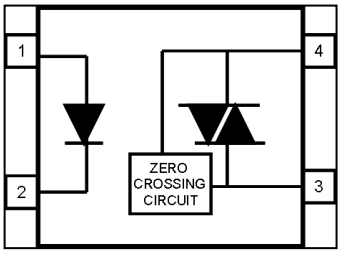
MF303x, MF304x, MF306x, MF308x

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.



1 Anode
2 Cathode
3 Main Terminal
4 Main Terminal

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
- UL File E91231 for MF304x, MF306x
- Safety Approval Pending for MF303x, MF308x

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°C unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	I_F = 30mA			1.5	V
Reverse Leakage Current	I_R	V_R = 6V			10	µA

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Peak Off-state Current	I_{DRM}	V_{DRM} = Rated V_{DRM} I_F = 0mA (Note 1)			100	nA
Peak Blocking Voltage	V_{DRM}	I_{DRM} = 100nA 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_{TM} = 100mA (peak)			3	V
Critical Rate of Rise of Off-state Voltage	dv/dt		1000			V/µs

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

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Input Trigger Current	I_{FT}	V_{TM} = 3V				mA
		MF3030 / MF3040 / MF3060 MF3080			30	
		MF3031 / MF3041 / MF3061 MF3081			15	
		MF3032 / MF3042 / MF3062 MF3082			10	
		MF3033 / MF3043 / MF3063 MF3083			5	
		(Note 2)				
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 = Rated I_{FT}, MT1-MT2 Voltage above which device will not trigger			20	V
Leakage in Inhibit State	I_{INH}	I_F = Rated I_{FT}, V_{DRM} = 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.

