



ISOCOM
COMPONENTS

IS183



DESCRIPTION

The IS183 low input type optocoupler consists of a GaAs infrared emitting diode optically coupled to an NPN silicon photo transistor in a space efficient Mini Flat package.

FEATURES

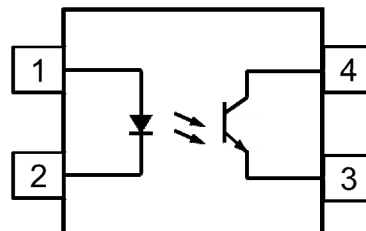
- Low Input Current
- CTR guaranteed min 50% at I_F 0.5mA, V_{CE} 5V
- Low Profile Package
- Wide Operating Temperature Range
- 55°C to +125°C
- High AC Isolation voltage 3750V_{RMS}
- Lead Free and RoHS Compliant
- Safety Approvals Pending

APPLICATIONS

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

ORDER INFORMATION

- Available in Tape and Reel with 3000 pieces per reel



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

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

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
Junction Temperature	125 °C

Output

Collector to Emitter Voltage V_{CEO}	80V
Emitter to Collector Voltage V_{ECO}	7V
Collector Current	50mA
Power Dissipation	150mW
Junction Temperature	125 °C

Total Package

Isolation Voltage	3750V _{RMS}
Total Power Dissipation	200mW
Operating Temperature	-55 to 125 °C
Storage Temperature	-55 to 125 °C
Lead Soldering Temperature (10s)	260°C

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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified. Typical Values at $T_A = 25^\circ\text{C}$)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	$I_F = 10\text{mA}$			1.6	V
Reverse Current	I_R	$V_R = 5\text{V}$			5	μA
Terminal Capacitance	C_{IN}	$V = 0\text{V}$, $f = 1\text{KHz}$		30	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector-Emitter Breakdown Voltage	V_{CEO}	$I_C = 0.5\text{mA}$, $I_F = 0\text{mA}$	80			V
Emitter-Collector Breakdown Voltage	V_{ECO}	$I_E = 0.1\text{mA}$, $I_F = 0\text{mA}$	7			V
Collector Dark Current	I_{CEO}	$V_{CE} = 48\text{V}$, $I_F = 0\text{mA}$		10	80	nA

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	$I_F = 0.5\text{mA}$, $V_{CE} = 5\text{V}$	50			%
		$I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$				
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = 8\text{mA}$, $I_C = 2.4\text{mA}$			0.3	V
Floating Capacitance	C_f	$V = 0\text{V}$, $f = 1\text{MHz}$		0.6	1	pF
Rise Time	t_r	$V_{CC} = 10\text{V}$, $I_C = 2\text{mA}$, $R_L = 100\Omega$, $f = 100\text{Hz}$		2	18	μs
Fall Time	t_f			3	18	

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Isolation Voltage	V_{ISO}	R.H. = 40% to 60 %, $t = 1\text{ min}$	3750			V_{RMS}
Input - Output Resistance	R_{I-O}	$V_{I-O} = 500\text{VDC}$, R.H. = 40% to 60 %	5×10^{10}	1×10^{11}		Ω

Device is considered a two terminal device : pins 1 and 2 are shorted together and pins 3 and 4 are shorted together.

