MOC306x

DESCRIPTION

The MOC306x Series are optically coupled isolators consisting of a Gallium Arsenide infrared emitting diode coupled with a monolithic silicon detector performing the functions of a zero crossing bilateral triac mounted in a standard 6 pin dual-in-line package.

FEATURES

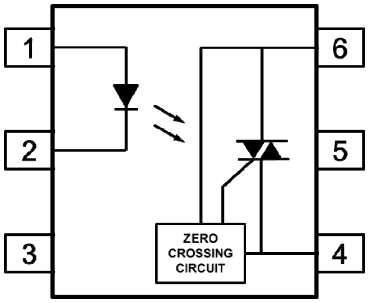
- Zero Voltage Crossing
- Triac Driver Output
- High V_{DRM} minimum 600V
- High Critical Rate of Rise of Off-State Voltage dv/dt minimum 600V/µs
- Isolation Voltage 5000V_{RMS}
- RoHS Compliant
- UL File No. E91231 Package System "TT"
- VDE File No. 40028086

APPLICATIONS

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

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



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

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C unless otherwise specified.
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
Juntion Temperature	125°C
Power dissipation	120mW

Output

Off State Output Terminal Voltage	600V
On State RMS Current	100mA_{RMS}
Peak Repetitive Surge Current (Pulse Width 100µs, 120pps)	1.0A
Junction Temperature	125°C
Power Dissipation	150mW

Total Package

Isolation Voltage	5000V_{RMS}
Total Power Dissipation	250mW
Operating Temperature	-40 to 100°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 = 20mA		1.2	1.4	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			500	nA
Peak Blocking Voltage Either Direction	V_{DRM}	I_{DRM} = 500nA	600			V
On-state Voltage Either Direction	V_{TM}	I_{TM} = 100mA (peak)			3.0	V
Critical Rate of Rise of Off-state Voltage (Static dv/dt)	dv/dt	I_F = 0mA, Vin = 240V_{RMS}	1000			V/µs

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Input Trigger Current Either Direction	I_{FT}	V_{TM} = 3V Note 2				mA
		MOC3060			30	
		MOC3061			15	
		MOC3062			10	
		MOC3063			5	
Holding Current Either Direction	I_H			400		µA

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		5	20	V
Leakage Current at Inhibit State	I_{DRM2}	I_F = Rated I_{FT}, V_{DRM} = 600V, Off-state			500	µA

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Isolation Voltage Input-Output	V_{ISO}	RH = 40 to 60%, t = 1 min Note 3	5000			V_{RMS}

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.

