



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

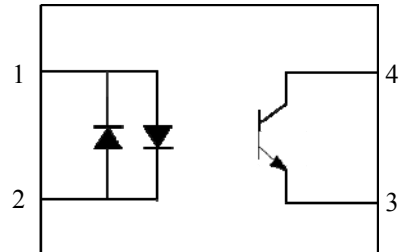
- AC Isolation Voltage 3750V_{RMS}
- Wide Operating Temperature Range -55°C to +100°C
- Lead Free and RoHS Compliant
- UL File E91231 Package Code "FPA"

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

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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	$V_{CE(\text{sat})}$	$I_F = \pm 20\text{mA}, I_C = 1\text{mA}$			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.

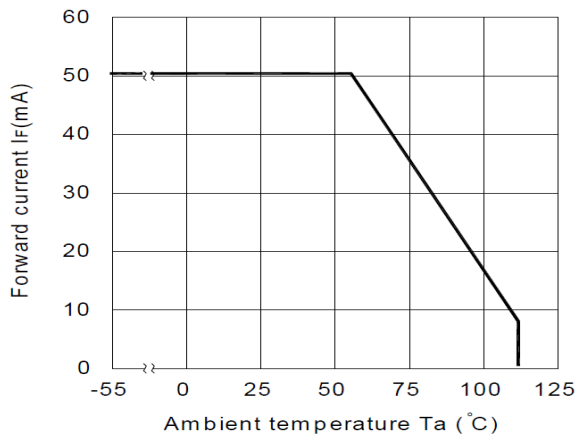


