PS2505-1, PS2505-2, PS2505-4

DESCRIPTION

The PS2505-1, PS2505-2 and PS2505-4 series of optocouplers consist of two infrared light emitting diodes connected in reverse parallel optically coupled to an NPN silicon photo transistor in a space efficient Dual In Line Plastic Package.

FEATURES

- AC Isolation Voltage 5000V_{RMS}
- Wide Operating Temperature Range
  PS2505-1 : −50°C to +110°C
  PS2505-2 / PS2505-4 : −30°C to +100°C
- RoHS Compliant
- UL File E91231 Model “EE”
- VDE Approval Certificate No. 40028086

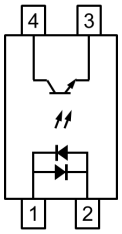
APPLICATIONS

- Computer Terminals
- Industrial System Controllers
- Measuring Instruments
- Signal Transmission between Systems of Different Potentials and Impedances

ORDER INFORMATION

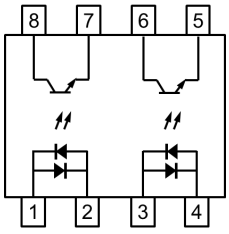
- Add X after PN for VDE Approval
- Add G after PN for 10mm lead spacing
- Add SM after PN for Surface Mount version
- Add SMT&R after PN for Surface Mount Tape & Reel version available for
  PS2505-1SM
  PS2505-2SM
- Consult Factory for Tape and Reel version of PS2505-4SM

PS2505-1



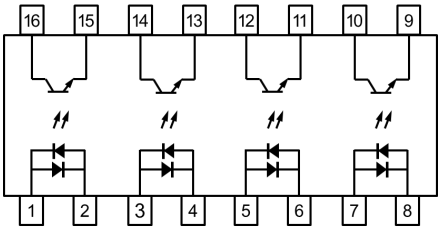
1	Anode/Cathode
2	Cathode/Anode
3	Emitter
4	Collector

PS2505-2



1, 3	Anode/Cathode
2, 4	Cathode/Anode
5, 7	Emitter
6, 8	Collector

PS2505-4



1, 3, 5, 7	Anode/Cathode
2, 4, 6, 8	Cathode/Anode
9, 11, 13, 15	Emitter
10, 12, 14, 16	Collector

ISOCOM COMPONENTS 2004 LTD
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e-mail : sales@isocom.com.hk

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Stresses exceeding the absolute maximum ratings can cause permanent damage to the device. Exposure to absolute maximum ratings for long periods of time can adversely affect reliability.

Input

Forward Current	±50mA
Power dissipation	70mW

Output

Collector to Emitter Voltage BV_{CEO}	80V
Emitter to Collector Voltage BV_{ECO}	6V
Collector Current	50mA
Power Dissipation	150mW

Total Package

Isolation Voltage	$5000V_{RMS}$
Total Power Dissipation	200mW
Operating Temperature	
PS2505-1	−50 to 110°C
PS2505-2 / PS2805-4	−30 to 100°C
Storage Temperature	−55 to 125°C
Junction Temperature	125°C
Lead Soldering Temperature (10s)	260°C

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ELECTRICAL CHARACTERISTICS (Ambient Temperature = 25°C unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	I_F = ±20mA		1.2	1.4	V
Terminal Capacitance	C_t	V = 0V, f = 1KHz		30	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector—Emitter breakdown Voltage	BV_{CEO}	I_C = 0.1mA, I_F = 0mA	80			V
Emitter—Collector breakdown Voltage	BV_{ECO}	I_E = 10µA, I_F = 0mA	6			V
Collector-Emitter Dark Current	I_{CEO}	V_{CE} = 20V, I_F = 0mA			100	nA

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	I_F = ±5mA, V_{CE} = 5V	80		600	%
Collector—Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = ±20mA, I_C = 1mA		0.1	0.2	V
Floating Capacitance	C_f	V = 0V, f= 1MHz		0.6	1	pF
Output Rise Time	t_r	V_{CE} = 2V I_C = 2mA R_L = 100Ω		4	18	µs
Output Fall Time	t_f			3	18	

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Input to Output Isolation Voltage	V_{ISO}	R.H. = 40% to 60% t = 1 min	5000			V_{RMS}
Input to Output Isolation Resistance	R_{ISO}	V_{IO} = 500VDC R.H. = 40% to 60%	5×10^{10}	1×10^{11}		Ω

Device is considered a two terminal device : Input pins are shorted together and Output pins are shorted together.

