

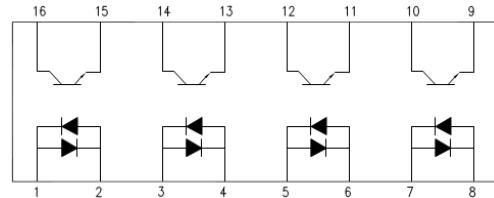


IS280-4

DESCRIPTION

The IS280-4 is a four channel optically coupled isolator. Each channel consists of 2 infrared emitting diodes connected in reverse parallel 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 3750V_{RMS}
- Wide Operating Temperature Range -55°C to 110°C
- Pb Free and RoHS Compliant
- UL Approval Pending

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)

Input Diode

Forward Current	±50mA
Power dissipation	65mW

Output Transistor

Collector to Emitter Voltage BV _{CEO}	80V
Emitter to Collector Voltage BV _{ECO}	7V
Collector Current	50mA
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 ($T_A = 25^\circ\text{C}$ unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	$I_F = \pm 20\text{mA}$		1.2	1.4	V
Input Capacitance	C_{IN}	$V_F = 0\text{V}$, $f = 1\text{MHz}$		60		pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector—Emitter breakdown Voltage	BV_{CEO}	$I_C = 0.1\text{mA}$, $I_F = 0\text{mA}$	80			V
Emitter—Collector breakdown Voltage	BV_{ECO}	$I_E = 10\mu\text{A}$, $I_F = 0\text{mA}$	7			V
Collector-Emitter Dark Current	I_{CEO}	$V_{CE} = 50\text{V}$, $I_F = 0\text{mA}$			100	nA

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current transfer ratio	CTR	$I_F = \pm 1\text{mA}$, $V_{CE} = 5\text{V}$	20		400	%
Collector—Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = \pm 8\text{mA}$, $I_C = 2.4\text{mA}$			0.4	V
Input to Output Isolation Voltage	V_{ISO}	See note 1	3750			V_{RMS}
Input to Output Isolation Resistance	R_{ISO}	$V_{IO} = 500\text{V}$ See note 1	5×10^{10}	1×10^{11}		Ω
Floating Capacitance	C_f	$V = 0\text{V}$, $f = 1\text{MHz}$		0.8	1	pF
Output Rise Time	t_r	$V_{CE} = 2\text{V}$, $I_C = \pm 2\text{mA}$, $R_L = 100\Omega$		3	18	μs
Output Fall Time	t_f	$V_{CE} = 2\text{V}$, $I_C = \pm 2\text{mA}$, $R_L = 100\Omega$		4	18	μs

Note 1 : Measured with input leads shorted together and output leads shorted together, R.H 40% to 60%

