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

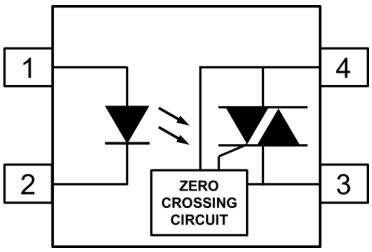
- Zero Voltage Crossing
- V_{DRM}
  - MF303x 250V
  - MF304x 400V
  - MF306x 600V
  - MF308x 800V
- Mini Flat Package
- Isolation Voltage 3750V_{RMS}
- Wide Operating Temperature Range -40°C to 110°C
- Pb Free and RoHS Compliant
- UL File E91231 for MF304x, MF306x
- Safety Approval Pending for MF303x, MF308x

APPLICATIONS

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

ORDER INFORMATION

- Available in Tape & Reel



1 Anode
2 Cathode
3 Main Terminal
4 Main Terminal

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_{RMS}
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 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
On-State Voltage	V_{TM}	I_{TM} = 100mA (peak)			3	V
Critical Rate of Rise of Off-State Voltage	dv/dt		1000			V/µs

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Input Trigger Current	I_{FT}	V_{TM} = 3V				V
		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

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.

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

ZERO CROSSING CHARACTERISTICS

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 Current in Inhibit State	$I_{DRM\,2}$	I_F = Rated I_{FT} V_{DRM} = Rated V_{DRM} Off-state			1000	µA

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Isolation Voltage	V_{ISO}	R.H. = 40% to 60% t = 1 min	3750			V_{RMS}

Measured with input leads shorted together and output leads shorted together.

