



**ISOCOM**  
COMPONENTS

## PS2501-1, PS2501-2, PS2501-4



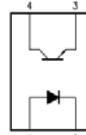
### DESCRIPTION

The PS2501-1, PS2501-2 and PS2501-4 series of optically coupled isolator consist of an infrared light emitting diode and an NPN silicon photo transistor in a space efficient Dual In Line Plastic Package.

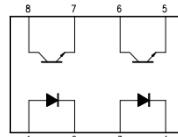
### FEATURES

- AC Isolation Voltage 5300V<sub>RMS</sub>
- CTR Selections Available
- Wide Operating Temperature Range -30°C to +100°C
- Lead Free and RoHS Compliant
- UL File E91231 Package Code "EE"
- VDE Approval Certificate No. 40028086

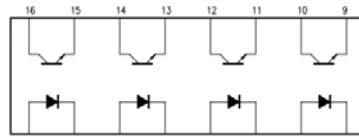
**PS2501-1**



**PS2501-2**



**PS2501-4**



### APPLICATIONS

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

### ABSOLUTE MAXIMUM RATINGS

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
Reverse Voltage	6V
Power dissipation	70mW

#### Output

Collector to Emitter Voltage BV <sub>CEO</sub>	80V
Emitter to Collector Voltage BV <sub>ECO</sub>	6V
Collector Current	50mA
Power Dissipation	150mW

#### Total Package

Operating Temperature	-30 to +100 °C
Storage Temperature	-55 to +125 °C
Total Power Dissipation	200mW
(derate linearly 2.67mW/°C at >25°C)	
Lead Soldering Temperature (10s)	260°C

### ORDER INFORMATION

- Add X after PN for VDE Approval
- Add G after PN for 10mm lead spacing
- Add SM after PN for Surface Mount
- Add SMT&R after PN for Surface Mount Tape & Reel  
(Available for PS2501-1SM and PS2501-2SM)

### ISOCOM COMPONENTS ASIA LTD

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## PS2501-1, PS2501-2, PS2501-4

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

#### INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 20mA		1.2	1.4	V
Reverse Voltage	V <sub>R</sub>	I <sub>R</sub> = 10µA	6.0			V
Reverse Leakage	I <sub>R</sub>	V <sub>R</sub> = 4V			10	µA
Terminal Capacitance	C <sub>t</sub>	V = 0V, f = 1KHz		30	250	pF

#### OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector—Emitter Breakdown Voltage	BV <sub>CEO</sub>	I <sub>C</sub> = 1mA, I <sub>F</sub> = 0mA	80			V
Emitter—Collector Breakdown Voltage	BV <sub>ECO</sub>	I <sub>E</sub> = 100µA, I <sub>F</sub> = 0mA	6			V
Collector-Emitter Dark Current	I <sub>CEO</sub>	V <sub>CE</sub> = 20V, I <sub>F</sub> = 0mA			100	nA

#### COUPLED

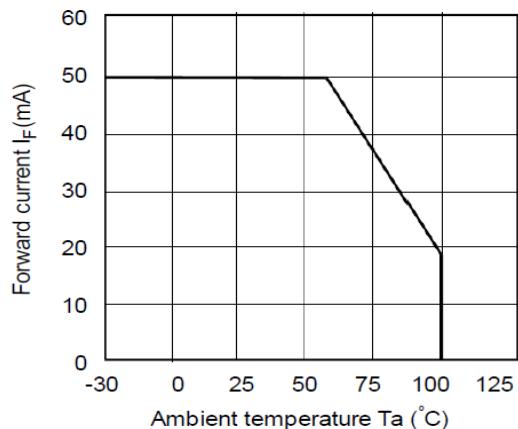
Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current transfer ratio	CTR	I <sub>F</sub> = 5mA, V <sub>CE</sub> = 5V Optional CTR Grades GR L (PS2501-1 only)	80 100 200		600 300 400	%
Collector—Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>F</sub> = 10mA, I <sub>C</sub> = 2mA			0.3	V
Input to Output Isolation Voltage	V <sub>ISO</sub>	AC 1 minute, RH = 40 to 60% Note 1	5300			V <sub>RMS</sub>
Input to Output Isolation Resistance	R <sub>ISO</sub>	V <sub>IO</sub> = 500V Note 1	5x10 <sup>10</sup>			Ω
Output Rise Time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>c</sub> = 2mA, R <sub>L</sub> = 100Ω		4	18	µs
Output Fall Time	t <sub>f</sub>	V <sub>CE</sub> = 2V, I <sub>c</sub> = 2mA, R <sub>L</sub> = 100Ω		3	18	µs

Note 1 : Measure with input leads shorted together and output leads shorted together.

