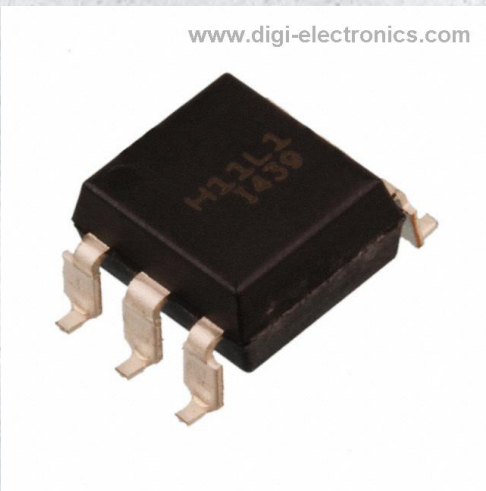
MOC3051SM Datasheet



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DiGi Electronics Part Number	MOC3051SM-DG
Manufacturer	Isocom Components 2004 LTD
Manufacturer Product Number	MOC3051SM
Description	6PIN RANDOM PHASE TRIAC, OPTOCOU
Detailed Description	Optoisolator Triac Output 5000Vrms 1 Channel 6-SMD

This model MOC3051SM is available at DiGi Electronics.

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Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
MOC3051SM	Isocom Components 2004 LTD
Series:	Product Status:
MOC305	Active
Output Type:	Zero Crossing Circuit:
Triac	No
Number of Channels:	Voltage - Isolation:
1	5000Vrms
Voltage - Off State:	Static dV/dt (Min):
600 V	1kV/µs
Current - LED Trigger (Ift) (Max):	Current - Hold (Ih):
15mA	200µA (Typ)
Turn On Time:	Voltage - Forward (Vf) (Typ):
-	1.2V
Current - DC Forward (If) (Max):	Operating Temperature:
50 mA	-40°C ~ 100°C
Mounting Type:	Package / Case:
Surface Mount	6-SMD, Gull Wing
Supplier Device Package:	Approval Agency:
6-SMD	UL, VDE

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.49.8000	

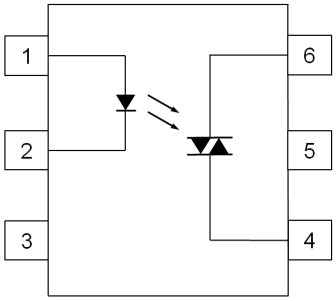
MOC3051 / MOC3052

DESCRIPTION

The MOC3051 and MOC3052 are optically coupled isolators consisting of a Gallium Arsenide infrared emitting diode coupled with a light activated silicon bilateral switch performing the functions of a triac.

These photocouplers provide random phase control of high current triacs or thyristors. The MOC3051 and MOC3052 feature greatly enhanced static dv/dt capability to ensure stable switching performance of inductive loads.

These devices are mounted in a standard 6 pin dual-in-line package.



1	Anode
2	Cathode
3	NC
4	Main Terminal
5	Substrate (Do not Connect)
6	Main Terminal

FEATURES

- High Repetitive Peak Off-state Voltage V_{DRM} : minimum 600V
- High Critical Rate of Rise of Off-state Voltage dv/dt : minimum 1000V/µs)
- High Isolation Voltage between Input and Output Viso : 5000Vrms
- Lead Free and RoHS Compliant
- UL File No. E91231
- VDE File No. 40028086

APPLICATIONS

- Solenoid / Valve Controls
- Lamp Ballasts
- Static AC Power Switch
- Interfacing Microprocessors to 115 and 240Vac Peripherals
- Solid State Relays
- Incandescent Lamp Dimmers
- Temperature Controls
- Motor Controls

ORDER INFORMATION

- Add Suffix “X” for VDE Approval
- Add G after PN for 10mm lead spacing
- Add SM after PN for Surface Mount
- Add SMT&R after PN for Surface Mount Tape & Reel

