91	± 1, ± 2, ± 5	± 100, ± 200	3.2 x 2.5 x 0.6	5,000	
		ERJ-14RS	1210	1/4 W	0.1 ~ 0.2	± 1, ± 2, ± 5	± 200		5,000	
		ERJ-14RQ	1210	1/4 W	0.22 ~ 0.91	± 1, ± 2, ± 5	± 100, ± 200		5,000	
		ERJ-14BS	1210	1/2 W	0.1 ~ 0.2	± 1, ± 2, ± 5	± 200	4.5 x 3.2 x 0.6	5,000	
		ERJ-14BQ	1210	1/2 W	0.22 ~ 0.91	± 1, ± 2, ± 5	± 100, ± 200		5,000	
		ERJ-12RS	1812	1/2 W	0.1 ~ 0.2	± 1, ± 2, ± 5	± 200	5.0 x 2.5 x 0.6	5,000	
		ERJ-12RQ	1812	1/2 W	0.22 ~ 0.91	± 1, ± 2, ± 5	± 100, ± 200		5,000	
		ERJ-12ZS	2010	1/2 W	0.1 ~ 0.2	± 1, ± 2, ± 5	± 200	6.4 x 3.2 x 0.6	5,000	
		ERJ-12ZQ	2010	1/2 W	0.22 ~ 0.91	± 1, ± 2, ± 5	± 100, ± 200		5,000	
		ERJ-1TRS	2512	1 W	0.1 ~ 0.2	± 1, ± 2, ± 5	± 200	1.0 x 0.5 x 0.4	4,000	• Low Ohmic • Small size and lightweight • High reliability using metal glaze thick film resistive elements and three layers of electrodes • Compatible with automatic placement of bulk taping and bulk case packaging • Meets ISO-9001 & TS16949 standards • AEC Q200 Certified • Halogen Free
		ERJ-1TRQ	2512	1 W	0.22 ~ 0.91	± 1, ± 2, ± 5	± 100, ± 200		10,000	
		ERJ-2LW	0402	1/5 W	10 m	± 1, +2, -+5	0 to 500	1.0 x 0.5 x 0.35	10,000	
		ERJ-2BW*	0402	1/4 W	0.047 ~ 0.2	± 2, ± 5	± 300	1.6 x 0.8 x 0.55	5,000	
		ERJ-3LW	0402	1/4 W	5 m ~ 10 m	± 1, ± 2, ± 5	5 m: 0 to 700 10 m: 0 to 300	2.0 x 1.25 x 0.65	5,000	
		ERJ-3BW*	0603	1/4 W	20 m ~ 100 m	± 1, ± 2, ± 5	± 150, ± 250	32 x 1.6 x 0.6	5,000	
		ERJ-6BW	0805	1/3 W	10 m ~ 50 m	± 1, ± 2, ± 5	± 200, ± 300	3.2 x 1.6 x 0.65	5,000	
		ERJ-8BW	1206	1 W	0.01 ~ 0.1	± 1, ± 2, ± 5	± 100, ± 150, ± 200	2.0 x 1.25 x 0.65	5,000	
		ERJ-8CW	1206	1 W	10 m ~ 50 m	± 1, ± 2, ± 5	± 75	1.6 x 0.8 x 0.45	5,000	
		ERJ-L03	0603	1/5 W	47 ~ 100 m	± 1, ± 5	± 200	2.0 x 1.25 x 0.6	5,000	
		ERJ-L06	0805	1/4 W	47 ~ 100 m	± 1, ± 5	± 100	3.2 x 1.6 x 0.6	5,000	
		ERJ-L08	1206	1/3 W	47 ~ 100 m	± 1, ± 5	± 100	3.2 x 1.6 x 0.6	5,000	
		ERJ-L14	1210	1/3 W	20 ~ 100 m	± 1, ± 5	R < 47 milli: ± 300 R ≥ 47 milli: ± 100	6.4 x 3.2 x 1.1	3,000	
		ERJ-L12	1812	1/2 W	20 ~ 100 m	± 1, ± 5		5.0 x 2.5 x 0.6	5,000	
		ERJ-L1D	2010	1/2 W	40 ~ 100 m	± 1, ± 5		6.4 x 3.2 x 0.8	3,000	
		ERJ-L1W	2512	1 W	40 ~ 100 m	± 5		6.4 x 3.2 x 0.8	3,000	
	Metal Plate	ERJ-M1WT	2512	1 W	3, 4 m	± 1, ± 5	± 350	6.4 x 3.2 x 0.8	3,000	• Low Ohmic • Meets ISO-9001 & TS16949 standards • AEC Q200 Certified • High Power
		ERJ-M1WT	2512	1 W	5, 6, 10, 15, 20 m	± 1, ± 5	± 100	6.4 x 3.2 x 0.8	3,000	
		ERJ-M1WS	2512	1 W	1, 1.5 m	± 1, ± 5	350 ± 100	6.4 x 3.2 x 0.8	3,000	
		ERJ-M1WS	2512	1 W	2, 3, 4 m	± 1, ± 5	100 ± 50	6.4 x 3.2 x 0.8	3,000	
		ERJ-MS4S	2512	3 W	1, 2, 3, 4 m	± 1	± 75	6.4 x 3.2 x 1.2	2,000	
		ERJ-MS4H	2512	3 W	5, 6 m	± 1	± 75	6.4 x 3.2 x 1.2	2,000	
		ERJ-MS4H	2512	2 W	7, 8, 9, 10 m	± 1	± 75	6.4 x 3.2 x 1.2	2,000	
		ERJ-MS6S	2526	5 W	0.5, 1, 2 m	± 1	± 75	6.4 x 6.8 x 1.2	1,000	
		ERJ-MP2	1206	0.5 ~ 1 W	1 ~ 50 m	± 1	± 75	3.2 x 1.6 x 0.6	3,000	
		ERJ-MP3	2010	0.5 ~ 2 W	1 ~ 50 m	± 1	± 75	5.0 x 2.5 x 0.6	3,000	
		ERJ-MP4	2512	1 ~ 3 W	1 ~ 50 m	± 1	± 75	6.4 x 3.2 x 1.2	2,000	

*Not AEC Q200 Certified.

		Series	Case Size	Power Rating (W)	Resistance Range	Resistance Tolerance (%)	T.C.R. (ppm/dC)	LxWxT Dimensions (mm)	Qty. 7" Reel (pcs.)	Features
High Precision Chip Resistors	Thin Film Chip Resistors	ERA-1A	0201	1/20 W	100 to 10 K	±01, ±0.25	± 25	0.6 x 0.3 x 0.23	15,000	• Small size and lightweight
		ERA-2A	0402	1/16 W	10 - 100K	±0.1, ±0.25, ±0.5	± 10, ± 15 ± 25, ± 100	1.0 x 0.5 x 0.35	10,000	• High reliability
		ERA-3A	0603	1/10 W	10 ~ 330 K	± 0.05, ± 0.1, ± 0.5	± 10, ± 15, ± 25, ± 50	1.6 x .80 x 0.45	5,000	• Low T.C.R. & current noise
		ERA-6A	0805	1/8 W	10 ~ 1 M	± 0.05, ± 0.1, ± 0.5	± 10, ± 15, ± 25, ± 50	2.0 x 1.25 x 0.5	5,000	• High operating temperature capability: -55 to +155°C
		ERA-8A	1206	1/4 W	10 ~ 1 M	± 0.1, ± 0.5	± 10, ± 15, ± 25, ± 50	3.2 x 1.6 x 0.6	5,000	• Halgoen Free
		ERA-2H	0402	1/16 W	10 - 100K	±0.1, ±0.25, ±0.5	± 10, ± 15 ± 25, ± 100	1.0 x 0.5 x 0.35	10,000	• Reflow & flow solderability
										• Meets ISO-9001 & TS16949 standards
										• AEC Q200 Certified
										• High sound quality

		Series	Case Size	Power Rating (W)	Resistance Value	Resistance Tolerance (%)	T.C.R (ppm/C)	LxWxT Dimensions (mm)	Qty. 7" Reel (pcs.)	Features
Anti-Sulfurated Chip Resistors	Thick Film Chip	ERJ-U01	0201	1/20 W	10 to 1M	±1	±200	0.6 x 0.3 x 0.23	15,000	• Sulfur resistance • High reliability • Suitable for flow and re-flow soldering • ERJ-S: Au-based inner electrode • ERJ-U: Ag-Pd-based inner electrode
					1 to 1M	±5				
		ERJ-S02 ERJ-U02	0402	0.1 W	10 to 1M	±1	±200	1.0 x 0.50 x 0.35	10,000	
					1 to 3.3M	±5				
		ERJ-S03 ERJ-U03	0603	0.1 W	10 to 1M	±1	±100	1.60 x 0.8 x 0.45	5,000	
					1 to 10M	±5	±200			
		ERJ-S06 ERJ-U06	0805	0.125 W	10 to 1M	±1	±100	2.0 x 1.25 x 0.60	5,000	
					1 to 10M	±5	±200			
		ERJ-S08 ERJ-U08	1206	0.25 W	10 to 1M	±1	±100	3.20 x 1.60 x 0.60	5,000	
					1 to 10M	±5	±200			
		ERJ-S14 ERJ-U14	1210	0.5 W	10 to 1M	±1	±100	3.20 x 2.50 x 0.60	5,000	
					1 to 10M	±5	±200			
		ERJ-S12 ERJ-U12	1812	0.75 W	10 to 1M	±1	±100	4.50 x 3.20 x 0.60	5,000	
					1 to 10M	±5	±200			
		ERJ-S10 ERJ-U10	2010	0.75 W	10 to 1M	±1	±100	5.0 x 2.50 x 0.60	5,000	
					1 to 10±M	±5	±200			
		ERJ-S1T ERJ-U1T	2512	1 W	10 to 1M	±1	±100	6.40 x 3.20 x 0.60	4,000	
					1 to 1M	±5	±200			
	ERJ-U6S	0805	0.25 W	0.1 to 0.2	±1, ±2, ±5	±150	2.0 x 1.25 x 0.55	5,000	• Low Ohmic	
	ERJ-U6Q	0805	0.25 W	0.22 to 1	±1, ±2, ±5	±150	2.0 x 1.25 x 0.55	5,000		
	Array	EXB-U24	0402	1/16 W	10 to 1M	±5	±200	1.0 x 1.0 x 0.35	10,000	• Array solution for high placement efficiency • Ag-Pb-based inner electrode • U24: 4 terminals, 2 resistors • U28: 8 terminals, 4 resistors
		EXB-U28	0402	1/16 W	10 to 1M	±5	±200	2.0 x 1.0 x 0.35	10,000	
	Wide Terminal	ERJ-C1	1020	2 W	10 m to 1	±1	Refer to Spec	2.5 x 5.0 x 0.55	5,000	• Wide Terminal
						±5				

		Series	Case Size	Power Rating (W)	Resistance Range Ω	Resistance Tolerance (%)	T.C.R. (ppm/dC)	LxWxT Dimensions (mm)	Qty. 7" Reel (pcs.)	Features
Wide Terminal Chip Resistors	High Power & Current Sensing	ERJ-A1	1225	1.33 W	10 m ~ 10 k	$\pm 1, \pm 2, \pm 5$	Refer to Spec	6.4 x 3.2 x .55	4,000	• High solder joint reliability • Excellent heat dissipation • Halogen Free • Meets ISO-9001 & TS16949 standards • AEC Q200 Certified
		ERJ-B1	1020	1 W, (2 W R < 10 Ω)	10 m ~ 10 k	$\pm 1, \pm 2, \pm 5$		5.0 x 2.5 x .55	5,000	
		ERJ-B2	0612	0.75 W, (1 W R < 10 Ω)	5 m ~ 1 M	$\pm 1, \pm 2, \pm 5$	Refer to Spec	3.2 x 1.6 x 0.65	5,000	
		ERJ-B3	0508	0.33 W, (0.5 W R < 1 Ω)	20 m ~ 10 M	$\pm 1, \pm 2, \pm 5$	Refer to Spec	2.0 x 1.25 x 0.5	5,000	

EIA Standard Resistance Values E-96 Tolerance *1% | E-24 Tolerance *5%, 0.5%, 0.1%

		Series	Power Rating (W)	Resistance Range	Resistance Tolerance	Dielectric Withstanding Voltage (VAC)	T.C.R. (ppm/dC)	Features
Axial Leaded Resistors	Standard	ERG-(X)12S	0.5	1 to 22 K	± 2	350	± 350	• Flame Resistance for the F Series • ERG: Metal Oxide Film • ERX: Metal Film
				0.2 to 47 K	± 5			
		ERG-(X)1S ERG-(X)1F	1	1 to 68 K	± 2	350	± 350	
				0.2 to 100 K	± 5			
		ERG-(X)2S ERG-(X)2F	2	1 to 100 K	± 2	600	± 350	
				0.22 to 100 K	± 5			
		ERG-(X)3S ERG-(X)3F	3	1 to 100 K	± 2	1000	± 300	
				0.22 to 100 K	± 5			
		ERG-(X)5S ERG-(X)5F	5	1 to 100 K	± 2	1000	± 200	
				0.33 to 100 K	± 5			
	High Power	ERG-12D	0.5	51 K to 240 K	± 2, ± 5	500	± 200	• High Power • Metal Oxide Film
		ERG-1D	1	110 K to 330 K	± 2, ± 5	500	± 200	
		ERG-2D	2	110 K to 510 K	± 2, ± 5	700	± 200	
		ERG-3D	3	110 K to 750 K	± 2, ± 5	700	± 200	
	Low Ohmic	ERX-12L	0.5	22 to 82 m	± 2, ± 5	350	22 to 39 m: +-1000 47 to 82 m: +-500	• Current Sensing • Metal Film
		ERX-1L	1	22 to 82 m	± 2, ± 5	350		
		ERX-2L	2	22 to 82 m	± 2, ± 5	600		

