IS4600

DESCRIPTION

The IS4600 quad channel optocoupler each channel consists of two infrared emitting diodes in reverse parallel connection 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 3750V_{RMS}
- Wide Operating Temperature Range -55°C to 110°C
- Pb Free and RoHS Compliant
- UL Approval E91231 Model “AHP4”

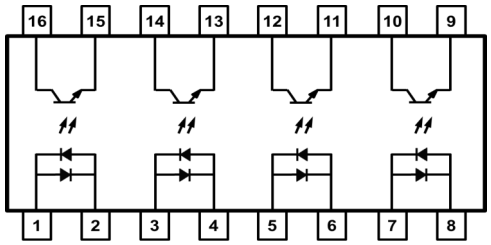
APPLICATIONS

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

ORDER INFORMATION

- Available in Tape and Reel

  IS4600 : 2000pcs per reel



1, 3, 5, 7	Anode / Cathode	9, 11, 13, 15	Emitter
2, 4, 6, 8	Cathode / Anode	10, 12, 14, 16	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
Power dissipation	65mW

Output

Collector to Emitter Voltage BV_{CEO}	80V
Emitter to Collector Voltage BV_{ECO}	7V
Collector Current	50mA
Junction Temperature	125°C
Power Dissipation	100mW

Total Package

Isolation Voltage	3750V_{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
Terminal Capacitance	C_{IN}	V = 0V, f = 1KHz		60		pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C = 0.1mA, I_F =0 mA	80			V
Emitter-Collector Breakdown Voltage	BV_{ECO}	I_E = 10µA, I_F = 0mA	7			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 = ±1mA, V_{CE} = 5V	20		400	%
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = ±8mA, I_C = 2.4mA			0.4	V
Floating Capacitance	C_f	V_F = 0V, f = 1MHz		0.8	1	pF
Output Rise Time	t_r	V_{CE} = 2V Ic = ±2mA R_L = 100Ω		3	18	µs
Output Fall Time	t_f			4	18	

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Isolation Voltage	V_{ISO}	R.H. = 40% to 60%, t = 1 min Note 1	3750			V_{RMS}
Input - Output Resistance	R_{I-O}	V_{I-O} = 500VDC R.H. = 40% to 60% Note 1	$5x10^{10}$	$1x10^{11}$		Ω