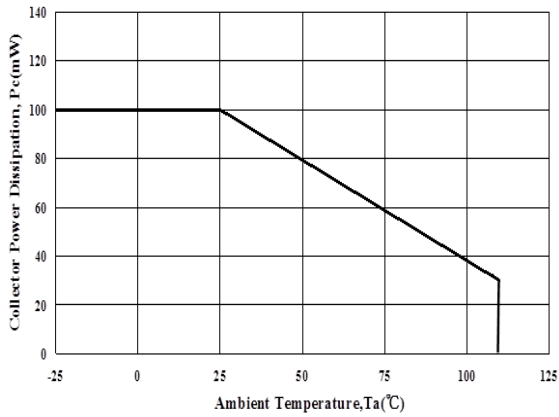


Fig 1 Collector Power Dissipation vs T_A

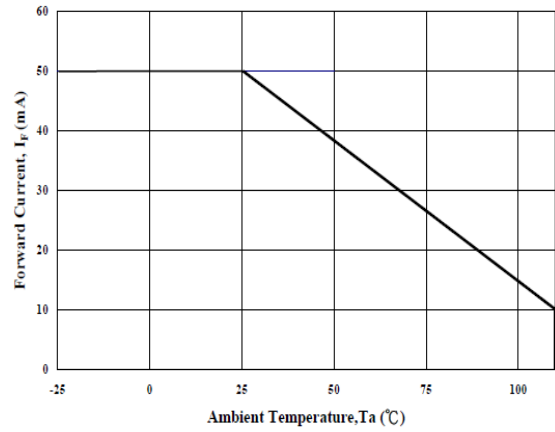


Fig 2 Forward Current vs T_A

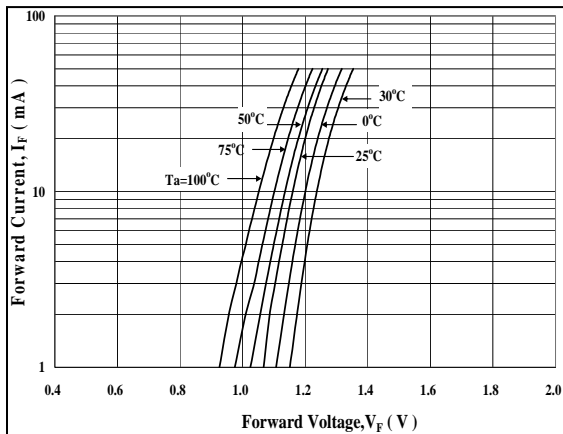


Fig 3 Forward Current vs Forward Voltage

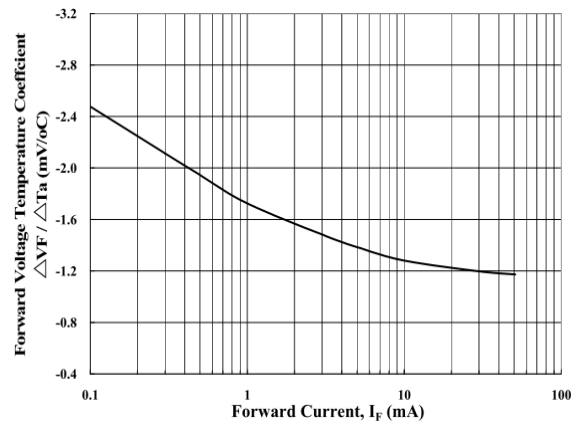


Fig 4 Forward Current Temperature Coefficient vs Forward Current

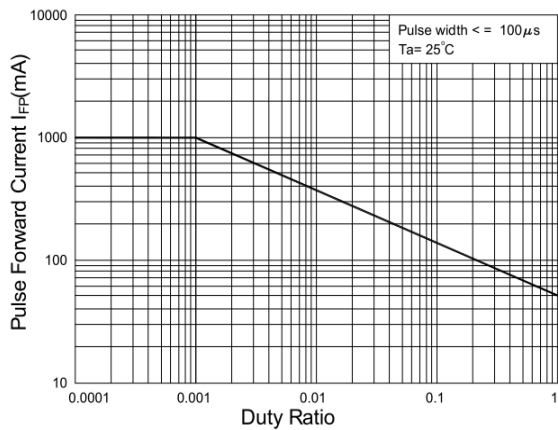