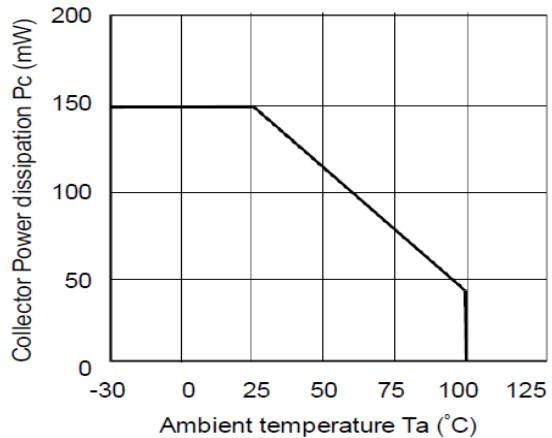


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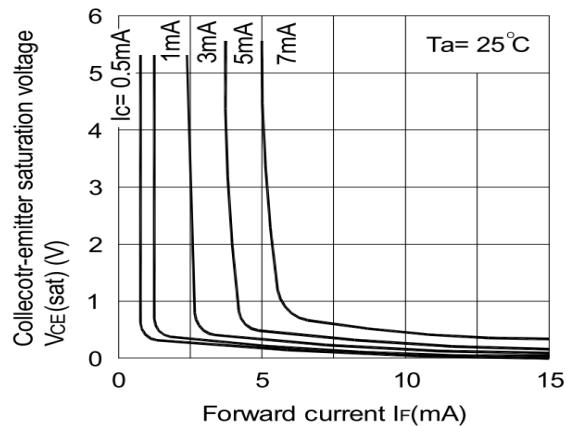
## PS2501-1, PS2501-2, PS2501-4



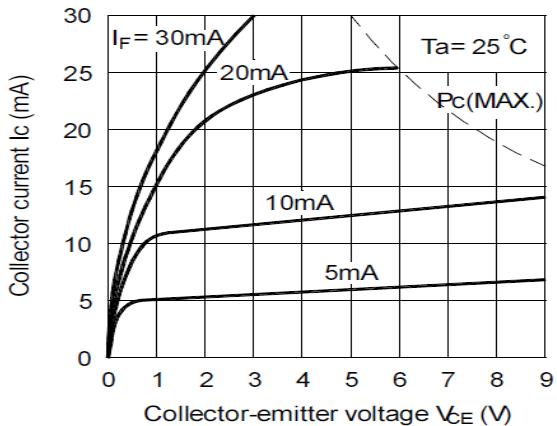
**Fig 1 Forward Current vs  $T_A$**



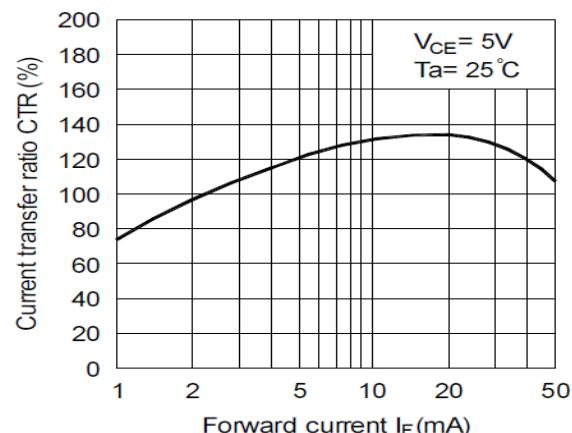
**Fig 2 Collector Power Dissipation vs  $T_A$**



