



IS180

DESCRIPTION

The IS180 series of optically coupled isolator consist of two infrared light emitting diodes in reverse parallel connection and optically coupled to an NPN silicon photo transistor in a space efficient Mini Flat Package.

FEATURES

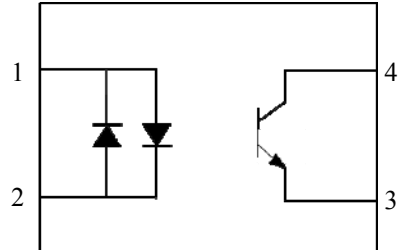
- AC Isolation Voltage 3750V_{RMS}
- Wide Operating Temperature Range
-55°C to +100°C
- Lead Free and RoHS Compliant
- UL File E91231 Package Code "FPA"

APPLICATIONS

- Computer Terminals
- Industrial System Controllers
- Measuring Instruments
- System Appliances

ORDER INFORMATION

- Available in Tape and Reel with 3000pcs per reel



ABSOLUTE MAXIMUM RATINGS

Input Diode

Forward Current	±50mA
Reverse Voltage	6V
Power dissipation	70mW

Output Transistor

Collector to Emitter Voltage BV_{CEO}	35V
Emitter to Collector Voltage BV_{ECO}	6V
Collector Current	50mA
Power Dissipation	150mW

Total Package

Operating Temperature	-55 to +100 °C
Storage Temperature	-55 to +150 °C
Total Power Dissipation	170mW
Lead Soldering Temperature (for 10s)	260°C

ISOCOM COMPONENTS 2004 LTD

Unit 25B, Park View Road West, Park View Industrial Estate
Hartlepool, Cleveland, TS25 1UD, United Kingdom
Tel: +44 (0)1429 863 609 Fax : +44 (0)1429 863 581
e-mail: sales@isocom.co.uk
<http://www.isocom.com>

ISOCOM COMPONENTS ASIA LTD

Hong Kong Office,
Block A, 8/F, Wah Hing Industrial mansion,
36 Tai Yau Street, San Po Kong, Kowloon, Hong Kong.
Tel: +852 2995 9217 Fax : +852 8161 6292
e-mail sales@isocom.com.hk



IS180

ELECTRICAL CHARACTERISTICS (Ambient Temperature = 25°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
Terminal Capacitance	C_t	$V = 0\text{V}, f = 1\text{KHz}$		30	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector—Emitter breakdown Voltage	BV_{CEO}	$I_C = 0.1\text{mA}, I_F = 0\text{mA}$	35			V
Emitter—Collector breakdown Voltage	BV_{ECO}	$I_E = 10\mu\text{A}, I_F = 0\text{mA}$	6			V
Collector-Emitter Dark Current	I_{CEO}	$V_{CE} = 20\text{V}, I_F = 0\text{mA}$			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	%
		Optional CTR Grades A	50		150	
Collector—Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = \pm 20\text{mA}, I_C = 1\text{mA}$			0.2	V
Input to Output Isolation Voltage	V_{ISO}	Note 1	3750			V_{RMS}
Input to Output Isolation Resistance	R_{ISO}	$V_{IO} = 500\text{V}$ Note 1	5×10^{10}			Ω
Floating Capacitance	C_f	$V = 0\text{V}, f = 1\text{MHz}$		0.5	1	pF
Output Rise Time	t_r	$V_{CE} = 2\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$		4	18	μs
Output Fall Time	t_f			3	18	μs