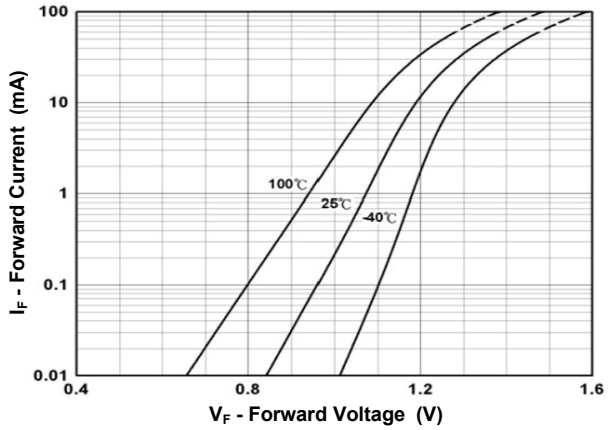


Fig 1 Forward Current vs Forward Voltage

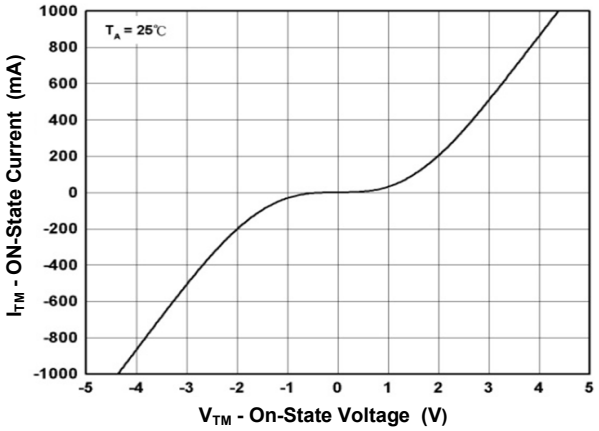


Fig 2 On-State Characteristics

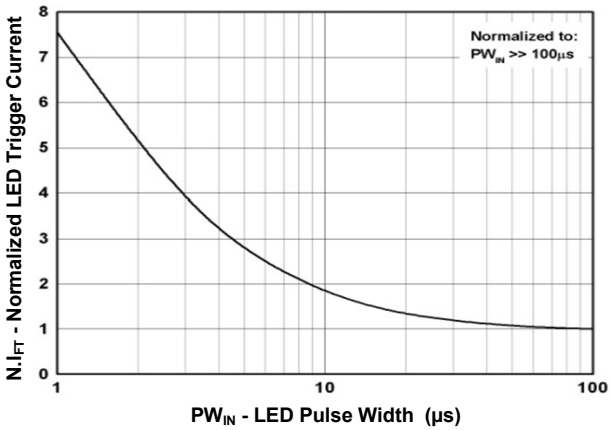


Fig 3 Normalized LED Trigger Current vs LED Pulse Width

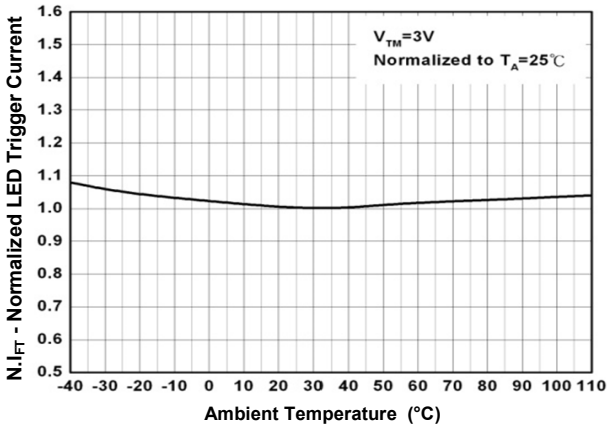


Fig 4 Normalized LED Trigger Current vs Ambient Temperature

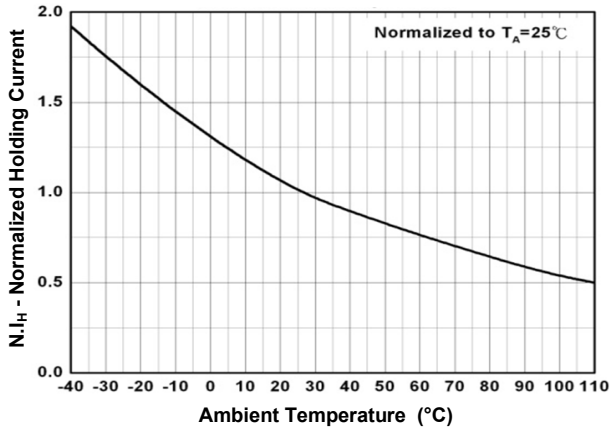


Fig 5 Holding Current vs Ambient Temperature