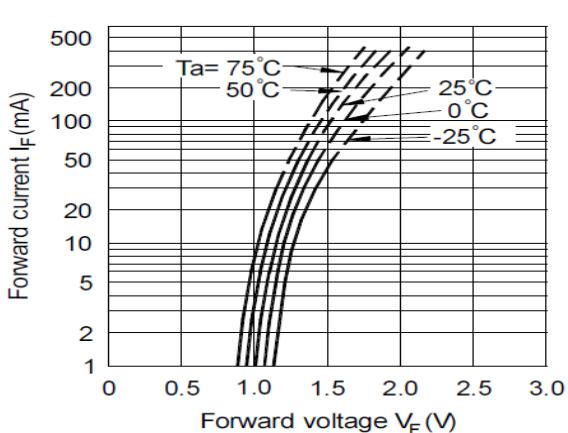
**Fig 3 Collector-emitter Saturation Voltage vs Forward Current**



**Fig 4 Collector Current vs Collector-emitter Voltage**



**Fig 5 Current Transfer Ratio vs Forward Current**



**Fig 6 Forward Current vs Forward Voltage**



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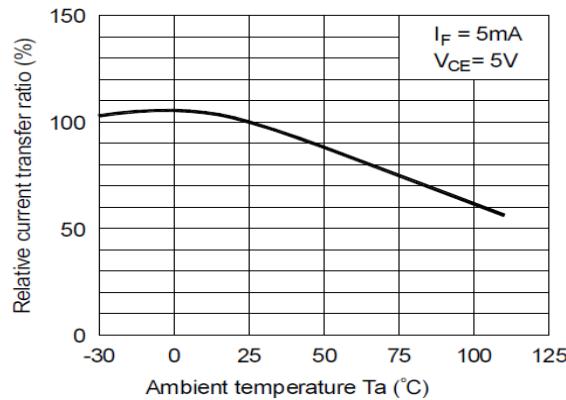


Fig 7 Relative CTR vs  $T_a$

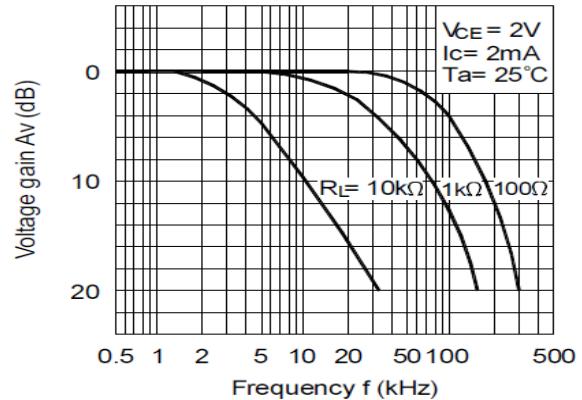


Fig 8 Frequency Response

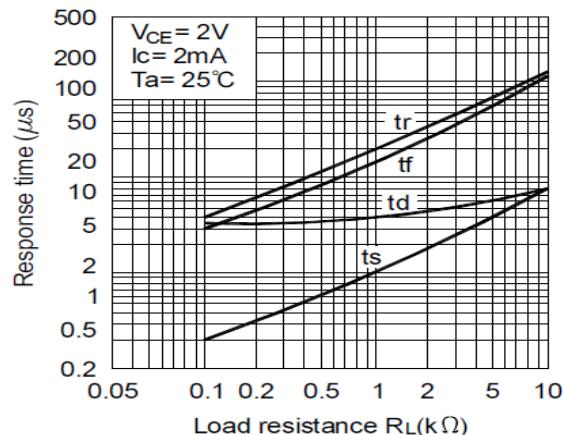
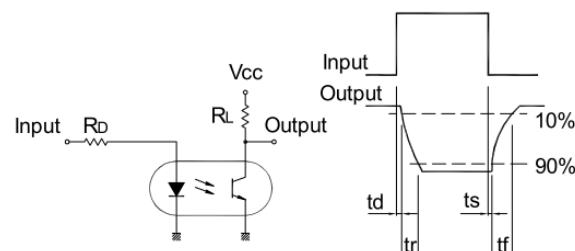


