

MF303x, MF304x, MF306x, MF308x

DESCRIPTION

The MF303x, MF304x, MF306x and MF308x series of devices consist of a GaAs infrared emitting diode optically coupled to a monolithic silicon detector performing the function of a zero voltage crossing bilateral triac driver. They are designed for use with a discrete power triac in the interface of logic systems to equipment powered from 110 to 240 VAC lines.

FEATURES

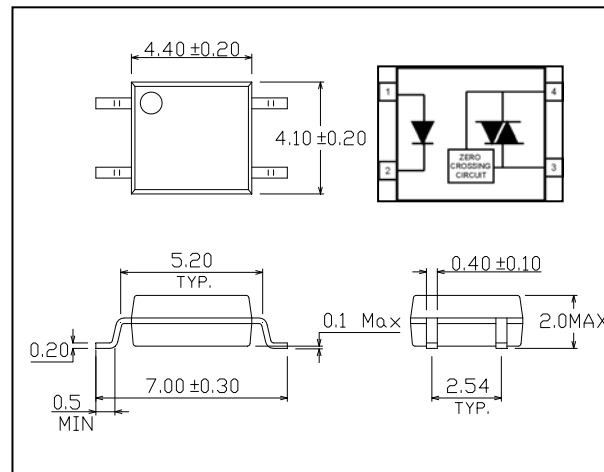
- Zero Voltage Crossing
- V_{DRM}
MF303x 250V
MF304x 400V
MF306x 600V
MF308x 800V
- Mini Flat Package
- Isolation Voltage 3750V_{RMS}
- Wide Operating Temperature Range
-40°C to 110°C
- Pb Free and RoHS Compliant
- Safety Approvals Pending

APPLICATIONS

- Solenoid / Valve Controls
- Light Controls
- AC Motor Drivers
- Temperature Controls
- AC Motor Starters
- Solid State Relays

ORDER INFORMATION

- Available in Tape & Reel



ABSOLUTE MAXIMUM RATINGS

Input

Forward Current	60mA
Peak Forward Current (1μs pulse 300pps)	1A
Reverse Voltage	6V
Power dissipation	100mW

Output

Off-state Output Terminal Voltage	
MF303x	250V
MF304x	400V
MF306x	600V
MF308x	800V
On-state rms Current	70mA
Power Dissipation	300mW

Total Package

Isolation Voltage	3750V _{RMS}
Operating Temperature	-40 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	$I_F = 30\text{mA}$			1.5	V
Reverse Leakage Current	I_R	$V_R = 6\text{V}$			10	μA

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Peak Off-state Current	I_{DRM}	$V_{\text{DRM}} = \text{Rated } V_{\text{DRM}}$ $I_F = 0\text{mA}$ (Note 1)			100	nA
Peak Blocking Voltage	V_{DRM}	$I_{\text{DRM}} = 100\text{nA}$ MF3030 / MF3031 MF3032 / MF3033 MF3040 / MF3041 MF3042 / MF3043 MF3060 / MF3061 MF3062 / MF3063 MF3080 / MF3081 MF3082 / MF3083			250 400 600 800	V
On-state Voltage	V_{TM}	$I_{\text{TM}} = 100\text{mA (peak)}$			3	V
Critical Rate of Rise of Off-state Voltage	dv/dt		1000			V/ μs

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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Input Trigger Current	I_{FT}	$V_{TM} = 3\text{V}$ MF3030 / MF3040 / MF3060 / MF3080 MF3031 / MF3041 / MF3061 / MF3081 MF3032 / MF3042 / MF3062 / MF3082 MF3033 / MF3043 / MF3063 / MF3083 (Note 2)			30 15 10 5	mA
Holding Current (either direction)	I_H			280		μA
Input to Output Isolation Voltage	V_{ISO}	(note 3)	3750			V_{RMS}

ZERO CROSSING CHARACTERISTIC

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Inhibit Voltage	V_{INH}	$I_F = \text{Rated } I_{FT}$, MT1-MT2 Voltage above which device will not trigger			20	V
Leakage in Inhibit State	I_{INH}	$I_F = \text{Rated } I_{FT}$, $V_{DRM} = \text{Rated } V_{DRM}$, Off-state			1000	μA

Note 1 : Test Voltage must be applied within 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.