Fig 5 Pulse Forward Current vs Duty Cycle

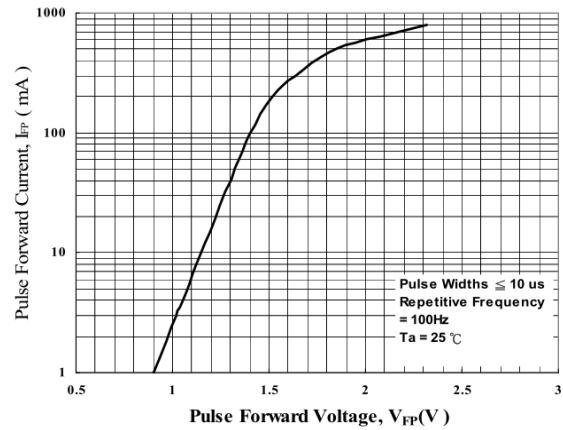


Fig 6 Pulse Forward Current vs Pulse Forward Voltage

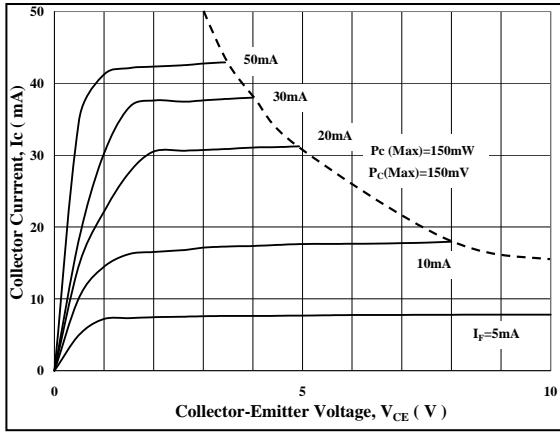


Fig 7 Collector Current vs Collector-Emitter Voltage

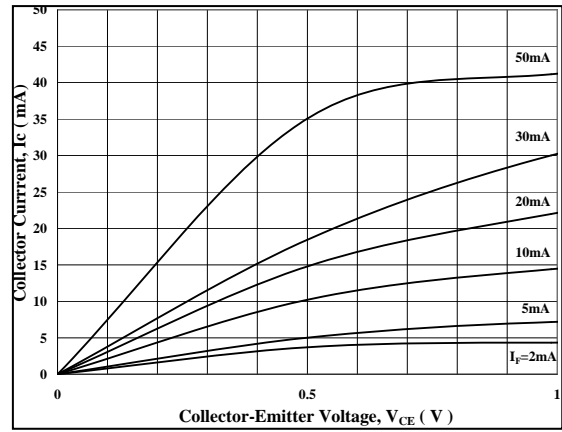


Fig 8 Collector Current vs Low Collector-Emitter Voltage

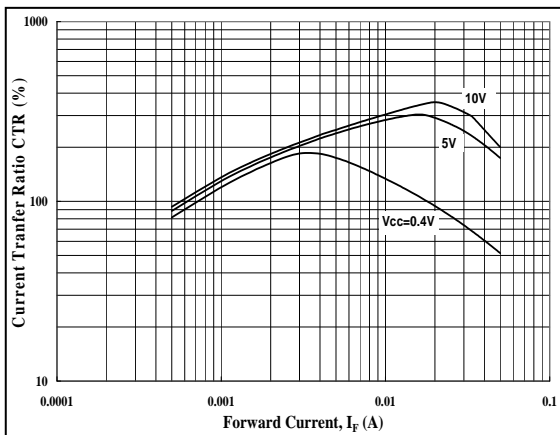