Fig 9 Response Time vs Load Resistance



Response Time Test Circuit



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## PS2501-1, PS2501-2, PS2501-4

### ORDER INFORMATION

PS2501-1 (UL Approval)			
After PN	PN	Description	Packing quantity
None	PS2501-1, PS2501-1GR, PS2501-1L	Standard DIP4	100 pcs per tube
G	PS2501-1G, PS2501-1GRG, PS2501-1LG	10mm Lead Spacing	100 pcs per tube
SM	PS2501-1SM, PS2501-1GRSM, PS2501-1LSM	Surface Mount	100 pcs per tube
SMT&R	PS2501-1SMT&R, PS2501-1GRSMT&R, PS2501-1LSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

PS2501-2 (UL Approval)			
After PN	PN	Description	Packing quantity
None	PS2501-2, PS2501-2GR	Standard DIP8	50 pcs per tube
G	PS2501-2G, PS2501-2GRG	10mm Lead Spacing	50 pcs per tube
SM	PS2501-2SM, PS2501-2GRSM	Surface Mount	50 pcs per tube
SMT&R	PS2501-2SMT&R, PS2501-2GRSMT&R,	Surface Mount Tape & Reel	1000 pcs per reel

PS2501-4 (UL Approval)			
After PN	PN	Description	Packing quantity
None	PS2501-4, PS2501-4GR	Standard DIP16	25 pcs per tube
G	PS2501-4G, PS2501-4GRG	10mm Lead Spacing	25 pcs per tube
SM	PS2501-4SM, PS2501-4GRSM	Surface Mount	25 pcs per tube

CTR grade "L" available only for PS2501-1.



## PS2501-1, PS2501-2, PS2501-4

### ORDER INFORMATION

PS2501-1X (UL and VDE Approvals)			
After PN	PN	Description	Packing quantity
None	PS2501-1X, PS2501-1XGR, PS2501-1XL	Standard DIP4	100 pcs per tube
G	PS2501-1XG, PS2501-1XGRG, PS2501-1XLG	10mm Lead Spacing	100 pcs per tube
SM	PS2501-1XSM, PS2501-1XGRSM, PS2501-1XLSM	Surface Mount	100 pcs per tube
SMT&R	PS2501-1XSMT&R, PS2501-1XGRSMT&R, PS2501-1XLSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

PS2501-2X (UL and VDE Approvals)			
After PN	PN	Description	Packing quantity
None	PS2501-2X, PS2501-2XGR	Standard DIP8	50 pcs per tube
G	PS2501-2XG, PS2501-2XGRG	10mm Lead Spacing	50 pcs per tube
SM	PS2501-2XSM, PS2501-2XGRSM,	Surface Mount	50 pcs per tube
SMT&R	PS2501-2XSMT&R, PS2501-2XGRSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

PS2501-4X (UL and VDE Approvals)			
After PN	PN	Description	Packing quantity
None	PS2501-4X, PS2501-4XGR,	Standard DIP16	25 pcs per tube
G	PS2501-4XG, PS2501-4XGRG	10mm Lead Spacing	25 pcs per tube
SM	PS2501-4XSM, PS2501-4XGRSM	Surface Mount	25 pcs per tube

CTR grade "L" available only for PS2501-1.



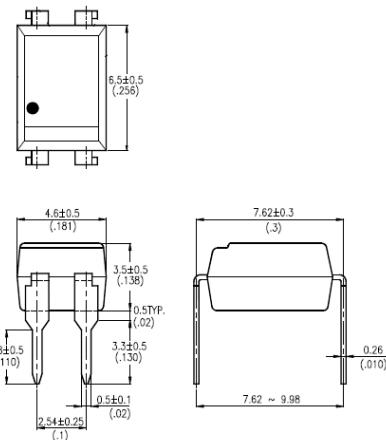
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## PS2501-1, PS2501-2, PS2501-4