		Series	Case Size	Power Rating (W)	Resistance Range	Resistance Tolerance (%)	T.C.R. (ppm/°C)	LxWxT Dimensions (mm)	Qty. 7" Reel (pcs.)	Features
Resistor Networks & Arrays	Chip Resistor Array	ERA-38V	0603 x 4 Convex Term	1/16 W Element	100K~220 K	0.5	± 25	3.2 x 1.6 x 0.5	5,000	• Thin Film
					1K~100 K	0.1, 0.25				
		EXB-14V	0201 x 2 Convex Term	1/32 W	10 ~ 1 M	± 5	± 200 x 10 ⁻⁴ /dC	0.8 x 0.6 x 0.35	10,000	• High density of resistors in single array chip
		EXB-18V	0201 x 4 Flat Term	1/32 W	10 ~ 1 M	± 5		1.4 x 0.6 x 0.35		
		EXB-N8V	0402 x 4 Concave Term	1/32 W	1 ~ 1 M	± 5	1 - 100: ± 600/-100x10 ⁻⁶ /dC	2.0 x 1.0 x 0.45		
		EXB-24V	0402 x 2 Convex Term	1/16 W	1 ~ 1 M	± 5		1.0 x 1.0 x 0.35	5,000	
		EXB-28V	0402 x 4 Convex Term	1/32 W	1 ~ 1 M		2.0 x 1.0 x 0.35			
		EXB-2HV	0402 x 8 Convex Term	1/16 W Element	1 ~ 1 M		3.8 x 1.6 x 0.45			
		EXB-34V	0603 x 2 Convex Term	1/16 W	1 ~ 1 M		10 - 1 M : ± 200	1.6 x 1.6 x 0.50		
		EXB-38V	0603 x 4 Convex Term	1/16 W	1 ~ 1 M			3.2 x 1.6 x 0.50		
		EXB-V4V	0603 x 2 Concave Term	1/16 W	1 ~ 1 M		10 > : -100 - + 600	1.6 x 1.6 x 0.60		
		EXB-V8V	0603 x 4 Concave Term	1/16 W	1 ~ 1 M	3.2 x 1.6 x 0.60				
		EXB-S8V	0805 x 4 Concave Term	1/10 W Element	10 ~ 1 M		5.08 x 2.2 x 0.7	2,500		
	Chip Resistor Network	EXB-D10C	1206 Concave Term	1/20 W Element	47 ~ 1 M	± 5	± 200	3.2 x 1.6 x 0.55	5,000	• High density placement for digital signal applications. • Superior mountability due to unique concave terminal
		EXB-Q16	1506 Concave Term	1/40 W	100 ~ 470 K			3.8 x 1.6 x 0.45	4,000	
		EXB-E10C	1608 Concave Term	1/16 W Element	47 ~ 1 M			4.0 x 2.1 x 0.55		
		EXB-A10P	2512 Concave Term					6.4 x 3.1 x 0.55		
	Chip Attenuator	EXB-24AT	0404	1 / 25 W Package	Attenuation Range 1 ~ 5 dB 6 ~ 10 dB	Attenuation Tolerance ± 0.3 dB ± 0.5 dB	Characteristic Impedance 50 Ω	1.0 x 1.0 x 0.35	10,000	• Space saving design using unbalanced pie-type attenuator



INDUCTORS

Power Choke Coils

EMI Filters

Chip Choke Coils

	Series	Parts No	Size (mm)	Inductance	Rated Current ^{*A, *B}	DCR (mΩ typ.)	Features
Power Choke Coils	PCC-M1050ML	ETQ-P5MR68YLC	10.9 x 10 x 5	68μH ±20%	26.3, 31.5	1.75	• Magnetic Shielding • High Power, Low loss • High Heat Resistance • High Reliability • High Bias Current • Temperature Stability • Low Audible Noise • Highly Efficient
		ETQ-P5M1R0YLC		1.0μH ±20%	23.0, 27.5	2.30	
		ETQP5M2R0YLC		2.0μH ±20%	16.2, 19.4	4.6	
	PCC-M0730L	ETQ-P3LR24CFM	8.7 x 7 x 3	0.24μH ±20%	22A	1.12	
	PCC-M0530M	ETQ-P3M2R2YFP	5.5 x 5 x 3	2.2μH ±20%	4.8, 5.8A	22.6	
		ETQ-P3M3R3YFP		3.3μH ±20%	4.1, 5.0A	31.3	
	PCC-M0540M	ETQ-P4M4R7YFP	5.5 x 5 x 4	4.7μH ±20%	4.0, 4.8A	36.0	
		ETQ-P4M220YFP		22μH ±20%	1.9, 2.3A	163	
	PCC-M0630M	ETQ-P3MR68YFN	6.5 x 6.0 x 3.0	0.68μH ±20%	9.8, 12.0	6.3	
		ETQP3M1R0YFN		1.0μH ±20%	8.8, 10.7	7.9	
	PCC-M0645M	ETQ-P4M6R8YFN	6.5 x 6 x 4.5	6.8μH ±20%	4.1, 5.2A	39.3	
		ETQP4M100YFN		10μH ±20%	3.3, 4.5	54.2	
		ETQ-P4M470YFN		47μH ±20%	1.8, 2.2A	210	
	PCC-M0754M	ETQ-P5M100YFM	7.5 x 7.0 x 5.4	10μH ±20%	4.7, 5.7A	37.6	
		ETQP5M4R7YFM		4.7μH ±20%	6.3, 8A	20	
		ETQP5M6R8YFM		6.8μH ±20%	5.5, 6.9	26.7	
		ETQP5M220YFM		22μH ±20%	3.0, 3.7	92	
		ETQP5M330YFM		33μH ±20%	2.6, 3.3	120	
		ETQP5M470YFM		48μH ±20%	2.3, 2.9A	156	
	PCC-M0750M	ETQP5M101YGM	7.5 x 7.0 x 5.0	95μH ±20%	1.4, 1.9	348	
	PCC-M0854M	ETQP5M2R5YFK	8.5 x 8.0 x 5.4	2.5μH ±20%	11.9, 14.0A	7.6	
		ETQP5M100YFK		10μH ±20%	5.7, 6.7	33	
		ETQP5M150YFK		15μH ±20%	4.7, 5.5	48.2	
		ETQP5M220YFK		22μH ±20%	4.1, 4.8A	63	
	PCC-M0850M	ETQ-P5M101YGK	8.5 x 8 x 5.4	100μH ±20%	1.7, 2.1A	302	
	PCC-M1054M	ETQ-P5M1R5YFC	10.7 x 10.0 x 5.4	1.45μH ±20%	17.9, 21.4	3.8	
		ETQP5M2R5YFC		2.5μH ±20%	15.1, 18.1A	5.3	
		ETQP5M3R3YFC		3.3μH ±20%	13.1, 15.7A	7.1	
		ETQP5M4R7YFC		4.7μH ±20%	10.9, 13.1A	10.2	
		ETQP5M100YFC		10.0μH ±20%	7.1, 8.5	23.8	
		ETQP5M220YFC		22μH ±20%	5.2, 6.2A	45.0	
		ETQP5M330YFC		32.5μH ±20%	4.2, 5.0	68.5	
		ETQP5M470YFC		47μH ±20%	3.5, 4.2	99	
		ETQP5M680YFC		66μH ±20%	3.0, 3.6	136	
	PCC-M1050M	ETQP5M101YGC	10.7 x 10.0 x 5.0	97μH ±20%	2.2, 2.7	208	
	PCC-M1050ML	ETQ-P5MR68YLC	10.9 x 10x5	68μH ±20%	26.3, 31.5	1.75	
		ETQ-P5M1R0YLC		1.0μH ±20%	23.0, 27.5	2.30	
		ETQP5M2R0YLC		2.0μH ±20%	16.2, 19.4	4.6	
	PCC-M1060ML	ETQP6M1R5YLC	10.9 x 10 x 6	1.5μH ±20%	19.5, 23.3	3.20	
		ETQ-P6M2R5YLC		2.5μH ±20%	16.3, 19.6A	4.5	
		ETQ-P6M3R3YLC		3.3μH ±20%	14.2, 17.0A	6.0	
		ETQP6M4R7YLC		4.7μH ±20%	11.8, 14.1	8.70	
	PCC-M1280MF	ETQP8MR68JFA	12.6 x 12.8 x 8.0	0.68μH ±20%	35.4, 42.6	1.10	
		ETQP8M4R7JFA		4.7μH ±20%	16.8, 20.2	4.90	
	PCC-M0530M-LP	ETQP3M100KVP	5.5 x 5.0 x 3.0	10μH ±20%	2.4, 2.9	96	
		ETQP3M1R0KVP		1.00μH ±20%	7.5*, 9.0	9.6	
	PCC-M0630-LP	ETQP3M100KVN	6.5 x 6.0 x3.0	10μH ±20%	2.9, 3.6	71	
		ETQP3M6R8KVN		6.80μH ±20%	3.6, 4.5	45.6	

^{*A} DC current causing temperature rise of 40K. Devices soldered by reflow on 4-layer PWB (1.6mm FR4) and measured at room temperature.

^{*B} DC current causing temperature rise of 40K. Devices soldered by reflow on multi-layer PWB with high heat dissipation performance. Note heat radiation constant per data sheet note.

Power Choke Coils	Series	Part Number	Size (mm)	Inductance	Rated Current ^{†*A, *B}	DCR	Features
	PCC-M0840M-LP	ETQP4M4R7KVK	8.5 x 8.0 x 4.0	4.70µH ±20%	7.1, 8.3	16.1	
	PCC-M0630L	ETQP3LR33XFN	7.5 x 6.5 x 3.0	0.33µH ±20%	17	2.0	
	PCC-M0630M	ETQP3MR68YFN	6.5 x 6.0 x 3.0	0.68µH ±20%	9.8, 12.0	6.3	
		ETQP3M1R0YFN		1.0µH ±20%	8.8, 10.7	7.9	
		ETQP3M1R5YFN		1.5µH ±20%	5.6	11m	
	PCC-M0630W	ETQP3WR33WFN	7.3 x 6.6 x 3.0	0.33µH ±20%	13.7, 21	3.3	Magnetic shielding
		ETQP3WR47WFN		0.47µH ±20%	11.6, 20	3.8	
		ETQP3WR68WFN		0.68µH ±20%	9.6, 17	4.9	
		ETQP3WR82WFN		0.82µH ±20%	8.9, 14	6.7	
		ETQP3W1R0WFN		1.00µH ±20%	8.1, 13	6.9	
		ETQP3W1R5WFN		1.50µH ±20%	6.6, 11	9.8	
		ETQP3W2R2WFN		2.20µH ±20%	5.8, 9	15.5	
		ETQP3W3R3WFN		3.30µH ±20%	4.8, 7.4	25.0	
		ETQP3W4R7WFN		4.70µH ±20%	3.8, 5.7	35.0	
	PCC-M0740L	ETQP4LR24AFM	8.7 x 7.0 x 4.0	0.24µH ±20%	24, 35.5	1.0	• High Power • Small type • Low loss (RDC 1.0 to 1.5mΩ) • Tighter DCR tol (±8%) • Suited for high frequency circuits (to 1 MHz) • Low audible noise (no discrete air gap)
		ETQP4LR36AFM		0.36µH ±20%	20, 31.0	1.35	
		ETQP4LR42AFM		0.42µH ±20%	17, 28.5	1.5	
	PCC-M1040L	ETQP4LR19WFC	11.5 x 10.0 x 4.0	0.19µH ±20%	28, 38	0.7t	
		ETQP4LR36WFC		0.36µH ±20%	24, 33	1.1	
		ETQP4LR56WFC		0.56µH ±20%	21, 28	1.56	
		ETQP4LR45XFC		0.45µH ±20%	25, 33	1.1	
		ETQP4LR36AFC	11.7 x 10.0 x 4.0	0.36µH ±20%	30, 40	0.76	
		ETQP4LR68XFC		0.68µH ±20%	21, 28	1.58	
	PCC-M1040W	ETQP4W1R5WFC	11.0 x 10.0 x 4.0	1.5µH ±20%	13	4	
	PCC-M1250L	ETQP5LR50XFA	14.5 x 12.5 x 5.0	0.50µH ±20%	30	0.80	• High Power (25A to 30A) • Low loss (RDC:0.8 to 1.1 mohm) • Tighter DCR tolerance (±5% - ±7%) • Low profile • High frequency (up to 1 MHz) • Low Audible Noise
	PCC-M125L	ETQP5LR60XFA		0.60µH ±20%	27	1.10	
	PCC-M1060L	ETQP6M1R5YLC	10 x 10.9 x 6.0	1.5µH ±20%	19.5, 23.3	3.2	
	PCC-M1050L	ETQP5M2R0YLC	10.9 x 10 x 5.0	2µH ±20%	16.2, 19.4	4.6	
	PCC-M0645M	ETQP4M220YFN	6 x 6.5 x 4.5	22µH ±20%	2.3, 2.9	126	
	PCC-D124H	ETQP3H0R4BFA	13.0 x 12.9 x 3.9	0.36µH ±20%	23	1.0	• High Power, High Inductance (MnFe Core) • Low Loss from Low RDC • Low Audible Noise • Surface Mount, Low profile
		ETQP3H0R8BFA		0.80µH ±20%	16	2.33	
		ETQP3H1R4BFA		1.43µH ±20%	12	4.52	
	PCC-D125H	ETQP2H0R3BFA	13.0 x 12.9 x 4.9	0.29µH ±20%	36	0.54	
		ETQP2H0R7BFA		0.69µH ±20%	21	1.30	
		ETQP2H1R2BFA		1.22µH ±20%	16	2.27	
		ETQP2H1R8BFA		1.83µH ±20%	14	3.48	
		ETQP2H2R6BFA		2.61µH ±20%	12	4.98	
	PCC-D126H	ETQP1H0R6BFA	13.0 x 12.9 x 6.0	0.60µH ±25%	26	0.90	
		ETQP1H1R0BFA		1.00µH ±20%	19	1.56	

^{†A} DC current causing temperature rise of 40K. Devices soldered by reflow on 4-layer PWB (1.6mm FR4) and measured at room temperature.

^{†B} DC current causing temperature rise of 40K. Devices soldered by reflow on multi-layer PWB with high heat dissipation performance. Note heat radiation constant per data sheet note.