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
Reverse Voltage	6V
Power dissipation	100mW
Output	
Peak Repetitive Surge Current (Pulse width = 1ms, 120pps)	1A
Off State Output Terminal Voltage	600V
Power Dissipation	300mW
Total Package	
Isolation Voltage	5000V_{RMS}
Total Power Dissipation	330mW
Operating Temperature	-40 to 100 °C
Storage Temperature	-55 to 150 °C
Lead Soldering Temperature (10s)	260°C

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e-mail : sales@isocom.com.hk

ISOCOM COMPONENTS

MOC3051 / MOC3052

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	1.5	V
Reverse Current	I_R	V_R = 6V		0.05	10	µA

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Peak Off-state Current Either Direction	I_{DRM}	V_{DRM} = 600V I_F = 0mA Note 1			100	nA
On-State Voltage Either Direction	V_{TM}	I_{TM} = 100mA (peak)			3.0	V
Critical Rate of Rise of Off-State Voltage	dv/dt	I_F = 0mA	1000			V/µs

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Input Trigger Current Either Direction	I_{FT}	V_{TM} = 3V Note 2 MOC3051 MOC3052			 15 10	mA
Holding Current Either Direction	I_H			200		µA

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Insulation Voltage	V_{ISO}	AC 1 minute, RH 40 to 60% Note 3	5000			V_{RMS}

Note 1 : Test Voltage must be applied within static dv/dt rating.

Note 2 : Guaranteed to trigger at an I_F value less than or equal to max I_{FT}, recommended I_F lies between Rated I_{FT} to Absolute Max I_F.

Note 3 : Measured with input leads shorted together and output leads shorted together.