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

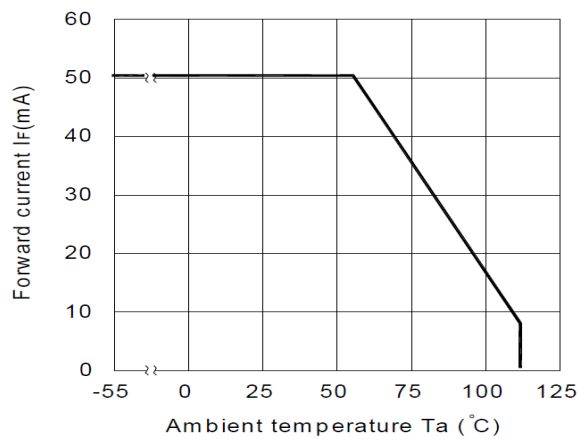


Fig 1 Forward Current vs T_A

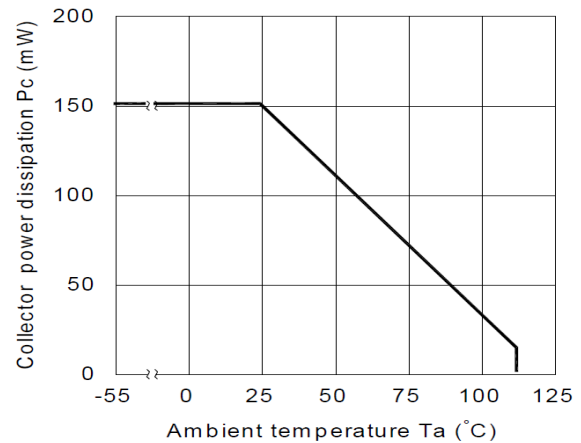


Fig 2 Collector Power Dissipation vs T_A

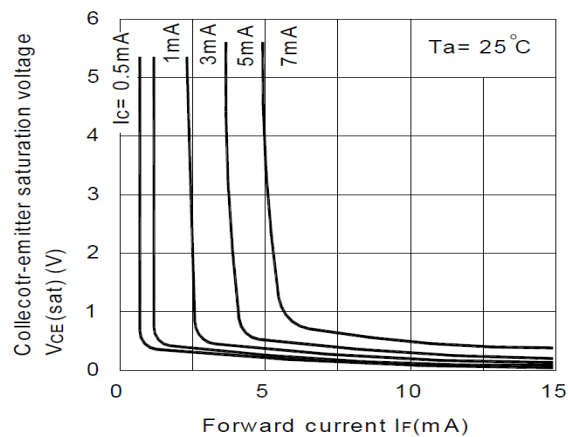


Fig 3 Collector-emitter Saturation Voltage vs Forward Current

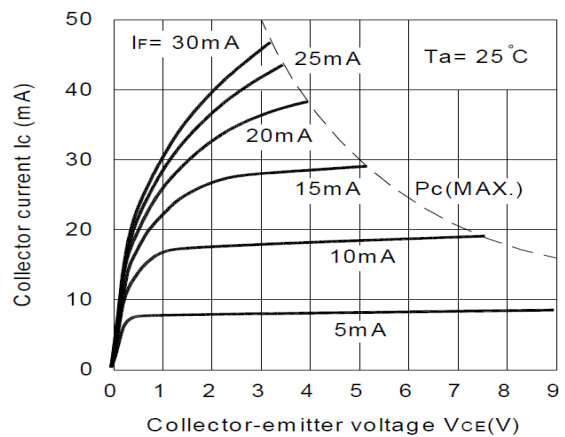


Fig 4 Collector Current vs Collector-emitter Voltage

