

DESCRIPTION

The MF3009, MF301x, MF302x and MOC305x series of devices consist of a GaAs infrared emitting diode optically coupled to a light activated bilateral triac. They are designed for use with a discrete power triac in the control of resistive and inductive loads operating in 110 to 240 VAC lines.

FEATURES

- Non Zero Crossing (Random Phase)
- V_{DRM}
 - MF3009 250V
 - MF301x 250V
 - MF302x 400V
 - MF305x 600V
- Isolation Voltage 3750V_{RMS}
- Wide Operating Temperature Range -40°C to 110°C
- Pb Free and RoHS Compliant
- Safety Approvals Pending •

APPLICATIONS

- Solenoid / Valve Controls •
- Lamp Ballasts
- **Light Dimming Controls** •
- AC Motor Drivers
- **Temperature Controls** .
- AC Motor .
- Solid State Relays

ORDER INFORMATION

Available in Tape & Reel



ABSOLUTE MAXIMUM RATINGS

Input

Forward Current	60mA
Reverse Voltage	6V
Power dissipation	100mW

Output

Off-state Output Terminal Voltage MOC3009 250V MOC301x 250V MOC302x 400V MOC305x 600V **On-state Current** 70mA_{RMS} Peak Repetitive Surge Current 1A Power Dissipation 300mW

Total Package

Isolation Voltage Operating Temperature Storage Temperature Lead Soldering Temperature (10s) $3750V_{RMS}$ -40 to 110 °C -55 to 150 °C 260°C

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Forward Voltage	$V_{\rm F}$	$I_F = 10 mA$		1.2	1.5	V
Reverse Leakage Current	I _R	$V_R = 6V$			10	μA

OUTPUT

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Peak Off-state Current	I _{DRM}	$V_{DRM} = Rated V_{DRM}$ $I_F = 0mA$			100	nA
		(Note 1)				
Peak Blocking Voltage	V _{DRM}	$I_{DRM} = 100nA$				V
		MF3009			250	
		MF3010 / MF3011 / MF3012			250	
		MF3020 / MF3021 MF3022 / MF3023			400	
		MF3051 / MF3052			600	
On-state Voltage	V _{TM}	$I_{TM} = 100 \text{mA} \text{ (peak)},$ $I_F = \text{Rated } I_{FT}$			2.5	V
Critical Rate of Rise of	dv/dt	$I_F = 0mA$				V/µs
Off-state Voltage		MF3009 MF3010 / MF3011 / MF3012 MF3020 / MF3021 MF3022 / MF3023		10		
		MF3051 / MF3052	1000			



ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

COUPLED

Parameter	Symbol	Test Condition	Min	Тур.	Мах	Unit
Input Trigger Current	I_{FT}	$V_{TM} = 3V$				mA
		MF3009 / MF3020			30	
		MF3010 / MF3021 / MF3051			15	
		MF3011 / MF3022 / MF3052			10	
		MF3012 / MF3023			5	
		(Note 2)				
Holding Current (either direction)	$I_{\rm H}$			3	5	mA
Input to Output Isolation Voltage	V _{ISO}	(note 3)	3750			V _{RMS}

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

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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.





Fig 1 Forward Current vs Forward Voltage









Fig 2 On-State Characteristics



Fig 4 Normalized LED Trigger Current vs **Ambient Temperature**



Voltage vs Ambient Temperature











ORDER INFORMATION

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		IS281	
After PN	PN	Description	Packing quantity
None	MF3009 MF3010, MF3011, MF3012 MF3020, MF3021, MF3022, MF3023 MF3051, MF3052,	Surface Mount Tape & Reel	3000 pcs per reel

DEVICE MARKING



MF3063 denotes Device Part Number where "MF3052" is used as example

I denotes Isocom

Y denotes 1 digit Year code

WW denotes 2 digit Week code



PACKAGE DIMENSIONS (mm)





RECOMMENDED PAD LAYOUT (mm)





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 200°C 60s – 120s
$\label{eq:soldering Zone} \begin{array}{l} \mbox{-} Peak Temperature (T_P) \\ \mbox{-} Liquidous Temperature (T_L) \\ \mbox{-} Time within 5^{\circ}C of Actual Peak Temperature (T_P - 5^{\circ}C) \\ \mbox{-} Time maintained above T_L (t_L) \\ \mbox{-} Ramp Up Rate (T_L to T_P) \\ \mbox{-} Ramp Down Rate (T_P to T_L) \end{array}$	260°C 217°C 30s 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



TAPE AND REEL PACKAGING (mm)





Direction of feed from reel





Dimension No.	Α	В	Do	D1	E	F
mm	4.4 ± 0.1	7.4 ± 0.1	1.5 + 0.1/-0	1.5 ± 0.1	1.7 5± 0.1	7.5 ± 0.1

Dimension No.	Ро	P1	P2	t	W	к
mm	4.0 ± 0.15	8.0 ± 0.1	2.0 ± 0.1	0.25 ± 0.03	16.0 ± 0.2	2.4 ± 0.1



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- Do not immerse device body in solder paste.

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