ISOCOM COMPONENTS

MOC3051 / MOC3052

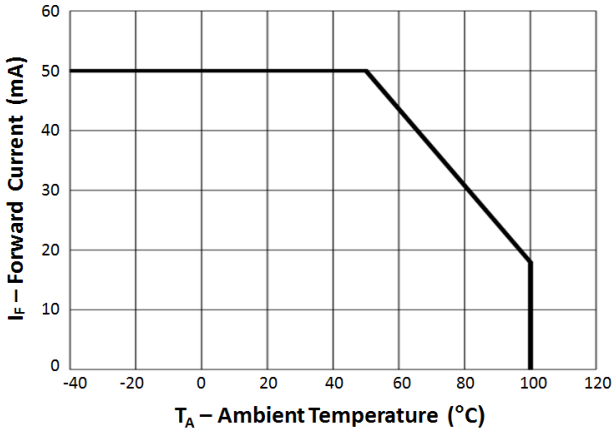


Fig 1 Forward Current vs Ambient Temperature

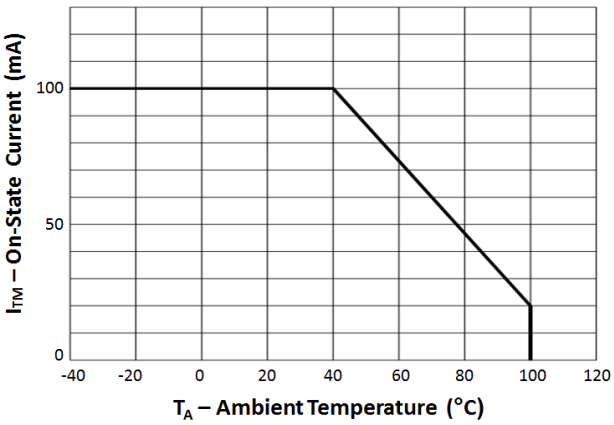


Fig 2 On-State Current vs Ambient Temperature

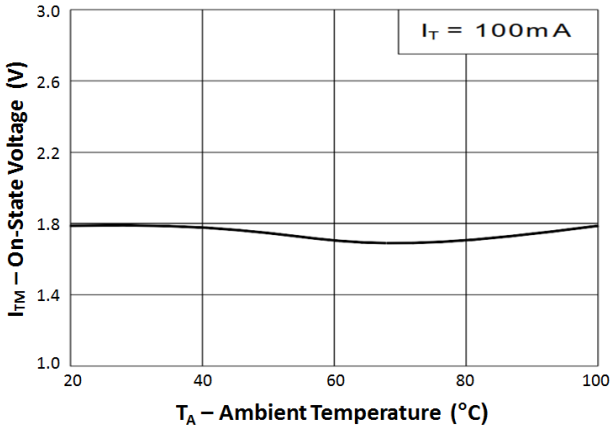


Fig 3 On-State Voltage vs Ambient Temperature

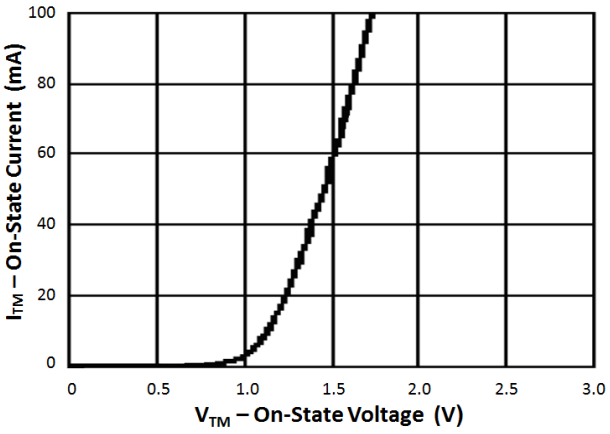


Fig 4 On-State Current vs On-State Voltage

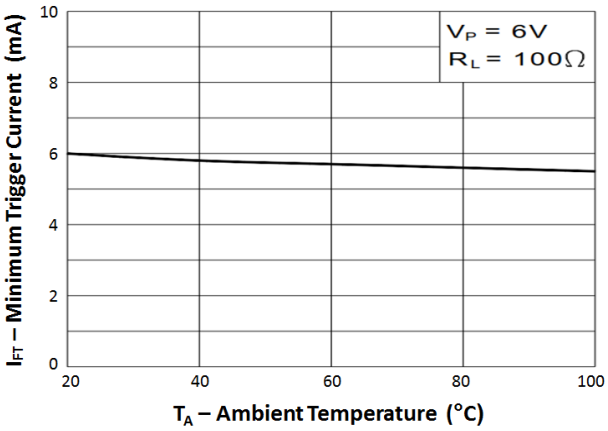


Fig 5 Minimum Trigger Current vs Ambient Temperature

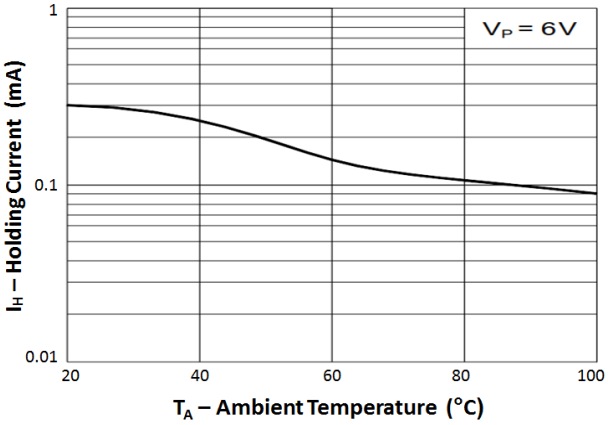


Fig 6 Holding Current vs Ambient Temperature

ISOCOM COMPONENTS

MOC3051 / MOC3052

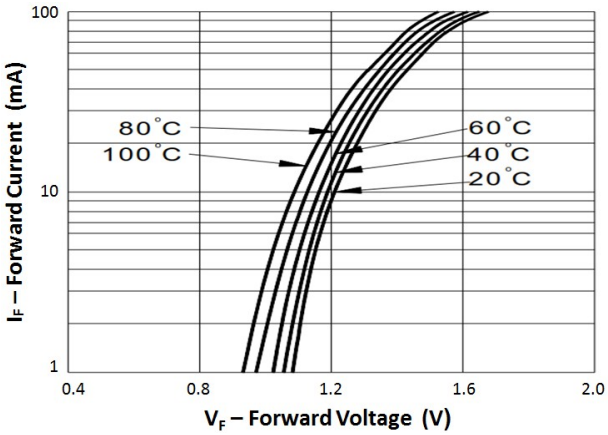


Fig 7 Forward Current vs Forward Voltage

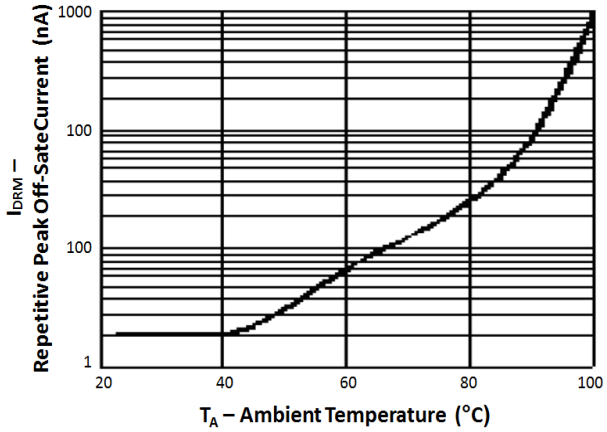


Fig 8 Repetitive Peak Off-State Current vs Ambient Temperature

ISOCOM COMPONENTS

MOC3051 / MOC3052

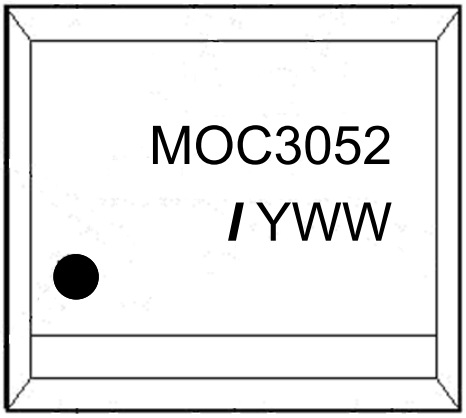
