TOSHIBA
Leading Innovation

SEMICONDUCTOR GENERAL CATALOG

Sensors/Image Pickup Devices

Photosensors
Image Sensors
Magnetic Sensors

2010/9 SCE0004K

Photosensors

Infrared LEDs and Visible LEDs for Sensor Light Sources

Part Number	Part Number with Rank	Package	Electrical/Optical Characteristics (Ta = 25°C)								Applications
			Radiant Intensity			Radiant Power			Peak Emission Wavelength (nm)	Half-Value Angle (°)	
			Min (mW/sr)	Max (mW/sr)	I_F (mA)	Min (mW)	Max (mW)	I_F (mA)			
TLN108(F)	—	TO-18CAN with lens	10	—	50	—	—	—	940	±8	Optoelectronic switches
TLN105B(F)	—	ϕ5	12	—	50	—	—	—	950	±23.5	Remote controls
TLN110(F)	—	ϕ5	15	—	50	—	—	—	940	±8	Optoelectronic switches
TLN115A(F)	—	ϕ5	15	—	50	—	—	—	950	±21	Remote controls
	TLN115A(B,F)		19	—							
TLN231(F)	—	ϕ5	35	—	50	—	—	—	870	±16	Fiberless optical transmissions, optoelectronic switches
TLN233(F)	—	ϕ5	46	—	50	—	—	—	870	±13	
TLN227(F)	—	ϕ5	—	—	—	14	—	50	870	±5	Fiberless optical transmissions
TLN225(F)	—	ϕ4.9	—	—	—	14	—	50	870	±21	
TLN226(F)	—	ϕ4.9	—	—	—	14	—	50	870	±13	
TLN119(F)	—	ϕ3	2.5	10	20	—	—	—	945	±30	Optoelectronic switches
	TLN119(B,F)		4.2	10							
TLN238(F)	—	ϕ3	40	—	50	—	—	—	870	±18	Fiberless optical transmissions, optoelectronic switches
TLN117(F)	—	Small side-view package	2	—	20	—	—	—	940	±15	Optoelectronic switches
	TLN117(B,F)		2	7.5							
	TLN117(C,F)		5	18.7							
TLOH9204 ☆	—	6-pin SMD	15◆	—	20	—	—	—	612	±4	Specifically designed for digital still cameras
TLN241 * ☆ ▲	—	1.6(L) x 0.95(W) x 0.6(H) (PCB-mounted)	—	—	—	11	—	30	850	±78/87	Infrared lighting

☆: Dry-packed

*: New product

◆: Luminous intensity (cd)

▲: Sample available

Note: I_F = forward current

- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

Phototransistors (for Optical Sensors)

Part Number	Part Number with Rank	Package	Electrical/Optical Characteristics (Ta = 25°C)							Applications
			Light Current			Dark Current		Peak Sensitive Wavelength (nm)	Half-Value Angle (°)	Impermeable to Visible Light	
			Min (μA)	Max (μA)	E (mW/cm^2)	Max (μA)	V_{CE} (V)				
TPS601A(F)	—	TO-18CAN with lens	100	—	0.1	0.2	30	800	±10	—	Optoelectronic switches
	TPS601A(A,F)		100	300							
	TPS601A(B,F)		200	600							
	TPS601A(C,F)		400	1200							
TPS610(F)	—	ϕ5	100	—	0.1	0.1	24	800	±8	—	
TPS611(F)	—	ϕ5	30	—	0.1	0.1	24	900	±8	●	
TPS615(F)	—	ϕ3	20	150	0.1	0.1	24	800	±30	—	
	TPS615(B,F)		34	85							
	TPS615(C,F)		60	150							
	TPS615(BC,F)		34	150							
TPS616(F)	—	ϕ3	10	75	0.1	0.1	24	900	±30	●	
	TPS616(B,F)		17	42.5							
	TPS616(C,F)		30	75							
	TPS616(BC,F)		17	75							
TPS622(F)	—	Small side-view package	27	—	0.1	0.1	24	870	±15	●	
	TPS622(A,F)		27	80							
	TPS622(B,F)		55	165							

Note: E = radiant incidence; V_{CE} = collector-emitter voltage

- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

Photodiodes

Part Number	Package	Electrical/Optical Characteristics (Ta = 25°C)							Applications
		Short-Circuit Current		Dark Current		Peak Sensitive Wavelength (nm)	Half-Value Angle (°)	Impermeable to Visible Light	
		Min (μA)	E (mW/cm²)	Max (nA)	VR (V)				
TPS703(F)	Side-view package	0.9	0.1	30	10	960	±65	●	Remote controls
TPS704(F)		0.5	0.1	30	10	1000	±65	●	

Note: E = radiant incidence; VR = reverse voltage

- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

Photo-ICs (Analog Output)

