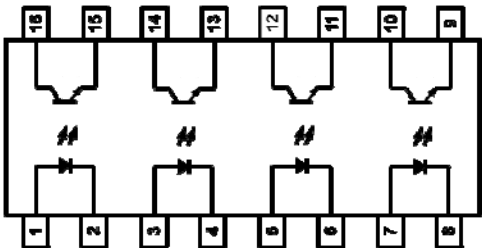
IS2801-4

DESCRIPTION

The IS2801-4 is a four channel optically coupled isolator each channel consists of an infrared emitting diode and optically coupled to an NPN silicon photo transistor.

This device belongs to Isocom Compact Range of Optocouplers.



FEATURES

- Half Pitch 1.27mm
- High AC Isolation voltage 3000V_{RMS}
- Wide Operating Temperature Range -55°C to 110°C
- Pb Free and RoHS Compliant
- UL Approval E91231 Package Code “THP4”

APPLICATIONS

- Hybrid Substrates with High Density Mounting
- Industrial System Controllers
- Measuring Instruments
- System Appliances

ORDER INFORMATION

- Available in Tape and Reel with 2000pcs per reel

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
Reverse Voltage	6V
Power dissipation	70mW
Output	
Output Current	50mA
Collector to Emitter Voltage BV_{CEO}	80V
Emitter to Collector Voltage BV_{ECO}	7V
Power Dissipation	100mW
Total Package	
Isolation Voltage	3000V_{RMS}
Total Power Dissipation	170mW
Operating Temperature	-55 to 110 °C
Storage Temperature	-55 to 150 °C
Lead Soldering Temperature (10s)	260°C

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ELECTRICAL CHARACTERISTICS (T_A = 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
Reverse Current	I_R	V_R = 4V			10	µA
Terminal Capacitance	C_t	V_F = 0V, f = 1KHz		30	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_F = 0, I_C = 0.1mA	80			V
Emitter-Collector Breakdown Voltage	BV_{ECO}	I_F = 0, I_E = 10µA	7			V
Collector-Emitter Dark Current	I_{CEO}	I_F = 0, V_{CE} = 48V			100	nA

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	I_F = 5mA, V_{CE} = 5V	50		600	%
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = 8mA, I_C = 2.4mA			0.4	V
Floating Capacitance	C_f	V_{CE} = 0V, f = 1MHz		0.6	1	pF
Output Rise Time	t_r	V_{CE} = 10V, Ic = 2mA, R_L = 100Ω		2	18	µs
Output Fall Time	t_f			3	18	
Turn-On Time	t_{ON}			3		
Turn-Off Time	t_{OFF}			3		
Turn-On Time	t_{ON}	V_{CE} = 5V, Ic = 16mA, R_L = 1.9kΩ		2		
Turn-Off Time	t_{OFF}			40		
Storage Time	t_S			25		

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Input to Output Isolation Voltage	V_{ISO}	RH = 40% - 60%, t = 1 min Note 1	3000			V_{RMS}
Input to Output Isolation Resistance	R_{ISO}	RH = 40% - 60%, V_{IO}= 500V Note 1	$5x10^{10}$	$1x10^{11}$		Ω