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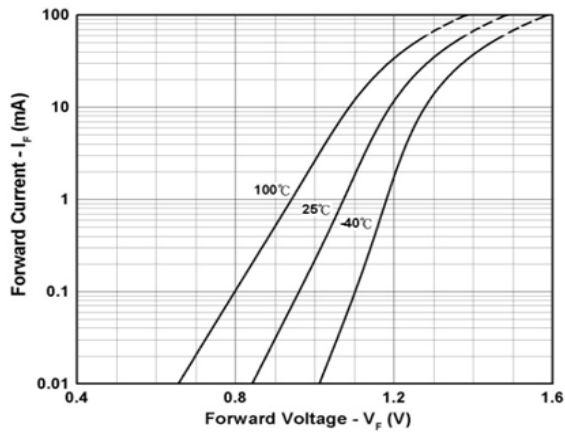


Fig 1 Forward Current vs Forward Voltage

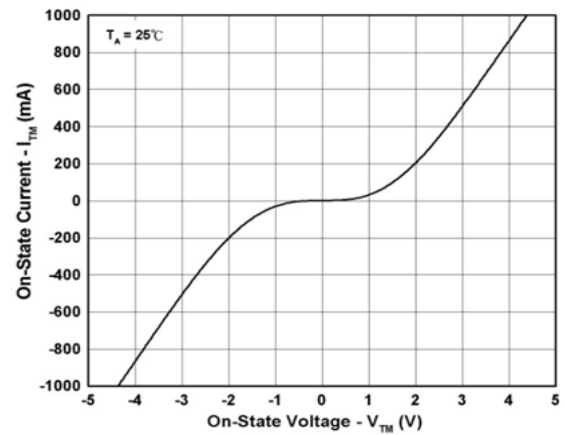


Fig 2 On-State Characteristics

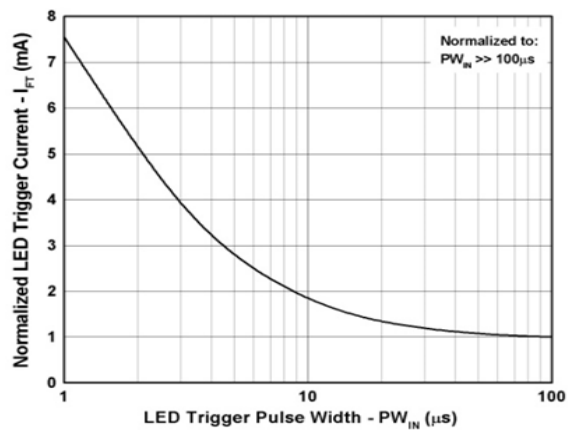


Fig 3 LED Trigger Current vs Trigger Pulse Width

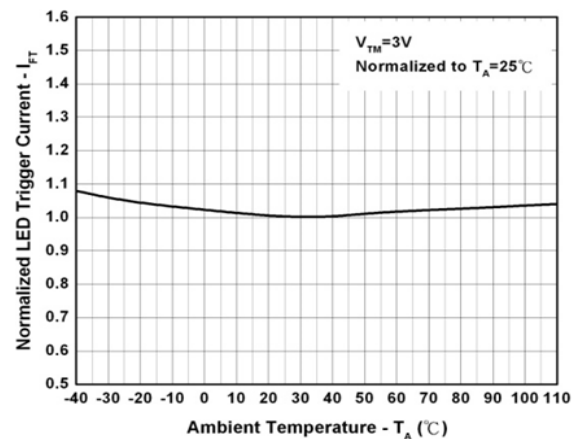


Fig 4 LED Trigger Current vs Ambient Temperature

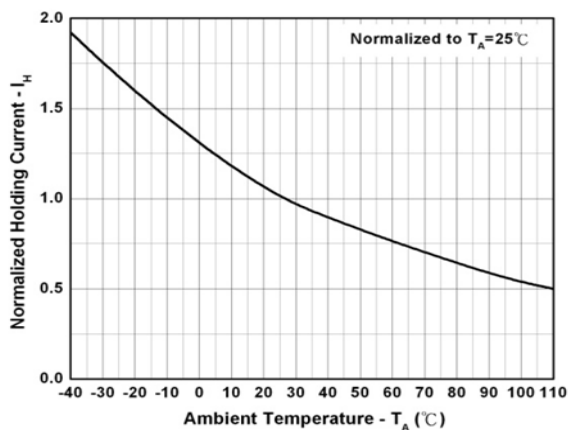


Fig 5 Holding Current vs Ambient Temperature

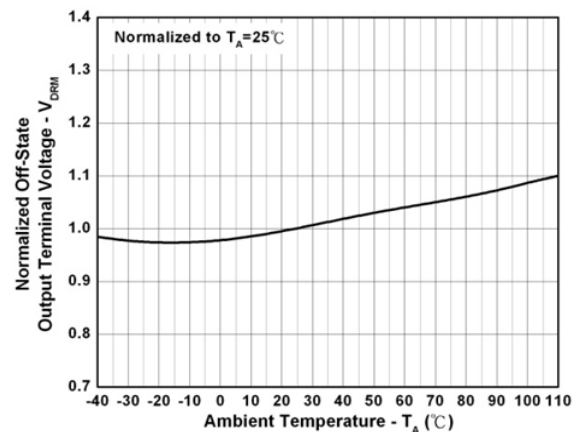


Fig 6 Off-State Output Terminal Voltage vs Ambient Temperature



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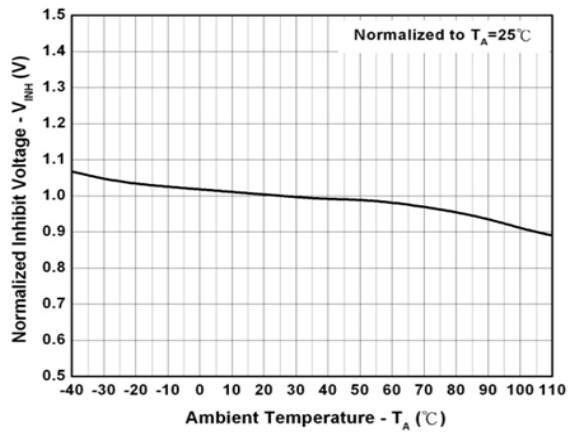