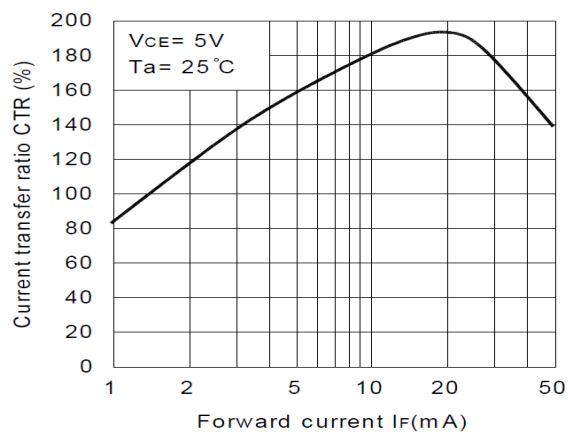


Fig 5 Current Transfer Ratio vs Forward Current

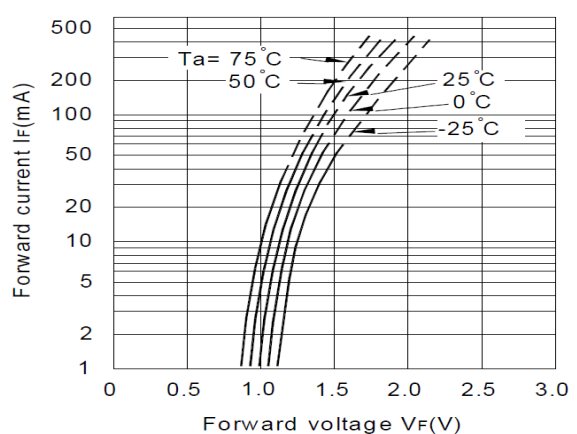


Fig 6 Forward Current vs Forward Voltage



IS180

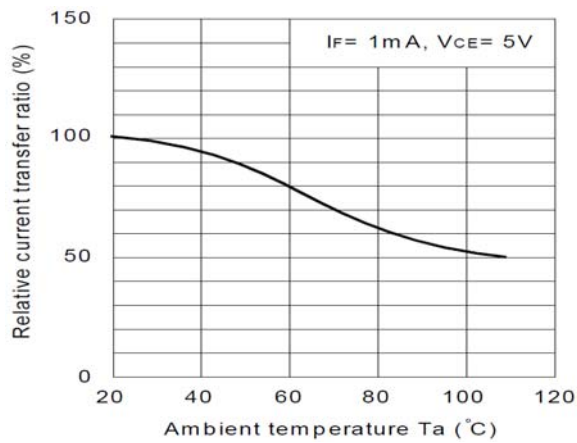


Fig 7 Relative CTR vs T_A

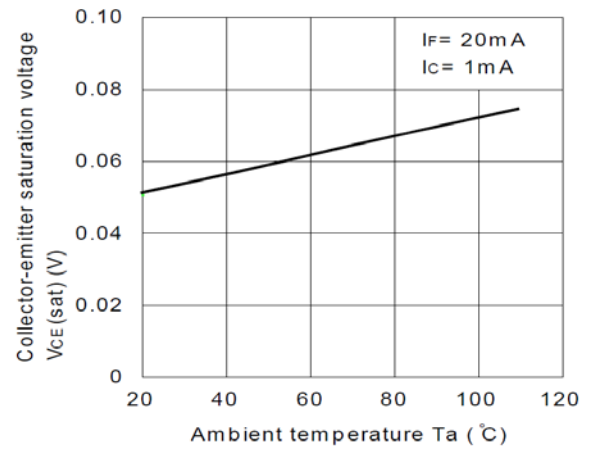


Fig 8 Collector-emitter Saturation Voltage vs T_A

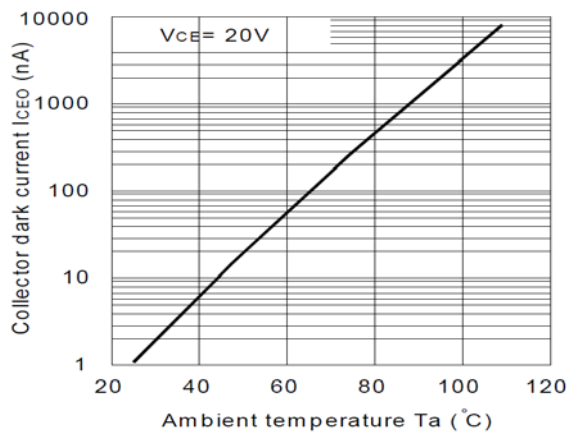


Fig 9 Collector Dark Current vs T_A