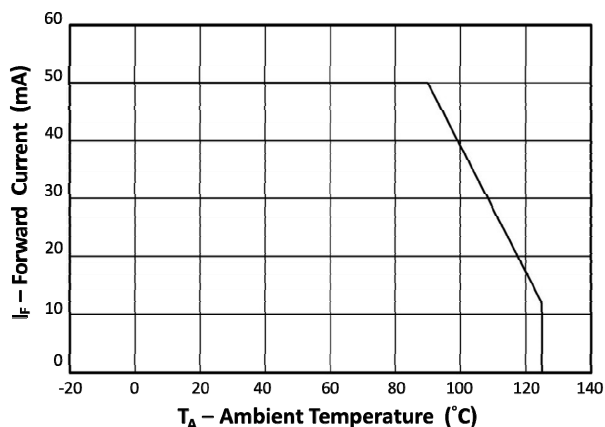


Fig 1 Forward Current vs Ambient Temperature

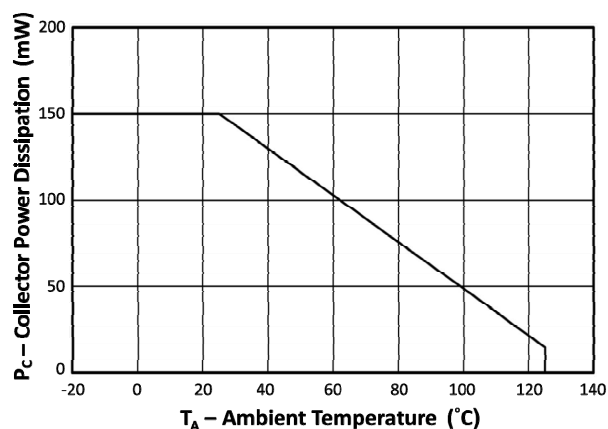


Fig 2 Collector Power vs Ambient Temperature

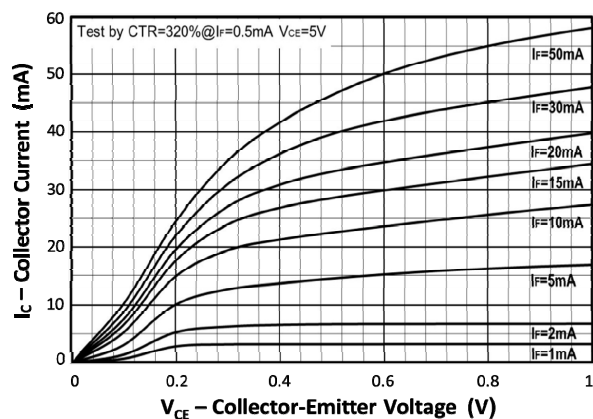


Fig 3 Collector Current vs Collector-Emitter Voltage

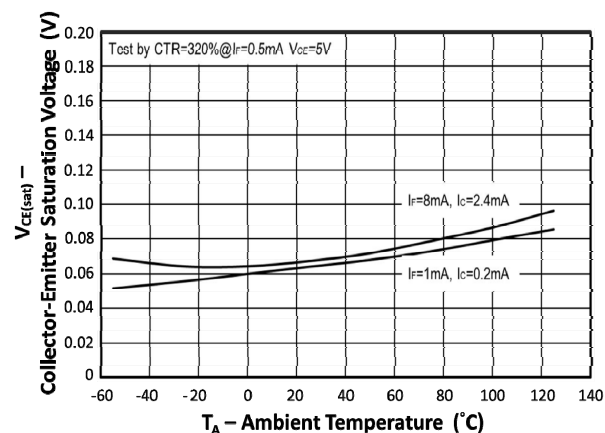


Fig 4 Collector-Emitter Saturation Voltage vs Ambient temperature