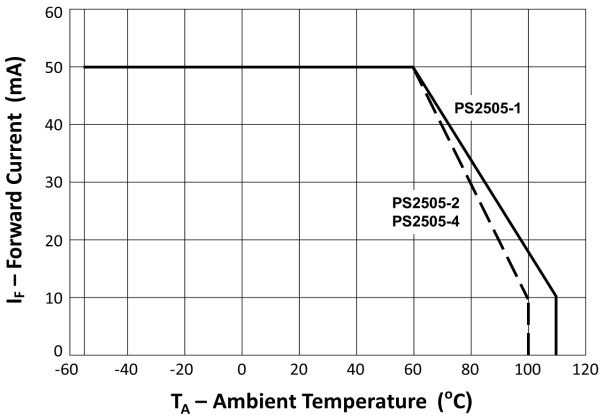


Fig 1 Forward Current vs Ambient Temperature

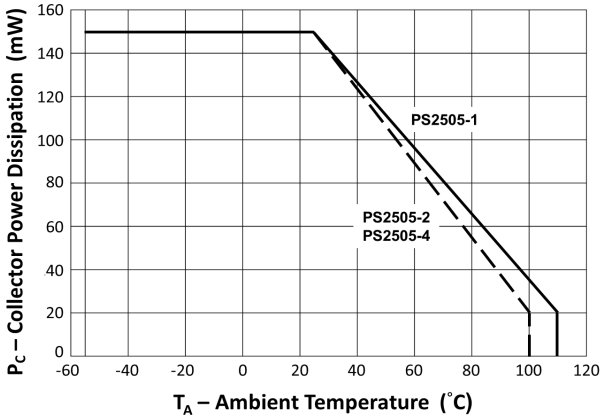


Fig 2 Collector Power Dissipation vs Ambient Temperature

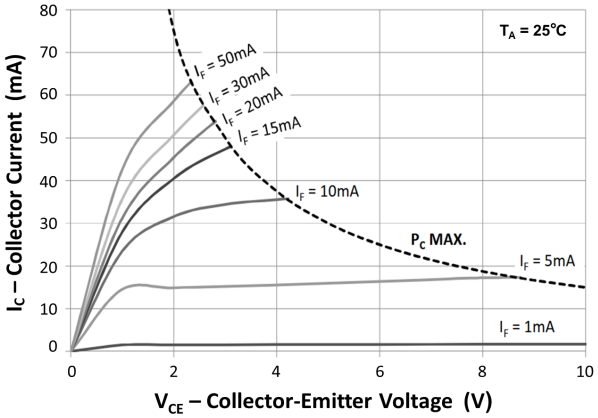


Fig 3 Collector Current vs Collector-Emitter Voltage (1)

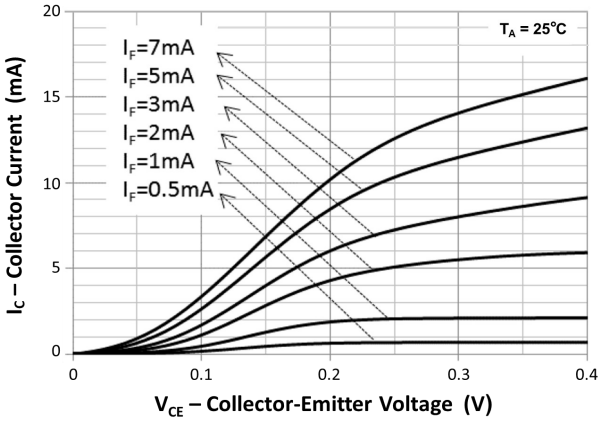


Fig 4 Collector Current vs Collector-Emitter Voltage (2)

