IS383

DESCRIPTION

The IS383 optocoupler consists of a GaAs infrared emitting diode optically coupled to an NPN silicon photo transistor.

This device belongs to isocom Long Creepage Range of Optocouplers.

FEATURES

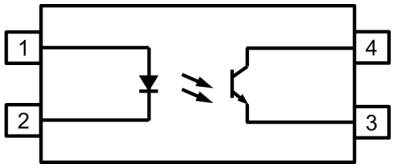
- Low Input Current
- Long Creepage >8mm
- CTR guaranteed min 50% at I_F 0.5mA, V_{CE} 5V
- Wide Operating Temperature Range
  - 55°C to +125°C
- High AC Isolation voltage 5000V_{RMS}
- Lead Free and RoHS Compliant
- UL File E91231

APPLICATIONS

- Computer Terminals
- Industrial System Controllers
- Measuring Instruments
- Signal Transmission between Systems of Differential Potentials and Impedances
- Hybrid substrates that require high density mounting.

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°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
Peak Forward Current Pulse 100us, Frequency 100Hz	1A
Reverse Voltage	6V
Junction Temperature	135 °C

Output

Collector to Emitter Voltage V_{CEO}	80V
Emitter to Collector Voltage V_{ECO}	7V
Collector Current	50mA
Power Dissipation	150mW
Junction Temperature	135 °C

Total Package

Isolation Voltage	5000V_{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°C, unless otherwise specified. Typical Values at T_A = 25°C)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	I_F = 10mA			1.6	V
Reverse Current	I_R	V_R = 5V			5	µA
Terminal Capacitance	C_t	V = 0V, f = 1MHz		50		pF

OUTPUT

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

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	I_F = 0.5mA, V_{CE} = 5V	100		600	%
		I_F = 5mA, V_{CE} = 5V				
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = 8mA, I_C = 2.4mA			0.3	V
Floating Capacitance	C_f	V = 0V, f = 1MHz		0.3		pF
Rise Time	t_r	V_{CC} = 10V, I_C = 2mA R_L = 100Ω, f = 100Hz		2		µs
Fall Time	t_f			3		
Turn On Time	t_{ON}			3		
Turn Off Time	t_{OFF}			3		

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Isolation Voltage	V_{ISO}	R.H. = 40% to 60 %, t = 1 min	5000			V_{RMS}
Isolation Resistance	R_{ISO}	V_{I-O} = 500VDC, R.H. = 40% to 60 %,	1×10^{12}			Ω