Fig 9 CTR vs Forward Current

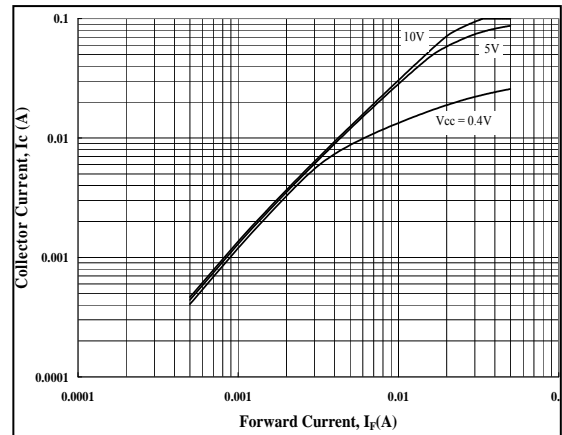


Fig 10 Collector Current vs Forward Current

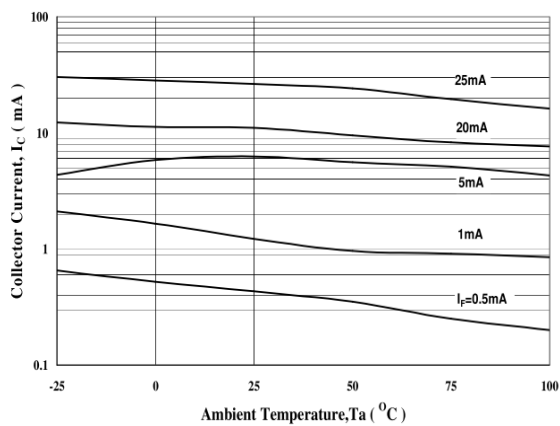


Fig 11 Collector Current vs T_A

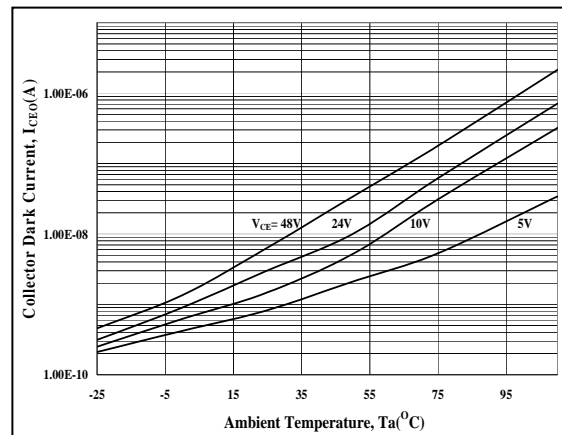


Fig 12 Collector Dark Current vs T_A



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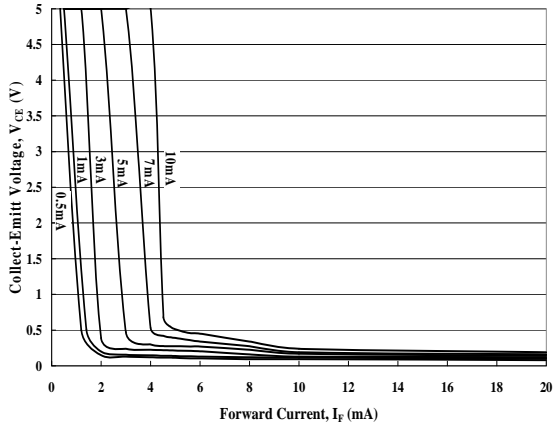