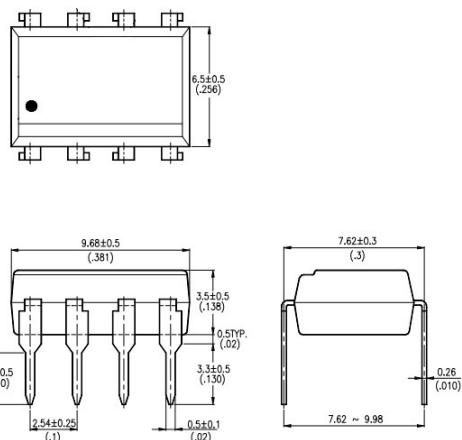
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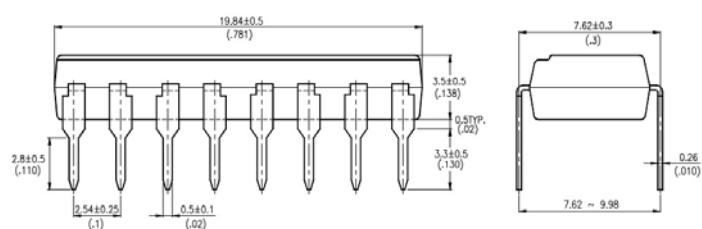
**PS2501-1**



**PS2501-2**



**PS2501-4**





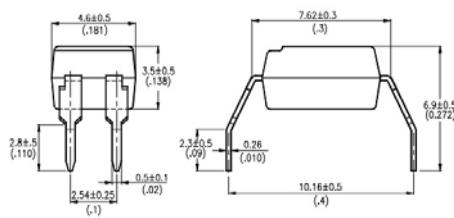
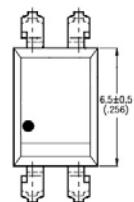
**ISOCOM**  
COMPONENTS

## PS2501-1, PS2501-2, PS2501-4

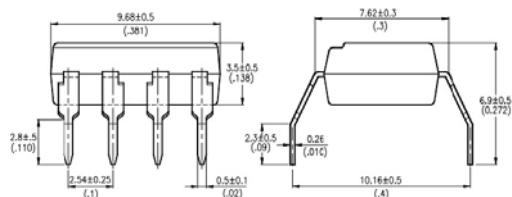
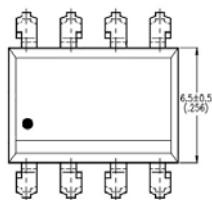
### PACKAGE DIMENSIONS in mm (inch)

#### G Form

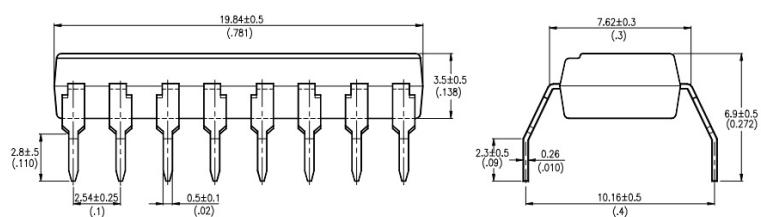
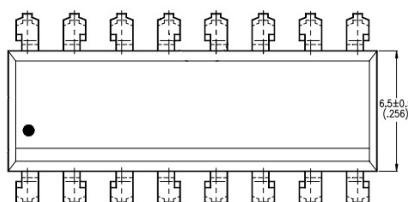
**PS2501-1G**



**PS2501-2G**



**PS2501-4G**





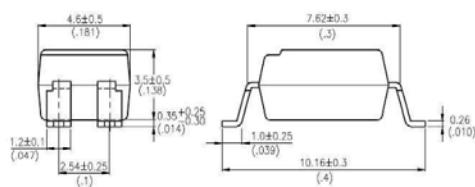
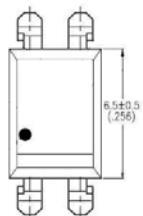
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## PS2501-1, PS2501-2, PS2501-4

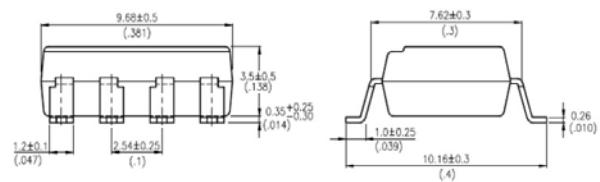
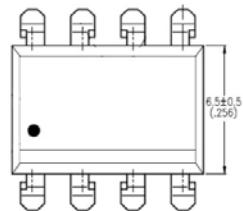
### PACKAGE DIMENSIONS in mm (inch)