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

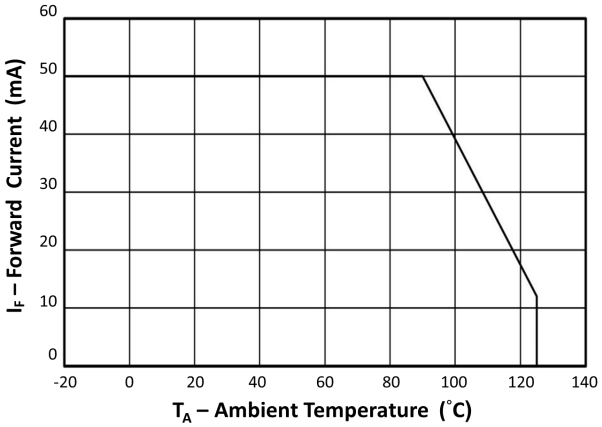


Fig 1 Forward Current vs Ambient Temperature

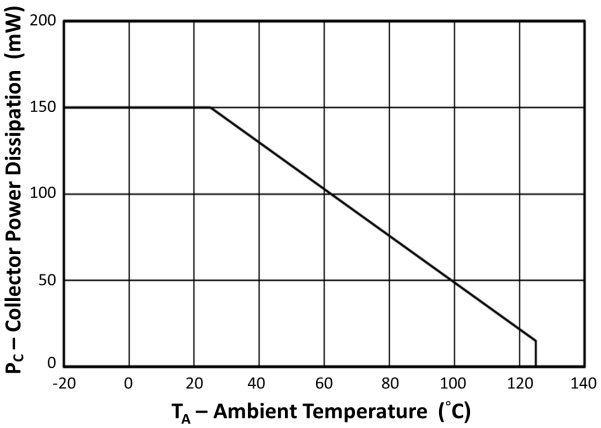


Fig 2 Collector Power vs Ambient Temperature

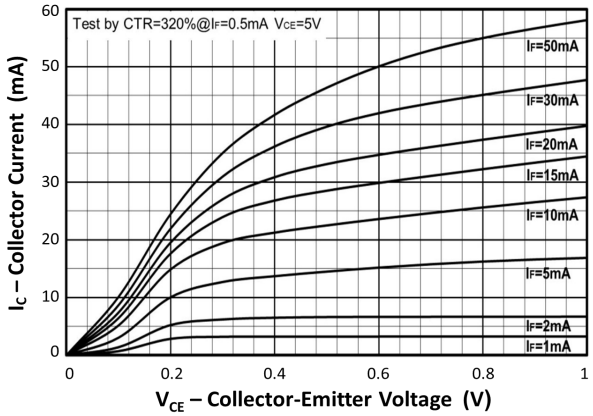


Fig 3 Collector Current vs Collector-Emitter Voltage

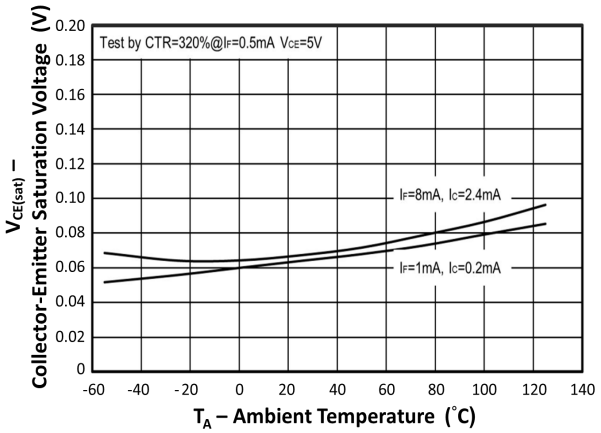


Fig 4 Collector-Emitter Saturation Voltage vs Ambient temperature