Fig 13 Collector-Emitter Saturation Voltage vs Forward Current

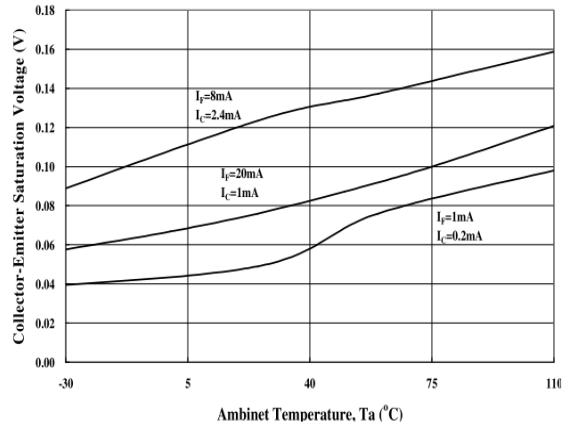


Fig 14 Collector-Emitter Saturation Voltage vs T_A

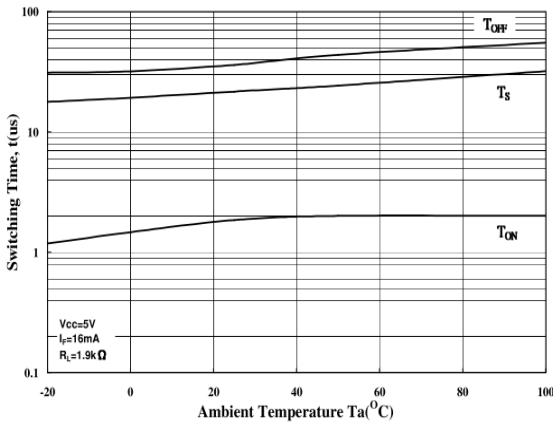


Fig 15 Switching Time vs T_A

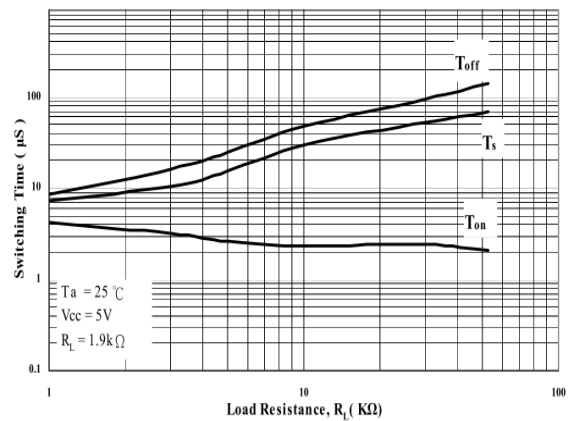


Fig 16 Switching Time vs Load Resistance

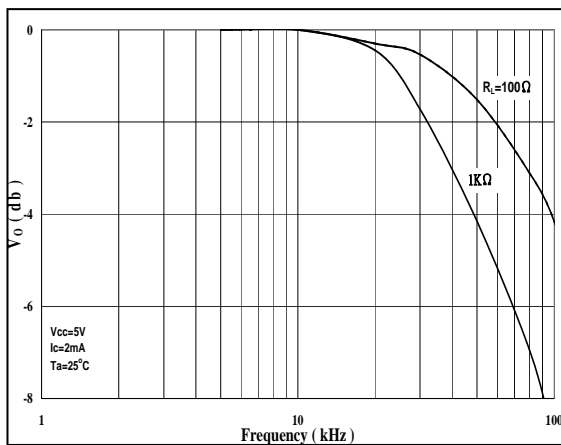
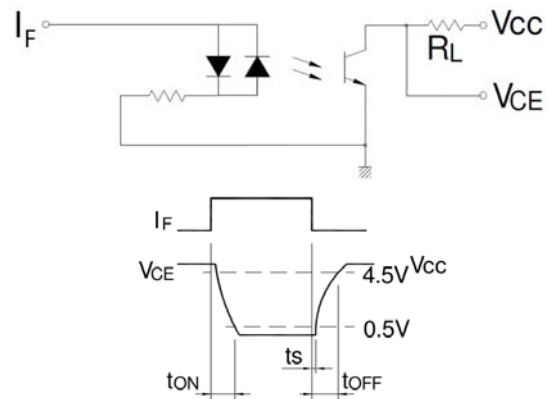


Fig 11 Frequency Response



Switching Time Test Circuit

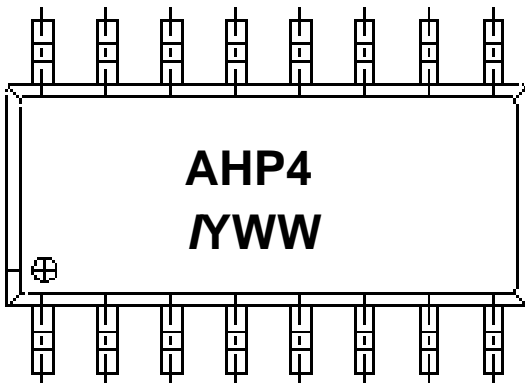


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ORDER INFORMATION

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

Device Marking

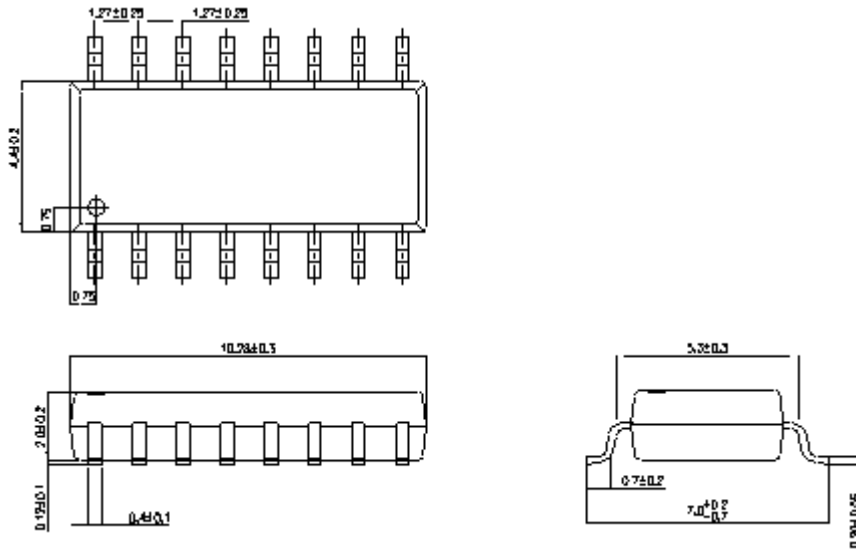


AHP4 denotes Product Identification
Y denotes 1 digit Year code
WW denotes 2 digit Week code
/ denotes Isocom