		Series	Part Number	Size (mm)	Inductance	Rated Current	DCR	Features
Power Choke Coils	PCC-D126F		ETQP6F0R6BFA	12.5 x 12.5 x 6.0	0.58μH ±20%	19A	1.44	• High Power, High Inductance (MnFe Core) • Low Loss from Low RDC • Low Audible Noise • Surface Mount, Low profile
			ETQP6F1R1BFA		1.06μH ±20%	16A	2.24	
			ETQP6F1R8BFA		1.71μH ±20%	14A	3.30	
			ETQP6F2R5BFA		2.45μH ±20%	12A	4.92	
			ETQP6F3R4BFA		3.32μH ±20%	10A	6.48	
	PCC-D1413H		ETQPDH240DTV	14.7x13.2x13.1mm	24.0 (10A)	6.9	25.8	Magnetic shielding
	PCC-F126F		ETQP6F0R8LFA	12.5 x 12.5 x 5.7	0.8μH ±30%	14.2A	2.24	• High Power (Isat 20A/100) • Thin Profile (5.7mm height)/SMD • Low Leakage Flux (EI type/Center gap core)
			ETQP6F102HFA		10.2μH ±25%	6.5A	13.30	
			ETQP6F1R0SFA		1.0μH ±30%	14.2A	2.24	
			ETQP6F1R2HFA		1.2μH ±30%	14.2A	2.24	
			ETQP6F1R3LFA		1.3μH ±30%	12.5A	3.30	
			ETQP6F1R6SFA		1.6μH ±30%	12.5A	3.30	
			ETQP6F2R0HFA		2.0μH ±30%	12.5A	3.30	
			ETQP6F2R0LFA		2.0μH ±30%	10.8A	4.92	
			ETQP6F2R5SFA		2.5μH ±30%	10.8A	4.92	
			ETQP6F2R9LFA		2.9μH ±30%	9.3A	6.48	
			ETQP6F3R2HFA		3.2μH ±25%	10.8A	4.92	
			ETQP6F3R5SFA		3.5μH ±30%	9.3A	6.48	
			ETQP6F4R1LFA		4.1μH ±20%	7.9A	8.64	
			ETQP6F4R6HFA		4.6μH ±25%	9.3A	6.48	
			ETQP6F6R4HFA		6.4μH ±25%	7.9A	8.64	
			ETQP6F8R2HFA		8.2μH ±25%	7.2A	10.90	

		Series	Case Size	Impedance (Ω)	Tolerance	Cap. (pF)	Rated DC Current	DC Resistance Max (Ω)	Features
EMI Filters	Surface Mount Filters	Coil	ELK-E	1207			10 ~ 33K		• For Filtering Digital Noise • Stable Attenuation Characteristics Over Current Changes

		Series	Size (mm)	Inductance Range	Saturation Rated Current	Features
Chip Choke Coils		ELL-4FG	3.8 x 3.8 x 1.2	1.00 ~ 47μH	0.29 ~ 1.90 mA	Magnetic shielding
		ELL-4GG	3.8 x 3.8 x 1.4	1.20 ~ 100μH	0.25 ~ 1.90 mA	
		ELL-4LG--A	3.8 x 3.8 x 1.8	1.00 ~ 150μH	0.22 ~ 1.90 mA	
		ELL-6GG	6.0 x 6.0 x 1.6	1.00 ~ 100μH	0.30 ~ 2.50 mA	
		ELL-6PG	6.0 x 6.0 x 2.0	0.80 ~ 100μH	0.38 ~ 2.80 mA	
		ELL-6RH	6.0 x 6.0 x 2.8	1.00 ~ 220μH	0.20 ~ 3.00 mA	
		ELL-6SH	6.0 x 6.0 x 3.3	1.00 ~ 680μH	0.16 ~ 3.40 mA	
		ELL-6UH	6.0 x 6.0 x 5.0	10.0 ~ 1000μH	0.18 ~ 1.80 mA	
		ELL-8TP	8.0 x 8.0 x 5.0	0.80 ~ 1000μH	0.25 ~ 9.00 mA	
		ELL-8UV	8.0 x 8.0 x 6.5	1.30 ~ 220μH	0.66 ~ 5.40 mA	
		ELL-ATP	10.0 x 10.0 x 4.5x	1.00 ~ 1000μH	0.31 ~ 8.00 mA	
		ELL-ATV	10.0 x 10.0 x 4.5	1.50 ~ 1000μH	0.32 ~ 6.70 mA	
		ELL-CTV	12.0 x 12.0 x 4.5	1.20 ~ 1000μH	0.41 ~ 6.50 mA	
		ELL-VEG	3.0 x 3.0 x 1.0	0.68 ~ 22μH	0.33 ~ 1.80 mA	
		ELL-VFG	3.0 x 3.0 x 1.2	1.00 ~ 33μH	0.28 ~ 1.50 mA	
		ELL-VGG	3.0 x 3.0 x 1.5	1.00 ~ 47μH	0.27 ~ 1.80 mA	
		ELL-VGG--C	3.0 x 3.0 x 1.5	1.00 ~ 100μH	0.18 ~ 1.40 mA	



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	Series	Contact Arrangement	Nominal Switching Capacity (A)	Max. Switching Voltage (V)	Latching: Single Side Stable (S)	Nominal Operating Power
General Purpose Power Relays	AHN	1a, 1c, 2c	10A 30VDC/250 VAC (1c)	250VAC, 30 VDC	S	AC (50Hz): 1.1 to 1.4VA (60Hz): 0.9 to 1.2VA
			5A 30VDC/250 VAC (2c)			
			16A 30VDC/250 VAC (1a)			DC: 0.53W
	HC	1c, 2c, 3c, 4c, 4c twin	10A 250 VAC (1c)	250 VAC	S	AC (50Hz): 1.3VA (60Hz): 1.2VA
			7A 250 VAC (2c, 3c)			DC: 0.9W to 1.0W
			5A 250 VAC (4c)			
			3A 250 VAC (4c twin)			
	HJ	2c, 4c	7A 30VDC/250 VAC(2c)	250VAC, 125 VDC	S	AC (50Hz): 1.2 to 1.5VA (60Hz): 1.0 to 1.3VA"
			5A 30VDC/250 VAC(2c)			DC: 0.9W to 1.1W
	HL	1c, 2c	10A 125/250 VAC (1c, 2c)	250 VAC	S	AC: (50Hz) 1.3VA, (60Hz) 1.2VA
			15A 125 VAC (1c)			DC: 0.9 to 1W
Safety Power Relays	SFS	2a2b, 3a1b, 4a2b, 5a1b, 3a3b	6A 250 VAC/30 VDC	250VAC, 125 VDC	S	360mW (2a2b, 3a1b) 500mW (4a2b, 5a1b, 3a3b)
	SFY	2a2b, 3a1b, 4a2b, 5a1b	6A 250 VAC, 6A 30 VDC	250VAC, 30 VDC	S	670mW
NON-Polarized Power Relays	ALA	2a	3A 125VAC, 5A 277 VAC	125VAC, 277 VAC	S	530mW
	ALDP	1a	5A 277 VAC	277 VAC	S	200mW
	ALE	1a	16A 277 VAC	277 VAC	S	400mW(std), 200mW(high sensitivity)
	ALF	1a	20A 250 VAC	250 VAC	S	900mW
	ALFG	1a	22A 250 VAC (Standard)	250 VAC	S	1400mW
			31A 250 VAC (1.5mm contact gap High capacity type)			
			33A 250 VAC (1.8mm contact gap High capacity type)			
	ALZ	1a, 1c	16A 250 VAC	440 VAC	S	400mW
	HE	1a, 2a	30A 277 VAC (1a)	30VDC, 277 VAC	S	1.92W (DC coil),
			25A 277 VAC (2a)			1.7 to 2.7VA (AC coil)
	HE-S	2a, 2a1b	35A 277 VAC	277 VAC	S	1880mW
	HE-PV	1a	35A 277 VAC	277 VAC	S	1920mW
			48A 277 VAC			
			80A 277 VAC			

	Series	Contact Arrangement	Nominal Switching Capacity (A)	Max. Switching Voltage (V)	Latching: Single Side Stable (S)	Nominal Operating Power
NON-Polarized Power Relays	JS	1a, 1c, 1a (long life)	1a, 1c: 5A 30 VDC, 6A 277 VAC, 10A 125 VAC, 10A 250 VAC (NO)	250VAC, 100 VDC (0.5A)	S	360mW
			1a (long life): 10A 250/277 VAC, 5A 30 VDC			
	JTN	1a, 1c	20A 277 VAC (1a, 1c NO)	277 VAC	S	800mW
			10A 277 VAC (1c NC)			
	JTV	1a, 1c	20A 277 VAC (1a, 1c NO)	277 VAC	S	1000mW
			10A 277VAC (1c NC)			
	JVN	1a	10A 30 VDC, 125/277 VAC	30 VDC, 277 VAC	S	200mW(4.5 to 48VDC)
			16A 125 VAC			600mW(100VDC)
	JW	1a, 1c, 2a, 2c	5A 30VDC/250 VAC (1a, 1c, 2a, 2c)	250 VAC, 30 VDC	S	530mW
			10A 250 VAC/30 VDC (1a, 1c)			
	LKP	1a	10A 277 VAC, 5A 30 VDC	30 VDC, 277 VAC	S	530mW
	LKT	1a	5A 277 VAC	277 VAC	S	250mW
	LKQ	1a	5A/8A 277 VAC	277 VAC	S	250mW
	LKG	1a	10A/16A 277 VAC	277 VAC	S	530mW
	LQ	1a, 1c	1a: 10A 125 VAC, 5A 250 VAC/30 VDC	250 VAC	S	200mW (1a)
			1c: (N.O.) 10A 125 VAC, 5A 250 VAC/30 VDC (N.C.) 3A 125 VAC, 2A 250 VAC, 1A 30 VDC			400mW (1c)
	NC	2c, 4c	5A 250 VAC/30 VDC	250 VAC	S	2c DC: 360mW (740mW: 100VDC) 4c DC: 720mW (740mW: 100VDC)
	PAN	1a	5A 250VAC/30 VDC	110V DC, 250 VAC	S	110mW (3 to 24VDC)
	PF	1a, 1c	6A 250 VAC	250 VAC	S	170 mW (5-24 VDC)
						217 mW (48 V DC) 175 mW (60 V DC)
	PQ	1a	5A 250 VAC/30 VDC	110VDC (0.3A), 250 VAC	S	200mW

	Series	Contact Arrangement	Nominal Switching Capacity (A)	Max. Switching Voltage (V)	Latching: Single Side Stable (S), 1 coil latching (L1), 2 coil latching (L2)	Nominal Operating Power
Polarized Power Relays	ADJ	1a, 1b, 1c, 1a1b, 2a, 2b, 2c	16A 250 VAC (1a, 1b, 1c)	250 VAC	S, L1, L2	150mW(L1) 250mW(S, L2)
			10A 250 VAC (1a1b, 2a, 2b 2c)			
	ADJH	1a	50A 277 VAC	480 VAC	L1, L2	1000mW(L1) 2000mW(L2)
	ADQ	1a	30A 250 VAC	250 VAC	L1, L2	500mW(L1) 1000mW(L2)
	DE	1a, 1a1b, 2a	10A 250 VAC/30 VDC (1a)	250 VAC, 30 VDC	S, L2	200mW
			8A 250VAC/30 VDC (1a1b, 2a)			
	DK	1a, 1a1b, 2a	10A 250 VAC/30 VDC (1a)	250 VAC, 125VDC(0.2A)	S, L2	200mW
			8A 250 VAC/30 VDC (1a1b, 2a)			
	DQM	1a	60A 250 VAC	250 VAC	L1, L2	500mW(L1) 1000mW(L2)
	DSP	1a, 1a1b, 2a	8A 250 VAC (1a)	250 VAC, 125VDC(0.2A)	S, L2	300mW
			5A 250 VAC/30 VDC (1a, 1a1b, 2a)			
	DW	1a	8A 250 VAC(standard type) 16A 277 VAC(Inrush type)	277 VAC	L1, L2	200 (L1) 400 (L2)
	S	2a2b, 3a1b, 4a	4A 250 VAC, 3A 30 VDC	250 VAC, 48 VDC (30–48 VDC at less than 0.5 A)	S, L2	(3 to 24V) 200mW (48V) 355mW
	SP	2c, 4c	15A 250 VAC (2c)	250 VAC, 30 VDC (48V DC: Max. 2A)	S, L2	300mW
			10A 250 VAC (4c)			
High Capacity DC Power Relays	ST	1a1b, 2a	8A 250 VAC	380 VAC, 250 VDC	S, L2	240mW
	AEJ	1a	100A 100 VDC	100VDC	S	5W
	AEP	1a	10A 400 VDC	1,000VDC	S	Max.1.24W
			20A 400 VDC			Max.3.9W
			80A 400 VDC			Max.4.2W
			200A 400 VDC			Max.6W
			300A 400 VDC			Max.45W
	HEV	2a	20A 800 VDC (400VDC at each 1 form A contact)	1000 VDC	S	1920mW

			Load Voltage											
Load	Output	PKG	20V	25V/30V	40V	80V	100V	200V	250V	350V	400V	600V	1000V	1500V
0.11 - 0.2 A	1a	SOP4									AQY214S AQY234S			
	1a	DIP4										AQY216EH		
	1a	SOP6						AQV227NS			AQV214S AQV224NS	AQV216S		
	1a	DIP6			AQV221	AQV225		AQV227N			AQV224N	AQV216	AQV259	AQV258
	1a1b	SOP8								AQW610S				
	1a1b	DIP8									AQW614EH AQW614			
	1b	SOP4									AQY414S			
	1b	SOP6									AQV414S			
	1b	DIP6									AQV414			
	2a	SOP8						AQW227NS		AQW210S	AQW214S AQW224N			
	2a	DIP8						AQW227N		AQW210HL	AQW214EH AQW214	AQW216EH AQW216		
	2b	SOP8									AQW414S			
	2b	DIP8									AQW414EH AQW414			
	4a	SOP16			AQS221FN2S AQS221N2S	AQS225R2S								
	1a	VSSOP		AQY221N3T										
	1a	VSSOP			AQY221N2T									
	1a	SSOP					AQY225R3V							
	1a	VSSOP	AQY221N5T											
	1a	SSOP	AQY221N5V											
	1a	S0N		AQY221N3M	AQY221N2M									
	1a	SSOP		AQY221N3V	AQY221FN2V AQY221N2V	AQY225R2V								
	1a	SOP4			AQY221N2S	AQY225R2S				AQY210KS AQY210LS AQY210S	AQY230S			
	1a	DIP4								AQY210EH	AQY214EH			
	1a	SOP6						AQV217S		AQV210S				
	1a	DIP6						AQV217	AQV253 AQV253H AQV203	AQV210E AQV210EH AQV210	AQV214E AQV214EH AQV214 AQV214H AQV254 AQV254H AQV104 AQV204 AQV234			
	1a1b	DIP8								AQW610EH	AQW654			
	1b	SOP4								AQY410S				
	1b	DIP4								AQY410EH	AQY414EH			
	1b	DIP6							AQV453	AQV410EH	AQV414E AQV414EH AQV454 AQV454H			
	2a	SOP8							AQW223R2S					
	2a	DIP8						AQW217		AQW210EH AQW210	AQW254			
	2b	DIP8									AQW454			
	4a	SOP16			AQS221FR2S AQS221R2S									

			Load Voltage								
Load	Output	Packaging	25V/30V	40V	50V	60V	80V	100V	200V	250V	400V
0.21-0.5A	1a	TSON		AQY2C1R2P							
	1a	VSSOP		AQY221R2T							
	1a	VSSOP				AQY222R2T					
	1a	VSSOP		AQY221R2T							
	1a	SON		AQY221R2M							
	1a	SSOP		AQY221FR2V AQY221R2V AQY221R4V							
	1a	SOP4		AQY221R2S		AQY212S AQY232S AQY222R1S	AQY225R1S				
	1a	SOP6				AQV212S		AQV215S			
	1a	DIP6		AQV251 AQV201		AQV112KL AQV252 AQV202		AQV215 AQV255	AQV257	AQV103	
	1a	Power-DIP4									AQY274
	1a	SIL4									AQZ204 AQZ204D
	1b	SOP4				AQY412S					
	1b	SIL4									AQZ404
	1a1b	SOP8				AQW612S					
	1a1b	DIP8				AQW612EH					
0.51-1A	2a	SOP8				AQW212S					
	2a	DIP8				AQW212EH AQW212		AQW215			
	1a	TSON	AQY2C1R6P								
	1a	VSSOP	AQY221R6T								
	1a	SSOP	AQY221R6V								
	1a	SOP4				AQY2126S					
	1a	DIP4	AQY211EH			AQY212EH					
	1a	Power-DIP4							AQY277		
	1a	DIP6		AQV101		AQV212 AQV102					
	1a	SIL4							AQZ207 AQZ207D		AQZ104 AQZ104D AQZ264
1.1-2A	1b	DIP4				AQY412EH					
	1b	DIP6				AQV412EH					
	1a	SOP		AQY211G2S							
	1a	SOP4				AQY212G2S					
	1a	DIP4				AQY212GH					
	1a	SOP6					AQV255GS				
2.1-4A	1a	Power-DIP4				AQY272		AQY275			
	1a	SIL4						AQZ205 AQZ205D	AQZ107 AQZ107D		
	1a	SOP			AQV252G2S						
	1a	DIP6	AQV251G			AQV252G					
4.1-10A	1a	SIL4				AQZ102 (DC) AQZ102D (DC) AQZ202 AQZ202D		AQZ105 AQZ105D	AQZ207G		
	1a	SIL4							AQZ197(DC)		
	1a	SIL4				AQZ192(DC) AQZ262 AQZ202G					