ORDER INFORMATION

MOC3051 / MOC3052 (UL Approval)			
After PN	**PN**	**Description**	**Packing quantity**
None	MOC3051, MOC3052	Standard DIP6	65 pcs per tube
G	MOC3051G, MOC3052G	10mm Lead Spacing	65 pcs per tube
SM	MOC3051SM, MOC3052SM	Surface Mount	65 pcs per tube
SMT&R	MOC3051SMT&R, MOC3052SMT&R	Surface Mount Tape & Reel	1000 pcs per reel

MOC3051X / MOC3052X (UL Approval and VDE Approvals)			
After PN	**PN**	**Description**	**Packing quantity**
None	MOC3051X, MOC3052X	Standard DIP6	65 pcs per tube
G	MOC3051XG, MOC3052XG	10mm Lead Spacing	65 pcs per tube
SM	MOC3051XSM, MOC3052XSM	Surface Mount	65 pcs per tube
SMT&R	MOC3051XSMT&R, MOC3052XSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

DEVICE MARKING

Example : MOC3052



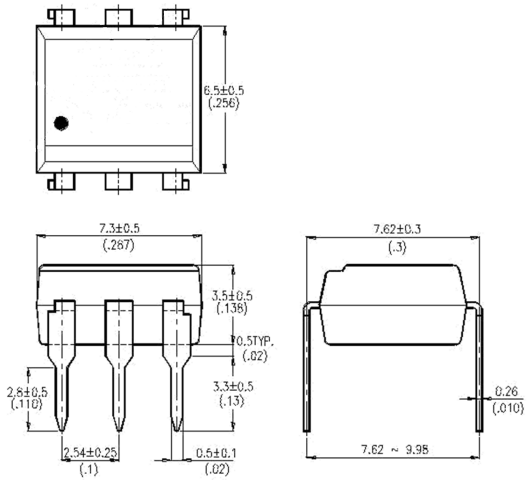
MOC3052	denotes Device Part Number
I	denotes Isocom
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code