#### SMD

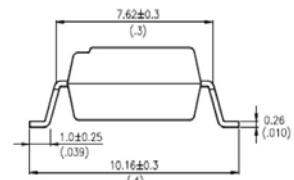
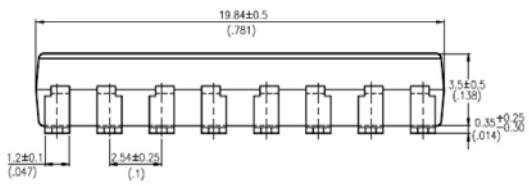
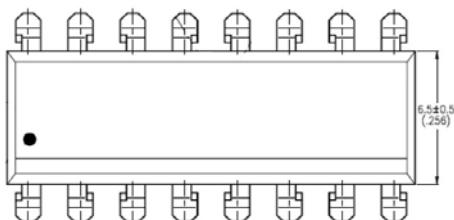
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**PS2501-2SM**



**PS2501-4SM**



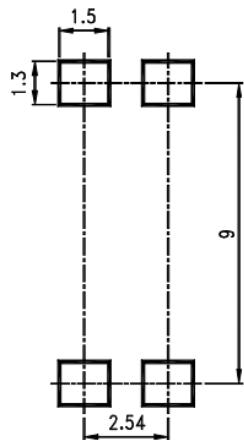


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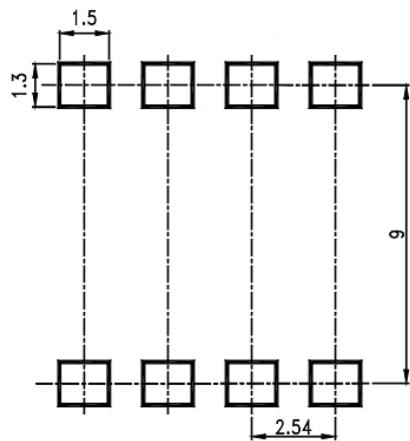
## PS2501-1, PS2501-2, PS2501-4

### RECOMMENDED PAD LAYOUT FOR SMD (mm)

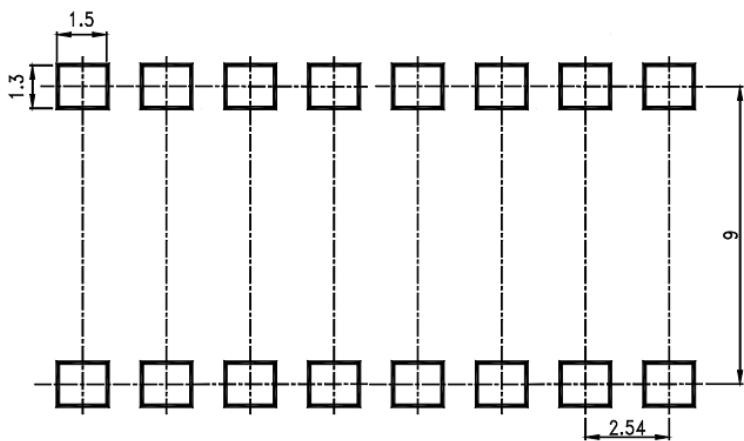
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**PS2501-2SM**