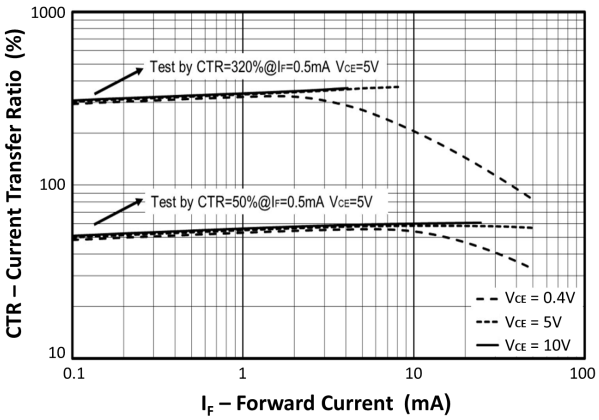


Fig 5 Current Transfer Ratio vs Forward Current

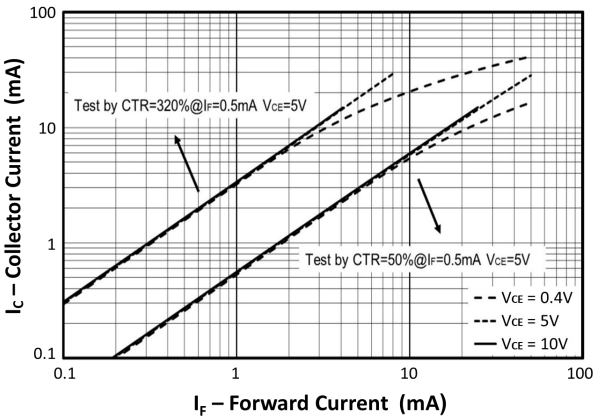


Fig 6 Collector Current vs Forward Current

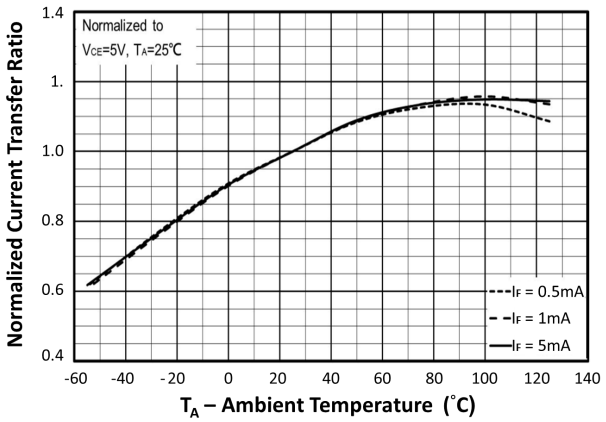


Fig 7 Normalized Non-Saturated Current Transfer Ratio vs Ambient Temperature

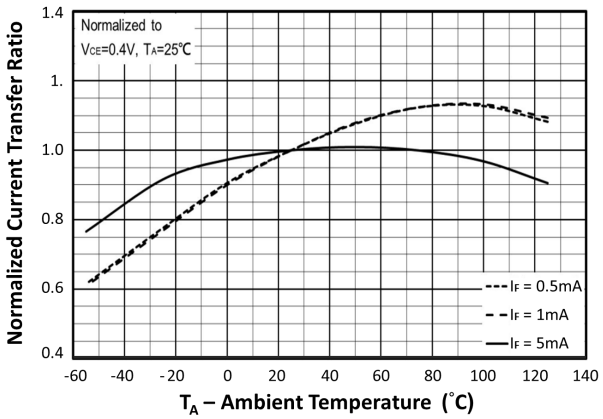


Fig 8 Normalized Saturated Current Transfer Ratio vs Ambient Temperature