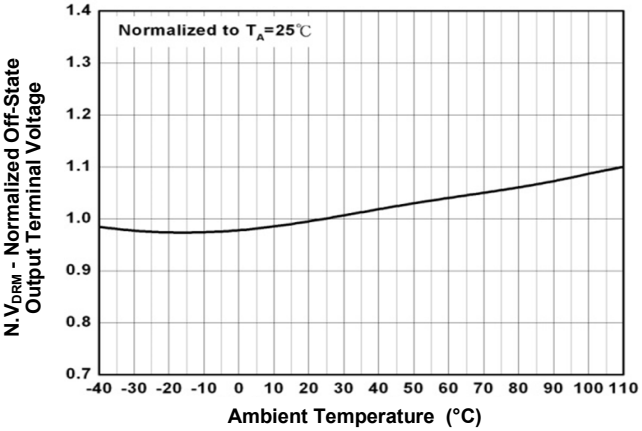


Fig 6 Off-State Output Terminal Voltage vs Ambient Temperature

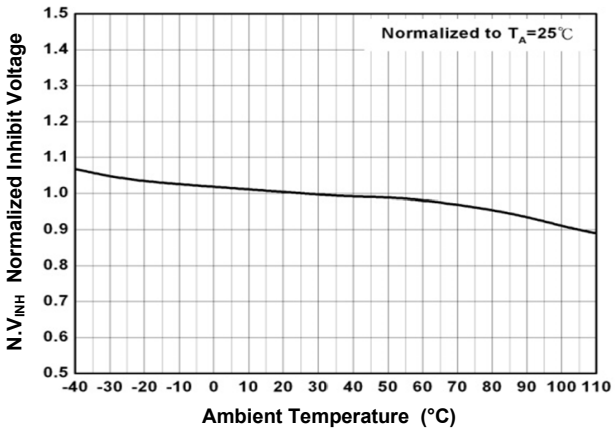


Fig 7 Normalized Inhibit Voltage vs Ambient Temperature

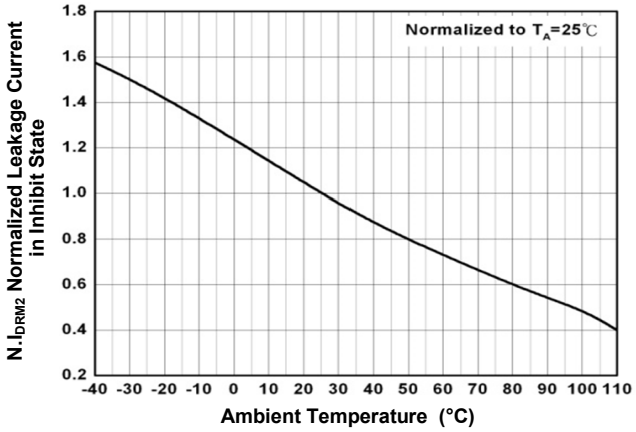


Fig 8 Normalized Leakage Current in Inhibit State vs Ambient Temperature

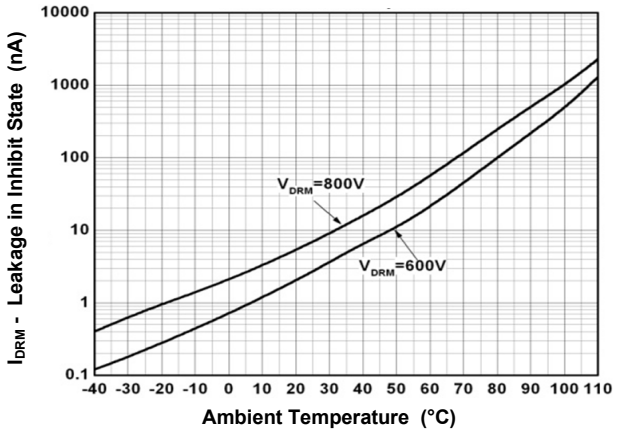


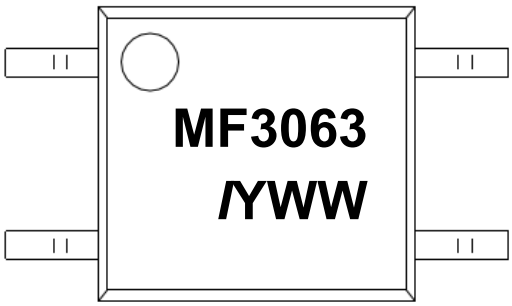
Fig 9 Leakage Current vs Ambient Temperature