Part Number	Package	Electrical/Optical Characteristics (Ta = 25°C)										Applications
		Light Current					Dark Current		Peak Sensitive Wavelength (nm)	Half-Value Angle (°)	Impermeable to Visible Light	
		Part Number with Rank	Min (μA)	Max (μA)	Ev (lx)	VCC (V)	Max (μA)	VCC (V)				
TPS820(B,F)	Side-view package	—	1500	6000	E = 0.1 mW/cm²	5	0.5	5	870	±15	●	Optoelectronic switches
TPS851(E ☆	Chip type	—	37	74	100	3	0.17	3.3	600	±55	—	Ambient light sensor
		TPS851(E,A	37	62								
TPS852(T)/ TPS852(K) ☆		—	27	54	100	3	0.1	3.3	600	±55	—	
		TPS852(A,T)/TPS852(A,K)	30	50								
TPS853(E ☆		—	37	74	100	3	0.1	3.3	600	±55	—	
		TPS853(E,A	42	70								
TPS856(T)/ TPS856(K) ☆			40	80	100	3	0.1	3	550	±55	—	
		TPS856(A,T)/TPS856(A,K)	44.1	73.7								
TPS859(T)/ TPS859(K) ☆		—	160	320	100	3	0.2	3	550	±55	—	
		TPS859(A,T)/TPS859(A,K)	180	300								

☆: Dry-packed

Note 1: VCC = power supply voltage; Ev: Illuminance; E = radiant incidence

Note 2: (T) = For world wide except japan, (K) = For japan

- The products shown in italic are manufactured by Toshiba semiconductor (Thailand) Co.,Ltd.
- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

Photointerrupters (Phototransistor Output)

Part Number	Part Number with Rank	Package	Gap (mm)	Slit Width (mm)	Electrical Characteristics (Ta = 25°C)				Absolute Maximum Ratings (Ta = 25°C)	Applications
					Current Transfer Ratio					
					Min (%)	Max (%)	I_F (mA)	V_{CE} (V)	Collector-Emitter Voltage (V)	
TLP832(F)	—	PWB direct mounting	5	0.5	5	100	10	2	35	Printers, fax machines, copiers, image scanners, vending machines
TLP833(F)	—		5	0.5	5	100	10	2	35	
TLP831(F)	—		4.2	0.5 (Note 1)	5	100	10	2	35	
TLP830(F)	—		2	0.15	3	20	10	2	35	
TLP848(E) ☆	—	Surface-mount, ultra-compact package	1.2	0.3	3	24	5	2	15	Cameras, cellular phones
	TLP848(R)		1.2	0.3	4	20	5	2	15	

☆: Dry-packed

Note: PWB = printed wiring board; I_F = forward current; V_{CE} = collector-emitter voltage

Note 1: Horizontal slit

- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

Photointerrupters (with Connector)

Part Number	Package	Gap (mm)	Slit Width (mm)	Electrical Characteristics (Ta = 25°C)			Connector Manufacturer	Applications
				Operating Supply Voltage (V)	Output Type			
					With Resistor	Open-Collector		
TLP1243(C8)	Snap-in mounting	5	0.7	$V_{CE} \leq 35$ V	—	Phototransistor output	Tyco Electronics AMP K.K.	Printers, copiers, fax machines, vending machines, FA equipment, amusement equipment

Note: V_{CE}: collector-emitter voltage

- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

Image Sensors

CCD Linear Image Sensors

Part Number	Style	Photosenstitive Pixels (Picture Elements)			Sensitivity (Typ.) (V/lx · s)	Data Rate (Max) (MHz)	Other Features
		Type/Lamp	Effective Pixels	Size (μm)			
TCD1103GFG ☆	Lens reduction type	B/W	1500	5.5 x 64	79	2	Digital shutter
TCD1254GFG ☆			2500	5.25 x 64	103	2	Sample-and-hold
TCD1706DG			7400	4.7 x 4.7	15	25 x 4	
TCD1710DG			7500 x 2 Line		15	15 x 2	
TCD1711DG			7450		15	30 x 2	
TCD2563BFG		Color	5340 x 4 Line	5.25 x 8.4	R:22.6, G:28.0, B:17.0	Color:25, B/W:25 x 2	TDI
TCD2564DG			5400 x 3 Line	7 x 7	R:9.6, G:8.9, B:3.8	30 x 2	
TCD2565BFG			7500 x 4 Line	5.25 x 5.25	R:10.2, G:9.2, B:4.0, B/W:14.7	Color:35, B/W:35 x 2	2-line distance (color)
TCD2709DG			7450 x 3 Line	4.7 x 4.7	R:5.7, G:5.2, B:2.2	25 x 2	
TCD2710DG			7500 x 3 Line	9.325 x 9.325	R:9.3, G:14.5, B:4.8	30 x 2	
TCD2712DG			7500 x 3 Line	9.325 x 9.325	R:14.1, G:22.2, B:9.1	30 x 4	
TCD2713DG			7500 x 4 Line	9.325 x 9.325	R:13.1, G:18.4, B:7.6, B/W:23.8	Color:35 x 2, B/W:35 x 4	2-line distance (color)
TCD2715DG			7450 x 3 Line	4.7 x 4.7	R:5.7, G:5.2, B:2.2	30	
TCD2716DG			7450 x 3 Line	4.7 x 4.7	R:9.1, G:8.5, B:3.8	30 x 2	
TCD2717BFG			7500 x 4 Line	4.7 x 4.7	R:8.0, G:7.2, B:3.1	Color:35, B/W:35 x 2	2-line distance (color)
TCD2915BFG			10680 x 3 Line	2.625 x 8.4	R:5.6, G:7.0, B:4.3	20	
TCD2916BFG			10680 x 4 Line		R:6.7, G:7.0, B:4.3, B/W-H:17.4, B/W-H:11.3	Color:25, B/W:25 x 2	
TCD2964BFG			21360 x 6 Line	2 x 4	R:1.3, G:1.5, B:0.7	10	Overflow drain