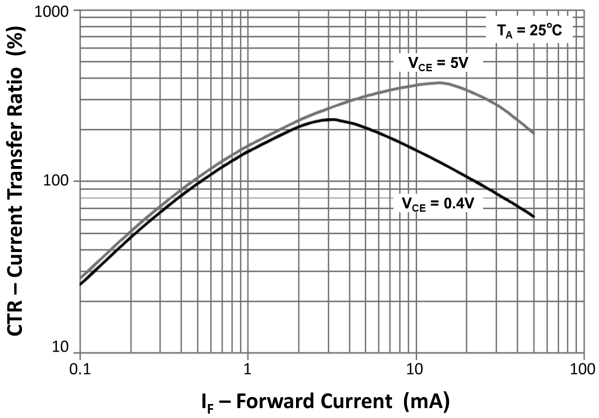


Fig 5 Current Transfer Ratio vs Forward Current

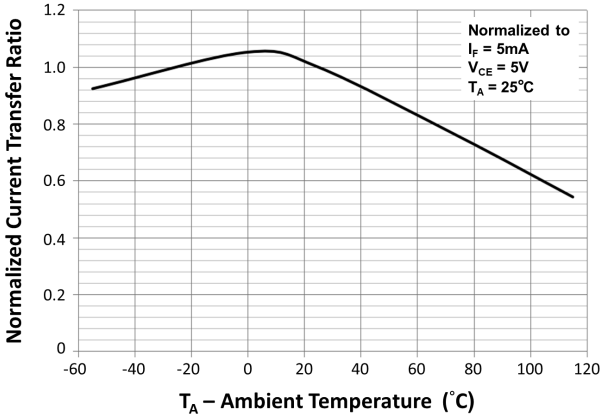


Fig 6 Normalized Current Transfer Ratio vs Ambient Temperature

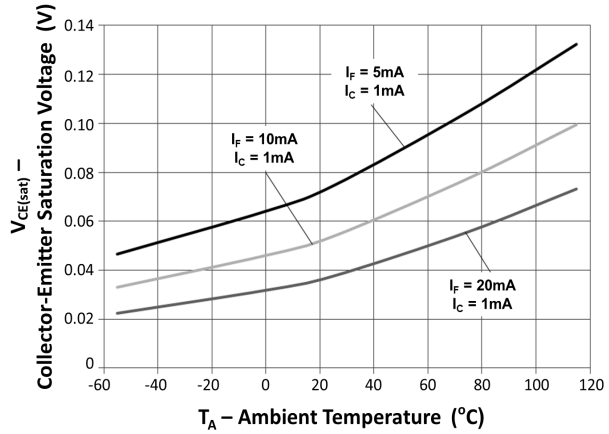


Fig 7 Collector-Emitter Saturation Voltage vs Ambient Temperature

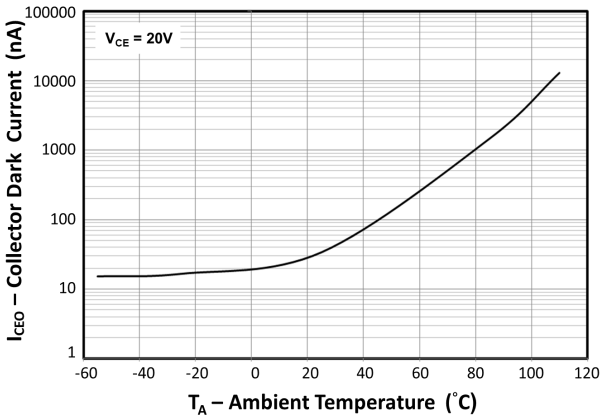


Fig 8 Collector Dark Current vs Ambient Temperature

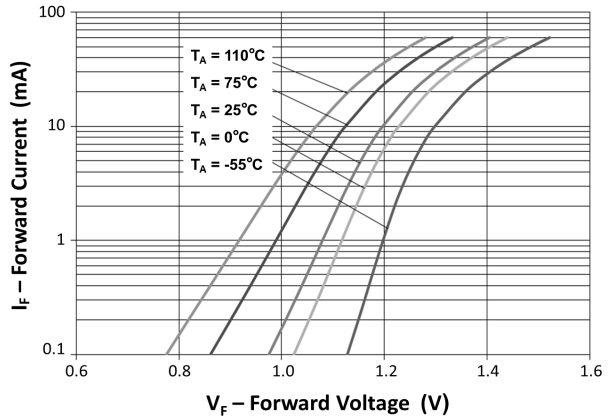


Fig 9 Forward Current vs Forward Voltage

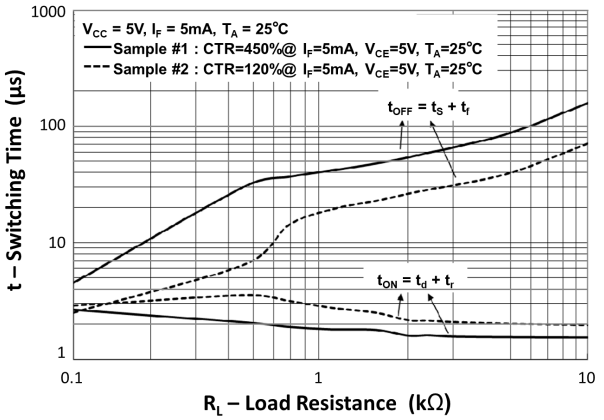


Fig 10 Switching Time vs Load Resistance

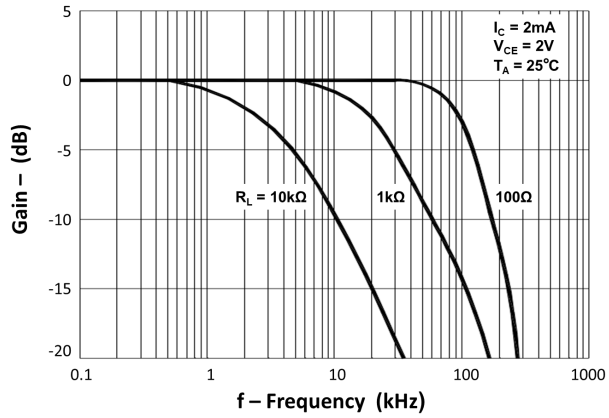
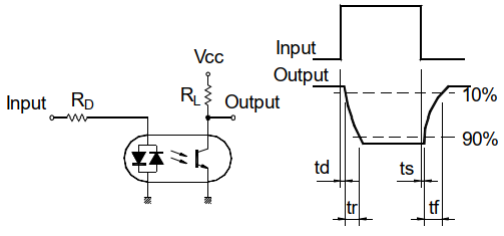
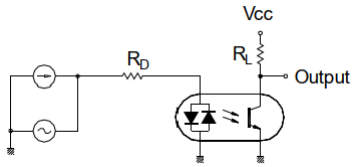


Fig 11 Frequency Response



Response Time Test Circuit



Frequency Response Test Circuit

ORDER INFORMATION

PS2505-1 (UL Approval)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2505-1	Standard DIP4	100 pcs per tube
G	PS2505-1G	10mm Lead Spacing	100 pcs per tube
SM	PS2505-1SM	Surface Mount	100 pcs per tube
SMT&R	PS2505-1SMT&R	Surface Mount Tape & Reel	1000 pcs per reel

PS2505-2 (UL Approval)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2505-2	Standard DIP8	50 pcs per tube
G	PS2505-2G	10mm Lead Spacing	50 pcs per tube
SM	PS2505-2SM	Surface Mount	50 pcs per tube
SMT&R	PS2505-2SMT&R	Surface Mount Tape & Reel	1000 pcs per reel

PS2505-4 (UL Approval)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2505-4	Standard DIP16	25 pcs per tube