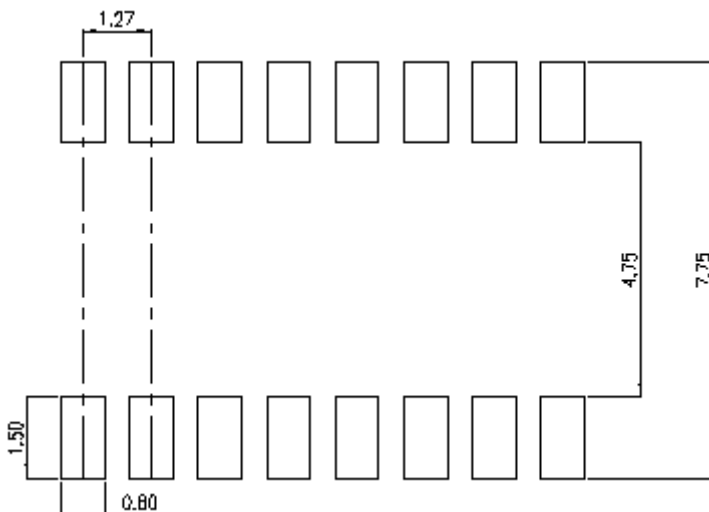


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PACKAGE DIMENSIONS (mm)



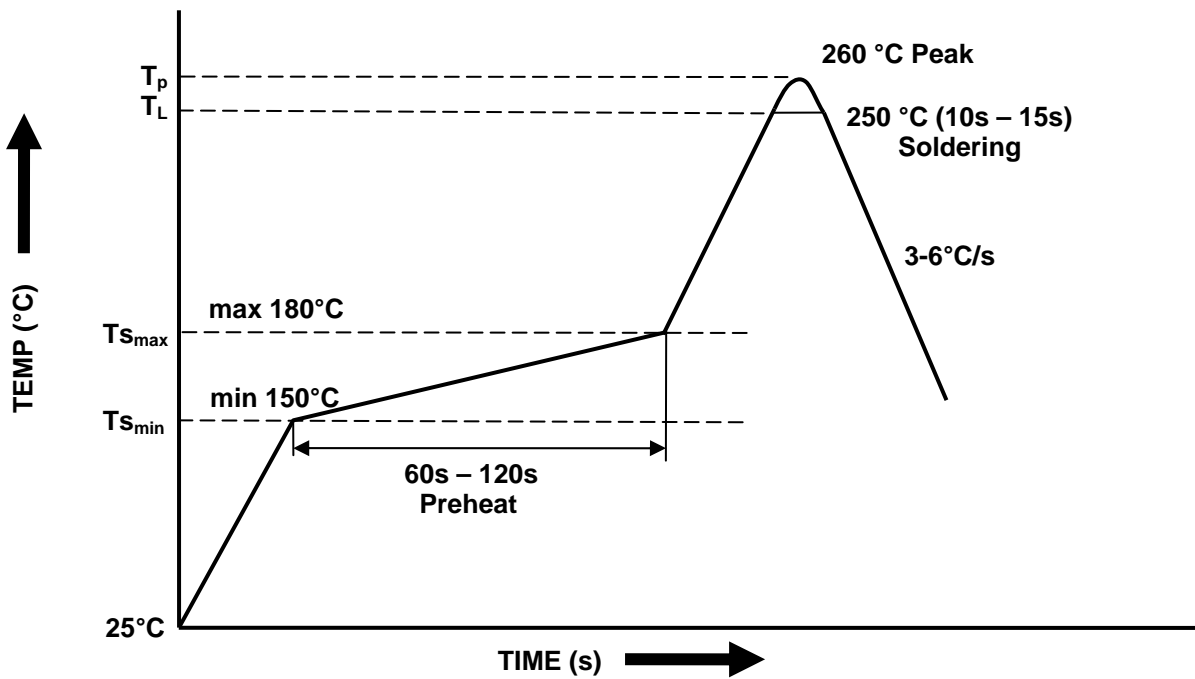
Recommended Solder Pad Layout (mm)