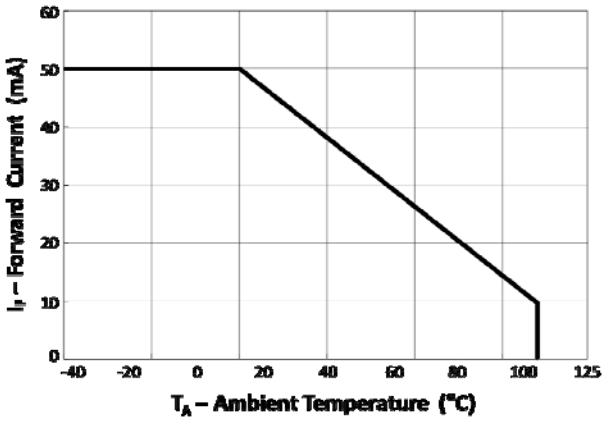


Fig 1 Forward Current vs T_A

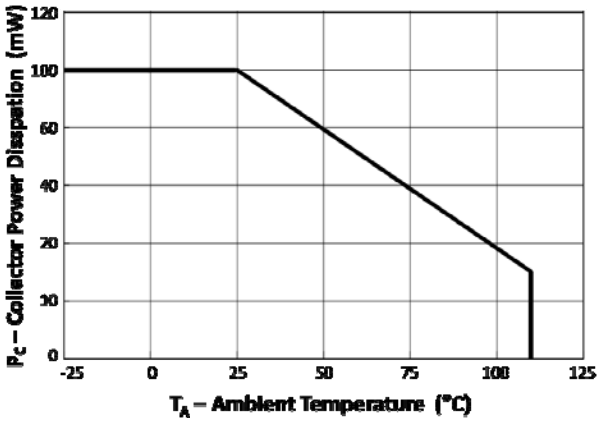


Fig 2 Collector Power Dissipation vs T_A

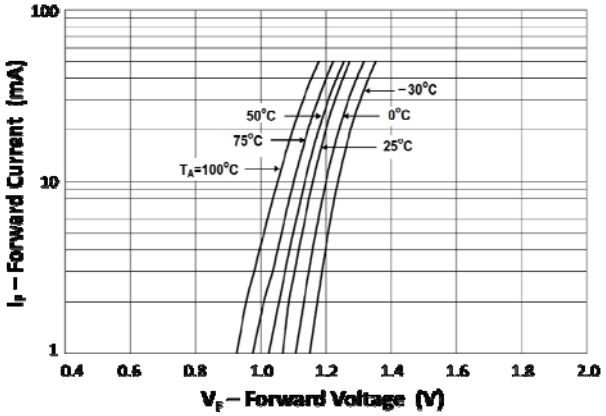


Fig 3 Forward Current vs Forward Voltage

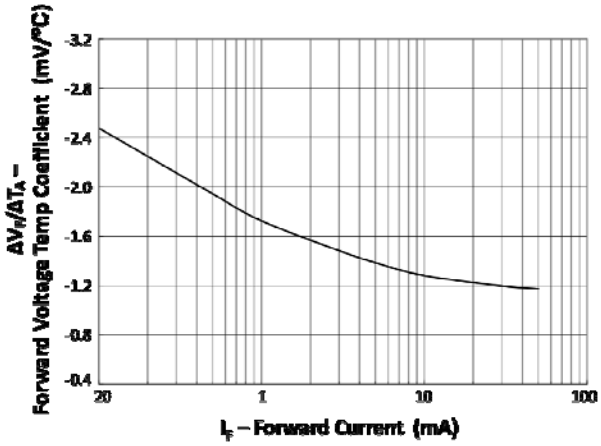


Fig 4 Forward Current Temperature Coefficient vs Forward Current

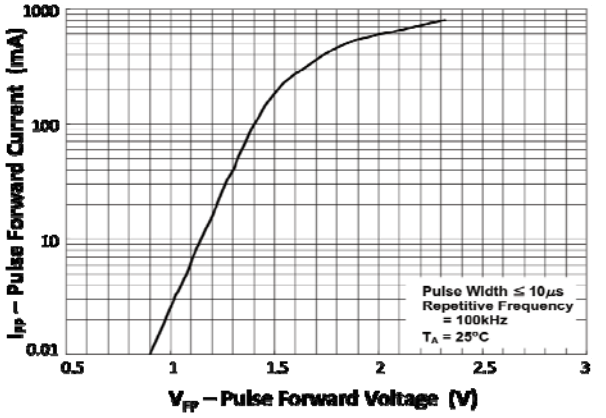


Fig 5 Pulse Forward Current vs Pulse Forward Voltage

Fig 6 Pulse Forward Current vs Duty Cycle

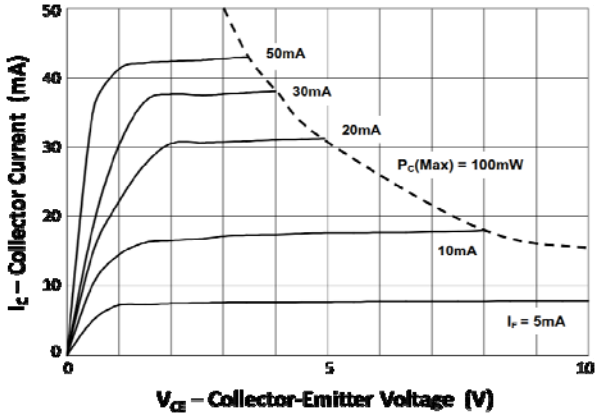


Fig 7 Collector Current vs Collector-Emitter Voltage