G	PS2505-4G	10mm Lead Spacing	25 pcs per tube
SM	PS2505-4SM	Surface Mount	25 pcs per tube

Consult Factory for Tape and Reel version of PS2505-4SM

ORDER INFORMATION

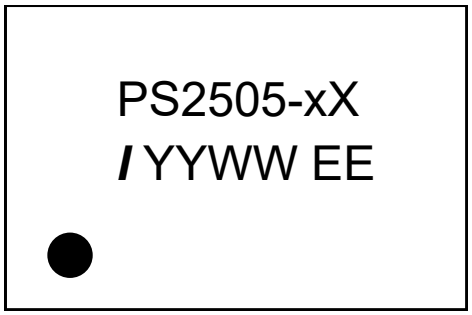
PS2505-1 (UL and VDE Approvals)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2505-1X	Standard DIP4	100 pcs per tube
G	PS2505-1XG	10mm Lead Spacing	100 pcs per tube
SM	PS2505-1XSM	Surface Mount	100 pcs per tube
SMT&R	PS2505-1XSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

PS2505-2 (UL and VDE Approvals)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2505-2X	Standard DIP8	50 pcs per tube
G	PS2505-2XG	10mm Lead Spacing	50 pcs per tube
SM	PS2505-2XSM	Surface Mount	50 pcs per tube
SMT&R	PS2505-2XSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

PS2505-4 (UL and VDE Approvals)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2505-4X	Standard DIP16	25 pcs per tube
G	PS2505-4XG	10mm Lead Spacing	25 pcs per tube
SM	PS2505-4XSM	Surface Mount	25 pcs per tube

Consult Factory for Tape and Reel version of PS2505-4XSM

DEVICE MARKING

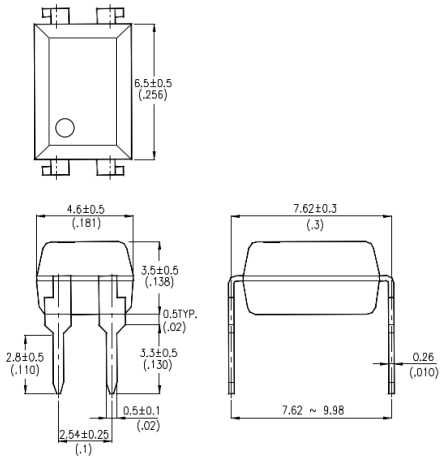


PS2505-x	Device Part Number where “x” denotes number of Channels 1 : Single Channel 2 : Dual Channel 4 : Quad Channel
X	VDE Option
I	Isocom
YY	2 digit Year code (22, 23, etc.)
WW	2 digit Week code
EE	UL Model

PACKAGE DIMENSIONS in mm (inch)