	Series	Transfer Rate	Output	PKG	Supply Voltage	I/O isolation voltage
PhotoIC coupler	APS1551S	50MB	Totem pole output type	SOP5	5V	3750VAC

		Series	Installation Method & Shape	Load Current	Load Voltage	Non-repetitive Surge Current	Breakdown Voltage
Solid State	Through-hole & SMD	AQAD	Screw mounting, hockey puck type	30A	100VDC	90A	4,000 Vrms between input and output 2500 Vrms between input and output case
				10A	600VDC	20A	
		AQ-C	PC board terminal, DIL	1A	3 to 60VDC	1.5A	2500VAC
				1A	75 to 125/250VAC	20A	
				25mA	4 to 32VDC	-	
		AQ-G	PC board terminal, SIL	1A	75 to 264VAC	8A	3000VAC
				2A	75 to 264VAC	30A	
		AQ-H	PC board terminal, DIP8	0.3A	600VAC	3A	5000VAC
				0.6A		6A	
				0.9A		9A	
				1.2A		12A	
		AQ1t	PC board terminal, SIL	1A	10 to 200VDC	5A (1sec.)	3000VAC
				2A	3 to 60VDC	5A (1sec.)	
				3A	75 to 250VAC	80A	4000VAC (between input & output) 2500VAC (between input, output & case)
				10A (Heat sink)	75 to 250VAC	100A	
		AQ8	PC board terminal, SIL	2A	75 to 125/250VAC	30A	3000VAC
				3A	75 to 125/250VAC	80A	
	Phototriac Coupler	APT	PC board terminal, SOP & DIP	0.05A	600VAC	0.6A 1.2A	3750VAC
				0.1A		1.2A	5000VAC
	High Capacity	AQ-A	Screw mounting, hockey puck type	15A	75 to 250 VAC	150A	4000VAC (between input & output) 2500VAC (between input, output & case)
				25A	75 to 250 VAC	250A	
				40A	75 to 250 VAC	400A	
		AQ-J	DIN rail mounting, hockey puck type	10A	75 to 264VAC	100A	3000 Vrms (between input & output) 2500 Vrms (between input, output & case)
				20A	75 to 264VAC	250A	
				15A	75 to 264VAC	100A	
		AQ-J	Screw mounting, hockey puck type (tab terminal)	10A	75 to 264VAC	100A	3000 Vrms (between input & output) 2500 Vrms (between input, output & case)
				15A	75 to 264VAC	150A	
				25A	75 to 264VAC	250A	

	Series	Contact Arrangement	Nominal Switching Capacity (A) (Resistive Loads)	Nominal Operating Power
Automotive	CA	1a	20/30A 12 VDC	1.4W, 1.8W
		1b	20A 12 VDC	
		1c	20A 12 VDC	
	CB	1a (high capacity)	70A 14 VDC	1.4W, 1.8W
		1a	40A 14 VDC	
		1c N.O.	40A 14 VDC	
		1c N.C.	30A 14 VDC	
	CJ	1c	20A 14 VDC (N.O.)	640/800mW
		1cx2	10A 14 VDC (N.C.)	
	CM	1a	35A 14 VDC (N.O.)	1.5/1.8W
		1c	20A 14 VDC (N.C.)	
	CN-H	1a	30A 14 VDC	450/640mW
	CN-M	1a	30A 14 VDC (N.O.)	640mW
		1c	15A 14 VDC (N.C.)	
	CP	1a	20A 14 VDC (N.O.)	640mW
		1c	10A 14 VDC (N.C.)	
	CP-Power	1a	20A 14 VDC	450/640mW
		1c	10A 14 VDC	
	CQ	1c	20A 14 VDC (N.O.)	640mW
			10A 14 VDC (N.C.)	
	CT	1c	20A 14 VDC (N.O.)	800mW
		1cx2	10A 14 VDC (N.C.)	
	CT-Power	1c	30A 14 VDC (N.O.)	1000mW
		1cx2	10A 14 VDC (N.C.)	
	CV	1a	20A 14 VDC (N.O.)	800mW
		1c	10A 14 VDC (N.C.)	
	CW	2a	120A (5s @20C)	1.4W
			70A (1min @85 C)	
			45A (continued @85 C)	
	JJ-M	1a	20A 14 VDC (N.O.)	640mW
		1c	10A 14 VDC (N.C.)	
	AJJM	Double make contact	12A 14 VDC	1000mW
			6A 1contact	
	JS-M	1a	10A 16 VDC	640mW
		1c	15A 16 VDC	
	AEB	1a	100A 42 VDC	5W
	AEV	1a	10A,400 VDC	1.24W
			20A,400 VDC	3.9W
			80A 400 VDC	4.2W
			120A 400 VDC	4.2W
			200A 400 VDC	6.0W
			300A 400 VDC	37.9W (Inrush, approx. 0.1 sec.) 3.6W (Stable)
	AEV (Quiet)	1a	60A 400VDC	4.5W

		Series	Contact Arrangement	Maximum Switching Voltage	Frequency Range (max)	Contact Input Power	Latching: Single Side Stable(S) 1 coil latching [L1], 2 coil latching [L2]	Nominal Operating Power
Microwave Devices	High Frequency Relays	ARA	2c	30 VDC	16GHz	3W @ 16GHz	S, L1, L2	S: 140mW (1.5 to 12V), 200mW (24V) 300mW (48V) L1: 70mW (1.5 to 12V), 100mW (24V) L2: 140mW (1.5 to 12V), 200mW (24V)
		ARE	1c	30 VDC	2.6GHz	10W @ 2.6GHz	S	200mW
		ARJ	2c	30 VDC	8GHz	1W @ 5GHz	S, L2	200mW (S), 150mW (L2)
		ARN	SPDT		6GHz	100W at 2Ghz	S, L2	320mW (S), 400mW (L2)
		ARS	1c	30 VDC	3GHz	10W @ 3GHz	S, L1, L2	200mW (S, L1), 400mW (L2)
	Coaxial Switches	ARD	SPDT, Transfer, SP6T	30 VDC 100mA (indicator)	26.5GHz	12W @ 3GH	S	840mW (SPDT/SP6T, Fail-safe, with indicator) 1540mW (Transfer, Fail-safe with indicator)
		ARV	SPDT		18GHz (PIN) 26.5GHz (SMA)	50W @ 3GH	S	700mW

	Series	Contact Arrangement	Nominal Switching Capacity (A)	Max. Switching Voltage (V)	Latching: Single Side Stable (S), 1 coil latching (L1), 2 coil latching (L2)	Nominal Operating Power
Signal	AGN	2c	1A 30 VDC, 0.3 A 125 VAC	110 VDC, 125 VAC	S, L1, S (high sensitivity)	L1 and S (high sensitivity type): 100mW (1.5 to 12VDC), 120mW (24VDC) S: 140mW (1.5 to 12VDC), 230mW (24VDC)
	AGQ	2c	2A 30 VDC, 0.3A 125VAC	110 VDC, 125 VAC	S, L1, S (high sensitivity)	L1 and S (high sensitivity type): 100mW (1.5 to 12VDC), 120mW (24VDC) S: 140mW (1.5 to 12VDC), 230mW (24VDC)
	AGQ-TH	2c	2A 30 VDC, 0.3A 125VAC	110 VDC, 125VAC	S, L1	L1: 100mW(1.5 to 12VDC), 120mW(24VDC) S: 140mW(1.5 to 12VDC), 230mW(24VDC)
	DS	1c, 2c	2 A 30 VDC	220 VDC, 250 VAC	S, L2	S: 200mW (standard), 400mW (high sensitivity) L2: 180mW (standard), 360mW (high sensitivity)
	TQ	2c, 2d(M.B.B.)	1 A 30 VDC, 0.5A 125 VAC	110 VDC, 125 VAC	S, L1, L2	S 2c: 140mW(3 to 12VDC), 200mW(24VDC), 300mW(48VDC) S 2d M.B.B.: 200mW L1(2c, 2d M.B.B.): 100mW(3 to 12VDC), 150mW(24VDC) L2(2c, 2d M.B.B.): 200mW(3 to 12VDC), 300mW(24VDC)
	TQ-SMD	2c	2A 30 VDC, 0.5A 125 VAC	220 VDC, 125 VAC	S, L1, L2	S: 140, 200, 300mW L1: 70, 100mW L2: 140, 200mW
	TX	2c	2A 30 VDC, 1A 30 VDC	220 VDC	S, L1, L2	S:140mW(1.5 to 24VDC) L1: 100 mW (1.5 to 24 V DC) L2: 200 mW (1.5 to 24 V DC)
	TX-D	2c, 2d (M.B.B.)	2A 30 VDC (2c) 1A 30 VDC (2d M.B.B.)	220 VDC (2c) 110 VDC, (2d M.B.B.)	S, L1	2c S: 200mW (1.5 to 12VDC), 230mW (24VDC) 2c L1: 150mW (1.5 to 12VDC), 170mW (24VDC) 2d M.B.B. S: 250mW (1.5 to 12VDC), 270mW (24VDC)
	TX-S	2c	1A 30 VDC	110 VDC	S, L1, L2	S: 50mW(3 to 12VDC), 70mW(24VDC) L2: 70mW(3 to 12VDC), 150mW(24VDC)
	TX (TH type)	2c	2A 30 VDC, 0.5A 125 VAC	220 VDC, 250 VAC	S, L1, L2	S: 140 mW (1.5 to 24 V DC), 270 mW (48 V DC) L1: 100 mW (1.5 to 24 V DC) L2: 140 mW (1.5 to 24 V DC)
	DSZY	2c	2A 30 VDC	220VDC, 250 VAC	S	S: 200 mW (1.5 to 24 VDC), 300 mW (48 VDC)



CONNECTORS

Narrow Pitch (Board to FPC)

Narrow Pitch (Board to Board)

FPC Connectors

Active Optical

Stacking for High Current

Board to FPC															
Series		S35		A35US	A35US w/Power Terminal	A35S	A35P	A4F	A4US			A4S		F4S	
Part Number (Socket)		AXG1*		AXG7**	AXG7****J*	AXE7**	AXF5A**	AXE3**	AXE1**					AXE5**	
Part Number (Header)		AXG2*		AXG8**	AXG8****J*	AXE8**	AXF6A**	AXE4**	AXE2**					AXE6**	
Mated Height (mm)		0.6	0.8	0.6	0.6	0.8	0.8	0.6	0.8	1.0	1.5	0.8	1.0	1	1.2
Socket (W) (mm)		1.7		2.2	2.2	2.5	2.5	3.0	2	2.2				3.6	
Header (W) (mm)		1.5		1.8	1.8	2.0	2.0	2.4	1.8	2.2				2.6	
Terminal Pitch (mm)		0.35		0.35	0.35	0.35	0.35	0.4	0.4					0.4	
	0-9	6													
Number of Contacts	10 - 19	10, 16	12	10 12, 16	10,12,16	10,12,16	10,12,16	10, 12, 14, 16	10, 14,18	10		10, 12, 14, 16, 18	10, 12, 14	10,12, 14,16	10
	20 - 29	20, 24	24	20, 24	20,24	20,24	20,24	20, 22, 24, 26	20,24	20	20	20, 22, 24, 26, 28	20, 24, 26	20,22, 24,26,28	
	30 - 39	30, 34	34	30, 34	30,34	30,34	30,34	30, 34, 36	30, 34,36	34		30, 32, 34, 36, 38	30, 32	30,32, 34,36	30
	40 - 49	40, 44	44	40	40	40,44	40,44	40, 42, 44	40	40		40, 44	40, 44	40,42, 44,48	40
	50 - 59	50, 54		50	50	50,54	50,54	50, 54	50			50, 54, 56	50, 54	50,54	50
	60 - 69			60	60	60,64	60,64	60, 64	60	60	60	60, 64	60	60,64	
	70 - 79					70	70	70	70			70	70	70	70
	80 +			100, 120		80,100	80,100		80	80	80	80	80	80	80
Rated Current (contact)		0.3A		0.25A	0.3A	0.25A	0.5A	0.3A							
Rated Voltage (AC/DC)		60V					30V	60V							
Insertion/Removal Life*		30X												50 X	

Board to FPC & Board to Board																					
Series		P35S		P4S			P4S Shield Type		P4					P4 w/ Soldering Terminal					P5KF		
Part Number (Socket)		AXT1**		AXT3**			AXT3***F*		AXK7**					AXK7**					AX5F**		
Part Number (Header)		AXT2**		AXT4**			AXT4**		AXK8**					AXK8**					AXK6F**		
Mated Height (mm)		1.5	1.5	2.0	2.5	3.0	1.5	1.5	2.0	2.5	3.0	3.5	1.5	2.0	2.5	3.0	3.5	1.5	2.0	2.5	
Socket (W) (mm)		3.6		3.60			3.8		5.10					5.10					5.8		
Header (W) (mm)		2.35		2.35			2.35		3.96					3.96					3.3		
Terminal Pitch (mm)		0.4		0.4			0.4		0.4					0.4					0.5		
Number of Contacts	10 - 19		10, 16					14	14	14			10		12			10, 12, 14, 16, 18	10, 12, 14, 16, 18	10, 12, 14, 16	
	20 - 29	20, 22, 24, 26, 28	20, 22, 24, 26, 28		20	20		20, 22, 24, 26	20, 24, 26	20, 24	20, 24			20, 24	20	20		20, 22, 24, 26	20, 22, 24, 26	20, 22, 24	
	30 - 39	30, 32, 34, 36, 38	30, 32, 34, 36, 38	30	30	30	38	30, 34	30	30	30	30	34	34	32	36		30, 32, 34	30, 34	30, 34	
	40 - 49	40	40, 44, 46	40	40			40, 44	40	40	40	40	40	40	40			40	40	40	
	50 - 59	50, 52	50, 54, 56				50	50, 54	50	50	50			50				50	50	50	
	60 - 69	60	60, 64		60	60		60, 64	60	60	60			60			60	60	60	60	
	70 - 79	70	70				74	70	70	70						70	70	70	70	70	
	80+	80, 90, 100	80, 90, 100	90, 100	80, 100			80, 100	80	80	80			80		80	80	80	80, 100	80, 100	
Rated Current (contact)		0.25A		0.3A			0.3A		0.3A					0.3A					0.5A		
Max Current		4A		5A																	
Rated Voltage (AC/DC)		60V																			
Insertion/Removal Life*		50 X																			