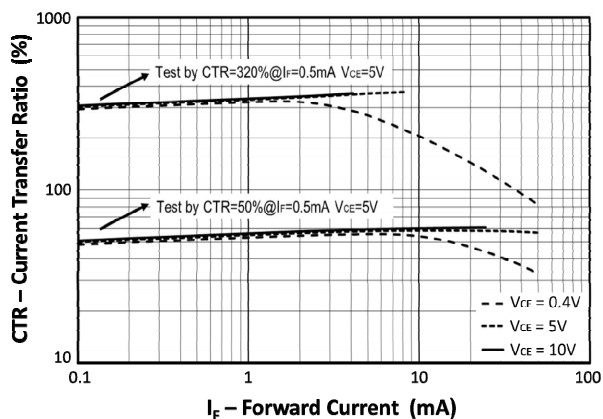


Fig 5 Current Transfer Ratio vs Forward Current

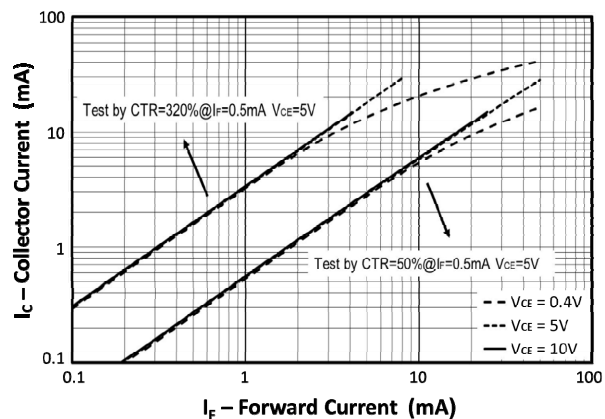


Fig 6 Collector Current vs Forward Current

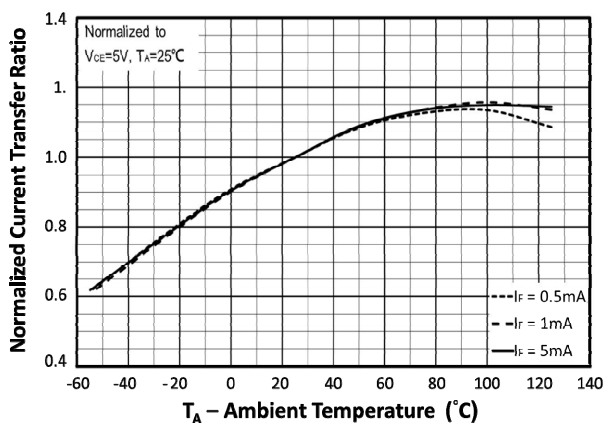


Fig 7 Normalized Current Transfer Ratio vs Ambient Temperature

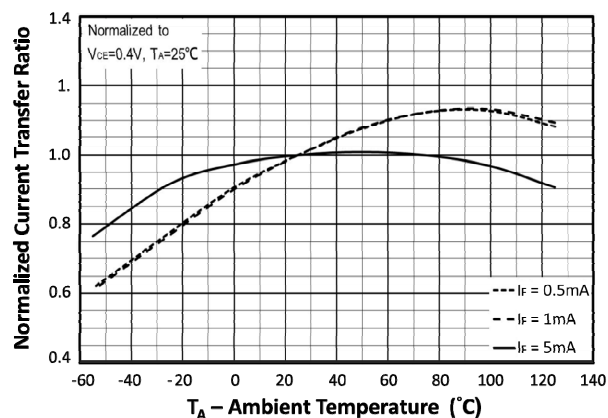


Fig 8 Normalized Saturated Current Transfer Ratio vs Ambient Temperature