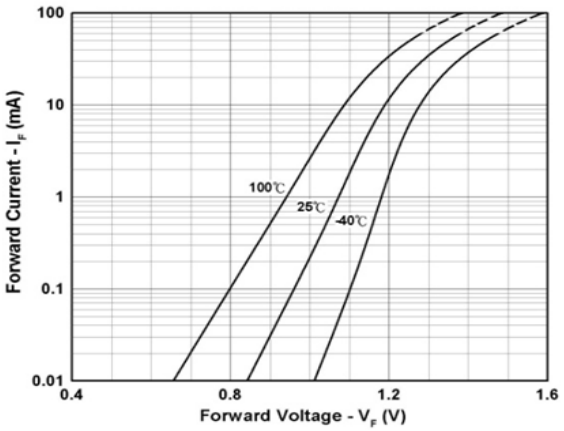


Fig 1 Forward Current vs Forward Voltage

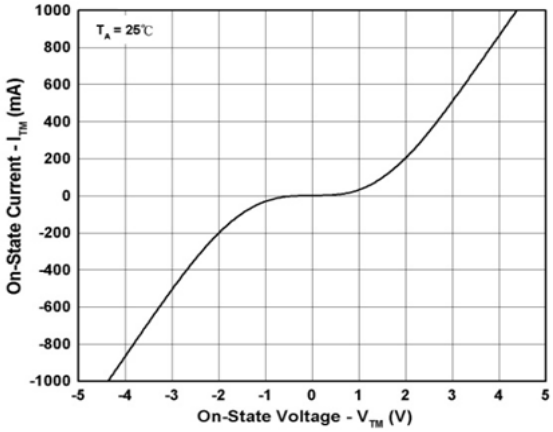


Fig 2 On-State Characteristics

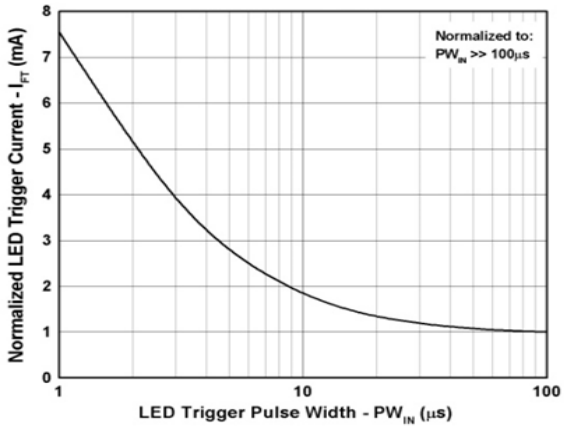


Fig 3 LED Trigger Current vs Trigger Pulse Width

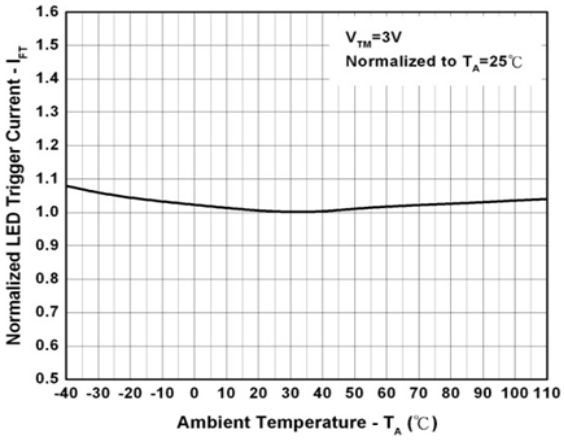


Fig 4 LED Trigger Current vs Ambient Temperature

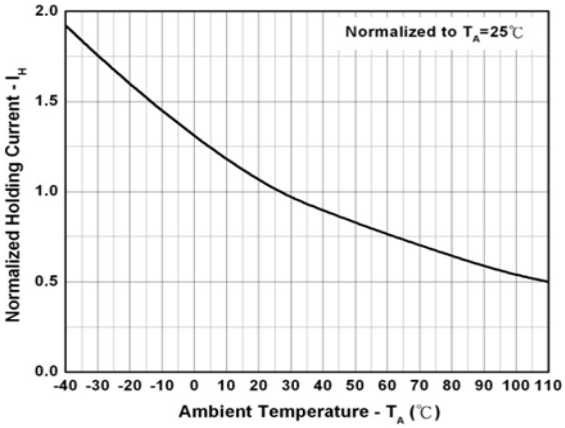


Fig 5 Holding Current vs Ambient Temperature

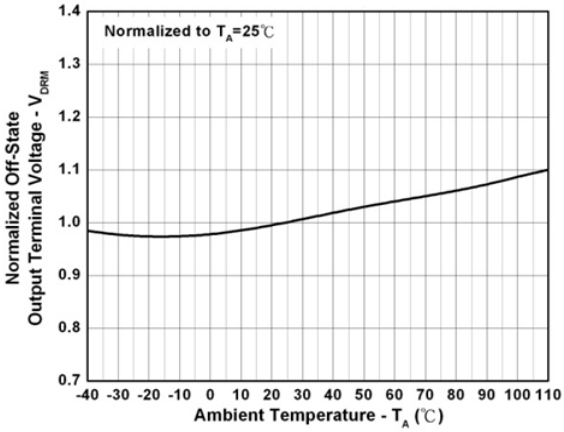


Fig 6 Off-State Output Terminal Voltage vs Ambient Temperature