ISOCOM COMPONENTS

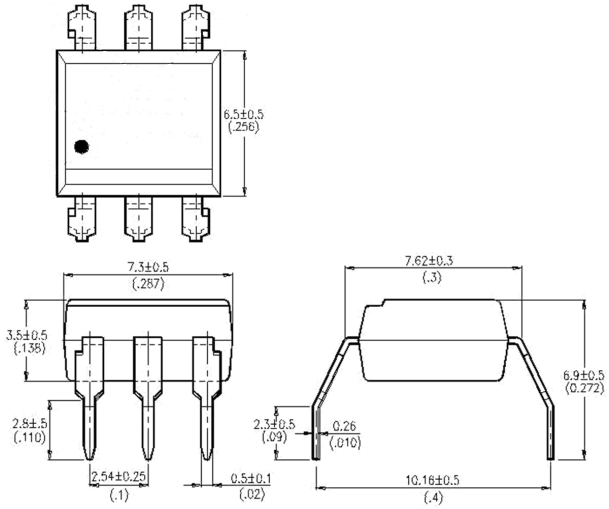
MOC3051 / MOC3052

PACKAGE DIMENSIONS in mm (inch)

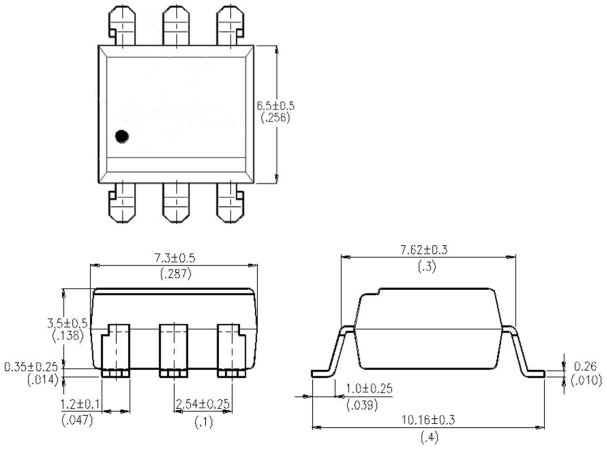
DIP



G Form



SMD



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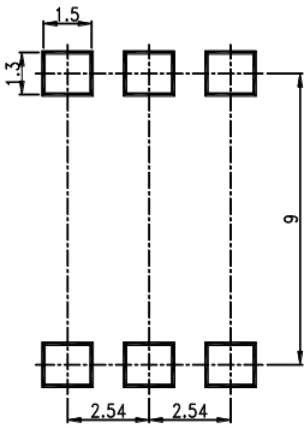
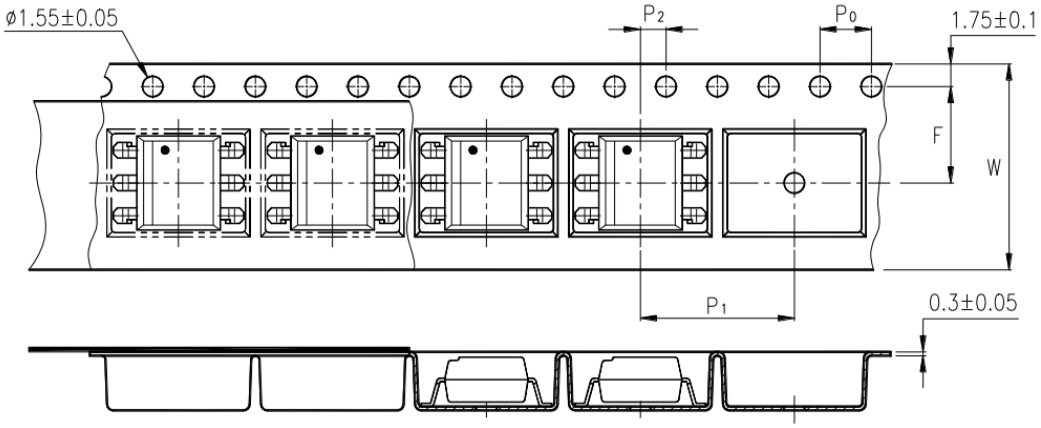
MOC3051 / MOC3052