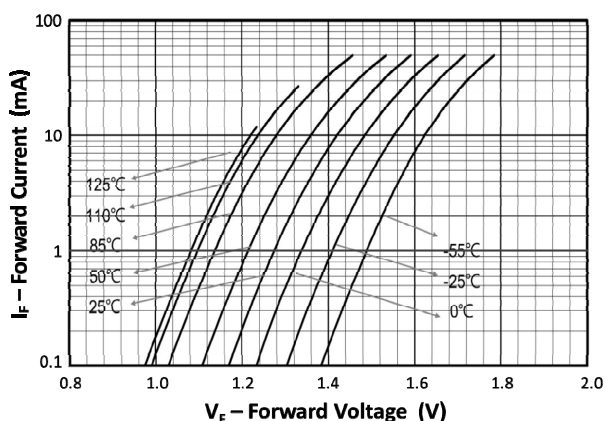


Fig 9 Forward Current vs Forward Voltage

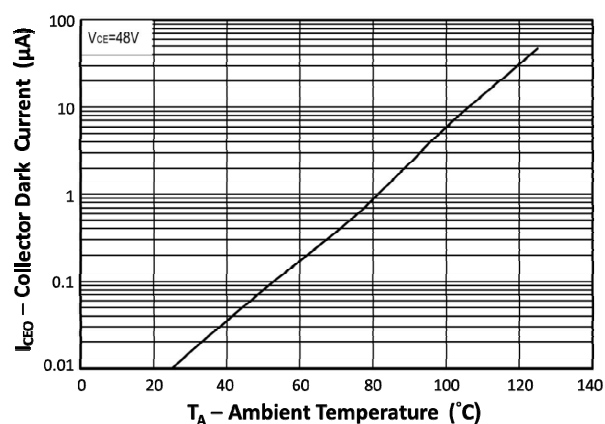


Fig 10 Collector Dark Current vs Ambient temperature

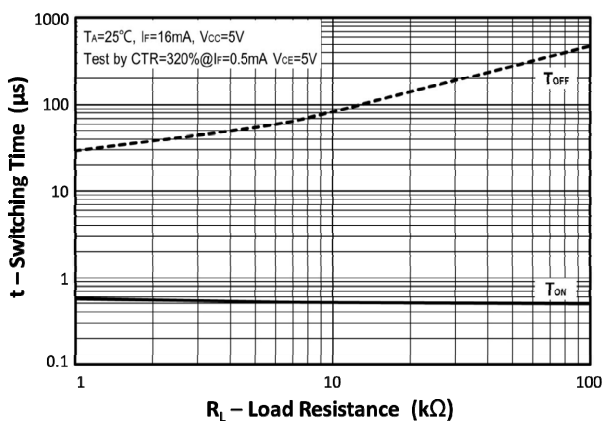


Fig 11 Response Time vs Load Resistance

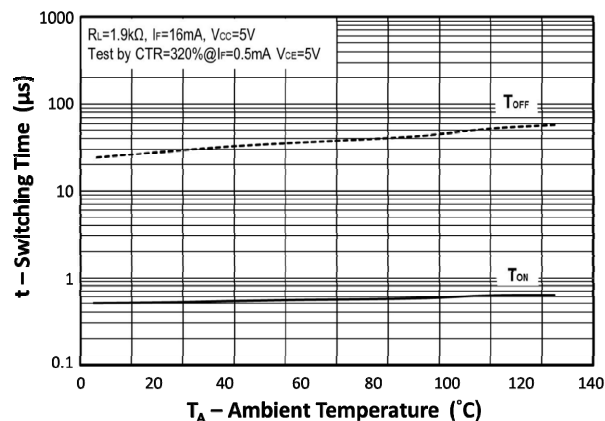
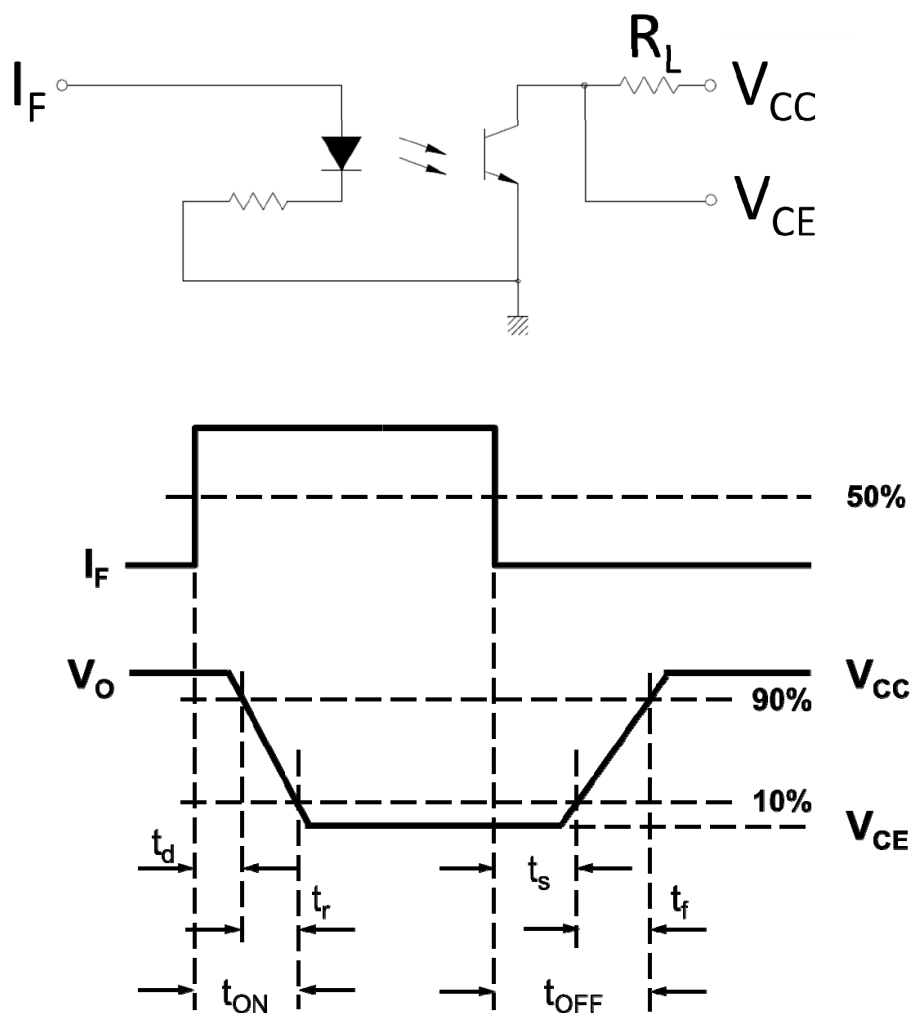