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

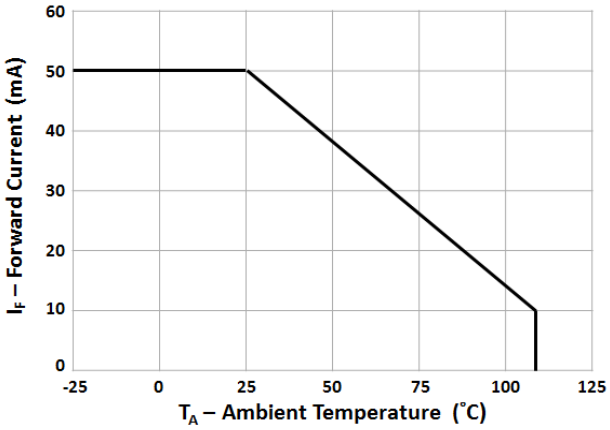


Fig 1 Forward Current vs Ambient Temperature

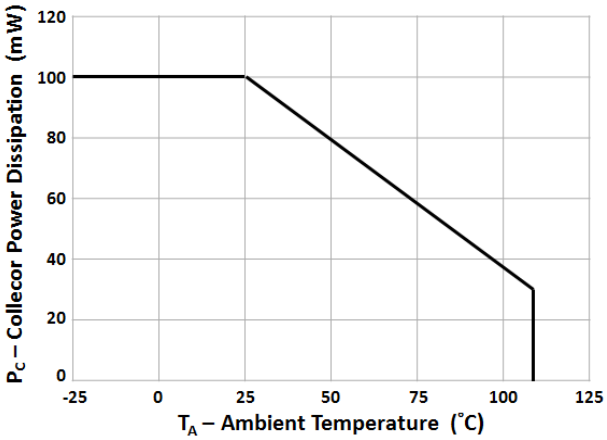


Fig 2 Output Power Dissipation vs Ambient Temperature

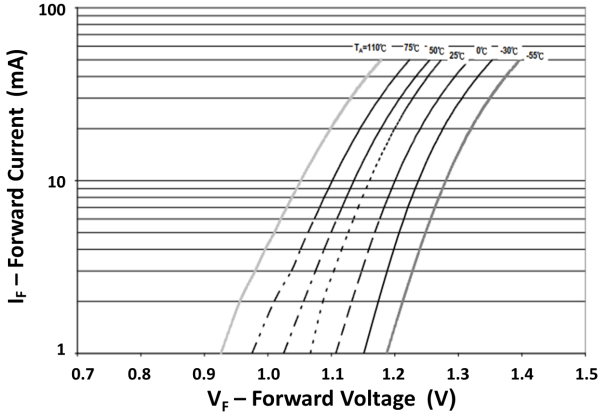


Fig 3 Forward Current vs Forward Voltage

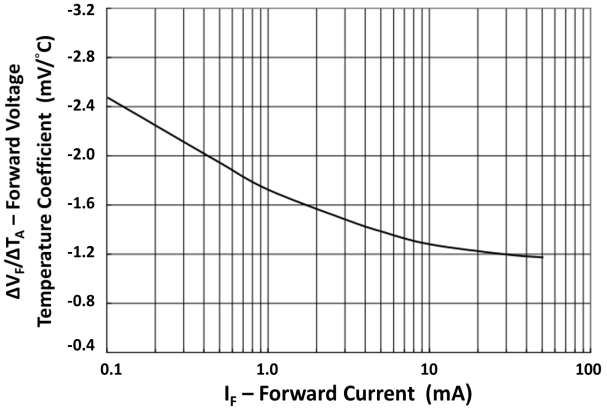


Fig 4 Forward Voltage Temperature Coefficient vs Forward Current

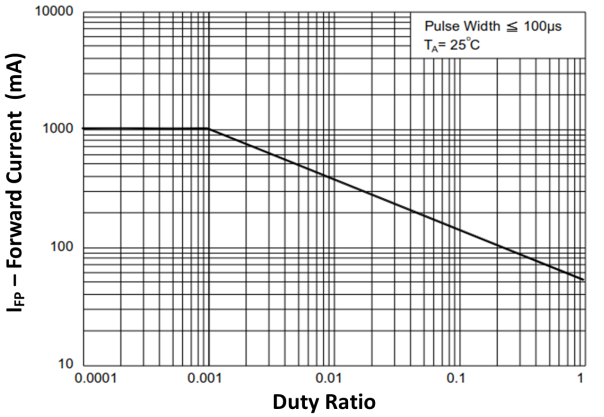


Fig 5 Pulsed Forward Current vs Duty Ratio

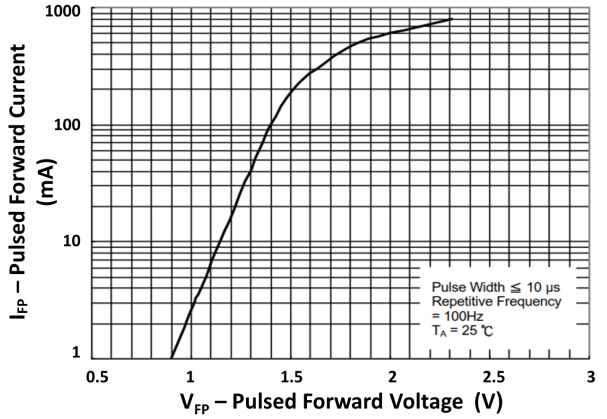


Fig 6 Pulsed Forward Current vs Pulsed Forward Voltage

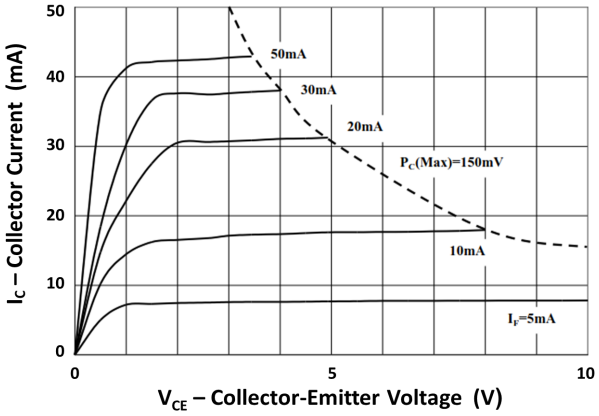


Fig 7 Collector Current vs Collector-Emitter Voltage (1)