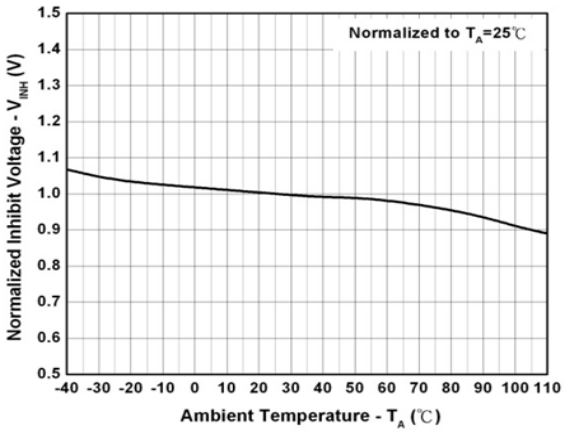


Fig 7 Inhibit Voltage vs Ambient Temperature

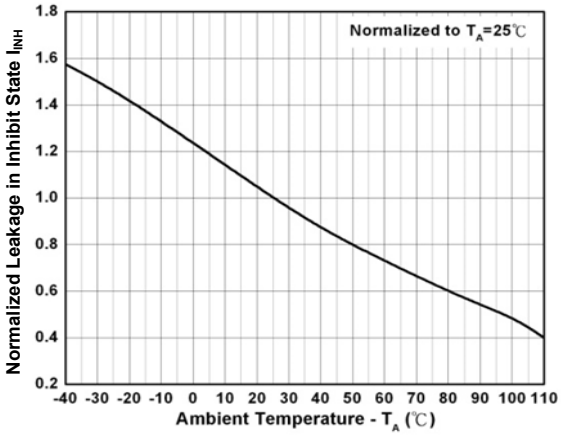


Fig 8 Leakage Current in Inhibit State vs Ambient Temperature

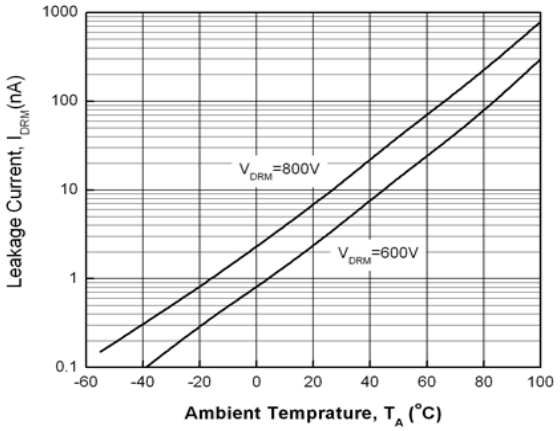
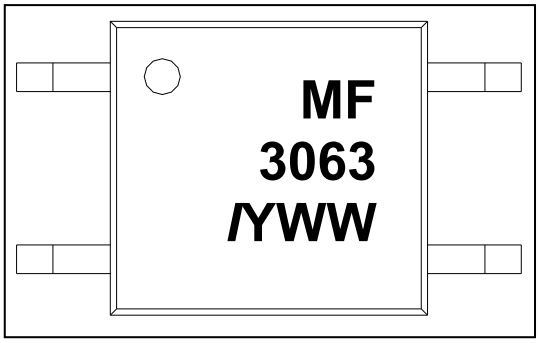


Fig 9 Leakage Current vs Ambient Temperature

ORDER INFORMATION

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

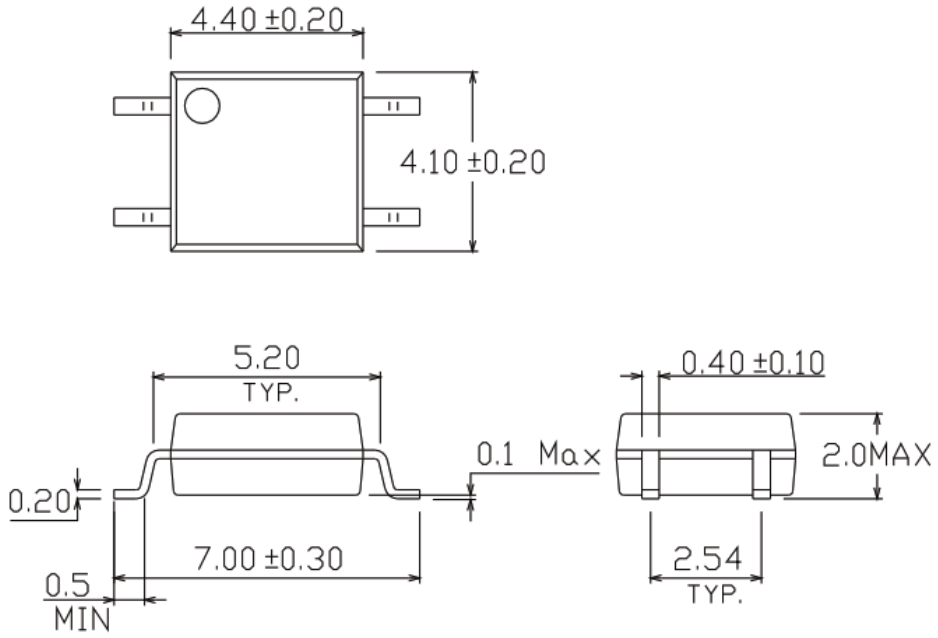
DEVICE MARKING
Note : MF3063 is used as example