Fig 1 Forward Current vs T_A

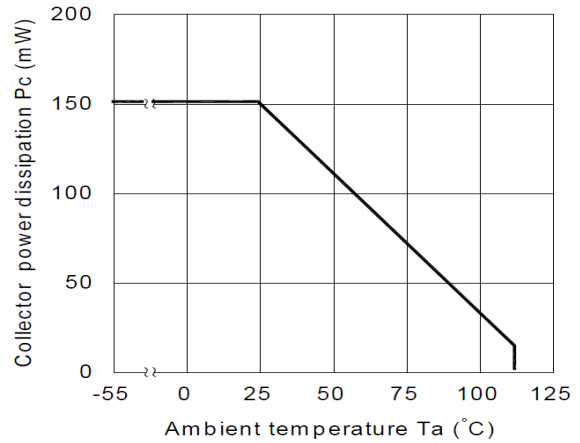


Fig 2 Collector Power Dissipation vs T_A

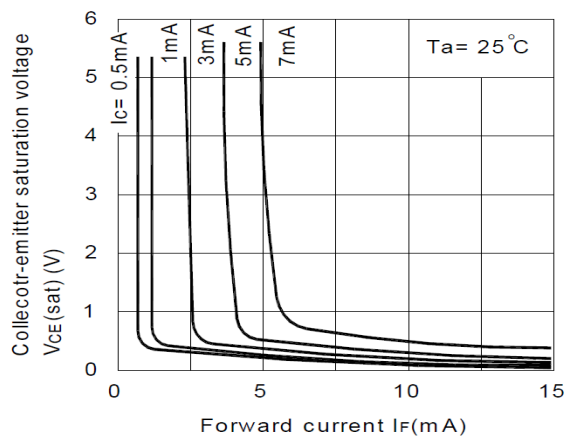


Fig 3 Collector-emitter Saturation Voltage vs Forward Current

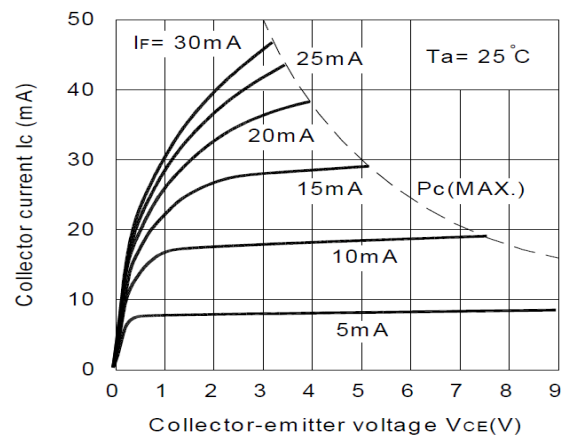


Fig 4 Collector Current vs Collector-emitter Voltage

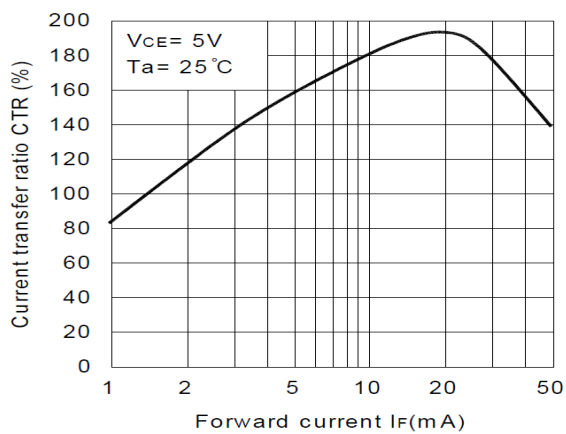


Fig 5 Current Transfer Ratio vs Forward Current

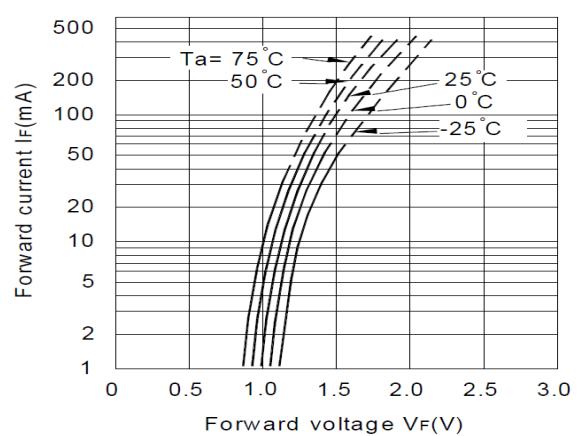


Fig 6 Forward Current vs Forward Voltage



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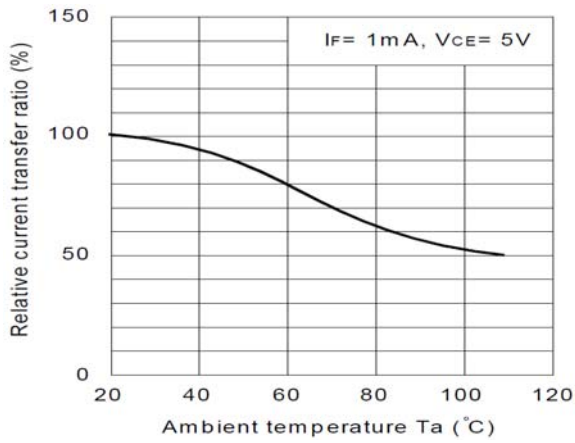