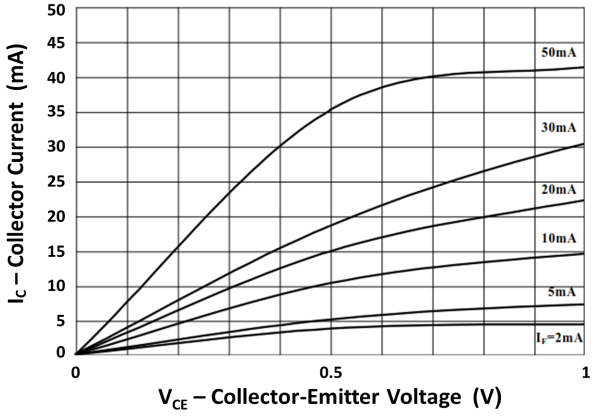


Fig 8 Collector Current vs Collector-Emitter Voltage (2)

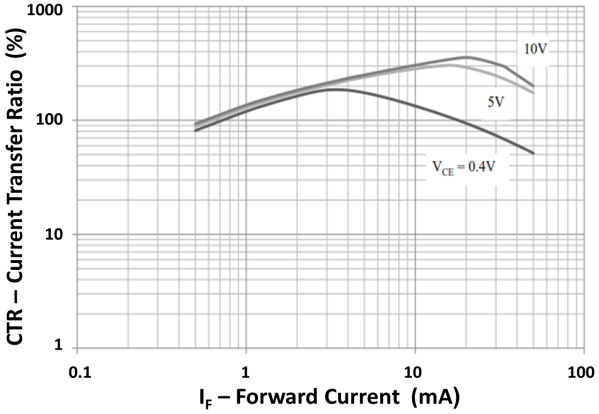


Fig 9 Current Transfer Ratio vs Forward Current

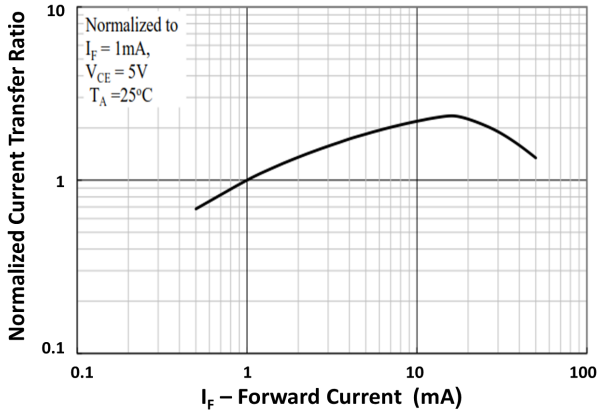


Fig 10 Normalized Current Transfer Ratio vs Forward Current

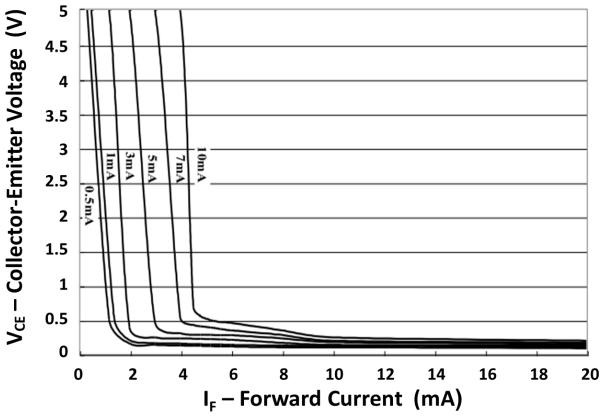


Fig 11 Collector-Emitter Voltage vs Forward Current