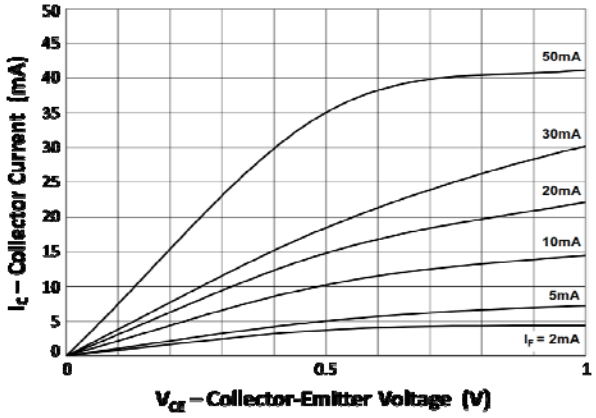


Fig 8 Collector Current vs Low Collector-Emitter Voltage

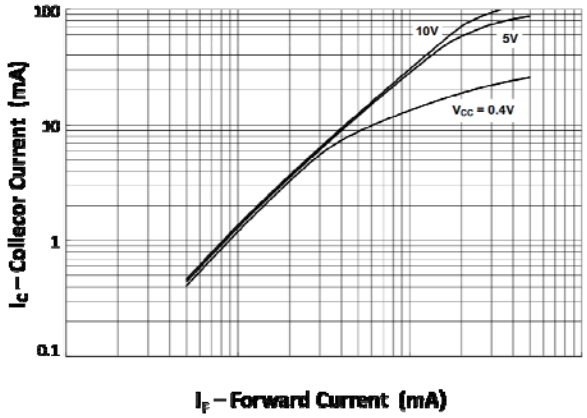


Fig 9 Collector Current vs Forward Current

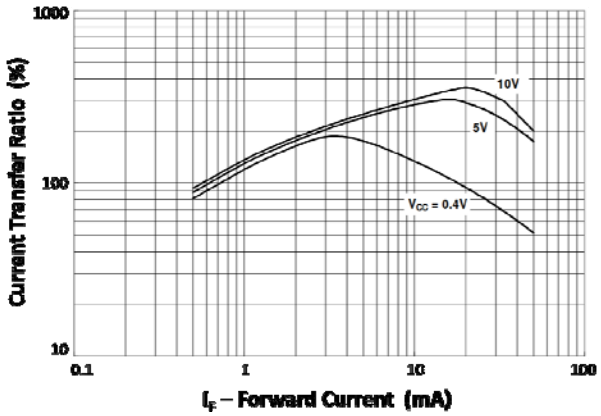


Fig 10 Current Transfer Ratio vs Forward Current

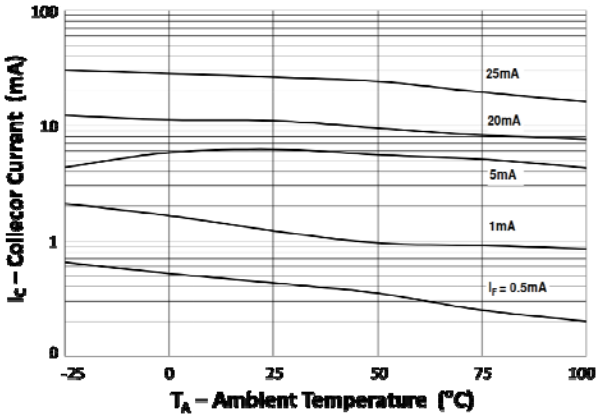


Fig 11 Collector Current vs T_A

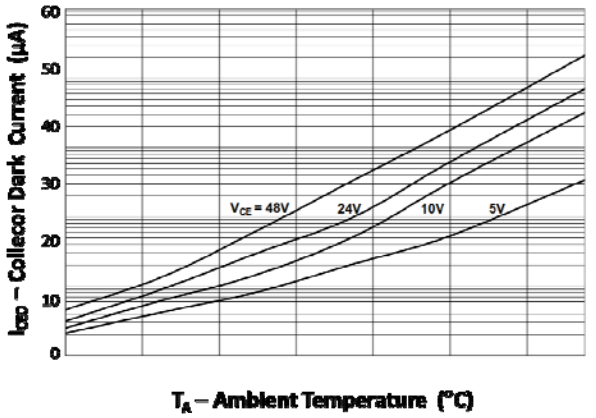


Fig 12 Collector Dark Current vs T_A

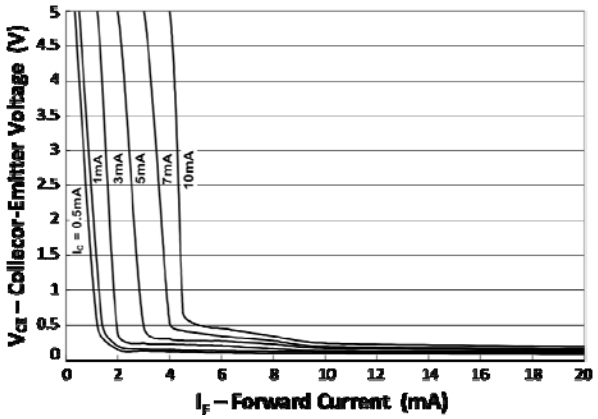


Fig 13 Collector-Emitter Voltage vs Forward Current