**PS2501-4SM**

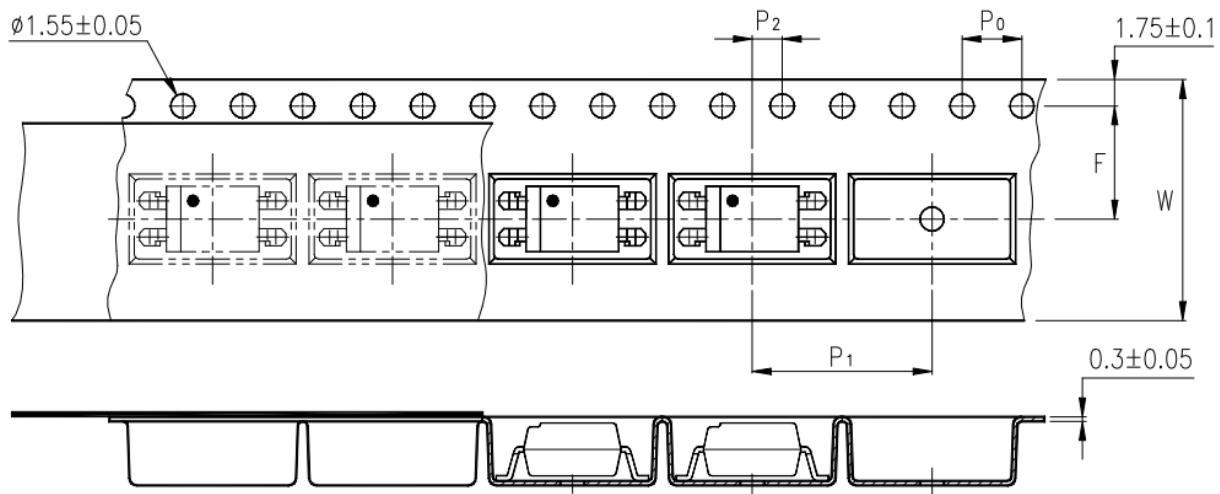




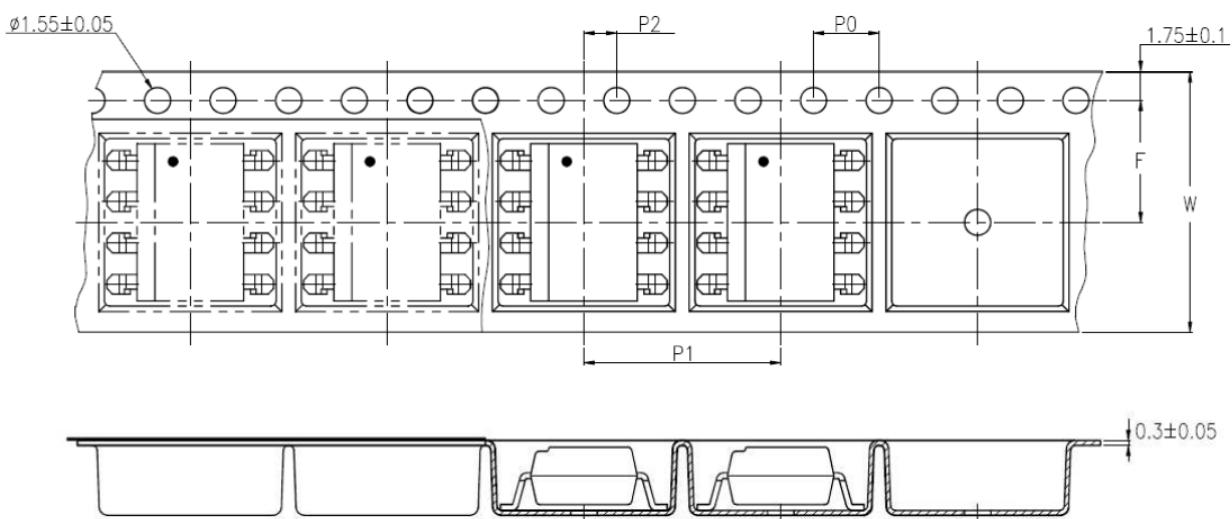
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## PS2501-1, PS2501-2, PS2501-4