RECOMMENDED PAD LAYOUT FOR SMD (mm)



TAPE AND REEL PACKAGING



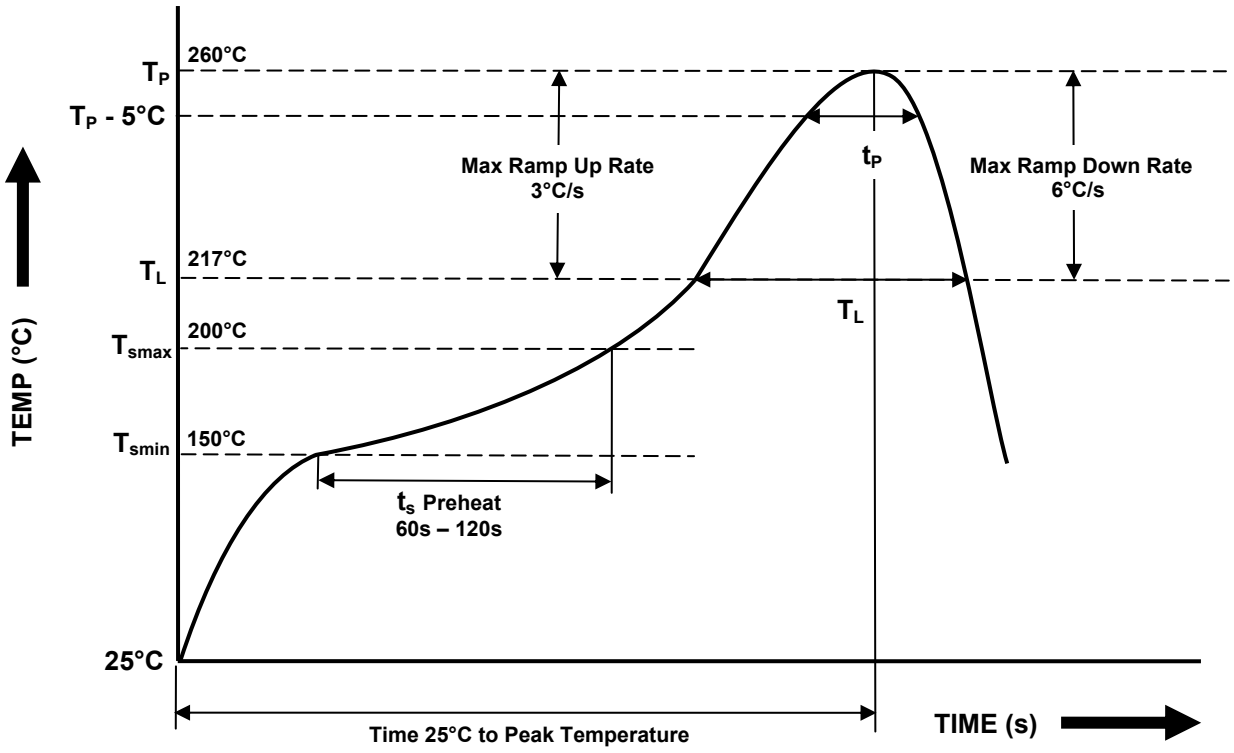
Description	Symbol	Dimension mm (inch)
Tape Width	W	16 ± 0.3 (0.63)
Pitch of Sprocket Holes	P_0	4 ± 0.1 (0.15)
Distance of Compartment to Sprocket Holes	F	7.5 ± 0.1 (0.295)
	P_2	2 ± 0.1 (0.079)
Distance of Compartment to Compartment	P_1	12 ± 0.1 (0.472)

ISOCOM COMPONENTS

MOC3051 / MOC3052

IR REFLOW SOLDERING TEMPERATURE PROFILE

Note : 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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