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			

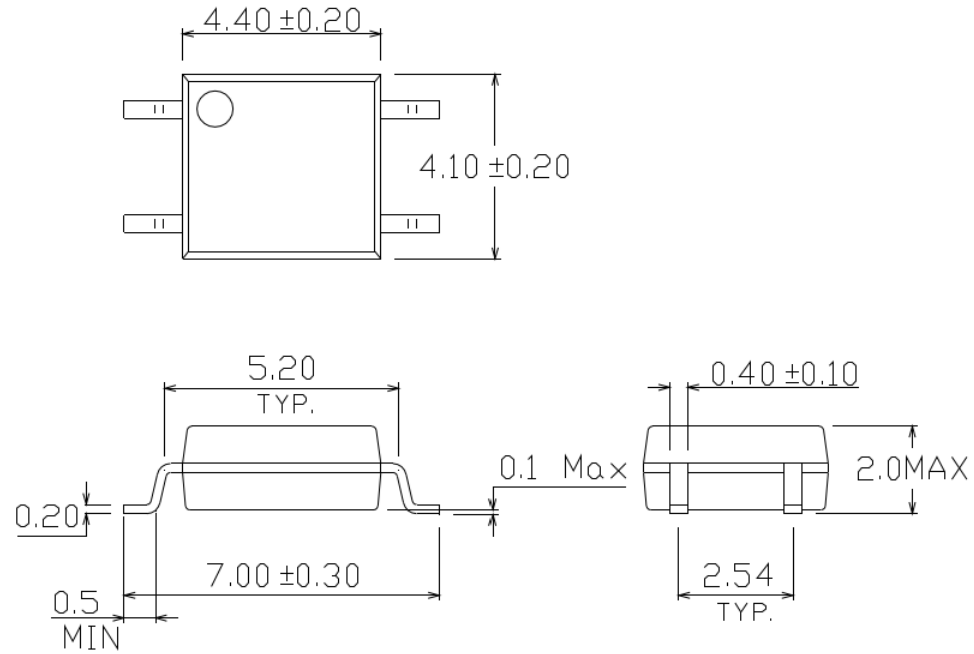
DEVICE MARKING

Note : MF3063 is used as example

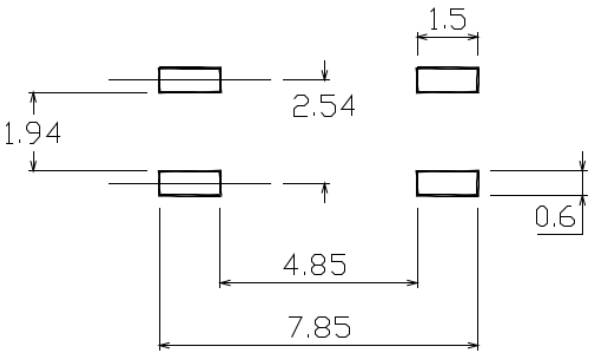


MF3063	Device Part Number	
/	Isocom	
Y	Year Code (A = 2010, B = 2011, etc.)	
WW	2 digit Week Code	
Note :	**Device**	**Optional Marking**
	MF3033	MF303#
	MF3043	MF304#
	MF3063	MF306# / MF3064
	MF3083	MF308#

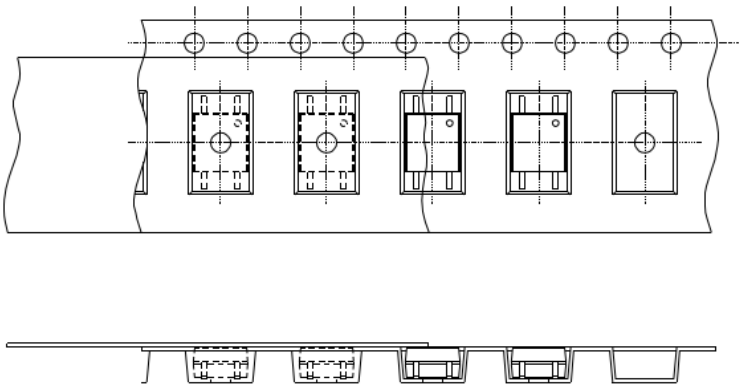
PACKAGE DIMENSIONS (mm)