*Inspection Connectors Available @ 3000X :: Ambient Operating Temperature: -55 ~ +85°C

Board to Board										
Series		P5K		P5KS						
Part Number (Socket)		AXK5**		AXK5S**						
Part Number (Header)		AXk6**		AXk6S**						
Mated Height (mm)		3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0
Socket (W) (mm)		5.8		5.4						
Header (W) (mm)		4.6		5.0						
Terminal Pitch (mm)		0.5		0.5						
Number of Contacts	20 - 29	20, 22	20, 22	20, 24	20, 24	20, 24	20, 24	20	20	20
	30 - 39	30	30, 34	30, 34	30, 34, 36	30, 34	30, 34	30	30	30
	40 - 49	40	40	40	40	40	40	40	40	40
	50 - 59	50	50	50	50	50	50	50	50	50
	60 - 69	60	60	60	60	60	60	60	60	60
	70 - 79	70	70	70	70	70	70	70	70	70
	80 +	80, 100, 120	80, 100, 120	80, 100	80, 100	80, 100	80, 100	80, 100	80, 100	80, 100
Rated Current (contact)		0.5A								
Max Current		10A		16A						
Rated Voltage (AC/DC)		60V								
Insertion & Removal Life*		50X								

*Inspection Connectors Available @ 3000X :: Ambient Operating Temperature: -55 ~ +85°C

FPC Connectors								
Series	Y3B	Y3BW	Y3BL	Y3BC	Y2B	Y5B	Y5BW	Y4BH
Part Number	AYF33**35	AYF33**65	AYF35**25	AYF36**35	AYF21**25	AYF53**35	AYF53**65T	AYF42**35
Lock Structure	Back		Back	Back	Back	Back	Back	Back
Mounting Height (mm)	0.9		0.6	1	0.9	1	1	1
Contact Pitch (mm)	0.3		0.3	0.3	0.2	0.5	0.5	0.4
Terminal Pitch (mm)	0.6		0.6	0.6	0.4	0.5	0.5	0.4
Dimension (W) (mm)	3.15		3.15	3.2	3.15	3.7	3.7	3.7
Number of Contacts	1 - 10	7, 8, 9	7			4, 5, 6, 8,	2, 3, 4, 6, 8	
	10 - 19	11, 13, 15, 17	11	11, 15		10, 12, 14, 16	10, 12, 14	
	20 - 29	21, 23, 25, 27	25	23, 27	25	23	24, 28	22, 26, 28
	30 - 39	31, 33, 35, 37, 39		31, 39	31,39	31	30, 32, 34	30, 32, 38
	40 - 49	41, 45		45		41	40, 42	40, 48
	50 - 59	51	51	51		51	50	
	60+	61, 71				61		
Compatibility w/ FPC/FFC	FPC		FPC	FPC	FPC	FPC/FFC	FPC	FPC
Contact Structure	Top & Bottom		Top & Bottom	Top & Bottom	Top & Bottom	Top & Bottom	Top & Bottom	Top & Bottom
Rated Current (Contact)	0.2A		0.2A	0.2A	0.2A	0.2A	0.5A	0.3A
Rated Voltage (AC/DC)	50 V							
Insertion & Removal Life	30 X							

Active Optical Connectors		
Series	V	
Transmission Specification	1 Channel -Bi Direction	2 Channel -Uni Direction
Part Number (Integrated Cable and Plug)	AYG4V1**	AYG5V1**
Part Number (Receptacle)	AXK6S20447M*	
Transmission Rate/Channel	20Mbps to 6 Gbps	20Mbps to 8 Gbps
Electrical Static Discharge	2kV	
Cable Length	50mm,500mm,1000mm	
Insertion & Removal Life	50 X	

Stacking Connectors for High Current			
Series	B01		B02
Part Number (Socket)	AXF361500	AXF461500	AXF382700
Part Number (Header)	AXF363500	AXF463500	AXF482700
Stacking Height in mm	0.6	0.8	0.7
No of Contacts	6		8
Width (Socket) in mm	2.4		2.2
Width (Header) in mm	1.8		1.8
Total Rated Current Power Terminal	6A		10A
Insertion/Removal Life	30 X		



SM

STORAGE MEDIA

SD Cards

Series	Form Factor	Part number	Capacity	NAND	Operating Temp	Data Transfer Rate (max) Read; Write	Speed Class	
FX	SD	RP-SDFC51DA1	512 mb	SLC (60 k)	-40 - 85 C	22 MB/s; 20 MB/s	Class 6	
		RP-SDFC02DA1	2 GB			22 MB/s; 20 MB/s	Class 6	
		RP-SDFC04DA1	4 GB			90 MB/s; 40 MB/s	Class 10/UHS-1 U1	
		RP-SDFC08DA1	8 GB			95 MB/s; 80 MB/s	Class 10/UHS-1 U1	
		RP-SDF16GDA1	16 GB			95 MB/s; 80 MB/s	Class 10/UHS-1 U1	
P	SD	RP-SDPC04DA1	4 GB	MLC (2k)		22 MB/s; 12 MB/s	Class 4	
		RP-SDPC08DA1	8 GB			22 MB/s; 12 MB/s	Class 4	
		RP-SDPC16DA1	16 GB			22 MB/s; 12 MB/s	Class 4	
GD	SD	RP-SDGD32DA1	32 GB			45 MB/s; 12 MB/s	Class 10/UHS-1 U1	
		RP-SDGD64DA1	64 GB			45 MB/s; 12 MB/s	Class 10/UHS-1 U1	
SC	MicroSD	RP-SMSC02DA1	2 GB	SLC (60 k)		22 MB/s; 20 MB/s	Class 6	
		RP-SMSC04DA1	4 GB			90 MB/s; 40 MB/s	Class 10/ UHS-1 U3	
		RP-SMSC08DA1	8 GB			90 MB/s; 40 MB/s	Class 10/ UHS-1 U3	
KC	MicroSD	RP-SMKC04DA1	4 GB	MLC (2k)		45 MB/s ; 6 MB/s	Class 2/UHS-1	
		RP-SMKC08DA1	8 GB			45 MB/s ; 6 MB/s	Class 2/UHS-1	
		RP-SMKC16DA1	16 GB			45 MB/s ; 6 MB/s	Class 2/UHS-1	
MC	eMMC 153 Ball	RP-SEMC08DA1	8 GB	MLC (2k) / SLC-lite		260 MB/s ; 25 MB/s	-	
		RP-SEMC16DA1	16 GB			260 MB/s ; 22 MB/s	-	
		RP-SEMC32DA1	32 GB			260 MB/s ; 45 MB/s	-	
QE	SD	RP-SDQE04DA1	4 GB	SLC (60 k)-Lite	65 MB/s; 65 MB/s	Class 10/UHS-1 U1		
		RP-SDQE08DA1	8 GB		65 MB/s; 65 MB/s	Class 10/UHS-1 U2		
		RP-SDQE16DA1	16 GB		65 MB/s; 65 MB/s	Class 10/UHS-1 U3		
ME	SD	RP-SDME04DA1	4 GB	MLC (2k) (2k)	90 MB/s; 25 MB/s	Class 10/UHS-1 U1		
		RP-SDME08DA1	8 GB		90 MB/s; 25 MB/s	Class 10/UHS-1 U1		
		RP-SDME16DA1	16 GB		90 MB/s; 45 MB/s	Class 10/UHS-1 U3		
		RP-SDME32DA1	32 GB		90 MB/s; 45 MB/s	Class 10/UHS-1 U3		
		UE	SD		RP-SDUE64DA1	64 GB	95 MB/s; 90 MB/s	Class 10/UHS-1 U3
RP-SDUE12DA1	128 GB				95 MB/s; 90 MB/s	Class 10/UHS-1 U3		
XE	SD	RP-SDXE25DA1	256 GB		280 MB/s ; 90 MB/s	Class 10/UHS-1 U3/ UHS-2 U3		
PE	MicroSD	RP-SMPE04DA1	4 GB	SLC (60 k)-Lite	22 MB/s; 20 MB/s	Class 6		
		RP-SMPE08DA1	8 GB		45 MB/s; 35 MB/s	Class 10/UHS-1 U1		
		RP-SMPE16DA1	16 GB		90 MB/s; 45 MB/s	Class 10/UHS-1 U3		
		RP-SMPE32DA1	32 GB		90 MB/s; 45 MB/s	Class 10/UHS-1 U3		
LE	MicroSD	RP-SMLE04DA1	4 GB	MLC (2k)	90 MB/s; 25 MB/s	Class 10/UHS-1 U1		
		RP-SMLE08DA1	8 GB		90 MB/s; 25 MB/s	Class 10/UHS-1 U1		
		RP-SMLE16DA1	16 GB		90 MB/s; 45 MB/s	Class 10/UHS-1 U3		
		RP-SMLE32DA1	32 GB		90 MB/s; 45 MB/s	Class 10/UHS-1 U3		
TE	MicroSD	RP-SMTE64DA1	64 GB		95 MB/s; 90 MB/s	Class 10/UHS-1 U3		
TT	MicroSD	RP-SMTT32DA1	32 GB		-40 - 85 C	95 MB/s; 90 MB/s	Class 10/UHS-1 U3	
		RP-SMTT64DA1	64 GB			95 MB/s; 90 MB/s	Class 10/UHS-1 U3	
MF	SD	RP-SDMF08DA1	8 GB	TLC (500)	-25 - 85 C	20 MB/s ; 5 MB/s	Class 4	
		RP-SDMF16DA1	16 GB			80 MB/s ; 10 MB/s	Class 10/UHS-1 U1	
		RP-SDMF32DA1	32 GB			80 MB/s ; 10 MB/s	Class 10/UHS-1 U1	
		RP-SDMF64DA1	64 GB			80 MB/s ; 10 MB/s	Class 10/UHS-1 U1	
LF	MicroSD	RP-SMLF08DA1	8 GB			20 MB/s ; 5 MB/s	Class 4	
		RP-SMLF16DA1	16 GB			80 MB/s ; 10 MB/s	Class 10/UHS-1 U1	
		RP-SMLF32DA1	32 GB			80 MB/s ; 10 MB/s	Class 10/UHS-1 U1	
		RP-SMLF64DA1	64 GB			80 MB/s ; 10 MB/s	Class 10/UHS-1 U1	



S

SENSORS

Passive Infrared

Infrared Array Grid-EYE®

Air Pressure

		Series	Current Usage	Operating Voltage (VDC)	Circuit Stability Time	Range	Lens Color	Output	Detection Angle	Profile (mm)*	Lens Diameter (mm)
Passive Infrared	PaPIRs	EKMB	1µA, 2µA, 6µA	2.3-4.0	1µA/2µA - 25s (typ.)	5m, 12m	White, Black, Pearl White	Digital	5m:94° (H), 82° (V) Standard Detection Type	5m:14.4 Standard Detection Type	5m:9.5 Standard Detection Type
					6µA - 30s (max.)				12m:102° (H), 92° (V) Long Detection Type	12m:20.2 Long Detection Type	12m:20.7 Long Detection Type
									12m, 6m, 3m: 40° (H), 105°(V) Wall Installation Type	12m, 6m, 3m: 20.2 Wall installation type	12m, 6m, 3m : 20.7 Wall installation type
									2.2m : 44° (H), 44°(V) Saturn Lens, Slight Motion	2.2m : 17.2 Saturn Lens (Slight Motion & Standard Motion)	2.2m : 14.1 Saturn Lens (Slight Motion & Standard Motion)
									2.2m : 90° (H), 90°(V) Saturn Lens, Standard Motion		
		EKMC	170µA	3.0-6.0	30s (max.)	5m, 12m	White, Black, Pearl White	Digital	5m:94° (H), 82° (V) Standard Detection Type	5m:14.4 Standard Detection Type	5m:9.5 Standard Detection Type
									12m:102° (H), 92° (V) Long Detection Type	12m:20.2 Long Detection Type	12m:20.7 Long Detection Type
									12m, 6m, 3m: 40° (H), 105°(V) Wall Installation Type	12m, 6m, 3m: 20.2 Wall installation type	12m, 6m, 3m : 20.7 Wall installation type
									2.2m : 44° (H), 44°(V) Saturn Lens, Slight Motion	2.2m : 17.2 Saturn Lens (Slight Motion & Standard Motion)	2.2m : 14.1 Saturn Lens (Slight Motion & Standard Motion)
									2.2m : 90° (H), 90°(V) Saturn Lens, Standard Motion		
	NaPI0n	AMN2	170µA	4.5-5.5	45s (max.)	2m, 5m, 10m	Black, White	Analog	Slight motion: 91° (H), 91° (V)	Slight motion: 15.2	Slight motion: 12.7
									5m: 100° (H), 82° (V)	5m: 14.5	5m: 9.5
									Spot detection: 38° (H), 22° (V)	Spot detection: 15.1	Spot detection: 8.9
									10m: 110° (H), 93° (V)	10m: 18.52	10m: 17.4
AMN3		170µA	3.0-6.0	30s (max.)	2m, 5m, 10m	Black, White	Digital	Slight motion: 91° (H), 91° (V)	Slight motion: 15.2	Slight motion: 12.7	
								5m: 100° (H), 82° (V)	5m: 14.5	5m: 9.5	
								Spot detection: 38° (H), 22° (V)	Spot detection: 15.1	Spot detection: 8.9	
								10m: 110° (H), 93° (V)	10m: 18.52	10m: 17.4	

*Profile measured from top of sensor to base (does not include pin length)

		P/N	Pixel Array	Op. Voltage	Amplification Factor	Viewing Angle	Frame Rate	Accuracy (typical)	Output Resolution	Temp. Range (Measured Object)	Op. Temp. Range	Size (mm)
Infrared Array: Grid-EYE	High Performance Type	AMG8833	64 (8x8)	3.3VDC	High Gain	60°	10/1 fps	+/-2.5°C	0.15°C	0 ~ +80°C	0 ~ +80°C	11.6 (L), 8.0 (W), 4.3 (H)
		AMG8834		3.3VDC	Low Gain			+/-3.0 °C	0.15°C	-20 ~ +100°C	-20 ~ +80°C	
		AMG8853		5VDC	High Gain			+/-2.5°C	0.15°C	0 ~ +80°C	0 ~ +80°C	
		AMG8854		5VDC	Low Gain			+/-3.0°C	0.15°C	-20 ~ +100°C	-20 ~ +80°C	

