LITEON®
OPTOELECTRONICS

Photocoupler

Product Data Sheet

MOC3063 SERIES

Spec No.: DS70-2001-026

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Revision: D

LITE-ON DCC

RELEASE

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Photocoupler
MOC306X series

1. DESCRIPTION

1.1 Features

- Isolation voltage between input and output V_{iso} : 5,000V_{rms}
- 6pin DIP zero-cross optoisolators triac driver output
- High repetitive peak off-state voltage VDRM : Min. 600V
- High critical rate of rise of off-state voltage(dV/dt : MIN. 1000V / μs)
- Dual-in-line package : MOC3061 / MOC3062 / MOC3063
- Wide lead spacing package : MOC3061M / MOC3062M / MOC3063M
- Surface mounting package : MOC3061S / MOC3062S / MOC3063S
- Tape and reel packaging : MOC3061S-TA1 / MOC3062S-TA1 / MOC3063S-TA1
- Safety approval

  UL 1577
  cUL CA5A
  VDE DIN EN60747-5-5 (VDE 0884-5)
- RoHS Compliance

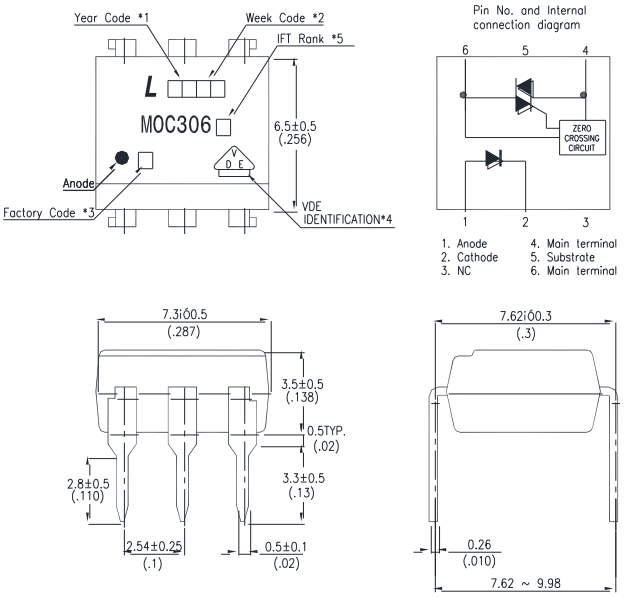
  All materials be used in device are followed EU RoHS directive (No.2002/95/EC).
- MSL class1

1.2 Applications

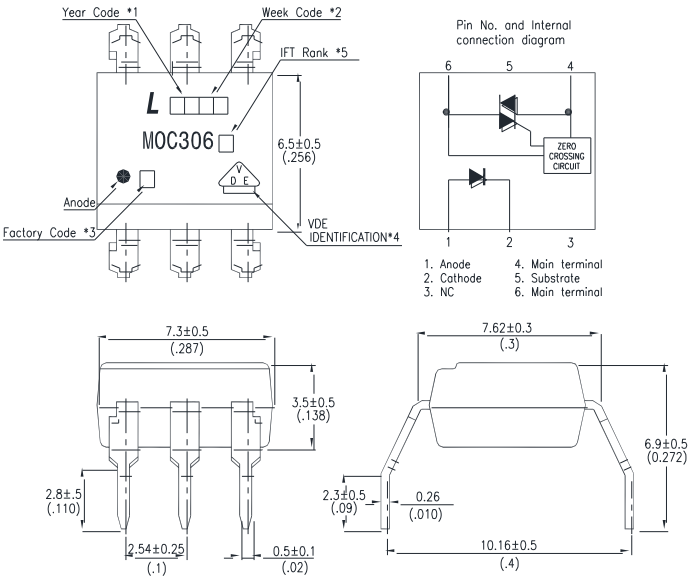
- AC Motor Drives
- AC Motor Starters
- E.M. Contactors
- Lighting Controls
- Solenoid/Valve Controls
- Solid State Relays
- Static Power Switches
- Temperature Controls