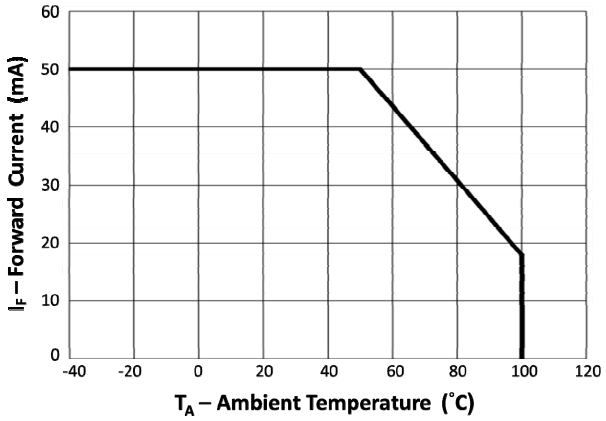


Fig 1 Forward Current vs Ambient Temperature

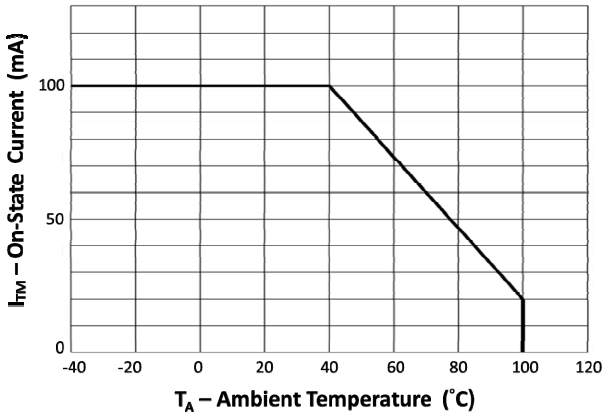


Fig 2 On-State Current vs Ambient Temperature

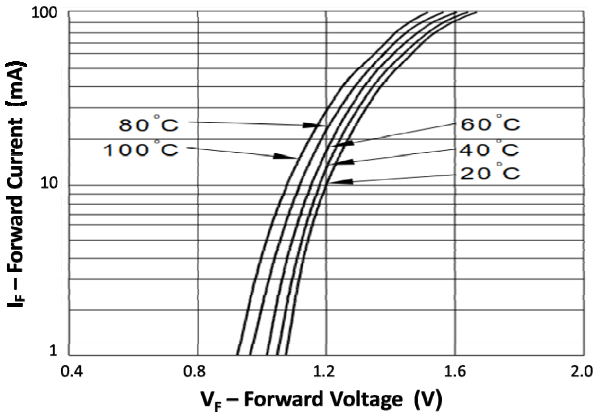


Fig 3 Forward Current vs Forward Voltage

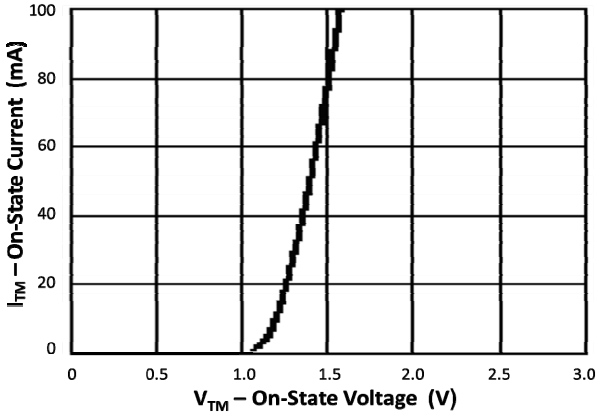


Fig 4 On-state Current vs On-State Voltage

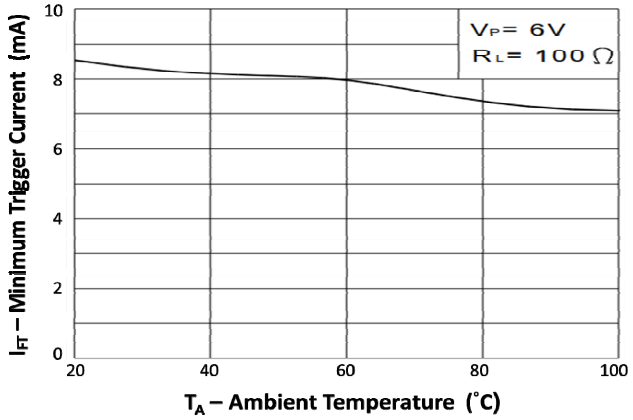


Fig 5 Minimum Trigger Current vs Ambient Temperature

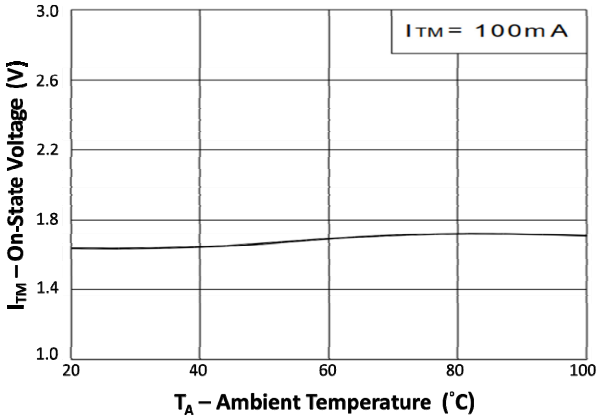


Fig 6 On-State Voltage vs Ambient Temperature

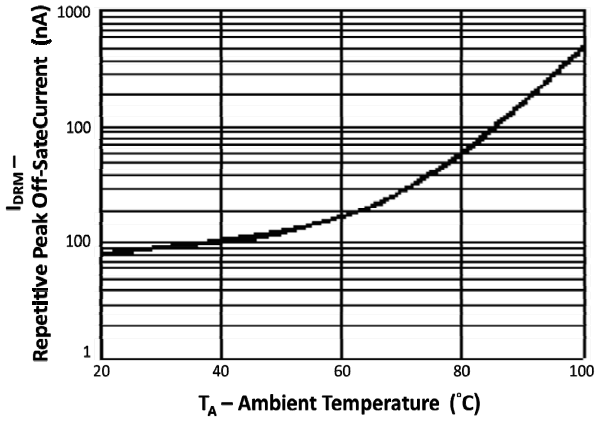


Fig 7 Repetitive Peak Off-State Current vs Ambient Temperature

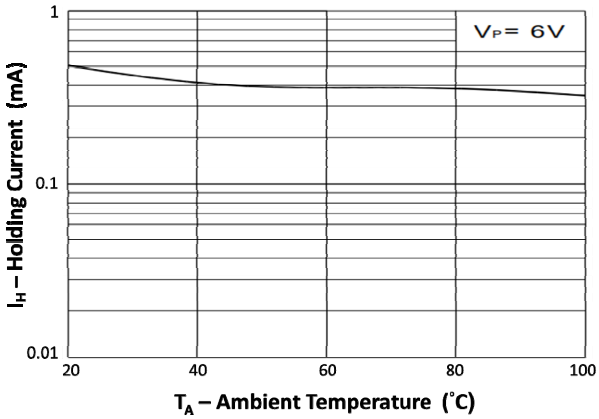


Fig 8 Holding Current vs Ambient Temperature

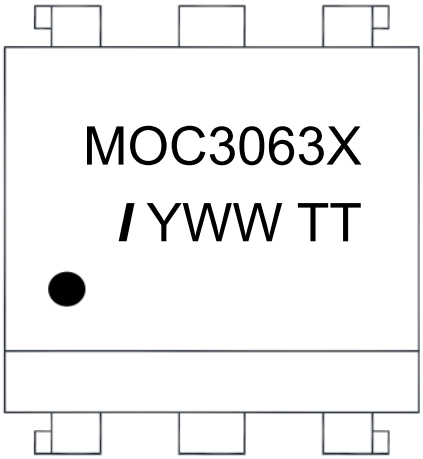
ORDER INFORMATION

MOC306x (UL Approval)			
After PN	**PN**	**Description**	**Packing quantity**
None	MOC3060, MOC3061, MOC3062, MOC3063	Standard DIP6	65 pcs per tube
G	MOC3060G, MOC3061G, MOC3062G, MOC3063G	10mm Lead Spacing	65 pcs per tube
SM	MOC3060SM, MOC3061SM, MOC3062SM, MOC3063SM	Surface Mount	65 pcs per tube
SMT&R	MOC3060SMT&R, MOC3061SMT&R, MOC3062SMT&R, MOC3063SMT&R	Surface Mount Tape & Reel	1000 pcs per reel

MOC306x (UL and VDE Approvals)			
After PN	**PN**	**Description**	**Packing quantity**
None	MOC3060X, MOC3061X, MOC3062X, MOC3063X	Standard DIP6	65 pcs per tube
G	MOC3060XG, MOC3061XG, MOC3062XG, MOC3063XG	10mm Lead Spacing	65 pcs per tube
SM	MOC3060XSM, MOC3061XSM, MOC3062XSM, MOC3063XSM	Surface Mount	65 pcs per tube
SMT&R	MOC3060XSMT&R, MOC3061XSMT&R, MOC3062XSMT&R, MOC3063XSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