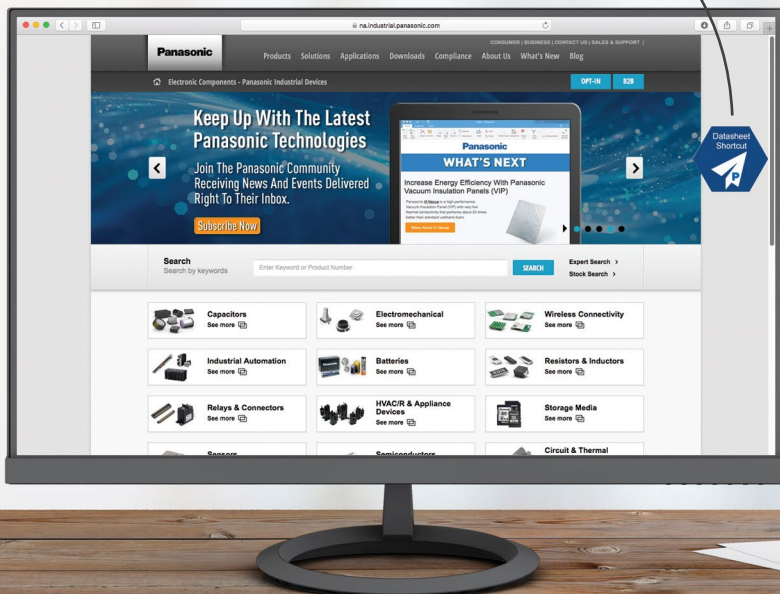
		Series	Pressure Range	Precision	Drive Voltage / Current	Current Consumption	Dimensions (mm)*	Pressure Inlet Hole Direction
Air Pressure	PS-A Series (Built-in amp & compensating circuit)	ADP51*0	6kPa to 1000kPa, (±100kPa)	Standard: ±1.25% FS Economy: ±4% FS Low Pressure: ±2.5% FS	Standard: 5±0.25V DC Economy: 3±0.15V DC Standard: 5±0.25V DC	Standard: 10mA max. Economy: 3mA max. Low Pressure: 10mA max.	7.2(L)x7.0(W)x6.5(H)	Opposite to pins
		ADP51*1 ADP51A11					7.2(L)x7.0(W)x8.5(H)	
		ADP51B61					10.4(L)x10.4(W)x10.7(H)	
		ADP51B62					10.4(L)x10.4(W)x19.3(H)	
	PF/PS Series	ADP41	4.9kPa to 980.7kPa	Low Pressure: ±2.5% FS	1 - 1.5mA	Voltage input dependent	7.2(L)x7.0(W)x8.5(H)	Opposite to pins
		ADP42					7.2(L)x7.0(W)x8.5(H)	Same as pins
		ADP11					8.6(L)x10.0(W)x9.3(H)	Opposite to pins
		ADP12					8.6(L)x10.0(W)x9.3(H)	Same as pins

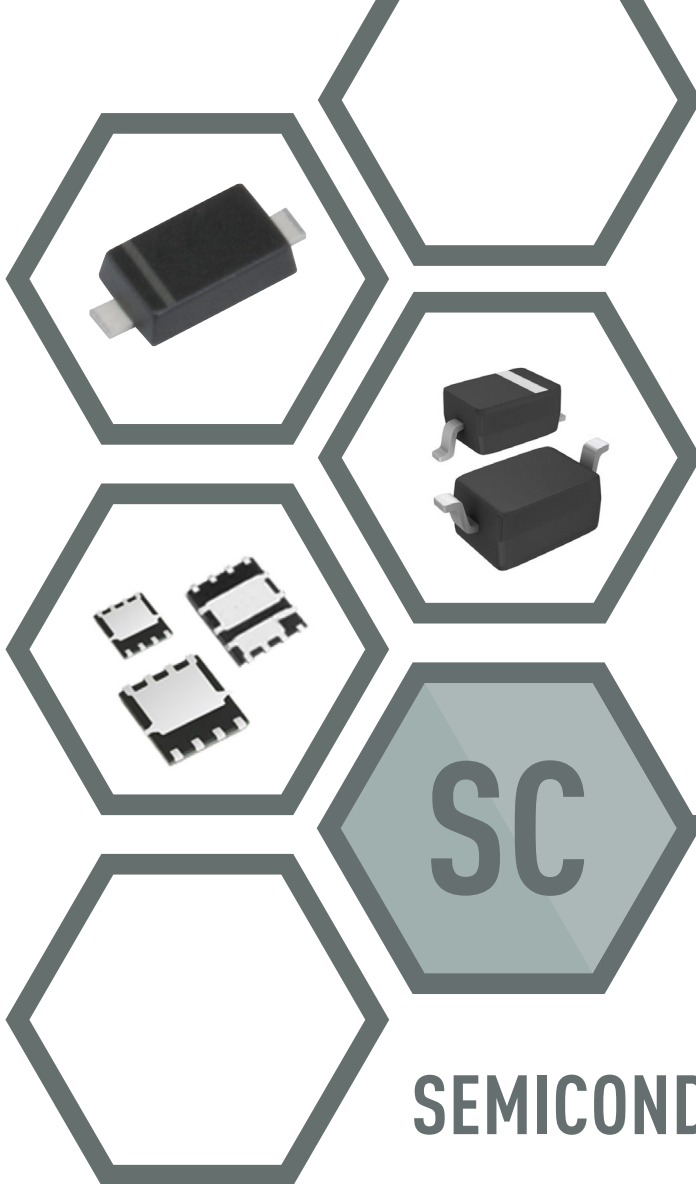
*Profile measured from top of sensor to base (does not include pin length)

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SEMICONDUCTORS

Diodes

ASSP

MOSFETs

Diodes	Type	Package	Series	Absolute Maximum Rating		Electrical Characteristics			
				VR (V)	IF(AV) (mA)	IR max.(uA)	trr max. (ns)	VF max. (ns)	IF (mA)
	Switching Diode	Surface Mount	DA/BA	40 - 300	100 - 200	0.1 - 1.0	3.0 - 60	--	--
				VR (V)	IF(AV) (mA)	IR max.(uA)	trr max. (ns)	VF max. (ns)	IF (mA)
	Schottky Barrier Diode	Surface Mount	DB	20 - 60	30 - 5000	0.3 - 3150	--	0.37 - 1.0	30 - 5000
	Schottky Barrier Diode	CSP	DB2xxx	12 - 40	100 - 1000	0.3 - 3150	--	0.39 - 0.54	100 - 1000
				Absolute Maximum Rating			Electrical Characteristics		
				VRRM (V)	IF(AV) (A)	IFSM max. (A)	VF max. (V)	IF (A)	trr max. (ns)
	Fast Recovery Diode	Surface Mount	DA**F	200 - 800	0.3 - 1	1 - 20	0.98 - 4.0	0.2 - 1.0	25 - 400 (typ.)
							VZ (V) nom.	VZ (V) min. to max.	
	Zener Diode	Surface Mount	DZ	--	--	--	2.7 - 82	2.28 - 87	
				Ppp (W)	Ipp (A)	VRWM max.(V)	Vc max. (V)	Ct typ. (pF)	ESD max.(kV)
	ESD Protection Diode	CSP	DY2xxx	20 - 23	1.8 - 2.8	5-Mar	9.9 - 13	6 - 8.5	15

ASSP	DCDC Converters	Type	Package	Series	Operating Voltage (V)	Output Voltage (V)	Functions
		High-Reliability DCDC with Integrated FET	SSOP024-P-0300F HQFP048-P-0707B	AN33xxx	5.0 - 39.0	1.2 - 9.0	- Settable Oscillation Frequency Range: 200 kHz - 2.0 MHz - Various Built-in Protection Functions (UVLO, OVP, SOP, TSD)
	Hall Sensor ICs	Multi-Ch DCDC with Integrated FET&LDO	UBGA009-W-1515AEA HQFN024-P-0404 Others	AN301xxx	2.5 - 5.5	0.8 - 3.3	- High-speed Response Due to Hysteretic Control - Abundant Protection Functions (Protection Against Over-current, Short-circuit, UVLO, Overheating) - On/Off Control Possible Using External Enable Pin
		Position Sensor ICs	SMINI-5DE	AN488xx	-	-	- Low-power Consumption, - High Sensitivity - CMOS Hall IC CMOS Inverter
	Motor Drivers	Stepping Motor Drivers	SSOP032-P-0300B HSOP042-P-0400D Others	AN44xxx	10 - 34 (VM)	Peak Current 0.8A - 2.5A	- Built-in Thermal Protection Circuit - Built in PWM Oscillator (Not in AN44071A)
		Motor Drivers Special Functions	QFN044-P-0606D	AN41908	2.7 - 3.6 (Vcc) 3.0 - 5.5 (VM)	-	4-channel H Bridge Driver (256 Micro Step) - Three-line Bi-directional Serial Data Communication - Built-in PWM Drive Iris Control
				AN41919	3.1, 4.8	-	DC Iris Control IC
		3-Phase Brushless DC Motor Driver IC	HQFN024-A-0404	AN441xxA	12v/24v system	-	Provide sine-wave PWM drive with one Hall sensor to reduce the component count, size and noise of a motor module
		Brushed DC Motor Driver IC	WLCSP HSOP034-P-0300A	AN44xxxA/ AN41xxxA	5v/24v system	-	Panasonic brushed DC motor series consists of the single motor driver ICs and the dual motor driver ICs.
	LED Driver	Matrix LED Drivers	XBGA012-W-1316AEL UBGA035-W-3333AEA Others	AN3xxxx	3.1 - 6.0	-	LED Matrix Driver
		General Purpose LED Drivers	SSOP016-P-0225E QFN016-P-0304B	AN3088A/B	3.0 - 20.0	-	- High-brightness LED-drive Driver IC - Reference Voltage (VREF) 30mV/200mV - For Backlights, Camera Flashes, General Illumination
	Logic LSI	NFC Tag	SSOP 16pins 5.0 x 6.4mm QFN 16pins 3.2 x 4.2mm	MN63Y12xx	1.7 - 3.6	-	- RF interface compliant to ISO/IEC14443 TypeB, JISX6319-4 - NFC forum specification Type3 tag, Type4 tag - Built in non volatile memory: 4k bit FeRAM
	MCU	Touch key control MCU	SSOP 32pins 11.0 x 8.1mm LQFP 64pins 16.0 x 16.0mm	MN101EFA5-7	-	-	- Panasonic original AM1 (MN101) 8-bit Single-chip Microcontroller - Built-in capacitive touch key detection circuit selection of products with built in ROM/RAM from 32k/1k to 128k/6k
		ReRAM MCU	TQFP064-P-1010D 80pins 14.0 x 14.0mm TQFP080-P-1212F 80pins 14.0 x 14.0mm	MN101LR04/05	-	-	8-bit low-power consumption microcomputer - Delivers both smaller area and small ROM code size as 8-bit microcomputer and high performance as 16-bit microcomputer based on 16-bit microcomputer core with alterable (3 or 4) stage pipeline. - It also delivers lower power consumption of the system by intermittent operation.

	Type	Package	Series	Polarity	Absolute Maximum Rating		Electrical Characteristics					
MOSFETs					VDSS (V)	ID (A)	RDS (on) max. (Ω)		tON typ. (ns)	tOFF typ. (ns)		
							VGS = 2.5V	VGS = 4.0V				
	MOS FETs	Surface Mount	FK3	Pch	30	0.1	17	7	300	400		
				Nch	30 - 60	0.1	6 -15	3 -12	100	100		
	Composite MOS FETs (Small Signal)	Surface Mount	F**	Nch x 2	30 - 60	0.1	6 - 15	3 -12	100	100		
				Pch + Nch	-30/30	-0.1/0.1	17/6	7/3	100/100	100/100		
	Type	Package	Series	Polarity	Absolute Maximum Rating		Electrical Characteristics					
					VDSS (V)	ID (A)	RDS (on) max. (Ω)			Ciss typ. (pF)	tON typ. (ns)	tOFF typ. (ns)
							VGS = 1.8V	VGS = 2.5V	VGS = 4.0V			
	MOSFETs (Power Management)	Surface Mount	MTM/EJ	Pch	12	4.0	54 - 75	41 - 55	40 - 42	1200	30 - 50	300
	MOSFETs (Power Management)	Surface Mount	MTM/EJ	Pch	20	1.0 - 3.0	230/-	70 - 560	55 - 420	80 - 3000	14 - 50	27 - 250
	MOSFETs (Power Management)	Surface Mount	MTM/FK	Nch	20	2.0 - 4.5	300/-	28 - 150	28 - 110	280 - 1730	12 - 49	50 - 225
					VDSS (V)	ID (A)	RDS (on) max. (Ω)			Ciss typ. (pF)	tON typ. (ns)	tOFF typ. (ns)
							VGS = 4.5V	VGS = 5.0V	VGS = 10V			
	MOSFETs (Power Management)	Surface Mount	MTM	Pch	40	7.0	45	-	25	2700	33	300
	MOSFETs (Power Management)	Surface Mount	MTM / FK	Nch	33 - 40	6.5 - 14	13 - 35	-	4.6 - 25	360 - 1750	11 -19	33 - 350
Composite MOSFETs (Power Management)	Surface Mount	FC	Nch x 2	33	5.0 - 6.5	35 - 68	-	20 - 40	210 - 360	10 - 11	24 - 33	
				VDSS (V)	ID (A)	RDS (on) max. (Ω)			Ciss typ. (pF)	tON typ. (ns)	tOFF typ. (ns)	
						VGS = 1.8V	VGS = 2.5V	VGS = 4.0V				
Composite MOSFETs (Power Management)	Surface Mount	MTM	Pch x 2	-20 - -12	-4.8 - -12	60 - 280	40 - 200	42 - 130	440 - 1400	20 - 243	96 - 430	
Composite MOSFETs (Power Management)	Surface Mount	MTM / FC	Nch x 2	20 - 24	2.0 - 8.0	300/-	15 - 150	25 - 105	280 - 1450	13 - 1030	38 -6000	
Composite MOSFETs (Power Management)	Surface Mount	MTM / FG	Pch + Nch	-20/20	-1.2/1.9	-	200/150	130/105	440/280	35/12	100/50	
Composite MOSFETs (Power Management)	Surface Mount	MTM / FG	Pch + Nch	-20/30	-2.0/0.1	245/-	185/6000	135/3000	300/12	14/100	112/100	

	Type	Package	Series	Polarity	Absolute Maximum Rating					Electrical Characteristics								
MOSFETs					MOS FET			SBD		MOS FET						SBD		
					V _{DSS} (V)	I _S (A)	I _D (A)	V _R (V)	I _F (A)	R _{DS(on)} max. (Ω)			C _{iss} typ. (pF)	t _{ON} typ. (ns)	t _{OFF} typ. (ns)	V _F max. (V)	I _F (mA)	I _R max. (μA)
										V _{GS} = 1.8V	V _{GS} = 2.5V	V _{GS} = 4.0V						
	MOSFET + SBD (Power Management)	Surface Mount	FL	Pch	-20		-1.0 - 2.1	15 - 20	0.5 - 0.8	230/-	170 - 560	120 - 420	80 - 400	6 - 35	17 - 112	0.47 - 0.55	500 - 800	10 - 200
	MOSFET + SBD (Power Management)	Surface Mount	FM	Nch	20		2.0 - 2.2	20	0.8 - 1.0	-	150	105	280	13	38	0.47 - 0.52	800 - 1000	80
MOS FETs (Lithium-Ion Battery Protection)	CSP	FCxB	Nch	12.0 - 20	1.5 - 16				1.1 - 55	1.45 - 70	2.0 - 95							