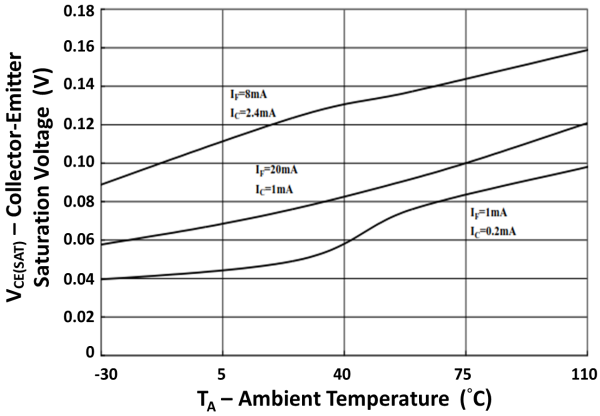


Fig 12 Collector-Emitter Saturation Voltage vs Ambient Temperature

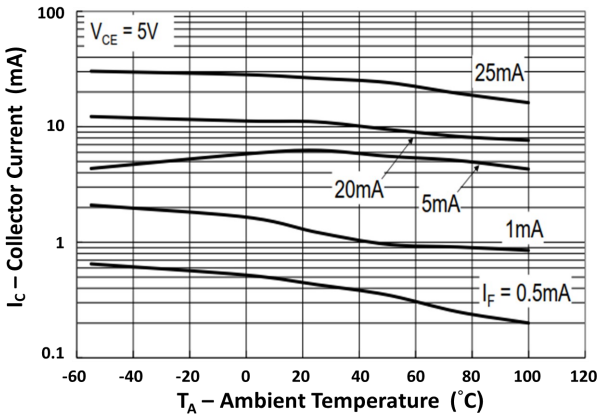


Fig 13 Collector Current vs Ambient Temperature

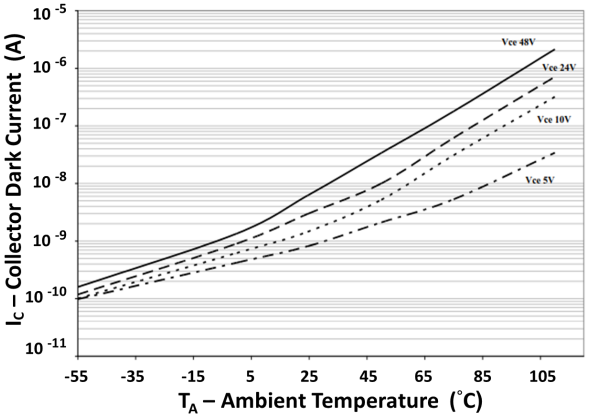


Fig 14 Collector Dark Current vs Ambient Temperature

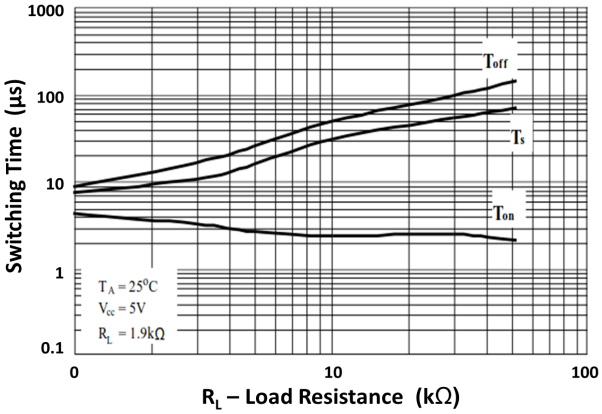


Fig 15 Switching Time vs Load Resistance

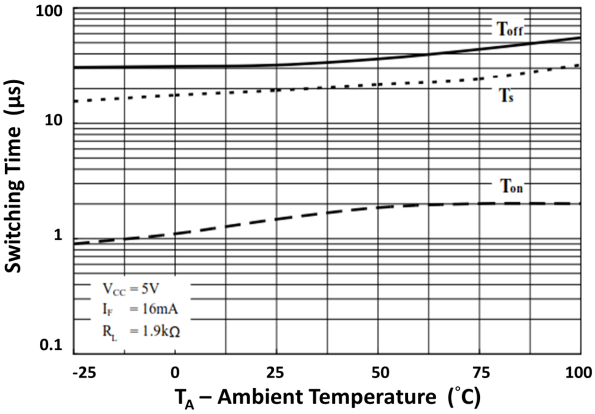