☆: Dry-packed

*: New product

- The products shown in bold are also manufactured in offshore fabs.
- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

Area Image Sensors (Dynastron™)

Part Number	Package	Features			
		Optical Format (Inches)	Total Pixel Count (PIX)	Color/Mono	Digital Signal Processor
TCM9001MD	Camera module	1/10	648 (H) x 492 (V) (VGA)	Color (RGB)	Yes
TCM9200MD	Camera module	1/4	1648 (H) x 1216 (V) (2.0M)	Color (RGB)	Yes

- Dynastron is a trademark of Toshiba Corporation.
- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

Package	Resolution (DPI)	Applications	Remarks
16PIN GLCC	—	Barcode readers	
22PIN Cerdip	A3 600	Photocopiers, scanners	
22PIN CLCC	A4 600	Photocopiers, color scanners	
22PIN Cerdip			
22PIN CLCC			ES: OK
22PIN Cerdip	A3 600		
68PIN Cerdip			
22PIN Cerdip			
32PIN CLCC			
22PIN CLCC	A4 1200		
32PIN CLCC	A4 4800	Color scanners	

Magnetic Sensors

Magnetic Sensors (Digital Output)

Part Number	Pole	Output	Supply Voltage V_{CC} (V)			Supply Current @ V_{CC} = 2.3 to 2.7 V						Magnetic Flux Density						Operating Frequency (Hz)			Package
						Average Current I_{CC} (μA)			Operating Current I_{CCON} (mA)			Operating Point Bon (mT)			Releasing Point Boff (mT)						
			min	typ.	max	min	typ.	max	min	typ.	max	min	typ.	max	min	typ.	max	min	typ.	max	
TCS10SPU	S	Push-pull	2.3	—	3.6	—	5.5	9.5	—	0.7	1.3	—	1.8	2.5	0.3	0.8	—	—	25	—	UFV
TCS10SLU		Open-drain	2.3	—	3.6	—	5.5	9.5	—	0.7	1.3	—	1.8	2.5	0.3	0.8	—	—	25	—	
TCS11SLU		Open-drain with inverting output	2.3	—	3.6	—	5.5	9.5	—	0.7	1.3	—	1.8	2.5	0.3	0.8	—	—	25	—	
TCS10NPU	N	Push-pull	2.3	—	3.6	—	5.5	9.5	—	0.7	1.3	—	1.8	2.5	0.3	0.8	—	—	25	—	
TCS10NLU		Open-drain	2.3	—	3.6	—	5.5	9.5	—	0.7	1.3	—	1.8	2.5	0.3	0.8	—	—	25	—	
TCS11NLU		Open-drain with inverting output	2.3	—	3.6	—	5.5	9.5	—	0.7	1.3	—	1.8	2.5	0.3	0.8	—	—	25	—	
TCS10DPU	S/N	Push-pull	2.3	—	3.6	—	8.5	13.2	—	0.7	1.3	—	1.8	2.5	0.3	0.8	—	—	25	—	
TCS10DLU		Open-drain	2.3	—	3.6	—	8.5	13.2	—	0.7	1.3	—	1.8	2.5	0.3	0.8	—	—	25	—	
TCS11DLU		Open-drain with inverting output	2.3	—	3.6	—	8.5	13.2	—	0.7	1.3	—	1.8	2.5	0.3	0.8	—	—	25	—	
TCS20DPR		Push-pull	2.3	—	3.6	—	★7.3	★13.2	—	★0.7	★1.1	—	3.4	4.4	0.9	2.0	—	—	25	—	SOT-23F
TCS20DLR		Open-drain	2.3	—	3.6	—	★7.3	★13.2	—	★0.7	★1.1	—	3.4	4.4	0.9	2.0	—	—	25	—	

Note: The UFV package measures 2.0 × 2.1 × 0.7 mm and is a variant of SC-88A.

The SOT-23F package measures 2.9 × 2.4 × 0.8 mm (Similar package as SOT-23).

★: When V_{CC} = 2.3 V

- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

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