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

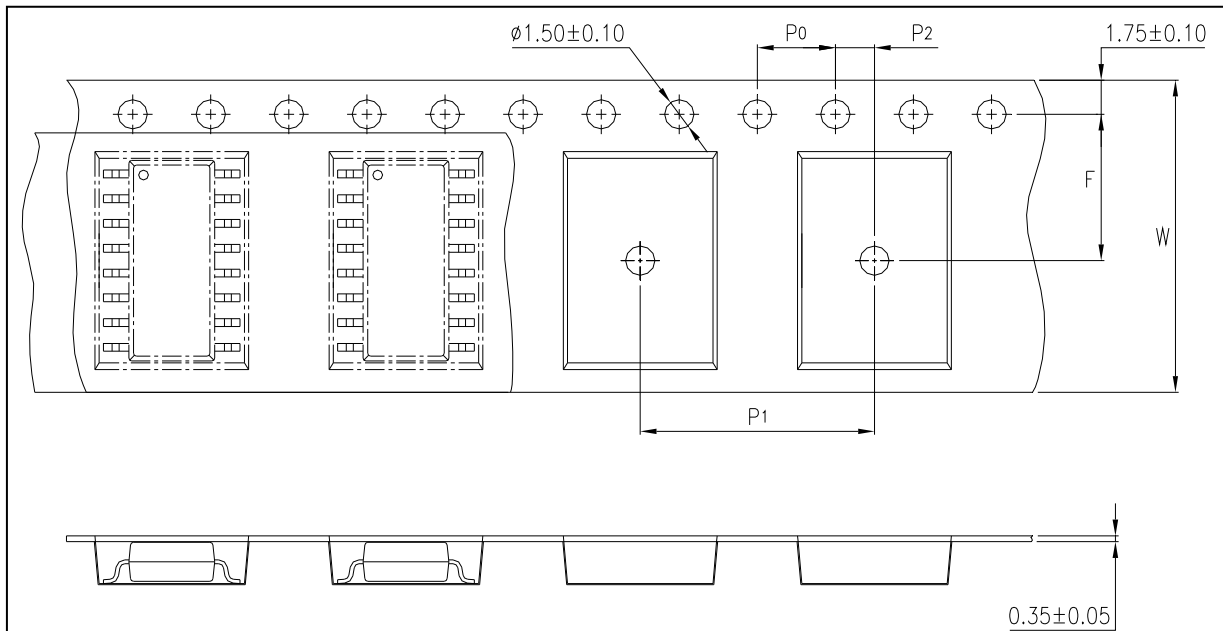


Profile item	Conditions
Preheat	
- Temperature Min (T _{Smin})	150°C
- Temperature Max (T _{Smax})	180°C
- Time (min to max) (ts)	90±30°C
Soldering zone	
- Temperature (T _L)	250°C
- Time (t _L)	10~15 sec
Peak Temperature (T _P)	260°C
Ramp-down rate	3~6°C / sec



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Tape and Reel Packaging



Description	Symbol	Dimension in mm (inches)
Tape wide	W	16 ± 0.3 (.47)
Pitch of sprocket holes	P₀	4 ± 0.1 (.15)
Distance of compartment	F P₂	7.5 ± 0.1 (.217) 2 ± 0.1 (.079)
Distance of compartment to compartment	P₁	12 ± 0.1 (.63)



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COMPONENTS

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Notes

- Isocom is continually improving the quality, reliability, function or design and Isocom reserves the right to make changes without further notices.
- The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.
- For equipment/applications 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 unit's body in solder paste.