### TAPE AND REEL PACKAGING



### PS2501-1SMT&R



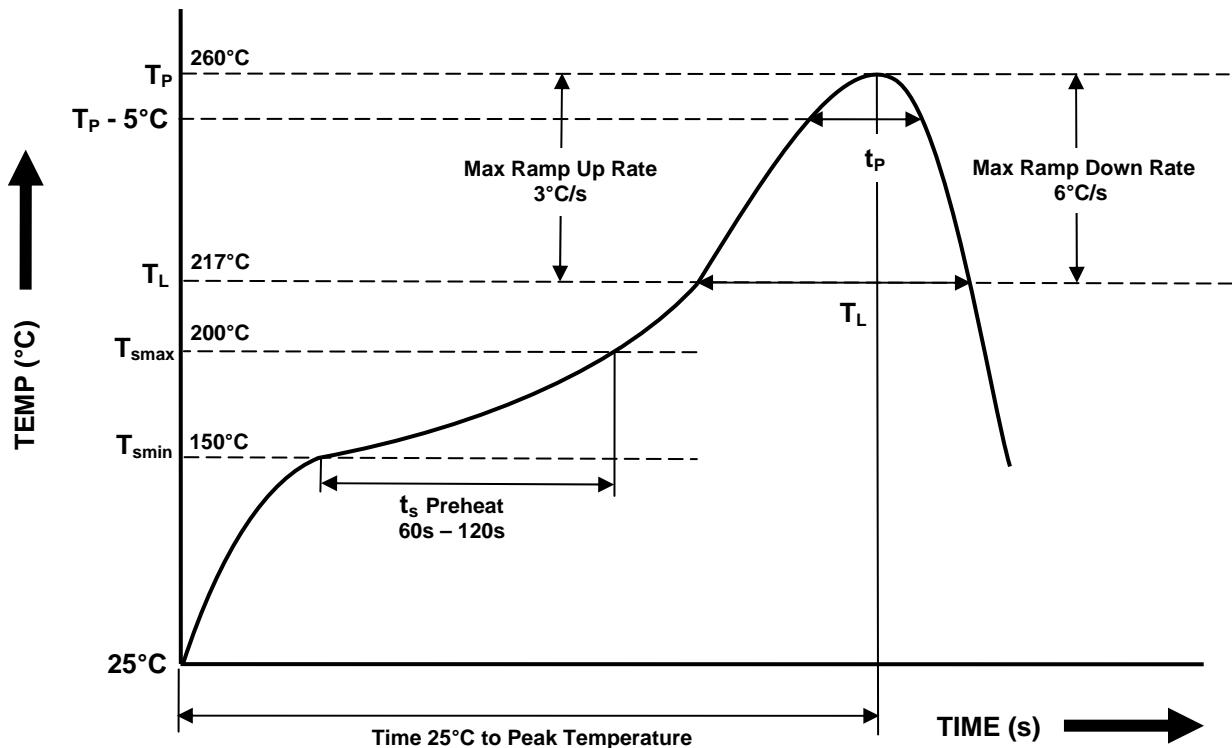
### PS2501-2SMT&R

Description	Symbol	Dimensions in mm ( inches )
Tape wide	W	$16 \pm 0.3$ ( .63 )
Pitch of sprocket holes	$P_0$	$4 \pm 0.1$ ( .15 )
Distance of compartment	F	$7.5 \pm 0.1$ ( .295 )
Distance of compartment to compartment	$P_2$	$2 \pm 0.1$ ( .079 )
	$P_1$	$12 \pm 0.1$ ( .472 )



## PS2501-1, PS2501-2, PS2501-4

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



Profile Details	Conditions
<b>Preheat</b> <ul style="list-style-type: none"><li>- Min Temperature (<math>T_{SMIN}</math>)</li><li>- Max Temperature (<math>T_{SMAX}</math>)</li><li>- Time <math>T_{SMIN}</math> to <math>T_{SMAX}</math> (<math>t_s</math>)</li></ul>	150°C 200°C 60s - 120s
<b>Soldering Zone</b> <ul style="list-style-type: none"><li>- Peak Temperature (<math>T_P</math>)</li><li>- Time at Peak Temperature</li><li>- Liquidous Temperature (<math>T_L</math>)</li><li>- Time within 5°C of Actual Peak Temperature (<math>T_P - 5^\circ\text{C}</math>)</li><li>- Time maintained above <math>T_L</math> (<math>t_L</math>)</li><li>- Ramp Up Rate (<math>T_L</math> to <math>T_P</math>)</li><li>- Ramp Down Rate (<math>T_P</math> to <math>T_L</math>)</li></ul>	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



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- For equipment/application where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc., please contact our sales representatives.
- When requiring a device for any "specific" application, please contact our sales for advice.
- The contents described herein are subject to change without prior notice.
- Do not immerse device body in solder paste.



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