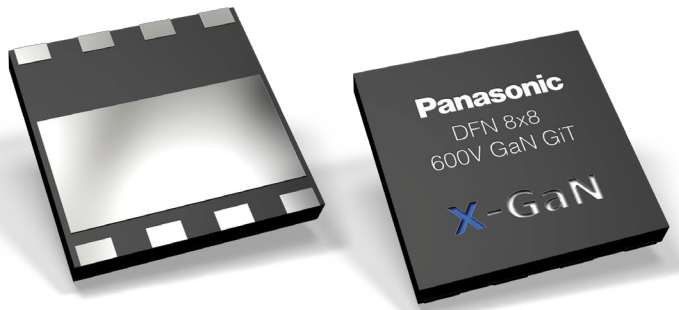


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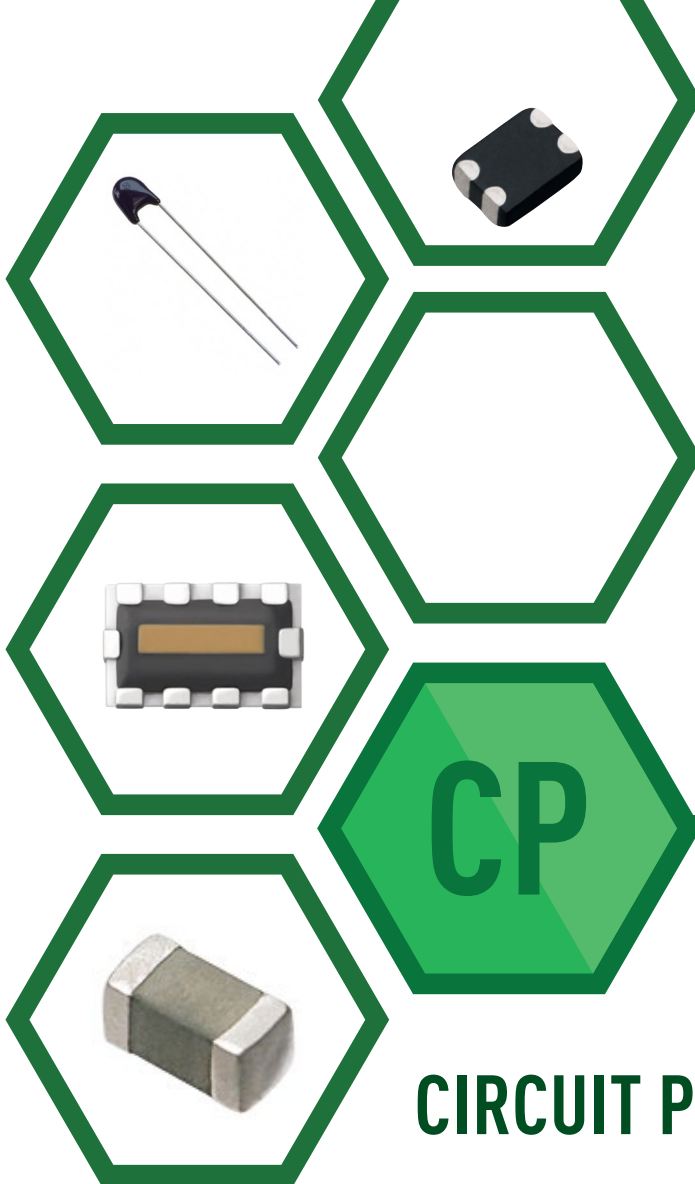
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CIRCUIT PROTECTION

Thermistors

ZNR Surge Absorbers

Varistors

EMI Filters

Fuse Resistors

ESD Suppressors

		Series	Case Size (EIA) LxWxH (mm)	Electrical Characteristics	Operating Temperature	Features
Thermistors	ERTJZ		0201 0.60x0.30x0.30mm	10k - 100k Ohm, +/-1%, +/-2%	-40 to +125°C	• Surface Mount 0201, 0402, 0603 • Highly Reliable • Multi-layer & Monolithic available • Lead Free (RoHS)
			0201 0.60x0.30x0.30mm	2k - 100k Ohm, +/-3%, +/-5%	-40 to +125°C	
	ERTJO		0402 1.0x0.50x0.50mm	10k - 100k Ohm, +/-1%, +/-2%	-40 to +125°C	
			0402 1.0x0.50x0.50mm	22 - 470k Ohm, +/-3%, +/-5%	-40 to +125°C	
	ERTJ1		0603 1.60x0.8x0.8mm	10k, 100k Ohm, +/-1%, +/-2%	-40 to +125°C	
			0603 1.60x0.8x0.8mm	22 - 220k Ohm, +/-3%, +/-5%	-40 to +125°C	
	ERTJO--M		0402 1.0x0.50x0.50mm	10k - 470k Ohm, +/-1%, +/-2%, +/-3%, +/-5%	-40 to +150°C	Automotive grade
			0603 1.60x0.8x0.8mm	10k - 220k Ohm, +/-1%, +/-2%, +/-3%, +/-5%	-40 to +150°C	

		Series	Case Size (EIA) LxWxH (mm)	Electrical Characteristics	Operating Temperature	Features
ZNR Surge Absorbers	Zinc-oxide	Leaded	ERZExxA	Varistor voltages 200 to 1800 VDC Max Peak Currents 1200 to 10000A	-40 ~ +85°C	• Safety Agency recognized • Replace next larger V Series devices
			ERZ-VxxD	Varistor Voltages: 18 to 1,800 VDC Max. Peak Currents: 125 to 6,500 A		• Large energy handling capabilities • UL / VDE / CSA Safety Certifications • QS9000
			ERZ-VS34Cxx	Varistor Voltages: 170-765 VDC		• Very large surge withstand capability • Fast response to steep impulse voltage • Low clamping voltage for better surge protection
			ERZ-CxxCk	VAC 130 to 575 vms		• UL and CSA recognized • High energy handling capability (210 to 750 joules) • Common terminals for mounting and electrical connections

		Type	Part Number	Case Size	Varistor Voltage	Max. Allowable Voltage (DC)	Capacitance (pF) 1MHz	Maximum ESD (IE61000-4-2)	Max Peak Current 8/20us 2x (A)
Varistors	Leaded	MLCV	EZJP0--M	0402	27 - 65	18 - 65	10 - 100	8kV	1 - 10
		MLCV	EZJP1--M	0603	18 - 65	11 - 40	27 - 220	8kV	2 - 20
		MLCV	EZJZ0--M	0402	50 - 170	5 - 18	1 - 3	8kV	
		MLCV	EZJZ1--M	0603	80 - 170	5 - 18	1 - 3	8kV	
		MLCV	EZJP0	0402	6.8 - 65	3.7 - 16	20 - 220	8kV	1 - 20
		MLCV	EZJP1	0603	12	6.7	330	8kV	20
		MLCV	EZJZ0	0402	42, 65	30, 40	56, 27	8kV	10, 5
		MLCV	EZJZ1	0603	18 - 65	11 - 40	27 - 220	8kV	3 - 20
		MLCV Array	EZJZSV	0504	12 - 170	6.7 - 18	3 - 220	8kV	3 - 5
	Strontium Titanate	MLCV	EZJS1V	0603	12 - 50	6 - 30	1800 - 8200	30kV	
		MLCV	EZJS2V	0805	12 - 50	6 - 30	4700 - 22000	30kV	

			Series	Case Size	Impedance (Ω)	Tolerance	Cap. (pF)	Rated DC Current	DC Resistance Max (Ω)	Features	
EMI Filters	Surface Mount Filters	Common Mode Noise Filter	EXC-14CE	0302	Common mode Z: 65, 90	±20%		130 mA	2.5	- Low DC Resistance and Insertion Loss - Low Profile	
			EXC-24CG	0504	Common mode Z: 24, 90	±20%		160mA, 100mA	1.5, 3.0	- Meet The Mask-Test For HDMI - High Reliability	
			EXC-24CE EXC-24CF	0504	Common mode Z: 36 ~ 200	±25%		130mA ~ 200 mA	1.0 ~ 2.70	- High-Q Impedance Available - Magnetic Shield	
			EXC-28CE	0804	Common mode Z: 90 ~ 200	±25%		130mA ~ 160 mA	1.5 ~ 2.50	2 Common Mode Noise Filters Per Package - Magnetic Shield - Small Size	
			EXC-28CG	0804	Common mode Z: 90	±25%		130 mA	3.0		
		2 Mode Noise Filter		EXC-24CB/CP EXC-24CN	0504	Common mode Z: 120 ~ 1000	±25%		50mA ~ 500 mA	0.3 ~ 1.5	- Burst/Radiation Noise Reduction For Audio Circuits - Filtering Common & Normal Mode Noises - Magnetic Shielding
		Chip Bead Cores		EXC-CL EXC-ML EXC-3B	0603 ~ 4532	Z: 25 ~ 115 Z: 27 ~ 68 Z: 60 ~ 1000	±25%		50mA ~ 2000 mA	0.1 ~ 1.0	Effective Noise Suppression For Power Lines And High Speed Signal Lines
		Coil		ELK-E	1207			10 ~ 33K		- For Filtering Digital Noise - Stable Attenuation Characteristics Over Current Changes	

			Series	Case Size	Rated Current	Rated Functioning Temperature	Internal R at 25°C (Max)	Rated Voaltage	Interrupting Rating at Rated Voltage	Features
Fuse Resistors	SMD	Micro Chip	ERB-RD	0402	0.25A ~ 3A	-40°C to +125°C	37m ~ 820 mΩ	32VDC	35A	• Fast acting • Small size
			ERB-RE	0603	0.5A ~ 5A	-40°C to +125°C	19m ~ 330 mΩ	32VDC	50A	
			ERB-RG	1206	0.5A ~ 4A	-40°C to +125°C	35m ~ 560 mΩ	32VDC, 63VDC	50A	
	Leaded	Thermal Cutoff	EYP	Thin, Axial Lead, Radial Lead	135C, 200C	92°C, 98°C, 102°C, 115°C, 134°C, 139°C, 145°C	250VAC, 50VDC, 32VDC	0.5A, 1.5A, 2A, 3A, 3.5A, 4A	55°C ~ 125°C (Vary by part number)	• High Reliability • Various Package Styles: Radial, Axial Lead, zand Thin

		Series	Case Size	Capacitance	LxWxT (mm) Dimensions	Qty. 7" Reel (pcs.)	Features
ESD Suppressors		EZA-EG1A	0201	C = 0.04 pF	0.6 x 0.3 x 0.23	15,000	• Good ESD Suppression • Good ESD Withstanding • Low Capacitance
		EZA-EG2A	0402	C = 0.10 pF	1.0 x 0.5 x 0.38	10,000	
		EZA-EG3A	0603	C = 0.05 pF	1.6 x .80 x 0.5	5,000	
		EZA-EGCA	0805	C = 0.25 pF (4 Per Pkg.)	2.6 x 1.85 x 0.5	5,000	



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Soft PGS

Semi-Sealing Material (SSM)

Graphite-PAD

NASBIS Insulating Sheet

		Type	PGS Thickness (μm)	Part Number	Standard Sheet Size (mm ²)	PGS Thermal Conductivity (a-b plane) (W/(m·K))	PGS Electrical Conductivity (S/cm)	PGS Density (g/cm ³)	PGS Extensional Strength (MPa)
Pyrolytic Graphite Sheet (PGS)	S Type	Graphite Sheet Only	100 μm	EYG-S091210	90 × 115 mm ²	700 W/(m·K)	10000 S/cm	0.85 g/cm ³	19.6 MPa
				EYG-S121810	115 × 180 mm ²				
				EYG-S182310	180 × 230 mm ²				
			70 μm	EYG-S091207	90 × 115 mm ²	1000 W/(m·K)	10000 S/cm	1.21 g/cm ³	20.0 MPa
				EYG-S121807	115 × 180 mm ²				
				EYG-S182307	180 × 230 mm ²				
			50 μm	EYG-S091205	90 × 115 mm ²	1300 W/(m·K)	10000 S/cm	1.70 g/cm ³	20.0 MPa
				EYG-S121805	115 × 180 mm ²				
				EYG-S182305	180 × 230 mm ²				
			40 μm	EYG-S091204	90 × 115 mm ²	1350 (m·K)	10000 S/cm	1.80 g/cm ³	25.0 MPa
				EYG-S121804	115 × 180 mm ²				
				EYG-S182304	180 × 230 mm ²				
			25 μm	EYG-S091203	90 × 115 mm ²	1600 W/(m·K)	20000 S/cm	1.90 g/cm ³	30.0 MPa
				EYG-S121803	115 × 180 mm ²				
	A-A Type	Graphite Sheet With 30 μm Acrylic Adhesive	70 μm	EYG-A091207A	90 × 115 mm ²	1000 W/(m·K)	10000 S/cm	1.21 g/cm ³	20.0 MPa
				EYG-A121807A	115 × 180 mm ²				
			50 μm	EYG-A091205A	90 × 115 mm ²	1300 W/(m·K)	10000 S/cm	1.70 g/cm ³	20.0 MPa
				EYG-A121805A	115 × 180 mm ²				
			40 μm	EYG-A091204A	90 × 115 mm ²	1350 W/(m·K)	10000 S/cm	1.80 g/cm ³	25.0 MPa
				EYG-A121804A	115 × 180 mm ²				
			25 μm	EYG-A091203A	90 × 115 mm ²	1600 W/(m·K)	20000 S/cm	1.90 g/cm ³	30.0 MPa
				EYG-A121803A	115 × 180 mm ²				
			17 μm	EYG-A091202A	90 × 115 mm ²	1750 W/(m·K)	20000 S/cm	2.10 g/cm ³	40.0 MPa
				EYG-A121802A	115 × 180 mm ²				
			10 μm	EYG-A091201A	90 × 115 mm ²	1950 W/(m·K)	20000 S/cm	2.13 g/cm ³	40.0 MPa
				EYG-A121801A	115 × 180 mm ²				
	A-F Type	Graphite Sheet With 6 μm Acrylic Adhesive	50 μm	EYG-A091205F	90 × 115 mm ²	1300 W/(m·K)	10000 S/cm	1.70 g/cm ³	20.0 MPa
				EYG-A121805F	115 × 180 mm ²				
			40 μm	EYG-A091204F	90 × 115 mm ²	1350 W/(m·K)	10000 S/cm	1.80 g/cm ³	25.0 MPa
				EYG-A121804F	115 × 180 mm ²				
			17 μm	EYG-A091202F	90 × 115 mm ²	1850 W/(m·K)	20000 S/cm	2.10 g/cm ³	40.0 MPa
				EYG-A121802F	115 × 180 mm ²				
			10 μm	EYG-A091201F	90 × 115 mm ²	1950 W/(m·K)	20000 S/cm	2.13 g/cm ³	40.0 MPa
				EYG-A121801F	115 × 180 mm ²				
	A-M Type	Graphite Sheet With 10 μm Acrylic Adhesive	70 μm	EYG-A091207M	90 × 115 mm ²	1000 W/(m·K)	10000 S/cm	1.21 g/cm ³	22.0 MPa
				EYG-A121807M	115 × 180 mm ²				
			50 μm	EYG-A091205M	90 × 115 mm ²	1300 W/(m·K)	10000 S/cm	1.70 g/cm ³	20.0 MPa
				EYG-A121805M	115 × 180 mm ²				
			40 μm	EYG-A091204M	90 × 115 mm ²	1350 W/(m·K)	10000 S/cm	1.80 g/cm ³	25.0 MPa
				EYG-A121804M	115 × 180 mm ²				
			25 μm	EYG-A091203M	90 × 115 mm ²	1600 W/(m·K)	20000 S/cm	1.90 g/cm ³	30.0 MPa
				EYG-A121803M	115 × 180 mm ²				
			17 μm	EYG-A091202M	90 × 115 mm ²	1750 W/(m·K)	20000 S/cm	2.10 g/cm ³	40.0 MPa
				EYG-A121802M	115 × 180 mm ²				
			10 μm	EYG-A091201M	90 × 115 mm ²	1950 W/(m·K)	20000 S/cm	2.13 g/cm ³	40.0 MPa
				EYG-A121801M	115 × 180 mm ²				