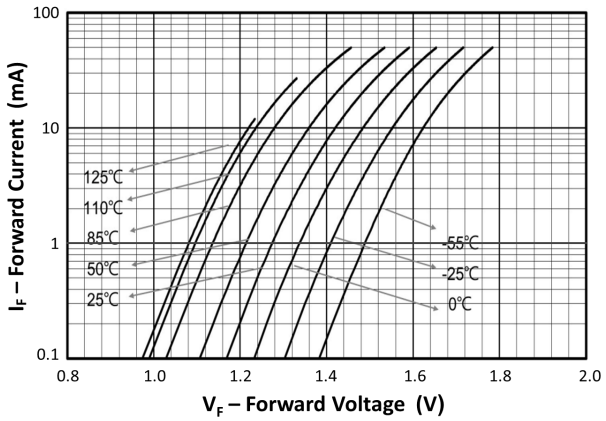


Fig 9 Forward Current vs Forward Voltage

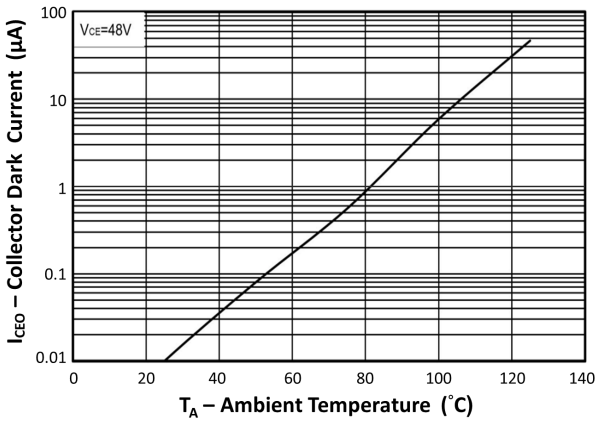


Fig 10 Collector Dark Current vs Ambient temperature

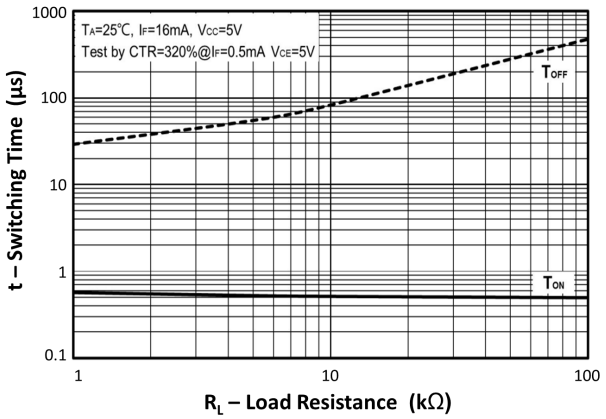


Fig 11 Response Time vs Load Resistance

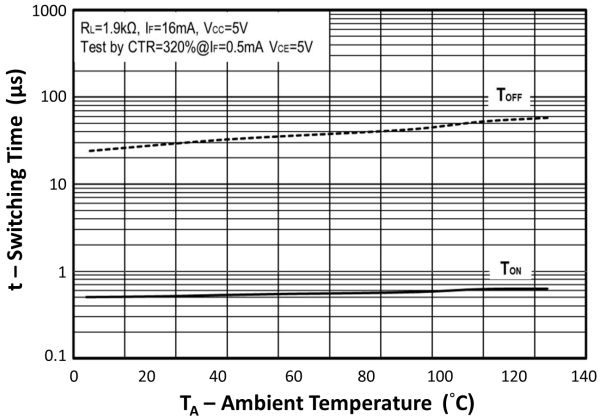
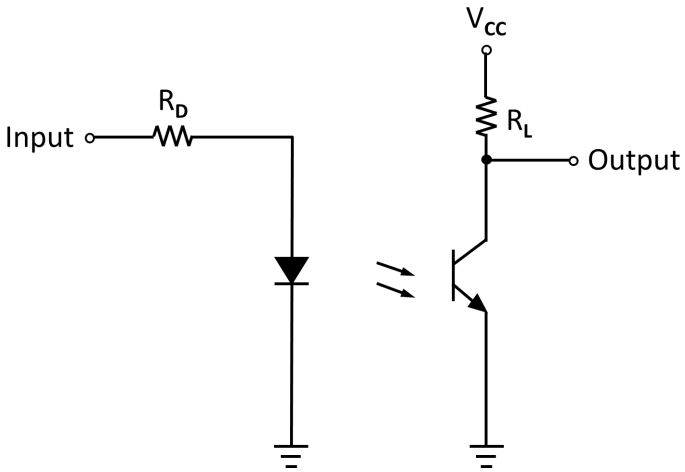
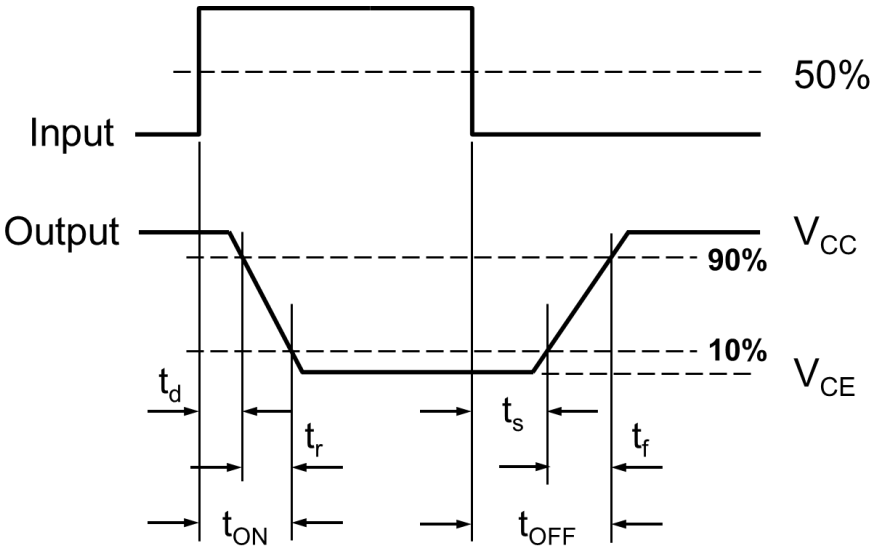