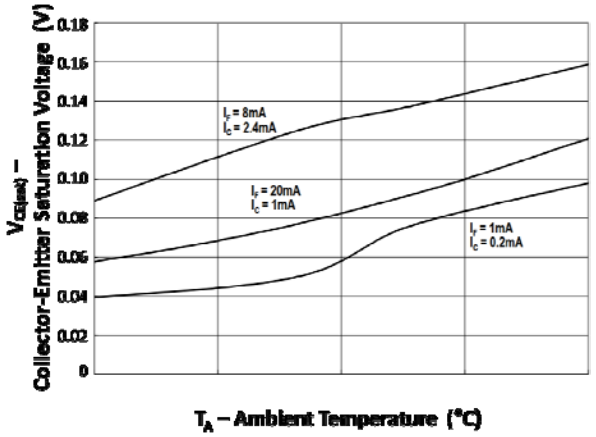


Fig 14 Collector-Emitter Saturation Voltage vs T_A

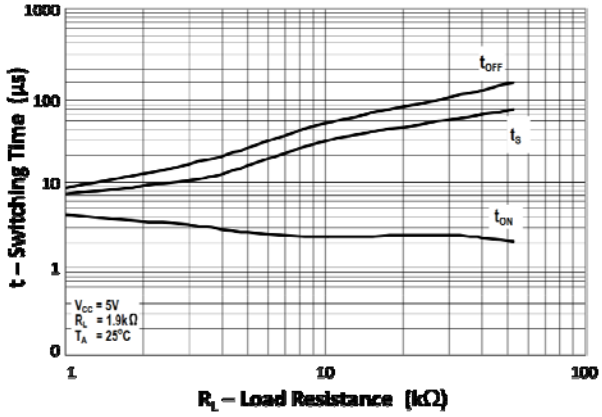


Fig 15 Switching Time vs Load Resistance

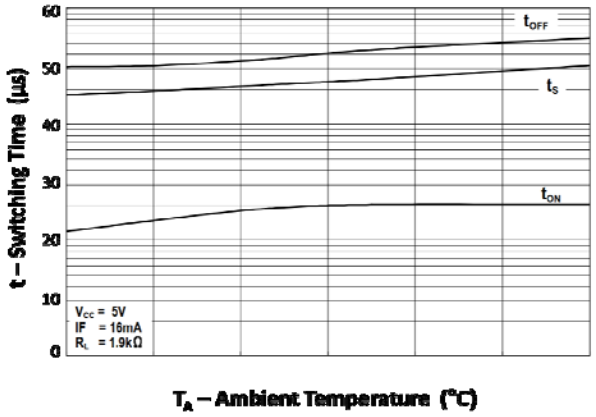


Fig 16 Switching Time vs T_A

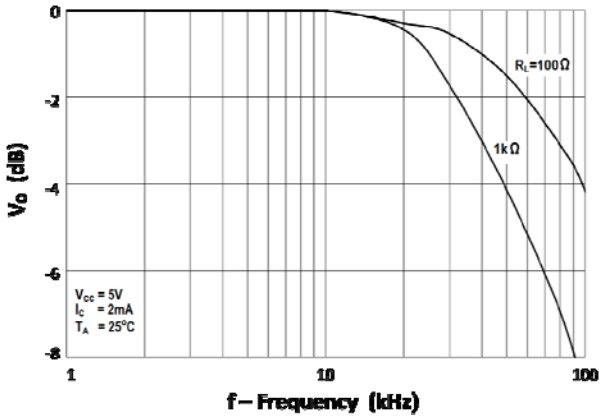
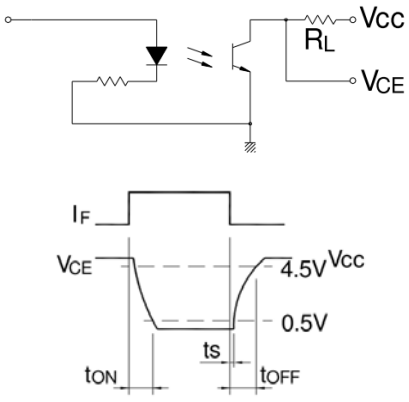


Fig 17 Frequency Response



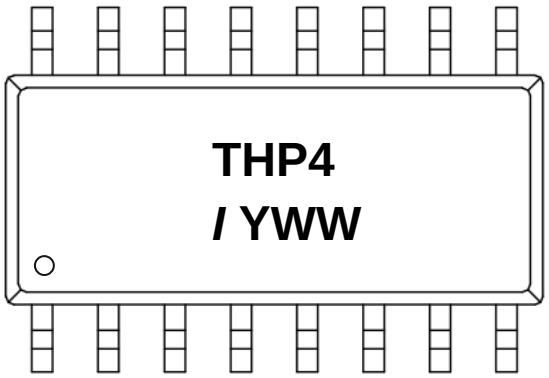
Switching Time Test Circuit

ORDER INFORMATION

UL Approval			
After PN	**PN**	**Description**	**Packing quantity**
None	IS2801-4	Surface Mount Tape & Reel	2000 pcs per reel