DEVICE MARKING

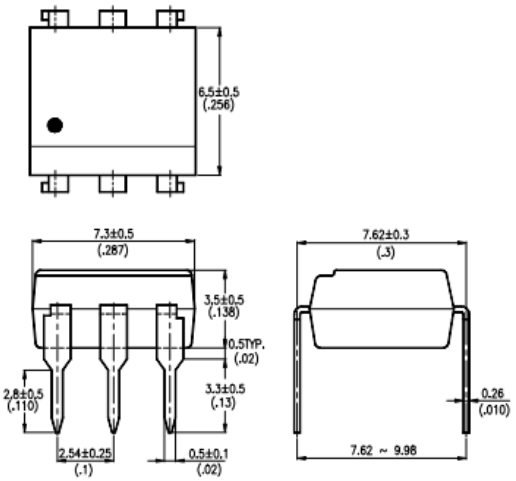
Example : MOC3063X



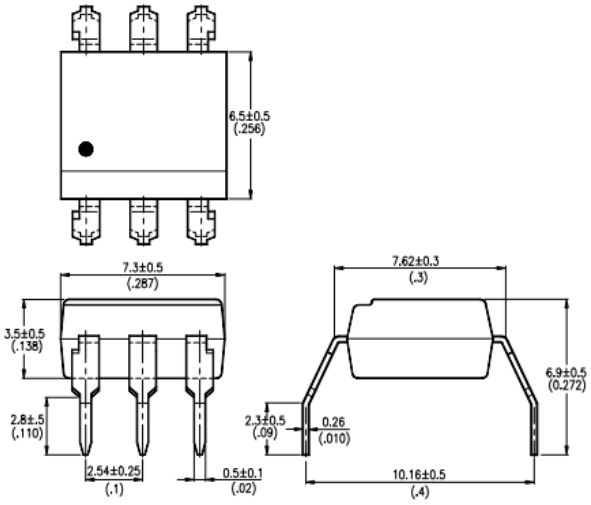
MOC3063X	Denotes Device Part Number
I	denotes Isocom
Y	denotes 2 digit Year code
WW	denotes 2 digit Week code
TT	UL Package System Code

PACKAGE DIMENSIONS in mm (inch)