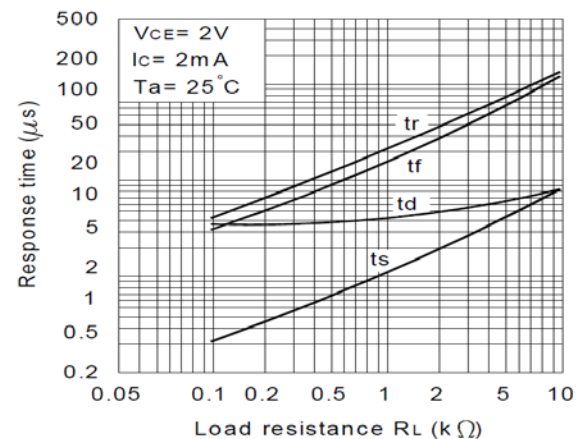


Fig 10 Response Time vs Load Resistance

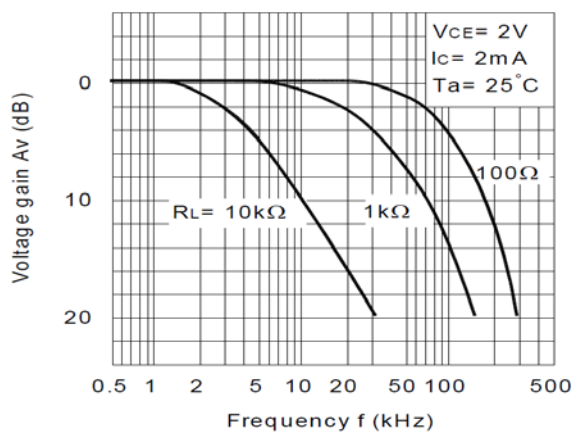
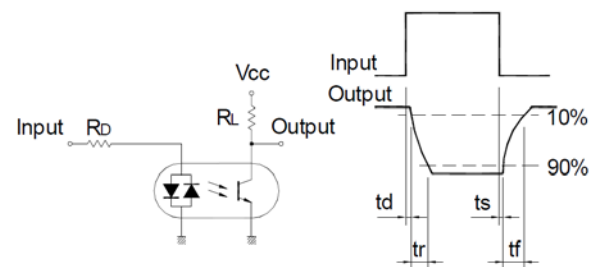


Fig 11 Frequency Response



Response Time Test Circuit



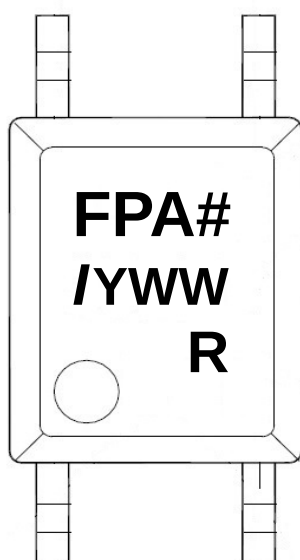
ISOCOM
COMPONENTS

IS180

STANDARD PACKING QUANTITY

IS180			
After PN	PN	Description	Packing quantity
None	IS180, IS180A	Surface Mount Tape & Reel	3000 pcs per reel