Fig 12 Response Time vs Ambient Temperature



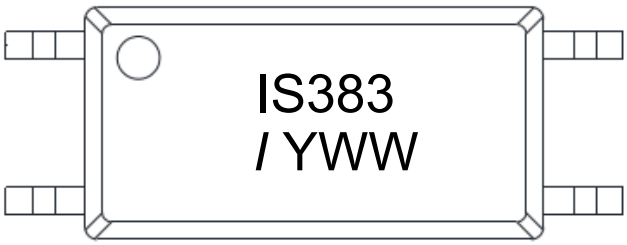


Switching Time Test Circuit and Waveform

ORDER INFORMATION

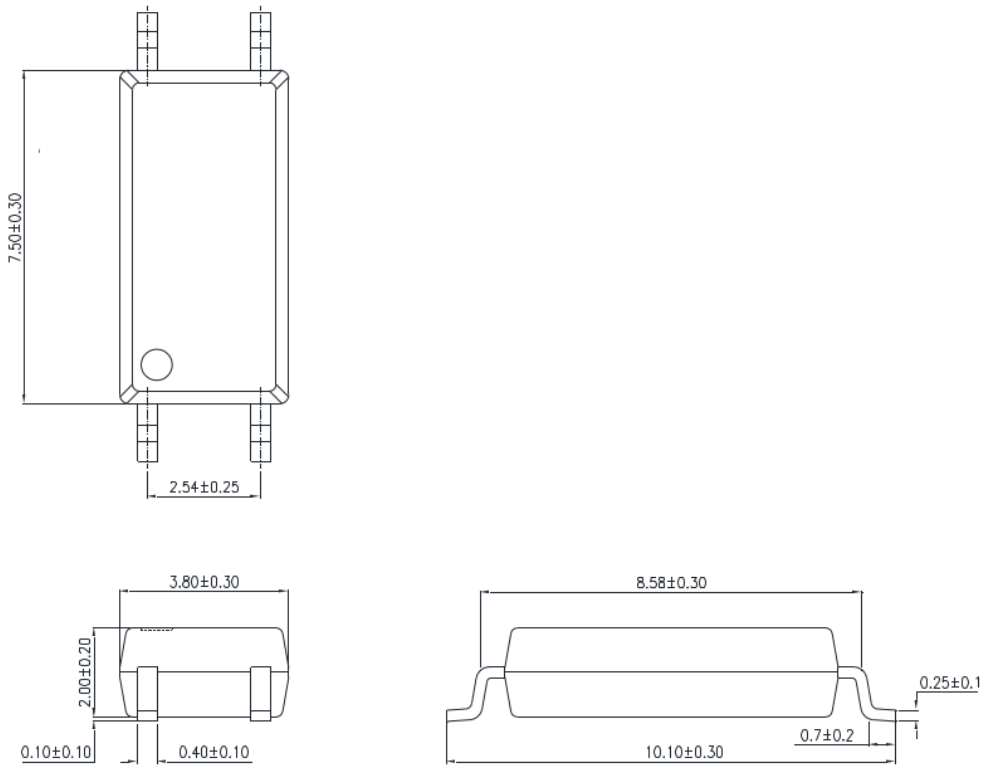
IS383			
After PN	**PN**	**Description**	**Packing quantity**
None	IS383	Surface Mount Tape and Reel	3000 pcs per reel

DEVICE MARKING

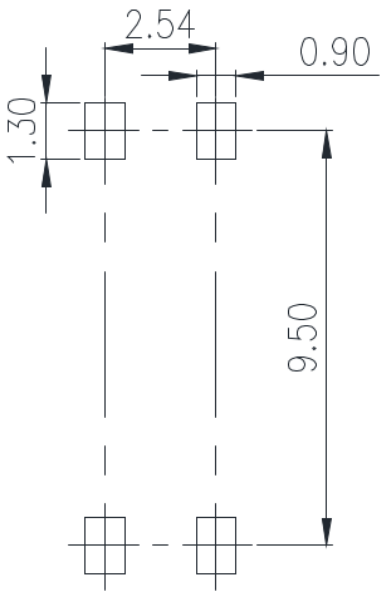


IS383	Device Part Number
/	Isocom
Y	1 digit Year code (A = 2010, B = 2011, etc.)
WW	2 digit Week code