Fig 12 Response Time vs Ambient Temperature



Switching Time Test Circuit and Waveform



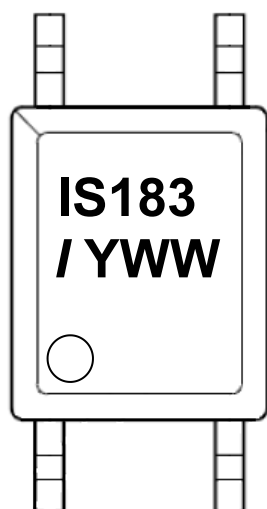
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ORDER INFORMATION

IS183			
After PN	PN	Description	Packing quantity
None	IS183	Surface Mount Tape and Reel	3000 pcs per reel

DEVICE MARKING

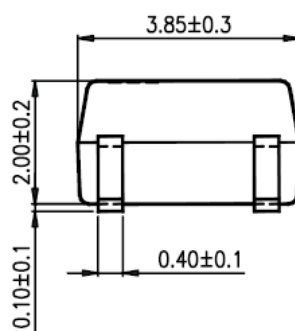
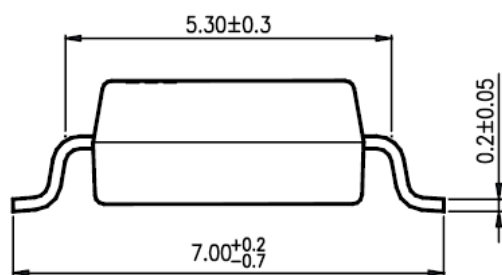
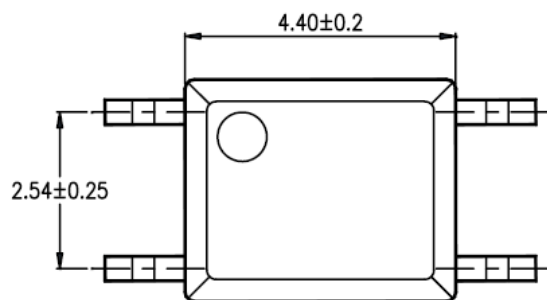


IS183 denotes Device Part Number
/ denotes Isocom
Y denotes 1 digit Year code (A = 2010, B = 2011, etc.)
WW denotes 2 digit Week code

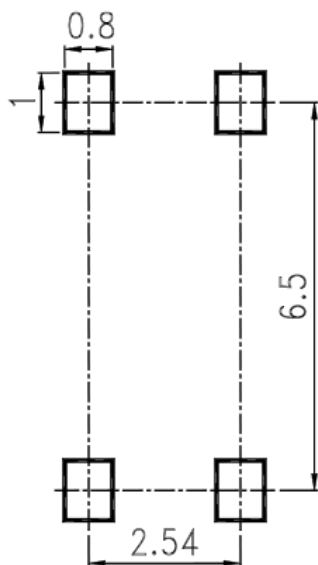


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PACKAGE DIMENSIONS in mm



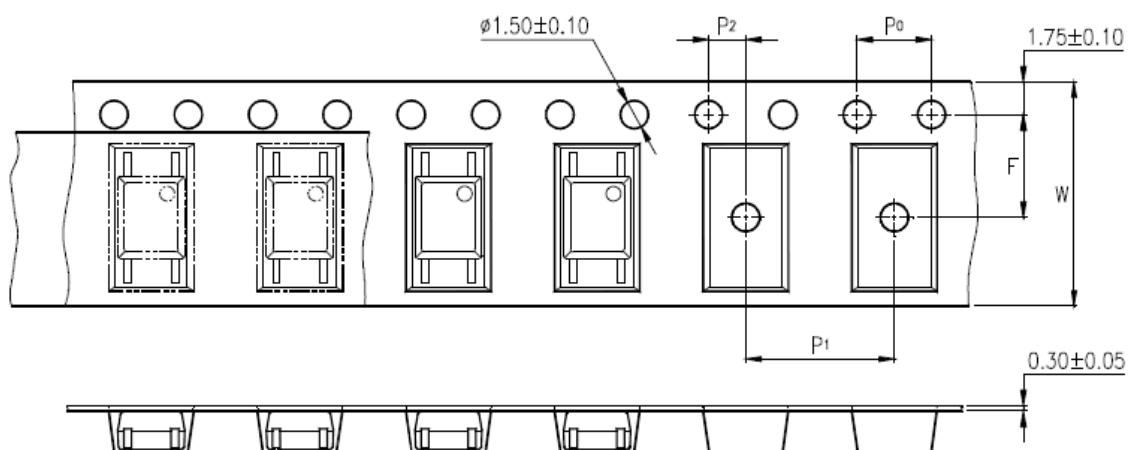
RECOMMENDED PAD LAYOUT FOR SMD (mm)