DIP

PS2505-1



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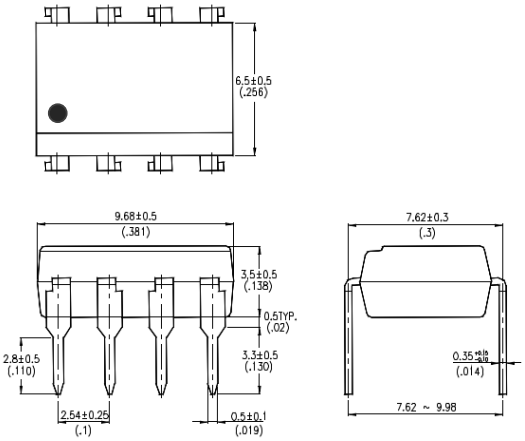
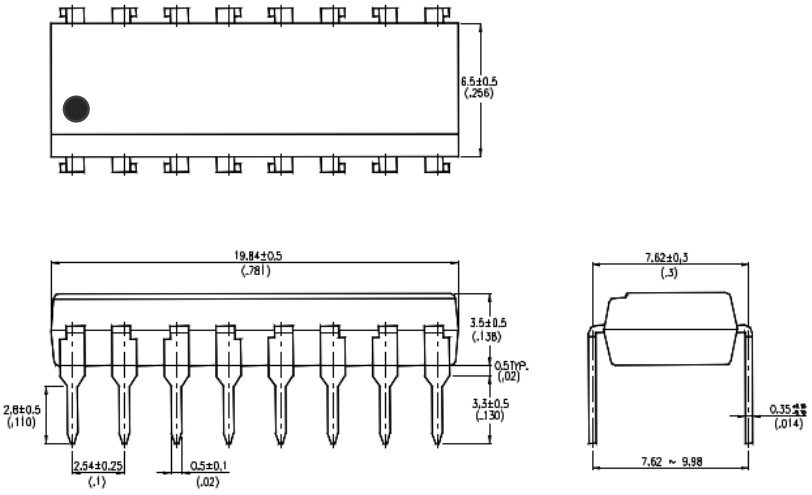


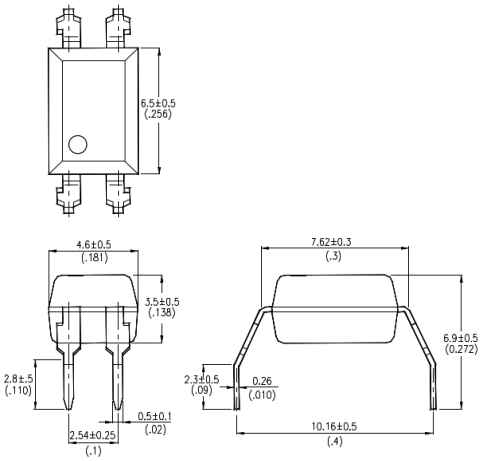
PS2505-4



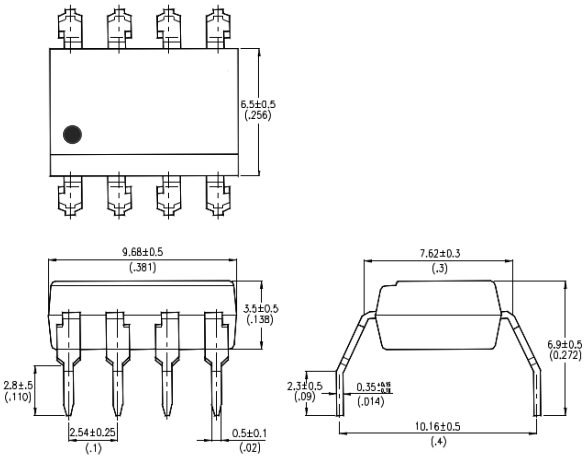
PACKAGE DIMENSIONS in mm (inch)