Fig 7 Relative CTR vs T_A

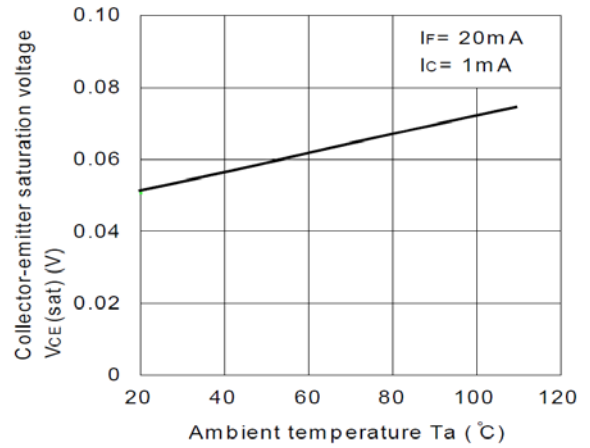


Fig 8 Collector-emitter Saturation Voltage vs T_A

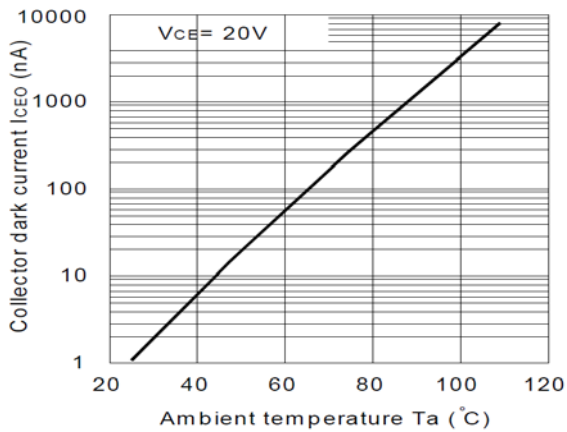


Fig 9 Collector Dark Current vs T_A

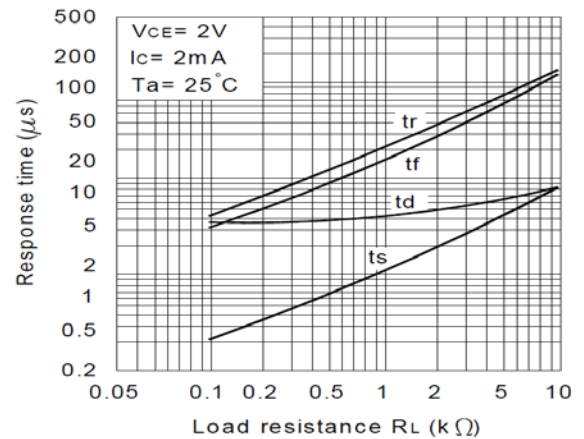


Fig 10 Response Time vs Load Resistance

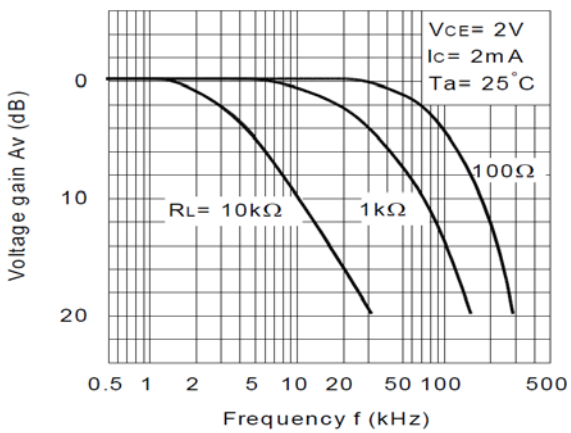
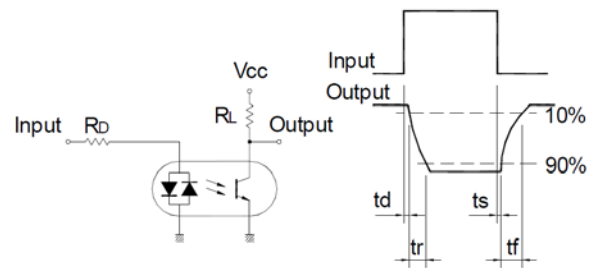