DEVICE MARKING

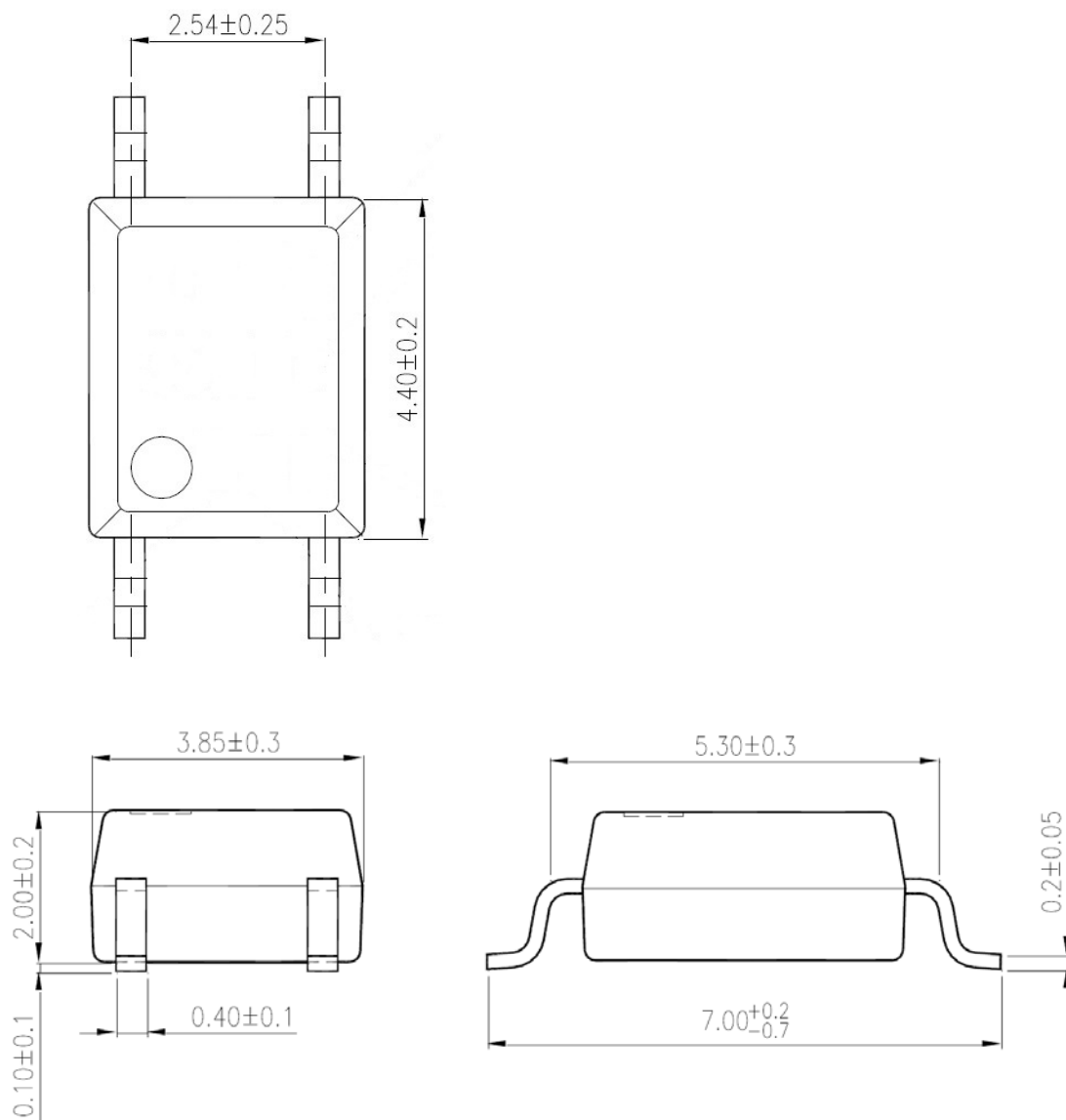


FPA#	denotes Device Part Number where “#” is internal control number
/	denotes Isocom
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code
R	denotes CTR Grade



IS180

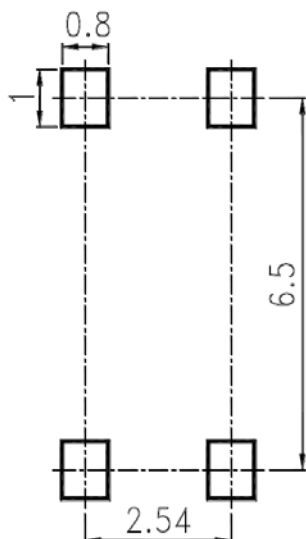
PACKAGE DIMENSIONS (mm)



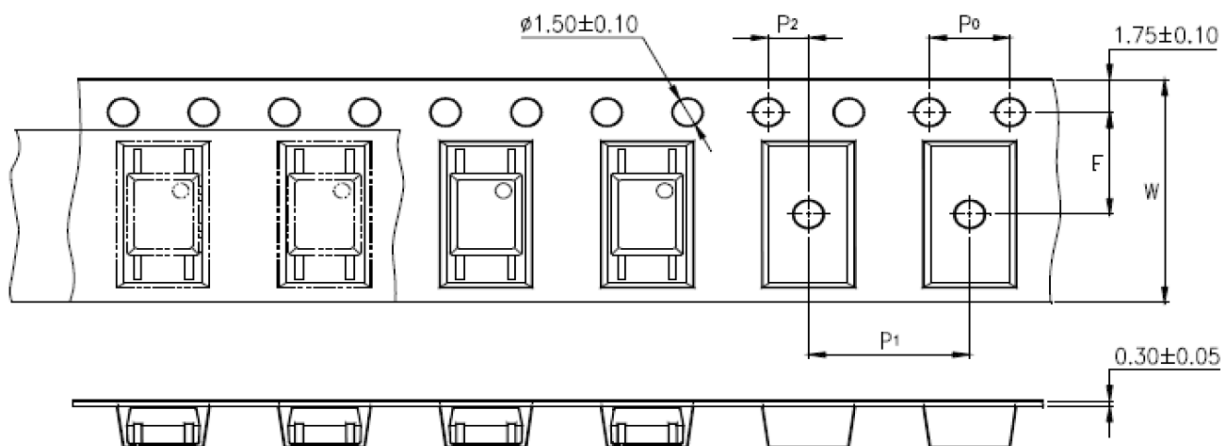


IS180

RECOMMENDED SOLDER PAD LAYOUT (mm)