IS183

TAPE AND REEL PACKAGING



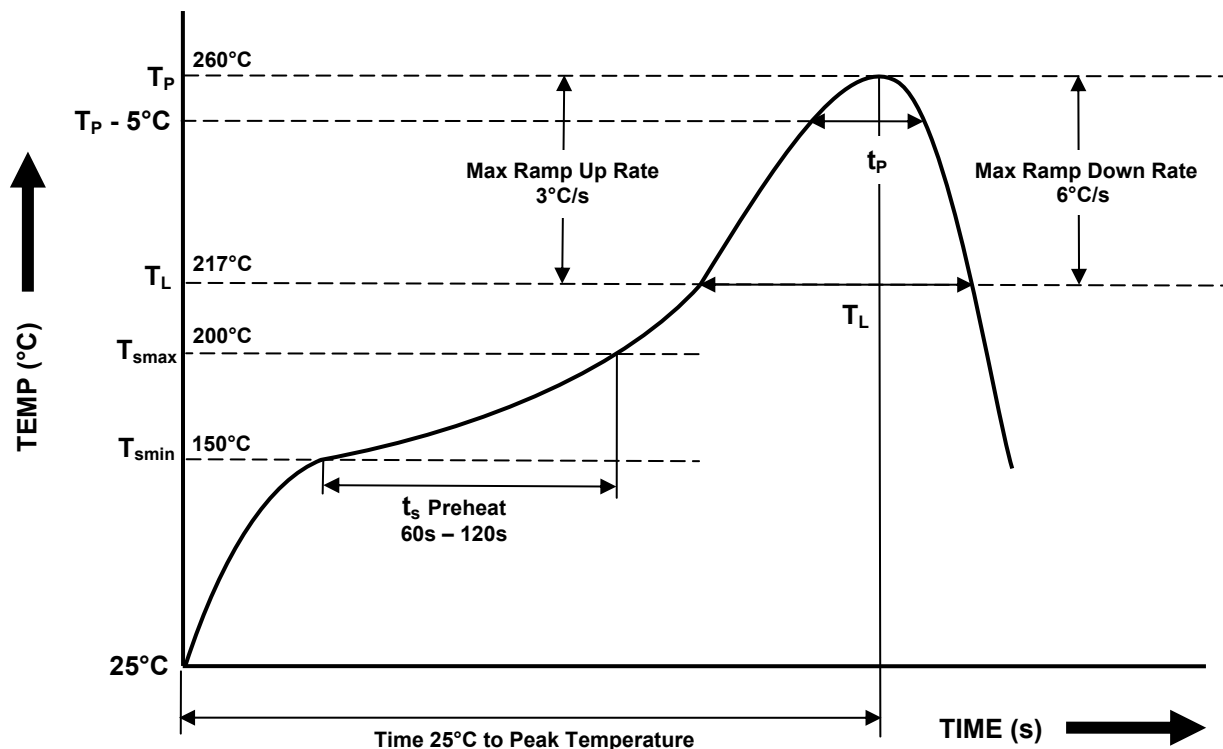
Description	Symbol	Dimension mm (inch)
Tape Width	W	12 ± 0.3 (0.47)
Pitch of Sprocket Holes	P_0	4 ± 0.1 (0.15)
Distance of Compartment to Sprocket Holes	F	5.5 ± 0.1 (0.217)
	P_2	2 ± 0.1 (0.079)
Distance of Compartment to Compartment	P_1	8 ± 0.1 (0.315)



IR REFLOW SOLDERING TEMPERATURE PROFILE

One Time Reflow Soldering is Recommended.

Do not immerse device body in solder paste.



Profile Details	Conditions
Preheat <ul style="list-style-type: none">- Min Temperature (T_{smin})- Max Temperature (T_{smax})- Time T_{smin} to T_{smax} (t_s)	150°C 200°C 60s - 120s
Soldering Zone <ul style="list-style-type: none">- Peak Temperature (T_P)- Time at Peak Temperature- Liquidous Temperature (T_L)- Time within 5°C of Actual Peak Temperature ($T_P - 5^\circ\text{C}$)- 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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