Fig 16 Switching Time vs Ambient Temperature

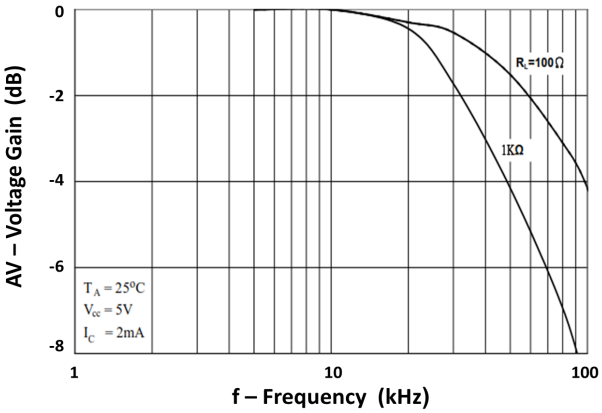
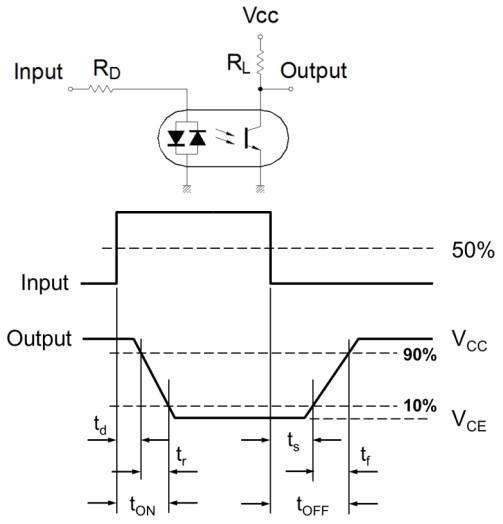


Fig 17 Frequency Response

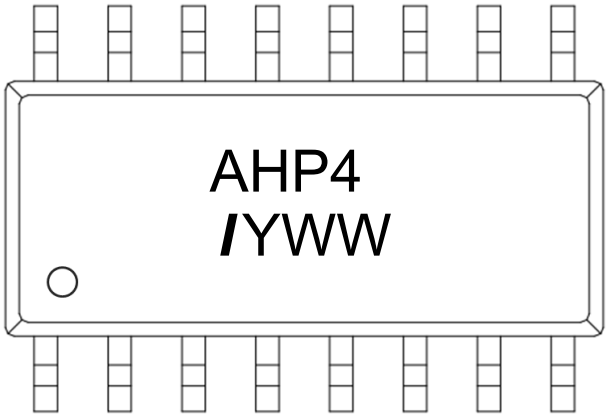


Switching Time Test Circuit

ORDER INFORMATION

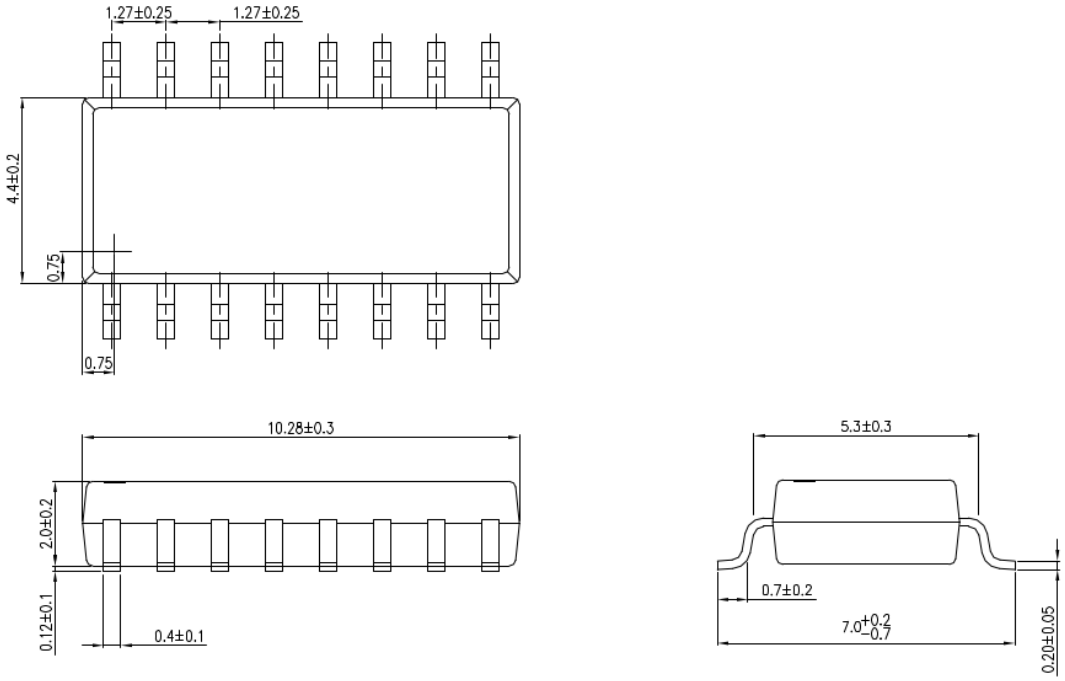
IS4600			
After PN	**PN**	**Description**	**Packing quantity**
None	IS4600	Surface Mount Tape & Reel	2000 pcs per reel