Fig 11 Frequency Response



Response Time Test Circuit

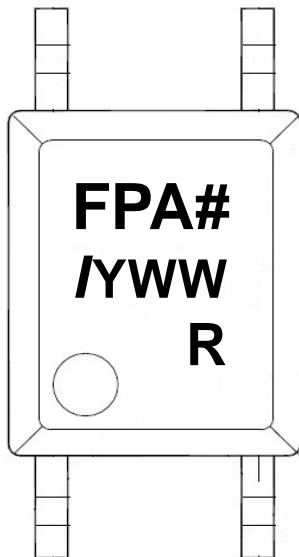


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STANDARD PACKING QUANTITY

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

DEVICE MARKING

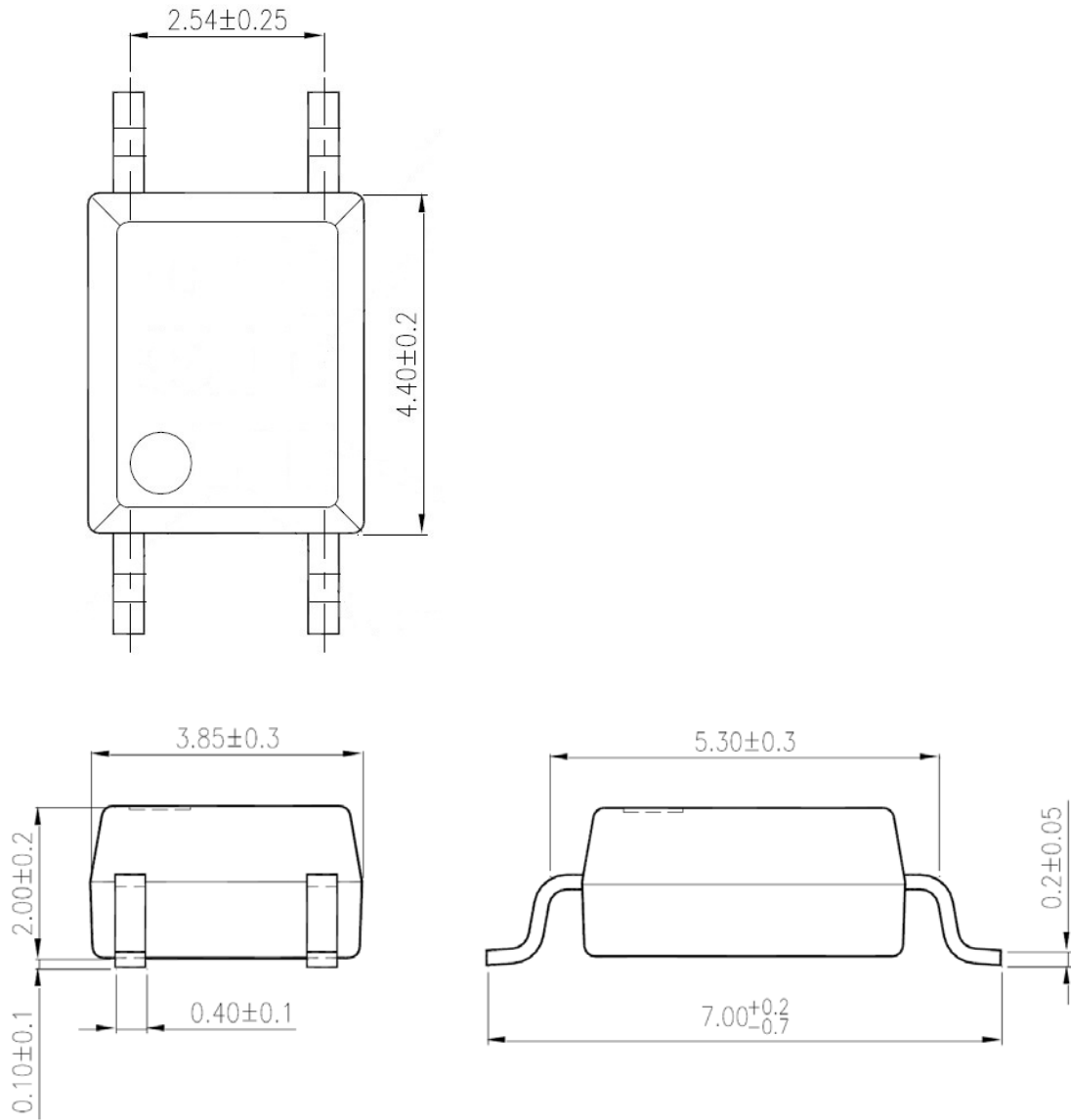


FPA# denotes Device Part Number where “#” is internal control number
/ denotes Isocom
Y denotes 1 digit Year code
WW denotes 2 digit Week code
R denotes CTR Grade



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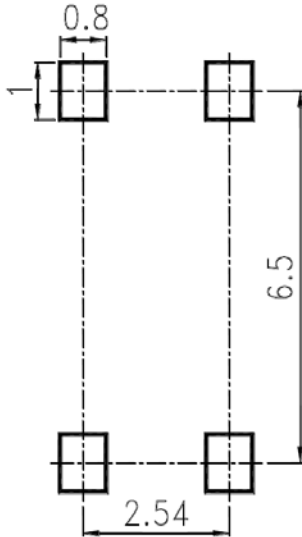
PACKAGE DIMENSIONS (mm)