TAPE AND REEL PACKAGING

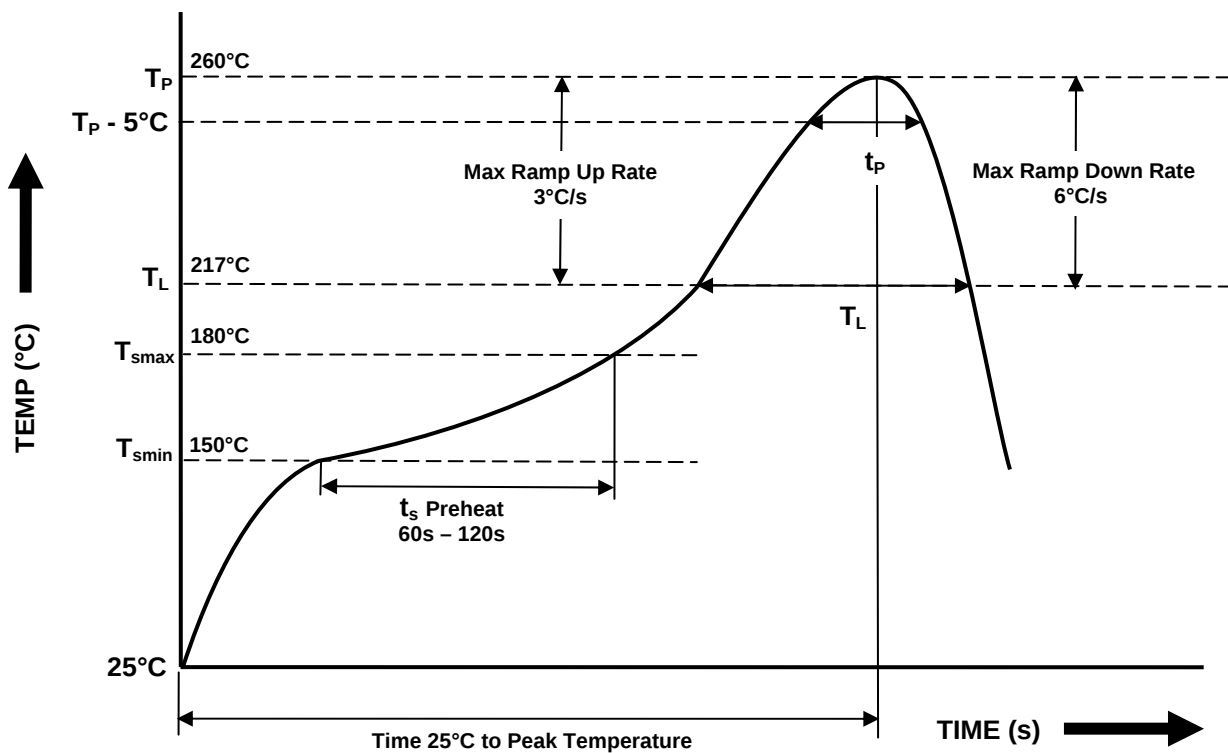


Description	Symbol	Dimensions in mm (inches)
Tape wide	W	12 ± 0.3 (.47)
Pitch of sprocket holes	P ₀	4 ± 0.1 (.15)
Distance of compartment	F	5.5 ± 0.1 (.217)
Distance of compartment to compartment	P ₁	2 ± 0.1 (.079)
	P ₂	8 ± 0.1 (.315)

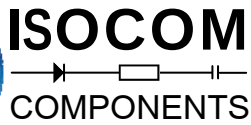


IS180

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



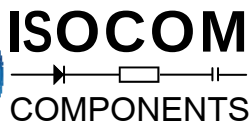
Profile Details	Conditions
Preheat - Min Temperature (T_{SMIN}) - Max Temperature (T_{SMAX}) - Time T_{SMIN} to T_{SMAX} (t_s)	150°C 180°C 60s - 120s
Soldering Zone - Peak Temperature (T_P) - Liquidous Temperature (T_L) - Time within 5°C of Actual Peak Temperature ($T_P - 5^\circ\text{C}$) - Time maintained above T_L (t_L) - Ramp Up Rate (T_L to T_P) - Ramp Down Rate (T_P to T_L)	260°C 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



IS180

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/application 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 device body in solder paste.



Disclaimer

ISOCOM is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing ISOCOM products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such ISOCOM products could cause loss of human life, bodily injury or damage to property.

In developing your designs, please ensure that ISOCOM products are used within specified operating ranges as set forth in the most recent ISOCOM products specifications.

___ The ISOCOM products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These ISOCOM products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury (“Unintended Usage”). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation Instruments, traffic signal instruments, combustion control instruments, medical Instruments, all types of safety devices, etc.. Unintended Usage of ISOCOM products listed in this document shall be made at the customer’s own risk.

__ Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.

__ The products described in this document are subject to the foreign exchange and foreign trade laws.

___ The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by ISOCOM Components for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of ISOCOM Components or others.

The information contained herein is subject to change without notice.