Fig 7 Inhibit Voltage vs Ambient Temperature

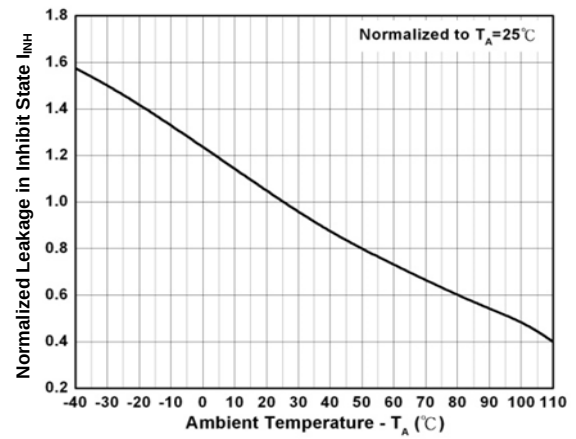


Fig 8 Leakage Current in Inhibit State vs Ambient Temperature

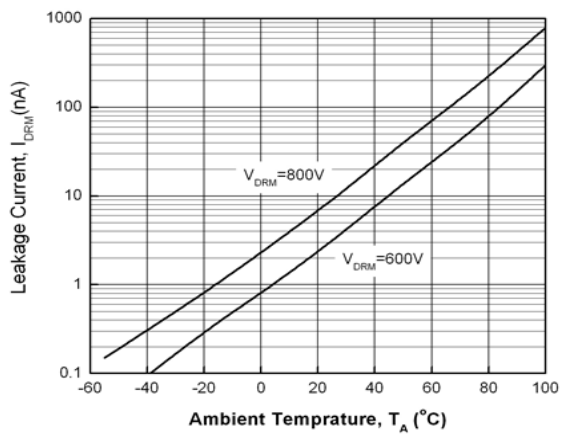


Fig 9 Leakage Current vs Ambient Temperature



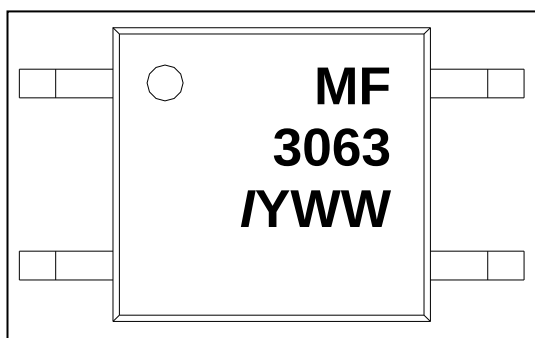
ISOCOM
COMPONENTS

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ORDER INFORMATION

IS281			
After PN	PN	Description	Packing quantity
None	MF3030, MF3031, MF3032, MF3032, MF3033 MF3040, MF3041, MF3042, MF3043 MF3060, MF3061, MF3062, MF3063 MF3080, MF3081, MF3082, MF3083	Surface Mount Tape & Reel	3000 pcs per reel