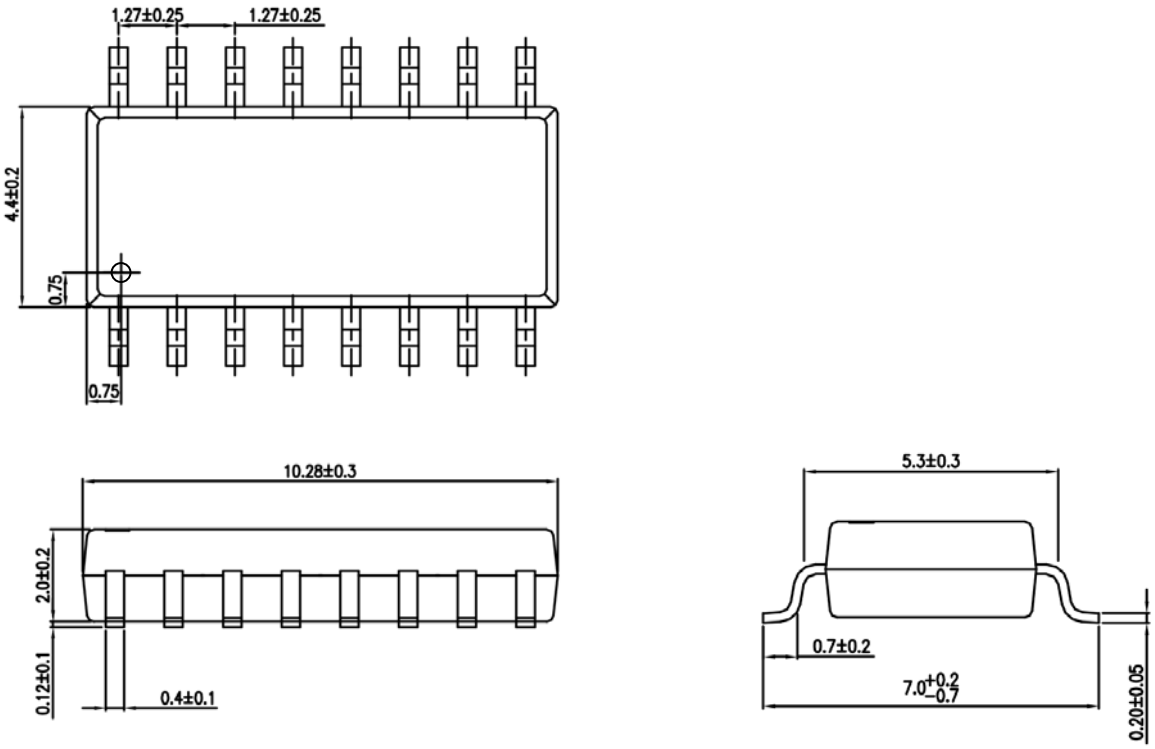
DEVICE MARKING

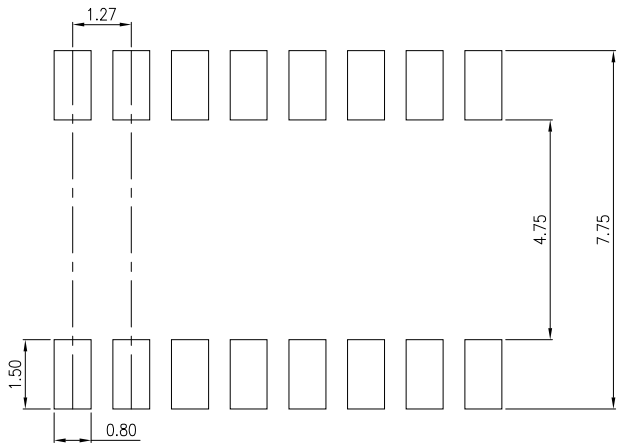
Example : IS2801-4



THP4	denotes Device Part Number