2. PACKAGE DIMENSIONS

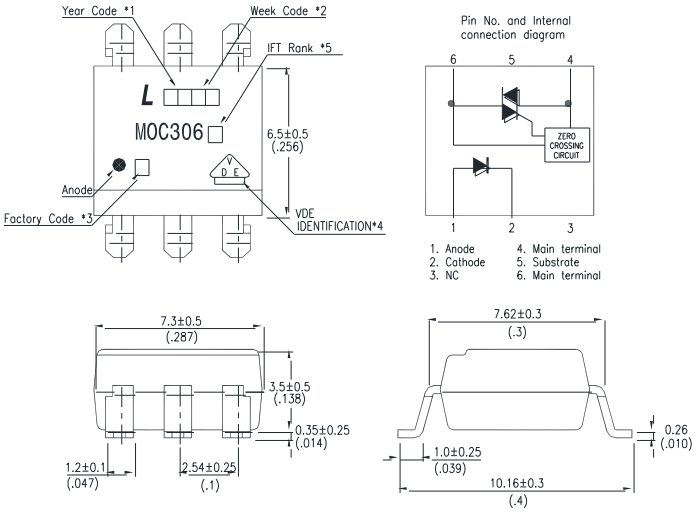
2.1 MOC306X



2.2 MOC306XM



2.3 MOC306XS



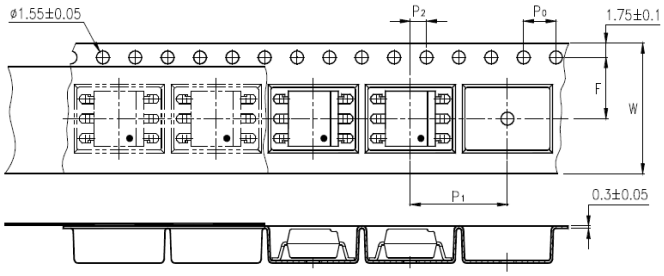
Notes :

1. Year date code.
2. 2-digit work week.
3. Factory identification mark shall be marked (W: China-CZ, Y: Thailand)
4. VDE option
5. I_{FT} rank

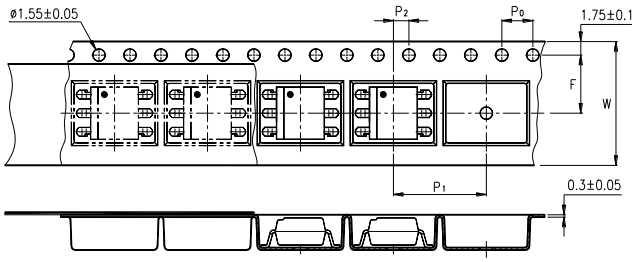
* Dimensions are in Millimeters and (Inches).

3. TAPING DIMENSIONS

3.1 MOC306XS-TA



3.2 MOC306XS-TA1



Description	Symbol	Dimension in mm (inch)
Tape wide	W	16±0.3 (0.63)
Pitch of sprocket holes	P_0	4±0.1 (0.15)
Distance of compartment	F	7.5±0.1 (0.295)
	P_2	2±0.1 (0.079)
Distance of compartment to compartment	P_1	12±0.1 (0.472)

3.3 Quantities Per Reel

Package Type	MOC306XS series
Quantities (pcs)	1000

4. RATING AND CHARACTERISTICS

4.1 Absolute Maximum Ratings at Ta=25°C

	Parameter	Symbol	Rating	Unit
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Junction Temperature	T_J	125	°C
	Power Dissipation	P	120	mW
Output	Off-State Output Terminal Voltage	V_{DRM}	600	V
	On-State RMS Current	$I_{D(RMS)}$	100	mA
	Peak Repetitive Surge Current (PW=1ms, 120pps)	I_{TSM}	1	A
	Junction Temperature	T_J	125	°C
	Collector Power Dissipation	P_C	150	mW
	Total Power Dissipation	P_{tot}	250	mW
1.	Isolation Voltage	V_{iso}	5000	V_{rms}
	Operating Temperature	T_{opr}	-40 ~ +110	°C
	Storage Temperature	T_{stg}	-55 ~ +150	°C
2.	Soldering Temperature	T_{sol}	260	°C

1. AC For 1 Minute, R.H. = 40 ~ 60%

   Isolation voltage shall be measured using the following method.

   (1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side.

   (2) The isolation voltage tester with zero-cross circuit shall be used.

   (3) The waveform of applied voltage shall be a sine wave.