G Form

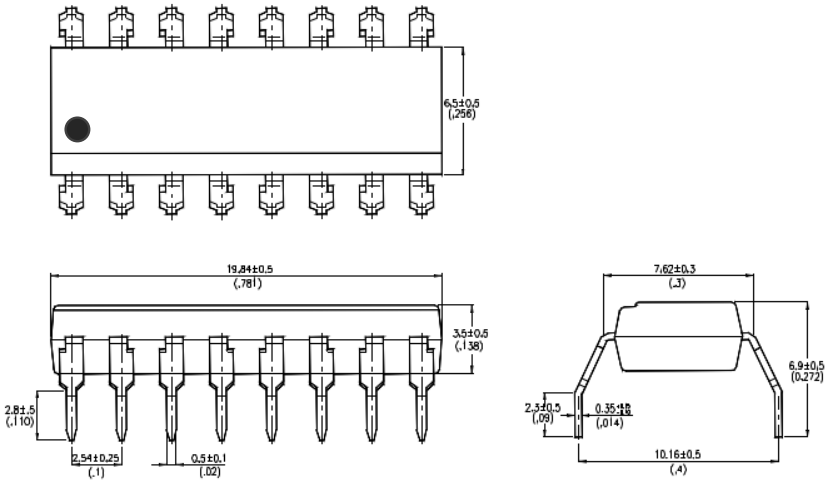
PS2505-1G



PS2505-2G



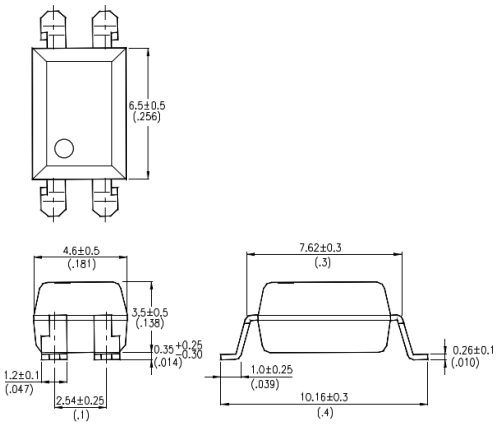
PS2505-4G



PACKAGE DIMENSIONS in mm (inch)

SMD

PS2505-1SM



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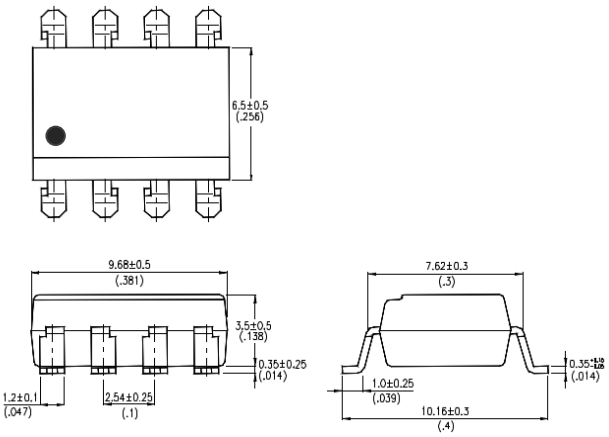
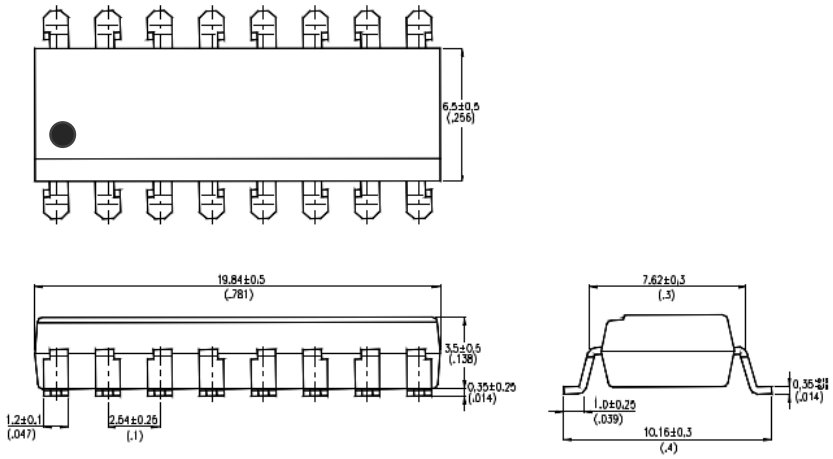
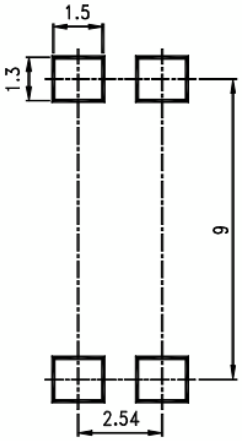


PS2505-4SM

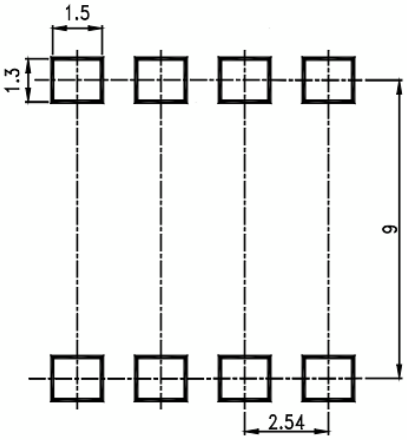


RECOMMENDED PAD LAYOUT FOR SMD (mm)