DEVICE MARKING

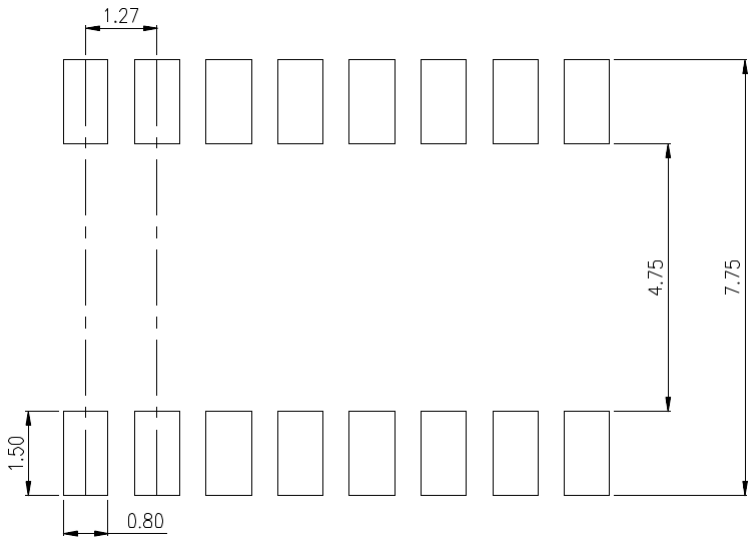


AHP4	IS4600
I	Isocom
Y	Year Code (A = 2010, B = 2011, etc.)
WW	2 digit Week Code

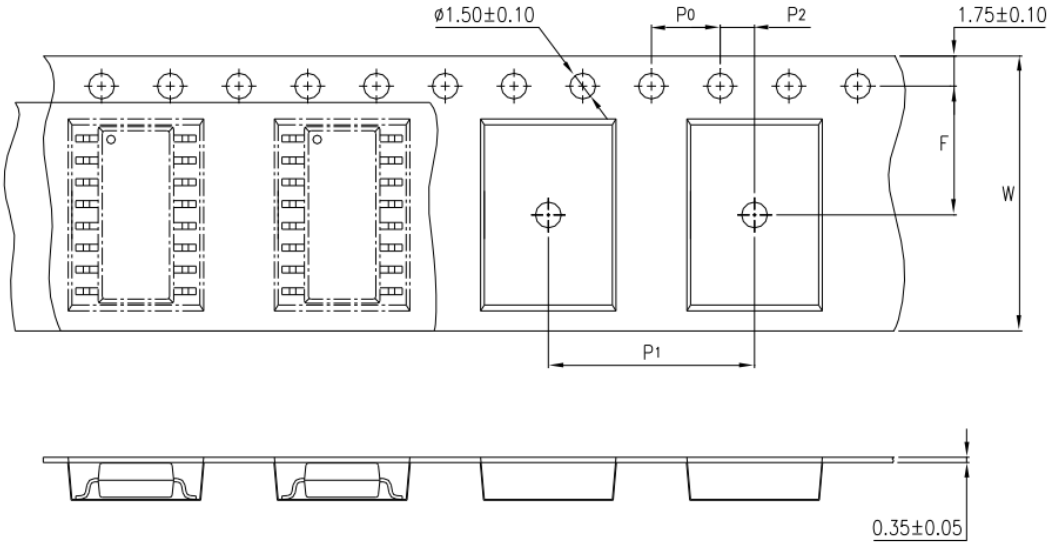
PACKAGE DIMENSIONS (mm)