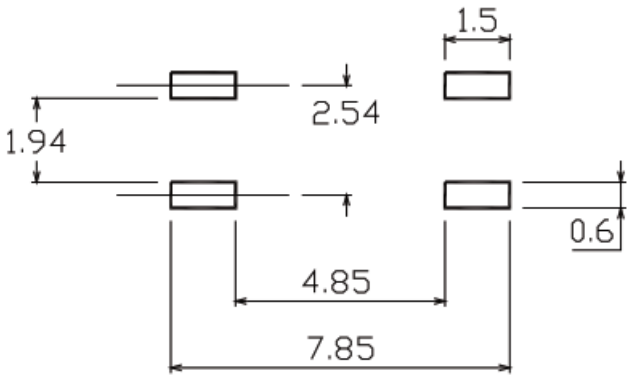
MF3064	denotes Device Part Number
I	denotes Isocom
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code

Note :	**Device**	**Optional Marking**
	MF3033	MF303#
	MF3043	MF304#
	MF3063	MF306#
	MF3083	MF308#

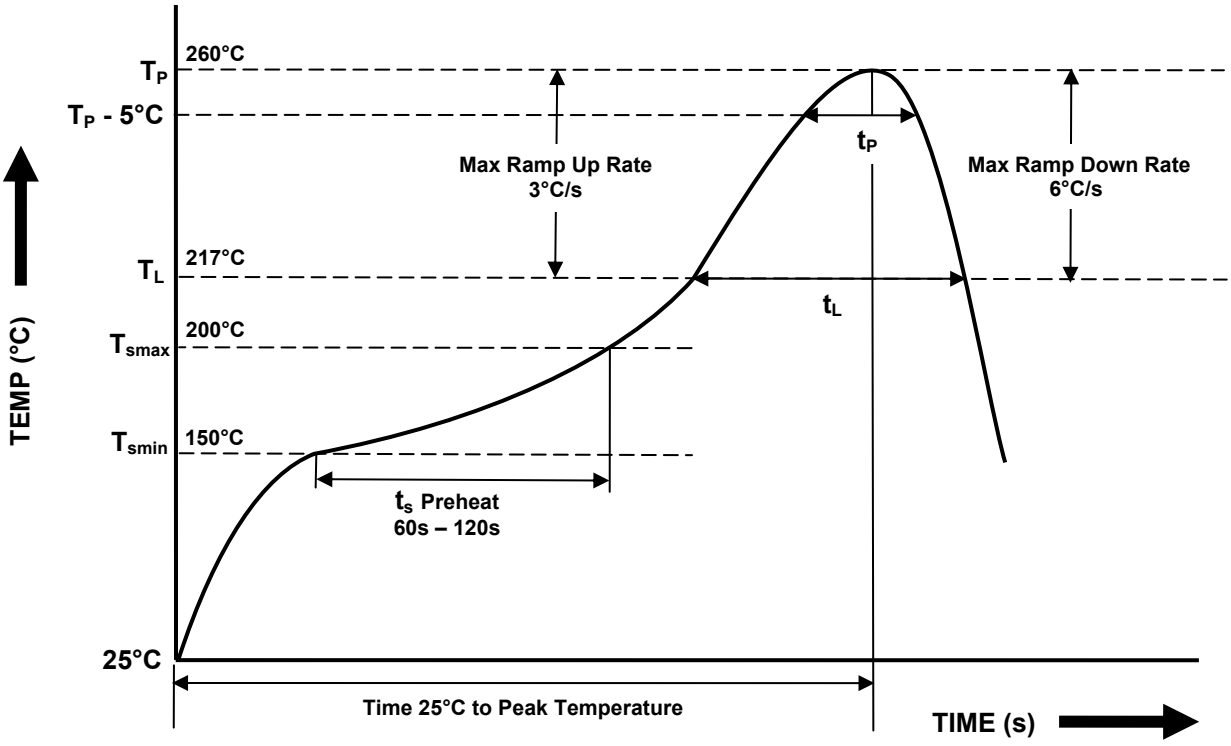
PACKAGE DIMENSIONS (mm)