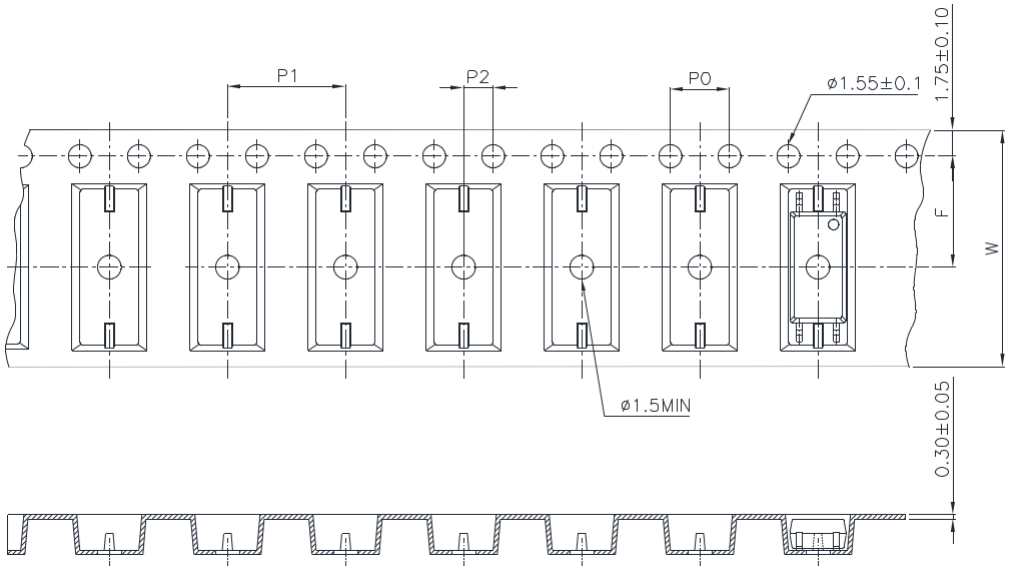
PACKAGE DIMENSIONS in mm



RECOMMENDED PAD LAYPUT FOR SMD (mm)



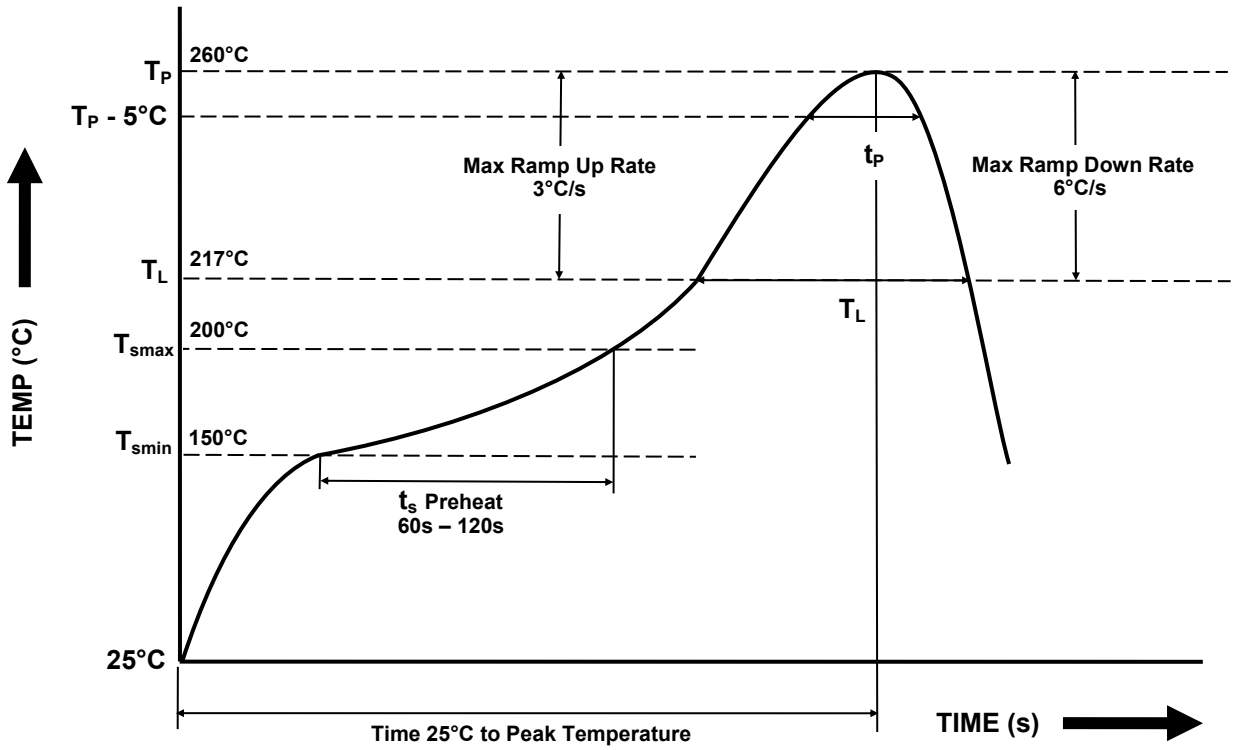
TAPE AND REEL PACKAGING



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	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 - 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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