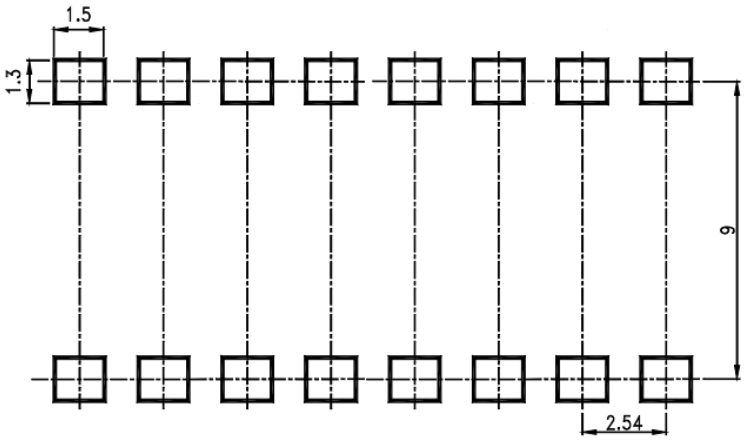
PS2505-1SM



PS2505-2SM

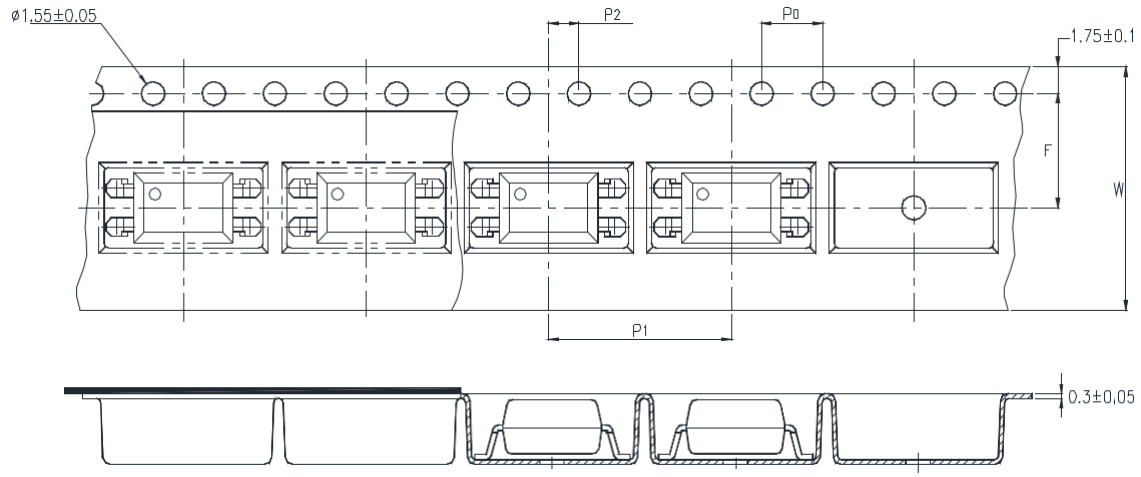


PS2505-4SM



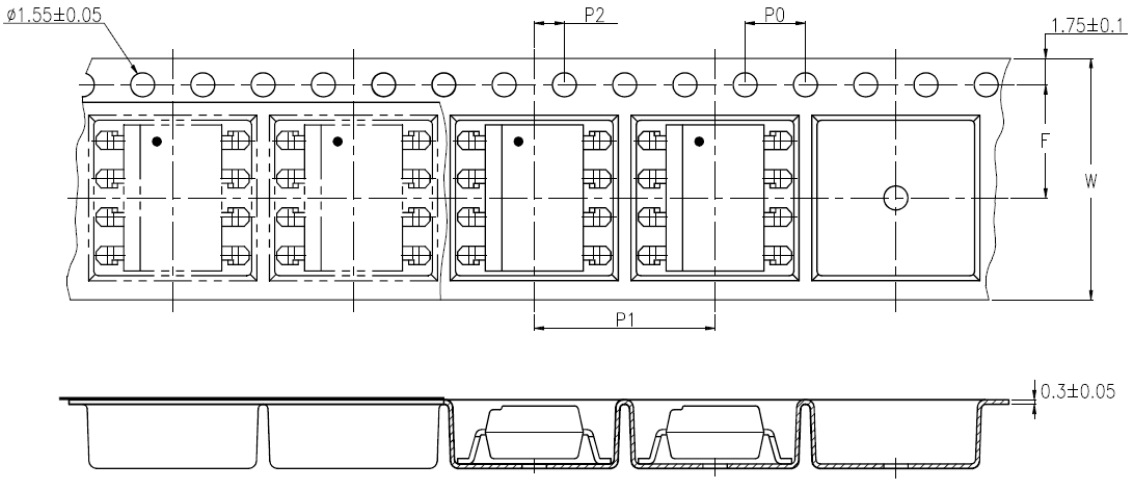
TAPE AND REEL PACKAGING

PS2505-1SMT&R



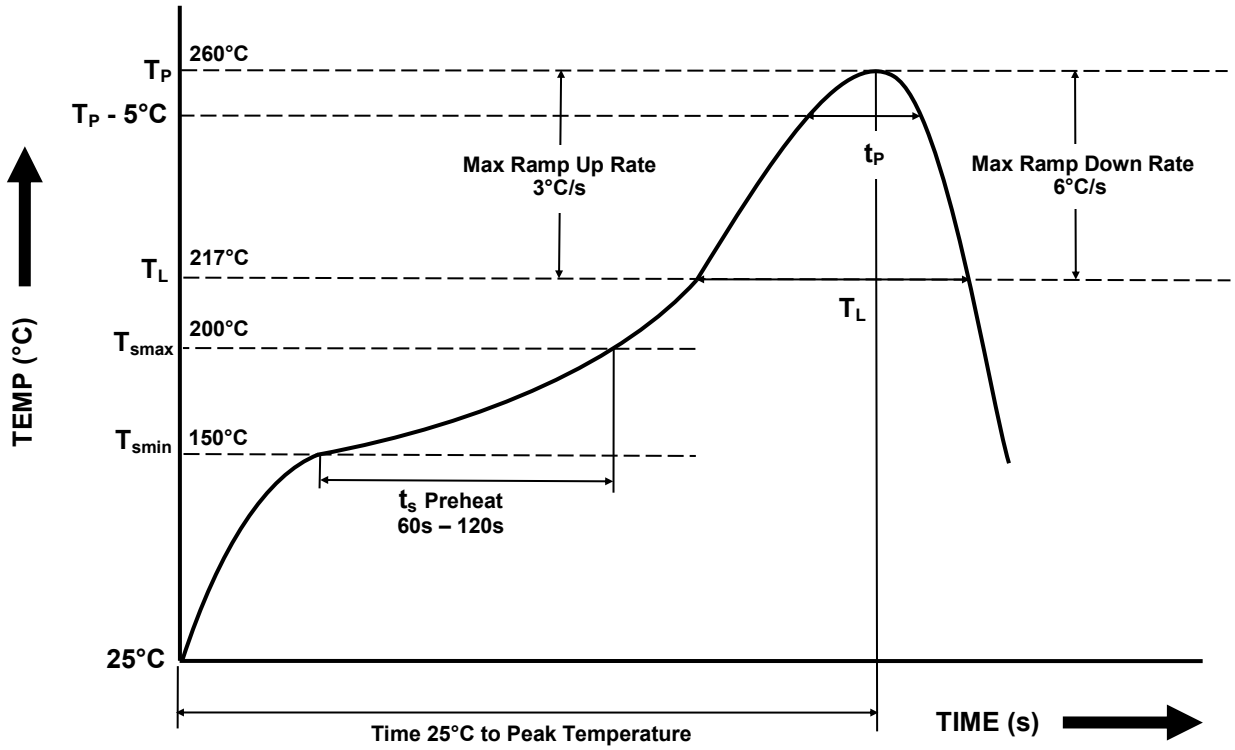
PS2505

-2SMT&R



Description	Symbol	Dimension mm (inch)
Tape Width	W	16 ± 0.3 (0.63)
Pitch of Sprocket Holes	P_0	4 ± 0.1 (0.15)
Distance of Compartment to Sprocket Holes	F	7.5 ± 0.1 (0.295)
	P_2	2 ± 0.1 (0.079)
Distance of Compartment to Compartment	P_1	12 ± 0.1 (0.472)

IR REFLOW SOLDERING TEMPERATURE PROFILE FOR SMD
(One Time Reflow Soldering is Recommended)



Profile Details	Conditions
Preheat - Min Temperature (T_{SMIN}) - Max Temperature (T_{SMAX}) - Time T_{SMIN} to T_{SMAX} (t_s)	 150°C 200°C 60s - 120s
Soldering Zone - Peak Temperature (T_P) - Time at Peak Temperature - Liquidous Temperature (T_L) - Time within 5°C of Actual Peak Temperature (T_P – 5°C) - Time maintained above T_L (t_L) - Ramp Up Rate (T_L to T_P) - Ramp Down Rate (T_P to T_L)	 260°C 10s max 217°C 30s max 60s - 100s 3°C/s max 6°C/s max
Average Ramp Up Rate (T_{smax} to T_P)	3°C/s max
Time 25°C to Peak Temperature	8 minutes max

ISOCOM COMPONENTS

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In developing your designs, please ensure that Isocom Components products are used within specified operating ranges as set forth in the most recent Isocom Components products specifications.

The Isocom Components products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These Isocom Components products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury (“Unintended Usage”). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation Instruments, traffic signal instruments, combustion control instruments, medical Instruments, all types of safety devices, etc... Unintended Usage of Isocom Components products listed in this document shall be made at the customer’s own risk.

Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.

The products described in this document are subject to the foreign exchange and foreign trade laws.

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