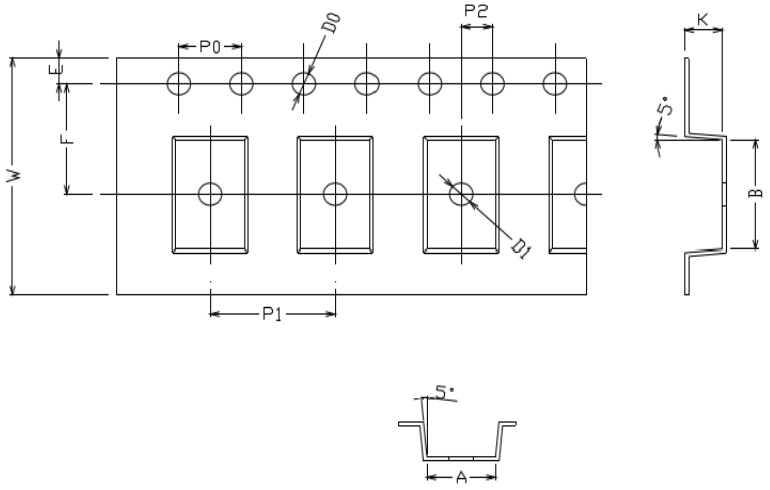
RECOMMENDED PAD LAYOUT (mm)



TAPE AND REEL PACKAGING (mm)

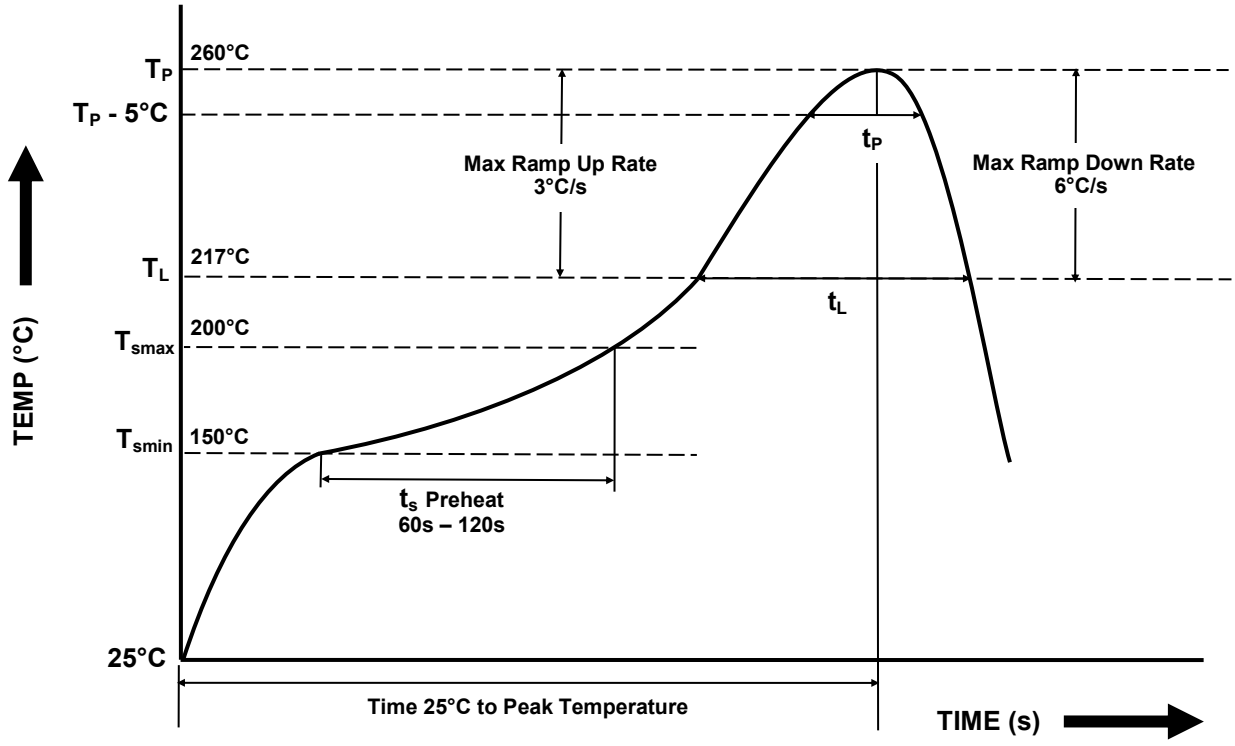


Direction of feed from reel



Dimension No.	A	B	Do	D1	E	F
Dimension(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.	Po	P1	P2	t	W	K
Dimension (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

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

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