2. For 10 Seconds

4.2 ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25°C

Parameter			Symbol	Min.	Typ.	Max.	Unit	Test Condition
Input		Forward Voltage	V_F	—	1.2	1.4	V	I_F=20mA
		Reverse Current	I_R	—	0.05	10	μA	V_R=6V
Output	1	Peak Blocking Current, Either Direction	I_{DRM}	—	—	500	nA	V_{DRM} = 600V
		Peak On-State Voltage, Either Direction	V_{TM}	—	—	3.0	V	I_{TM}=100 mA Peak
	2	Critical rate of Rise of Off-State Voltage	dv/dt	1000	—	—	V/μs	Vin=240Vrms
Couple	3	Led Trigger Current, Current Required to Latch Output, Either Direction	MOC3061	I_{FT}	—	—	15	mA	Main Terminal Voltage = 3V
			MOC3062		—	—	10		
			MOC3063		—	—	5		
		Holding Current, Either Direction		I_H	—	400	—	μA	
ZERO CROSSING		Inhibit Voltage		V_{INH}	—	5	20	Volts	I_F=Rated I_{FT}, MT1-MT2 Voltage above which device will not trigger.
		Leakage in Inhibited State		I_{DRM2}	—	—	500	μA	I_F = Rated I_{FT}, Rated V_{DRM}, Off State

*1. Test voltage must be applied within dv/dt rating.

*2. This is static dv/dt. Commutating dv/dt is a function of the load-driving thyristor(s) only.

*3. All devices are guaranteed to trigger at an I_F value less than or equal to max I_{FT}. Therefore, recommended operating I_F lies between max I_{FT}, 15 mA for MOC3061, 10 mA for MOC3062, 5 mA for MOC3063, and absolute max I_F (50mA).