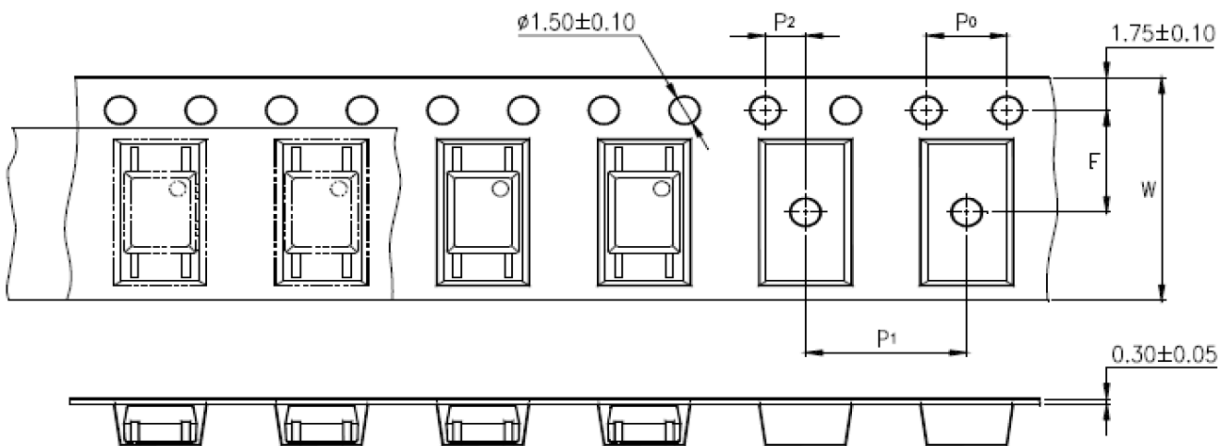


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RECOMMENDED SOLDER PAD LAYOUT (mm)



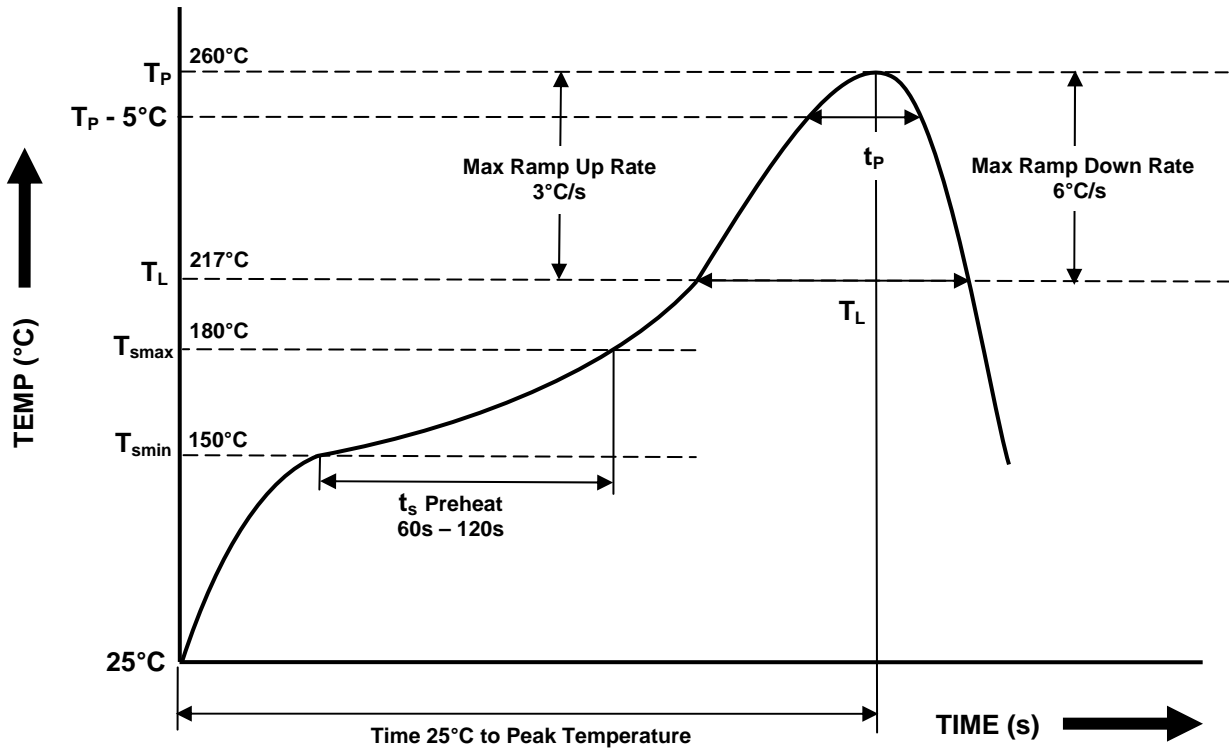
TAPE AND REEL PACKAGING



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	P_2	5.5 ± 0.1 (.217)
Distance of compartment to compartment	P_1	2 ± 0.1 (.079)



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 ($T_P - 5^\circ C$) - 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



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- 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.



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