DEVICE MARKING



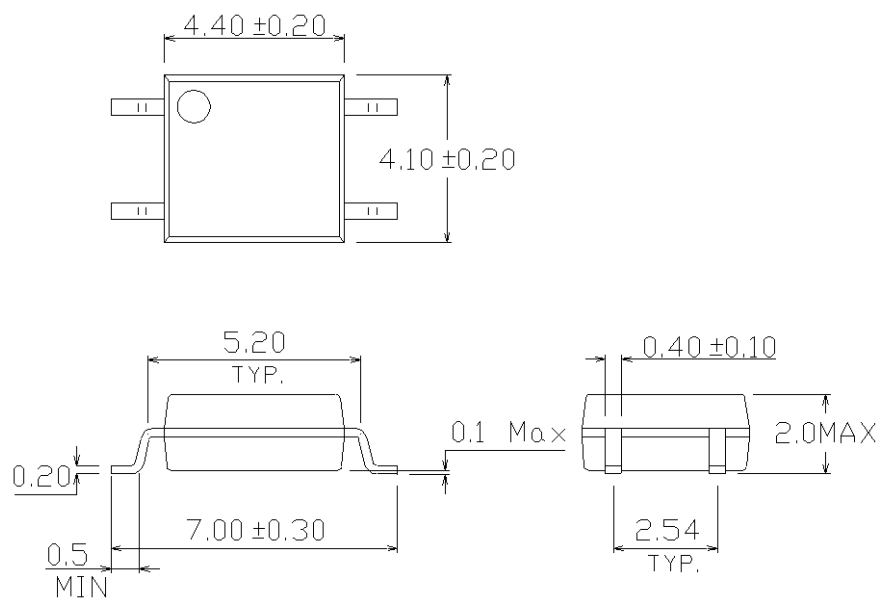
MF3063 denotes Device Part Number where "MF3063" is used as example
/ denotes Isocom
Y denotes 1 digit Year code
WW denotes 2 digit Week code



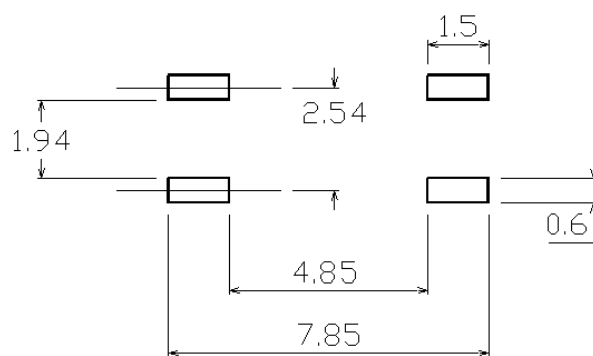
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PACKAGE DIMENSIONS (mm)



RECOMMENDED PAD LAYOUT (mm)