RECOMMENDED PAD LAYOUT (mm)

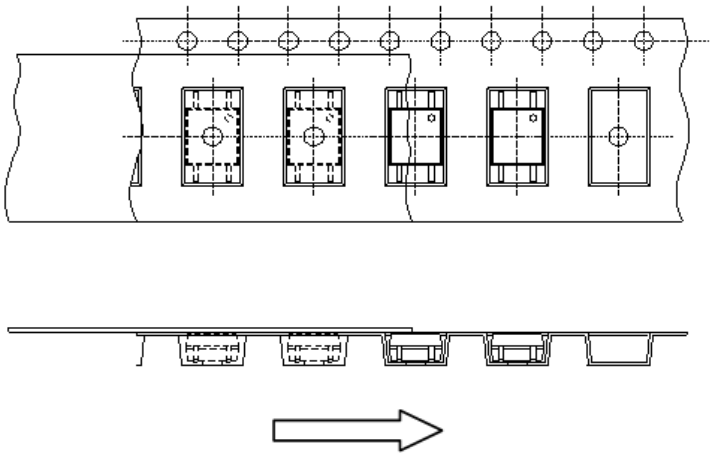


IR REFLOW SOLDERING TEMPERATURE PROFILE
(One Time Reflow Soldering is Recommended)

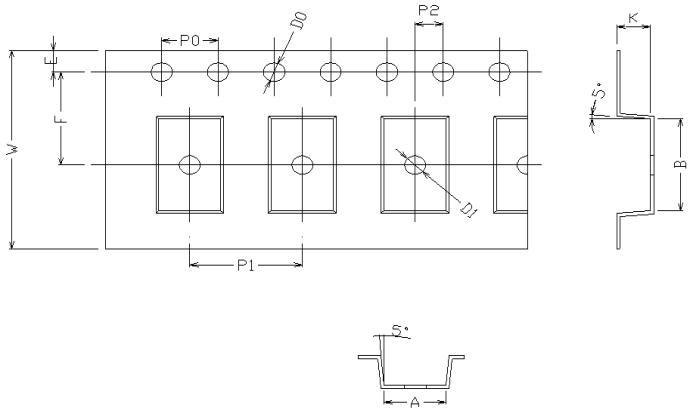


Profile Details	Conditions
Preheat - Min Temperature (T_{SMIN}) - Max Temperature (T_{SMAX}) - Time T_{SMIN} to T_{SMAX} (t_s)	 150°C 200°C 60s – 120s
Soldering Zone - Peak Temperature (T_P) - Liquidous Temperature (T_L) - Time within 5°C of Actual Peak Temperature (T_P – 5°C) - Time maintained above T_L (t_L) - Ramp Up Rate (T_L to T_P) - Ramp Down Rate (T_P to T_L)	 260°C 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.	A	B	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.	Po	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

ISOCOM COMPONENTS

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