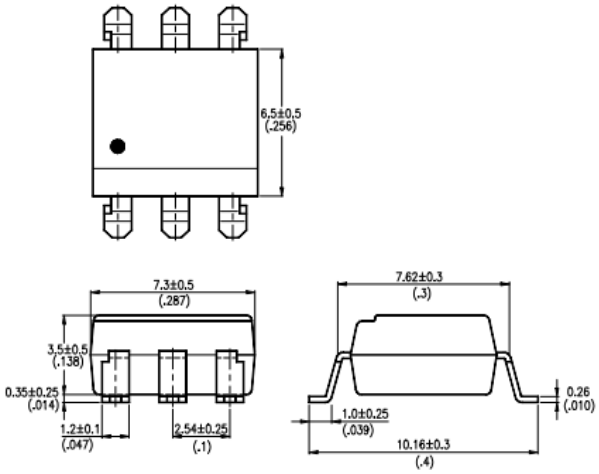
DIP



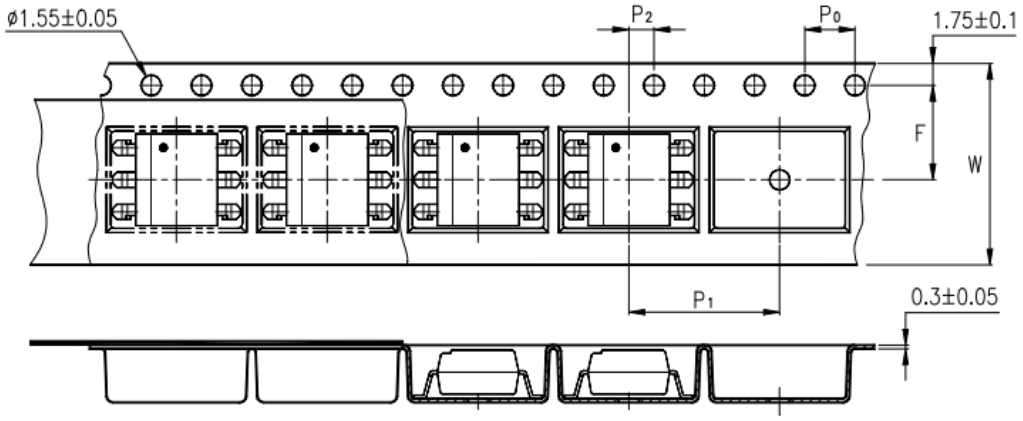
G Form



SMD

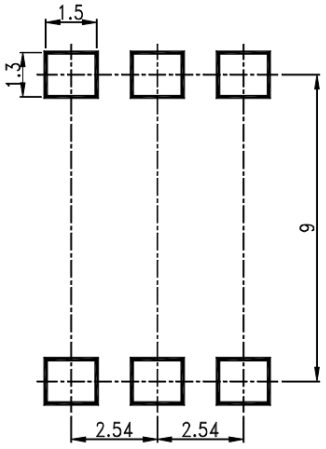


TAPE AND REEL PACKAGING

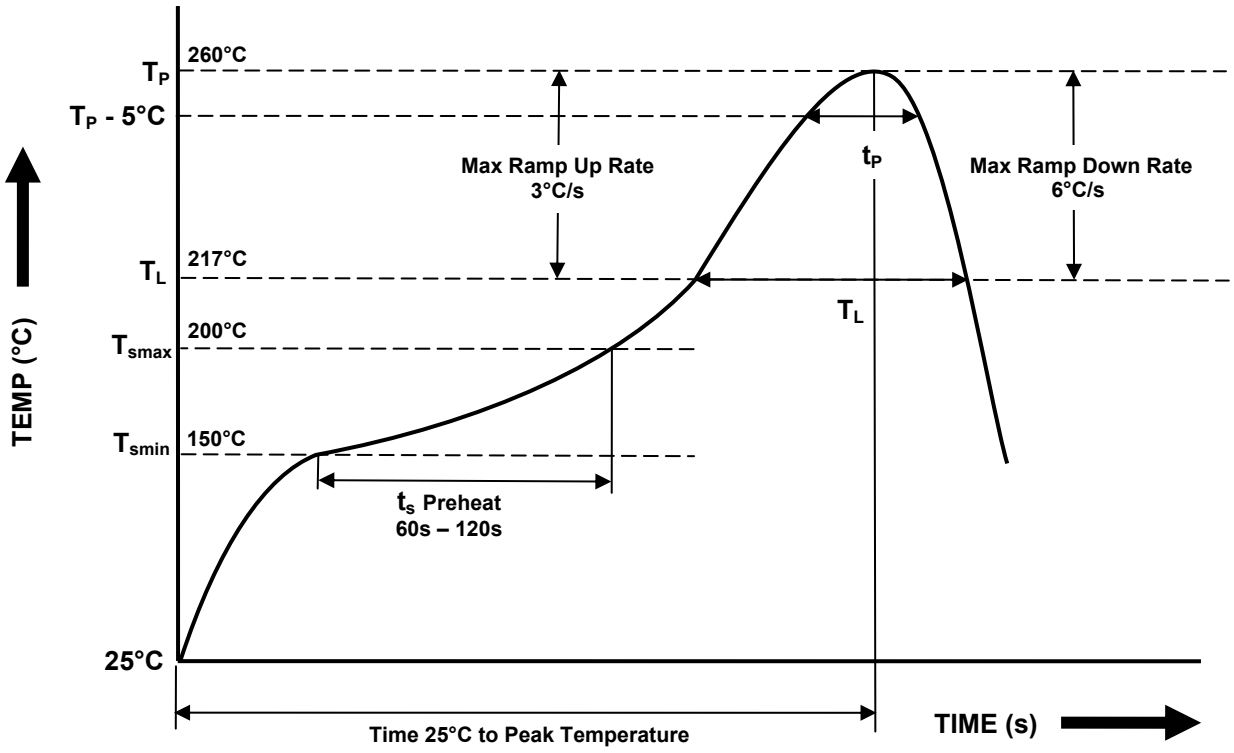


Description	Symbol	Dimension mm (inch)
Tape Width	W	16 ± 0.3 (0.63)
Pitch of Sprocket Holes	P_0	4 ± 0.1 (0.15)
Distance of Compartment to Sprocket Holes	F	7.5 ± 0.1 (0.295)
	P_2	2 ± 0.1 (0.079)
Distance of Compartment to Compartment	P_1	12 ± 0.1 (0.47)

RECOMMENDED PAD LAYOUT for SMD (mm)



IR REFLOW SOLDERING TEMPERATURE PROFILE
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

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