RECOMMENDED SOLDER PAD LAYOUT (mm)



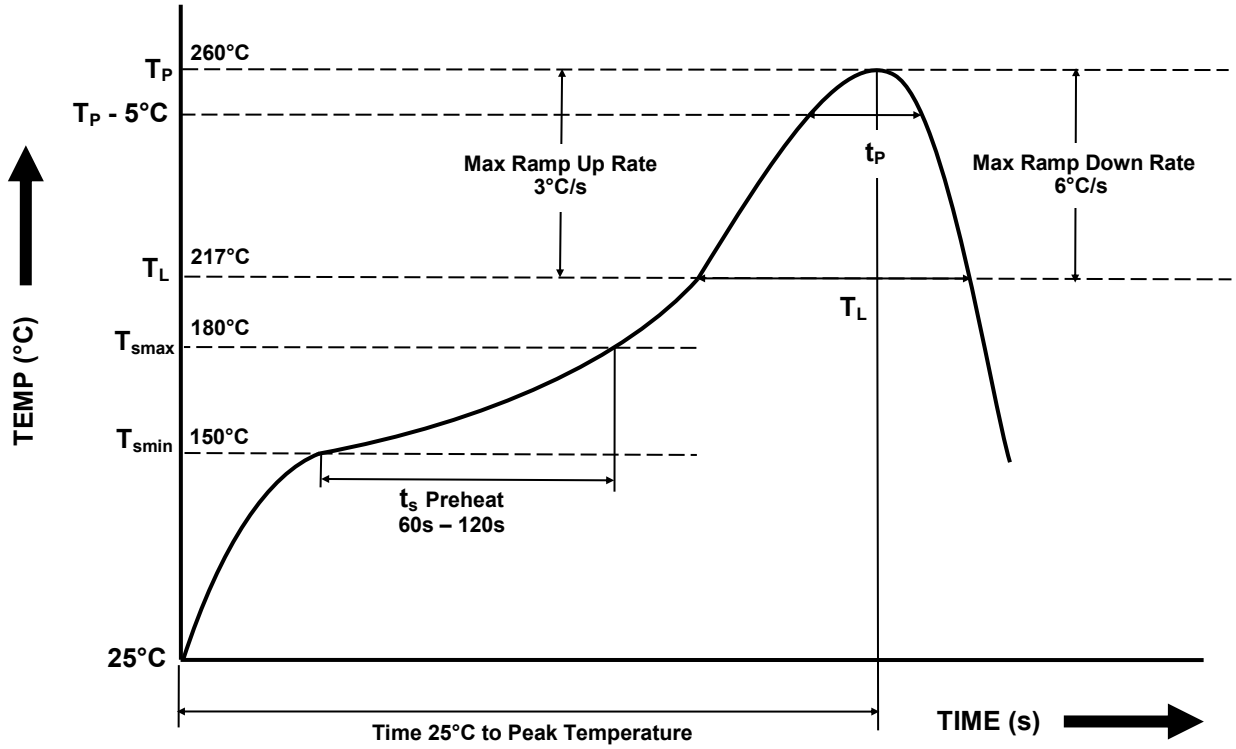
TAPE AND REEL PACKAGING



Description	Dimension	mm (inch)
Tape Width	W	16 ± 0.3 (0.63)
Pitch of Sprocket Holes	P0	4 ± 0.1 (0.15)
Distance of Compartment	F	7.5 ± 0.1 (0.295)
	P2	2 ± 0.1 (0.079)
Distance of Compartment to Compartment	P1	12 ± 0.1 (0.472)

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 180°C 60s - 120s
Soldering Zone - Peak Temperature (T_P) - 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 217°C 20s 60s 3°C/s max 3 - 6°C/s
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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