Type		PGS Thickness (μm)	Part Number	Standard Sheet Size (mm ²)	PGS Thermal Conductivity (a-b plane) (W/(m-K))	PGS Electrical Conductivity (S/cm)	PGS Density (g/cm ³)	PGS Extensional Strength (MPa)
Pyrolytic Graphite Sheet (PGS)	A-DF Type	50 μm	EYG-A091205DF	90 × 115 mm ²	1300 W/(m-K)	10000 S/cm	1.70 g/cm ³	20.0 MPa
			EYG-A121805DF	115 × 180 mm ²				
		40 μm	EYG-A091204DF	90 × 115 mm ²	1350 W/(m-K)	10000 S/cm	1.80 g/cm ³	25.0 MPa
			EYG-A121804DF	115 × 180 mm ²				
	A-PA Type	17 μm	EYG-A091202DF	90 × 115 mm ²	1850 W/(m-K)	20000 S/cm	2.10 g/cm ³	40.0 MPa
			EYG-A121802DF	115 × 180 mm ²				
		10 μm	EYG-A091201DF	90 × 115 mm ²	1950 W/(m-K)	20000 S/cm	2.13 g/cm ³	40.0 MPa
			EYG-A121801DF	115 × 180 mm ²				
		70 μm	EYG-A091207PA	90 × 115 mm ²	1000 W/(m-K)	10000 S/cm	1.21 g/cm ³	22.0 MPa
			EYG-A121807PA	115 × 180 mm ²				
		50 μm	EYG-A091205PA	90 × 115 mm ²	1300 W/(m-K)	10000 S/cm	1.70 g/cm ³	20.0 MPa
			EYG-A121805PA	115 × 180 mm ²				
		40 μm	EYG-A091204PA	90 × 115 mm ²	1350 W/(m-K)	10000 S/cm	1.80 g/cm ³	25.0 MPa
			EYG-A121804PA	115 × 180 mm ²				
		25 μm	EYG-A091203PA	90 × 115 mm ²	1600 W/(m-K)	20000 S/cm	1.90 g/cm ³	30.0 MPa
			EYG-A121803PA	115 × 180 mm ²				
		17 μm	EYG-A091202PA	90 × 115 mm ²	1750 W/(m-K)	20000 S/cm	2.10 g/cm ³	40.0 MPa
			EYG-A121802PA	115 × 180 mm ²				
		10 μm	EYG-A091201PA	90 × 115 mm ²	1950 W/(m-K)	20000 S/cm	2.13 g/cm ³	40.0 MPa
			EYG-A121801PA	115 × 180 mm ²				
	A-PM Type	70 μm	EYG-A091207PM	90 × 115 mm ²	1000 W/(m-K)	10000 S/cm	1.21 g/cm ³	22.0 MPa
			EYG-A121807PM	115 × 180 mm ²				
		50 μm	EYG-A091205PM	90 × 115 mm ²	1300 W/(m-K)	10000 S/cm	1.70 g/cm ³	20.0 MPa
			EYG-A121805PM	115 × 180 mm ²				
		40 μm	EYG-A091204PM	90 × 115 mm ²	1350 W/(m-K)	10000 S/cm	1.80 g/cm ³	25.0 MPa
			EYG-A121804PM	115 × 180 mm ²				
		25 μm	EYG-A091203PM	90 × 115 mm ²	1600 W/(m-K)	20000 S/cm	1.90 g/cm ³	30.0 MPa
			EYG-A121803PM	115 × 180 mm ²				
		17 μm	EYG-A091202PM	90 × 115 mm ²	1750 W/(m-K)	20000 S/cm	2.10 g/cm ³	40.0 MPa
			EYG-A121802PM	115 × 180 mm ²				
		10 μm	EYG-A091201PM	90 × 115 mm ²	1950 W/(m-K)	20000 S/cm	2.13 g/cm ³	40.0 MPa
			EYG-A121801PM	115 × 180 mm ²				
	A-DM Type	70 μm	EYG-A091207DM	90 × 115 mm ²	1000 W/(m-K)	10000 S/cm	1.21 g/cm ³	22.0 MPa
			EYG-A121807DM	115 × 180 mm ²				
		50 μm	EYG-A091205DM	90 × 115 mm ²	1300 W/(m-K)	10000 S/cm	1.70 g/cm ³	20.0 MPa
			EYG-A121805DM	115 × 180 mm ²				
		40 μm	EYG-A091204DM	90 × 115 mm ²	1350 W/(m-K)	10000 S/cm	1.80 g/cm ³	25.0 MPa
			EYG-A121804DM	115 × 180 mm ²				
		25 μm	EYG-A091203DM	90 × 115 mm ²	1600 W/(m-K)	20000 S/cm	1.90 g/cm ³	30.0 MPa
			EYG-A121803DM	115 × 180 mm ²				
		17 μm	EYG-A091202DM	90 × 115 mm ²	1750 W/(m-K)	20000 S/cm	2.10 g/cm ³	40.0 MPa
			EYG-A121802DM	115 × 180 mm ²				
		10 μm	EYG-A091201DM	90 × 115 mm ²	1950 W/(m-K)	20000 S/cm	2.13 g/cm ³	40.0 MPa
			EYG-A121801DM	115 × 180 mm ²				

Type		PGS Thickness (μm)	Part Number	Standard Sheet Size (mm ²)	PGS Thermal Conductivity (a-b plane) (W/(m·K))	PGS Electrical Conductivity (S/cm)	PGS Density (g/cm ³)	PGS Extensional Strength (MPa)
Pyrolytic Graphite Sheet (PGS)	A-V Type	70 μm	EYG-A091207V	90 x 115 mm ²	1000 W/(m·K)	10000 S/cm	1.21 g/cm ³	22.0 MPa
			EYG-A121807V	115 x 180 mm ²				
		50 μm	EYG-A091205V	90×115 mm ²	1300 W/(m·K)	10000 S/cm	1.70 g/cm ³	20.0 MPa
			EYG-A121805V	115×180 mm ²				
		40 μm	EYG-A091204V	90×115 mm ²	1350 W/(m·K)	10000 S/cm	1.80 g/cm ³	25.0 MPa
			EYG-A121804V	115×180 mm ²				
		25 μm	EYG-A091203V	90 x 115 mm ²	1600 W/(m·K)	20000 S/cm	1.90 g/cm ³	30.0 MPa
			EYG-A121803V	115 x 180 mm ²				
		17 μm	EYG-A091202V	90 x 115 mm ²	1750 W/(m·K)	20000 S/cm	2.10 g/cm ³	40.0 MPa
			EYG-A121802V	115 x 180 mm ²				
		10 μm	EYG-A091201V	90×115 mm ²	1950 W/(m·K)	20000 S/cm	2.13 g/cm ³	40.0 MPa
			EYG-A121801V	115×180 mm ²				
	A-RV Type	70 μm	EYG-A091207RV	90 x 115 mm ²	1000 W/(m·K)	10000 S/cm	1.21 g/cm ³	22.0 MPa
			EYG-A121807RV	115 x 180 mm ²				
		50 μm	EYG-A091205RV	90×115 mm ²	1300 W/(m·K)	10000 S/cm	1.70 g/cm ³	20.0 MPa
			EYG-A121805RV	115×180 mm ²				
		40 μm	EYG-A091204RV	90×115 mm ²	1350 W/(m·K)	10000 S/cm	1.80 g/cm ³	25.0 MPa
			EYG-A121804RV	115×180 mm ²				
		25 μm	EYG-A091203RV	90 x 115 mm ²	1600 W/(m·K)	20000 S/cm	1.90 g/cm ³	30.0 MPa
			EYG-A121803RV	115 x 180 mm ²				
		17 μm	EYG-A091202RV	90 x 115 mm ²	1750 W/(m·K)	20000 S/cm	2.10 g/cm ³	40.0 MPa
			EYG-A121802RV	115 x 180 mm ²				
		10 μm	EYG-A091201RV	90×115 mm ²	1950 W/(m·K)	20000 S/cm	2.13 g/cm ³	40.0 MPa
			EYG-A121801RV	115×180 mm ²				
	A-KV Type	70 μm	EYG-A091207KV	90 x 115 mm ²	1000 W/(m·K)	10000 S/cm	1.21 g/cm ³	22.0 MPa
			EYG-A121807KV	115 x 180 mm ²				
		50 μm	EYG-A091205KV	90×115 mm ²	1300 W/(m·K)	10000 S/cm	1.70 g/cm ³	20.0 MPa
			EYG-A121805KV	115×180 mm ²				
		40 μm	EYG-A091204KV	90×115 mm ²	1350 W/(m·K)	10000 S/cm	1.80 g/cm ³	25.0 MPa
			EYG-A121804KV	115×180 mm ²				
		25 μm	EYG-A091203KV	90 x 11 mm ²	1600 W/(m·K)	20000 S/cm	1.90 g/cm ³	30.0 MPa
			EYG-A121803KV	115 x 180 mm ²				
		17 μm	EYG-A091202KV	90 x 115 mm ²	1750 W/(m·K)	20000 S/cm	2.10 g/cm ³	40.0 MPa
			EYG-A121802KV	115 x 180 mm ²				
		10 μm	EYG-A091201KV	90×115 mm ²	1950 W/(m·K)	20000 S/cm	2.13 g/cm ³	40.0 MPa
			EYG-A121801KV	115×18 mm ²				

	Thickness (mm)	Part Number	Standard Sheet Size (mm ²)	Thermal Conductivity (a-b plane) (W/(m·K))	Thermal Conductivity (c plane) (W/(m·K))	Thermal Resistance (K·cm ² /W) @ 600kPa	Operating Temperature Range (°C)	Compressibility (%) @ 600 kPa
Soft PGS	200 µm	EYG-S0909ZLX2	90 x 90 mm ²	400 W/(m·K)	30 W/(m·K)	0.2 K·cm ² /W	-55 to 400°C	40%
		EYG-S0918ZLX2	90 x 180 mm ²					
		EYG-S1818ZLX2	180 x 180 mm ²					

	Elastomer Thickness (mm)	PGS Thickness (µm)	Part Number	Standard Sheet Size (mm ²)	Elastomer Thermal Conductivity (W/(m·K))	Elastomer Thermal Resistance @ 100 kPa (C·cm ² /W)	Hardness (ASTM D2240) TYPE E	Compressibility (%) @ 100 kPa, 50°C	Density (g/cm ³)
Semi-Sealing Material (SSM)	1 mm	25 µm	EYG-E0912XB6D	90 x 115 mm ²	1.6 W/(m·K)	7.53°C·cm ² /W	39 ASTM D2240, TYPE E	4.93%	1.88 g/cm ³
		70 µm	EYG-E0912XD6D						
	2 mm	25 µm	EYG-E0912XB8D			14.82°C·cm ² /W		4.05%	
		70 µm	EYG-E0912XD8D						
	3 mm	25 µm	EYG-E0912XB9D			19.48°C·cm ² /W		4.43%	
		70 µm	EYG-E0912XD9D						

	Thickness (mm)	Part Number	Standard Sheet Size (mm ²)	Thermal Conductivity (c plane) (W/(m·K))	Thermal resistance (°C·cm ² /W) @ 100kPa	Operating Temperature Range (°C)	Hardness (ASTM D2240, TYPE E)	Compressibility (%) @ 100 kPa, 50 °C	Volume Resistivity (Ω·cm)
Graphite-PAD	0.5 mm	EYG-T3535A05A	35 × 35 mm ²	13 W/(m·K)	0.6°C·cm ² /W	-40 to 150°C	25 ASTM D2240, TYPE E	5.78%	40×10 ⁵ Ω·cm
		EYG-T7070A05A	70 × 70 mm ²						
	1 mm	EYG-T3535A10A	35 × 35 mm ²		1.34°C·cm ² /W			10.29%	
		EYG-T7070A10A	70 × 70 mm ²						
	1.5 mm	EYG-T3535A15A	35 × 35 mm ²		1.56°C·cm ² /W			17.46%	
		EYG-T7070A15A	70 × 70 mm ²						
	2 mm	EYG-T7070A20A	35 × 35 mm ²		1.93°C·cm ² /W			17.80%	
		EYG-T7070A20A	70 × 70 mm ²						
	2.5 mm	EYG-T3535A25A	35 × 35 mm ²		2.09°C·cm ² /W			17.60%	
		EYG-T7070A25A	70 × 70 mm ²						
	3 mm	EYG-T3535A30A	35 × 35 mm ²		2.36°C·cm ² /W			17.90%	
		EYG-T7070A30A	70 × 70 mm ²						

	Type	NASBIS Thickness (μm)	PGS Thickness (μm)	Part Number	Standard Sheet Size (mm ²)	NASBIS Thermal Conductivity (W/(m·K))	Operating Temperature Range (°C)
NASBIS Insulating Sheet	N-S NASBIS and PGS Solution	1000 μm	70 μm	EYG-N0912QB3S	90 x 115 mm ²	0.018 to 0.026 W/(m·K)	-20 to 100°C
		500 μm		EYG-N0912QB4S			
		100 μm		EYG-N0912QB6S			
		1000 μm	50 μm	EYG-N0912QC3S			
		500 μm		EYG-N0912QC4S			
		100 μm		EYG-N0912QC6S			
		1000 μm	40 μm	EYG-N0912QG3S			
		500 μm		EYG-N0912QG4S			
		100 μm		EYG-N0912QG6S			
		1000 μm	25 μm	EYG-N0912QD3S			
		500 μm		EYG-N0912QD4S			
		100 μm		EYG-N0912QD6S			
		1000 μm	17 μm	EYG-N0912QE3S			
		500 μm		EYG-N0912QE4S			
		100 μm		EYG-N0912QE6S			
		1000 μm	10 μm	EYG-N0912QF3S			
		500 μm		EYG-N0912QF4S			
		100 μm		EYG-N0912QF6S			
	Y-S NASBIS Only	1000 μm	N/A	EYG-Y0912QN3S			
		500 μm	N/A	EYG-Y0912QN4S			
		100 μm	N/A	EYG-Y0912QN6S			

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