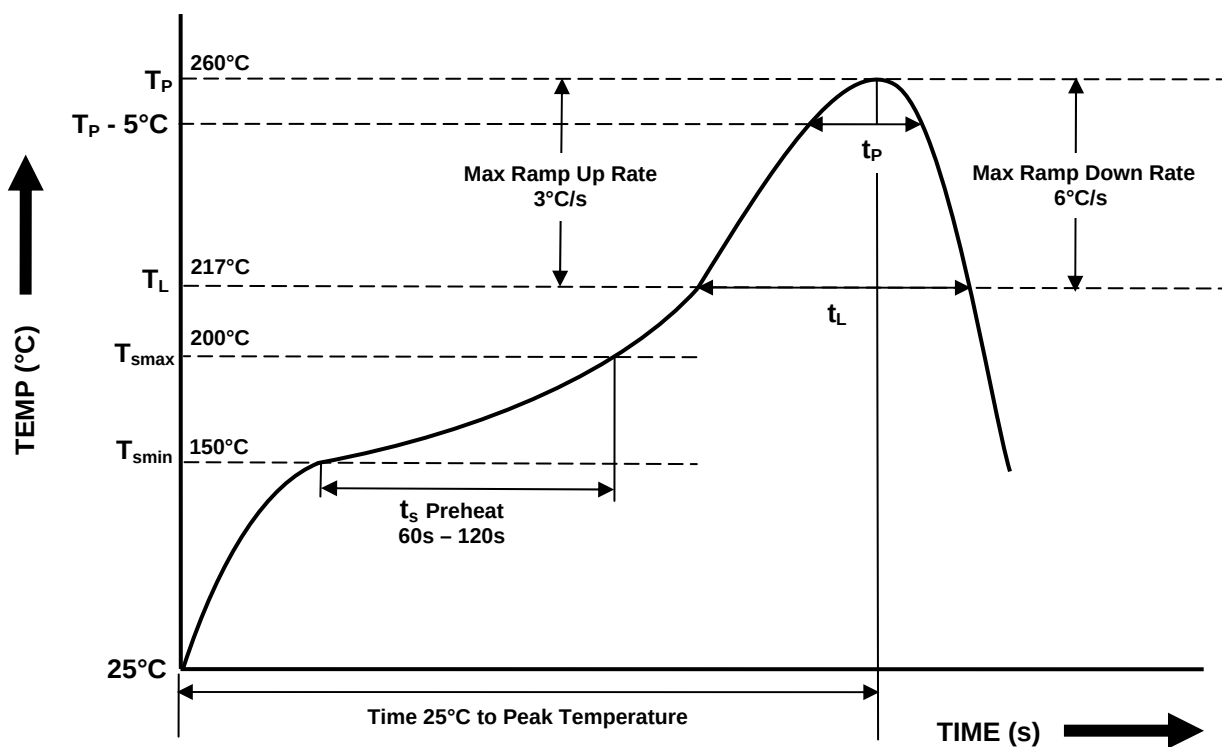




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IR REFLOW SOLDERING TEMPERATURE PROFILE

(One Time Reflow Soldering is Recommended)



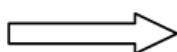
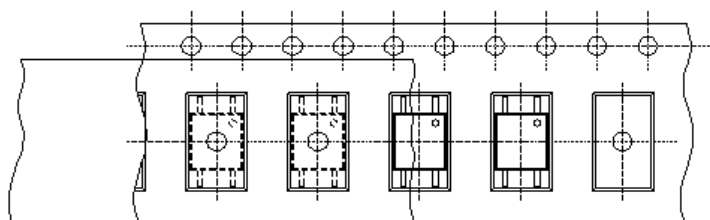
Profile Details	Conditions
Preheat - Min Temperature (T_{SMIN}) - Max Temperature (T_{SMAX}) - Time T_{SMIN} to T_{SMAX} (t_s)	150°C 200°C 60s – 120s
Soldering Zone - Peak Temperature (T_P) - Liquidous Temperature (T_L) - Time within 5°C of Actual Peak Temperature ($T_P - 5^\circ\text{C}$) - Time maintained 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 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



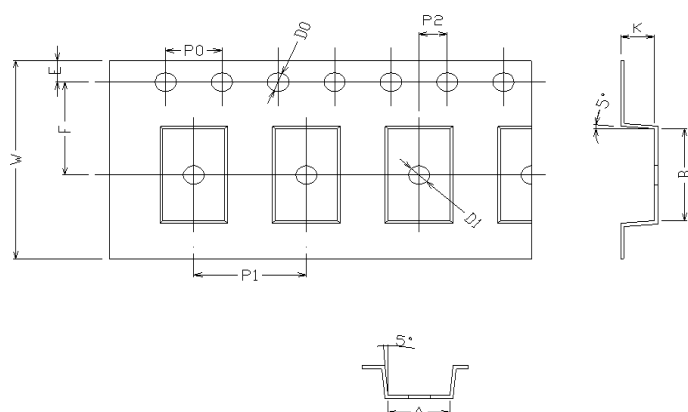
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TAPE AND REEL PACKAGING (mm)

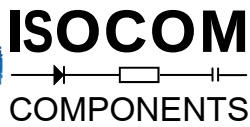


Direction of feed from reel



Dimension No.	A	B	D0	D1	E	F
mm	4.4 ± 0.1	7.4 ± 0.1	$1.5 + 0.1/-0$	1.5 ± 0.1	1.75 ± 0.1	7.5 ± 0.1

Dimension No.	P0	P1	P2	t	W	K
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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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.