I	denotes Isocom
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code

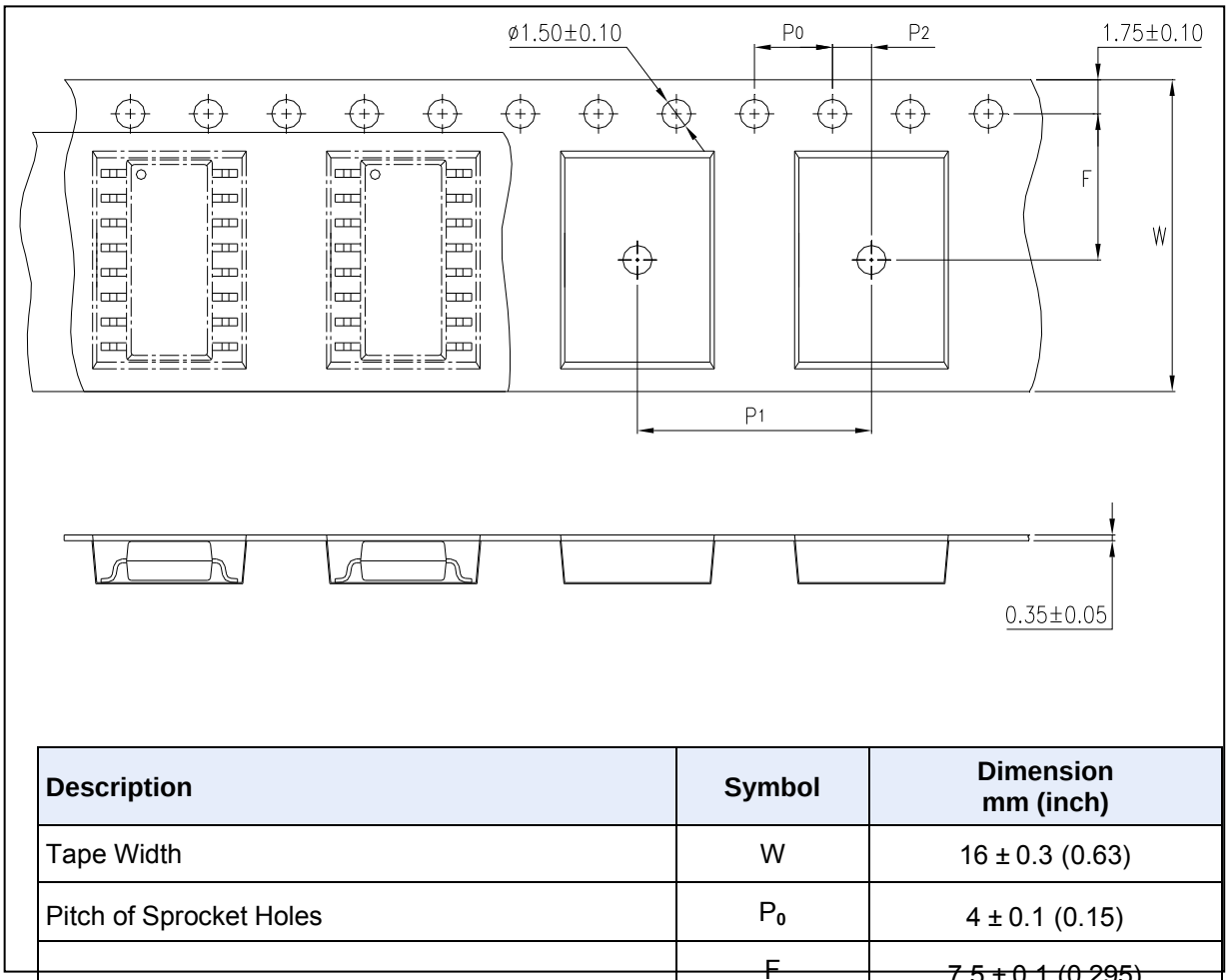
PACKAGE DIMENSIONS (mm)





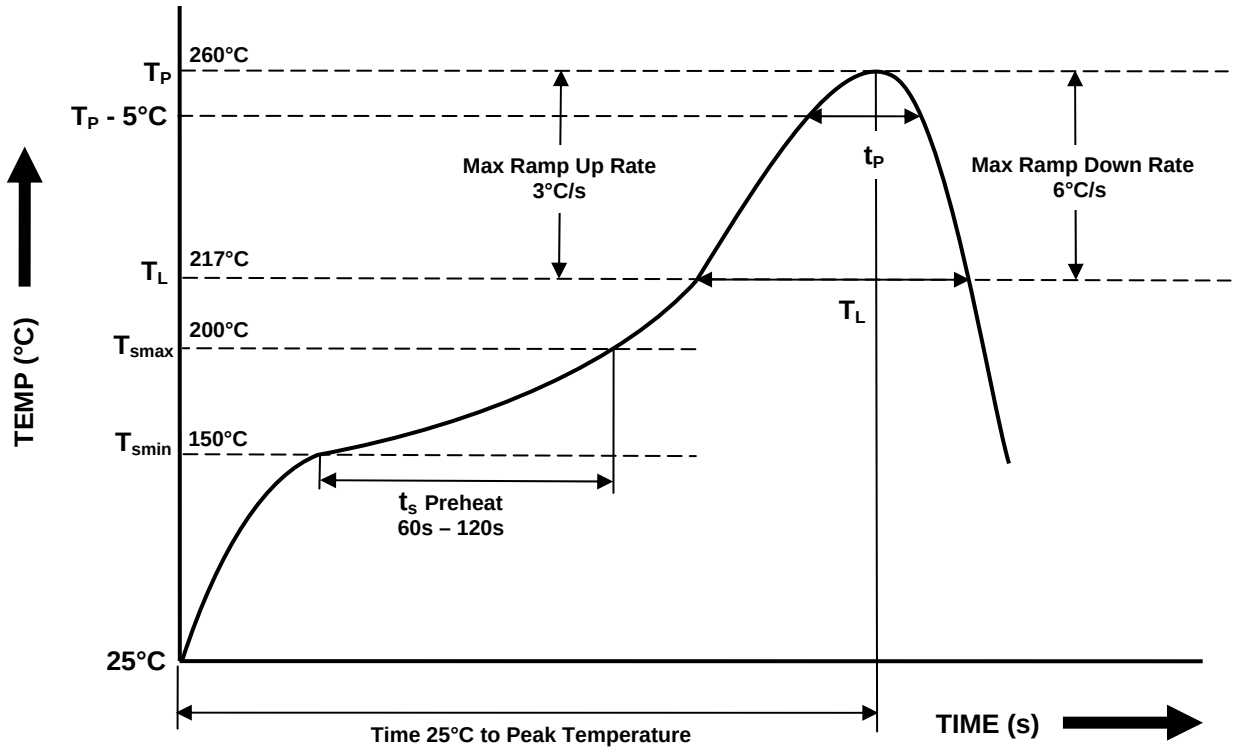
RECOMMENDED SOLDER PAD LAYOUT (mm)

TAPE AND REEL PACKAGING



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 (0.47)

IR REFLOW SOLDERING TEMPERATURE PROFILE
(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

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- When requiring a device for any ”specific” application, please contact our sales for advice.

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- Do not immerse unit’s body in solder paste.

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