5. CHARACTERISTICS CURVES (TYPICAL PERFORMANCE)

Fig.1 Forward Current vs. Ambient Temperature

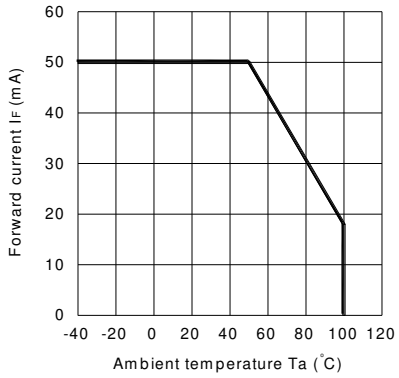


Fig.2 On-state Current vs. Ambient Temperature

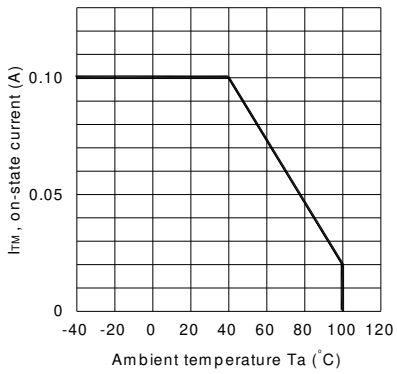


Fig.3 Minimum Trigger Current vs. Ambient Temperature

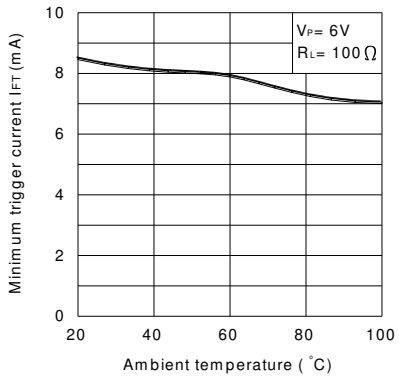


Fig.4 Forward Current vs. Forward Voltage

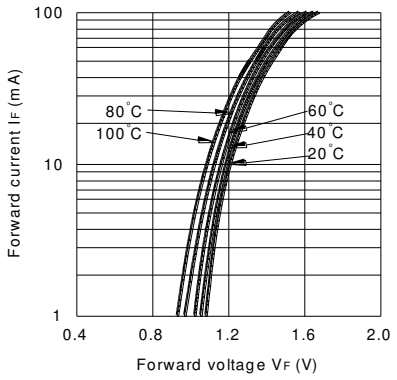


Fig.5 On-state Voltage vs. Ambient Temperature

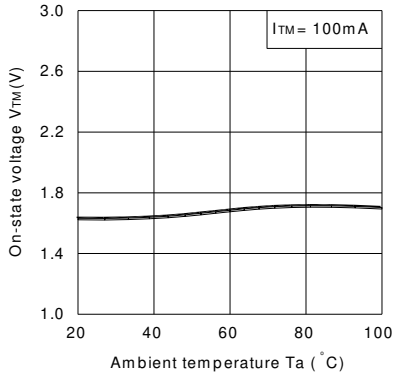


Fig.6 Holding Current vs. Ambient Temperature

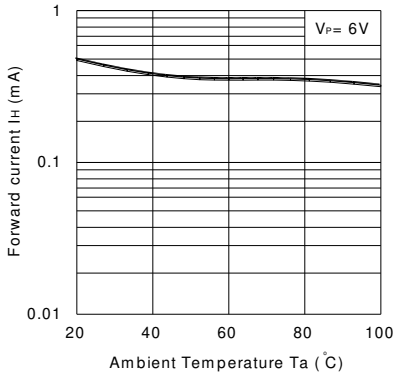


Fig.7 Repetitive Peak Off-state Current vs. Temperature

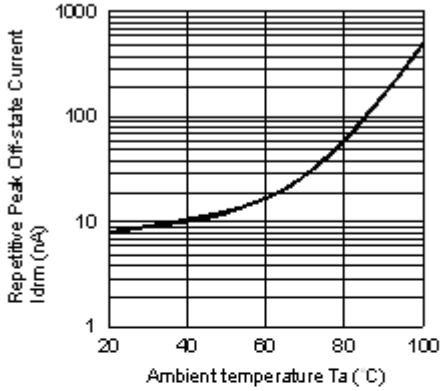
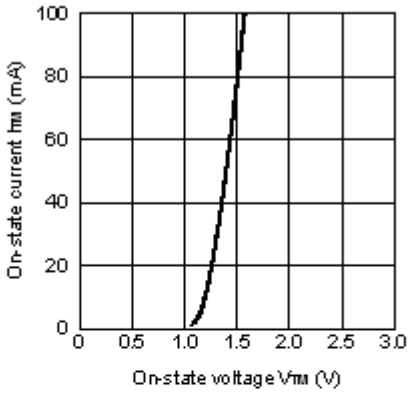
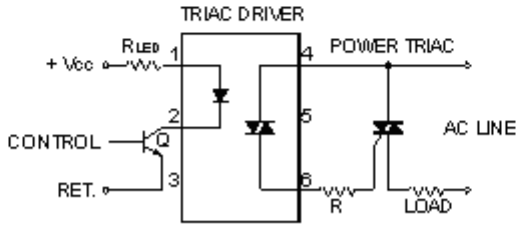


Fig.8 On-state Current vs. On-state Voltage



Basic Driver Circuit



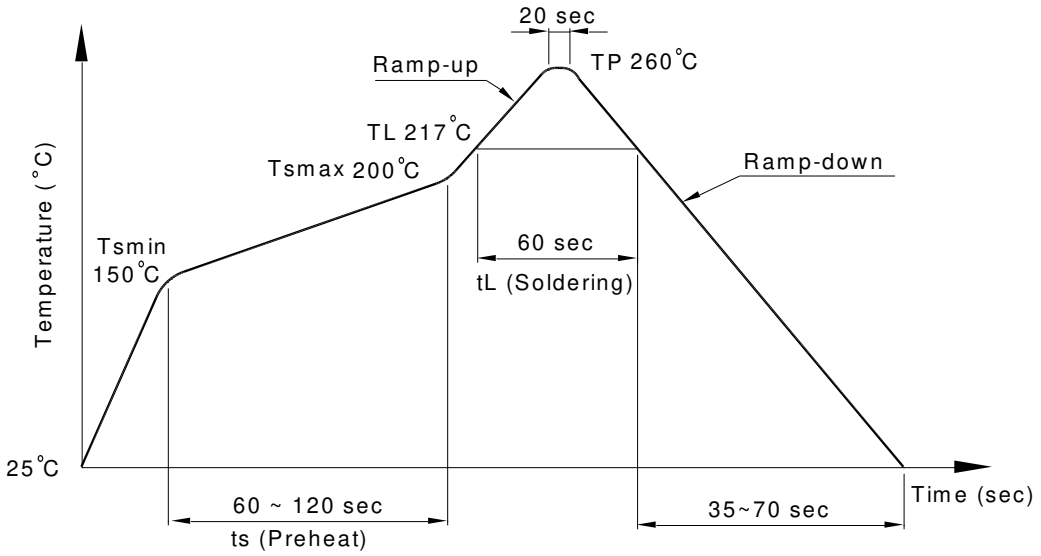
RLED= (Vcc- VF LED-VTM(Q))/ IFT
R= VP AC line/ITSM

6. TEMPERATURE PROFILE OF SOLDERING

6.1 IR Reflow soldering (JEDEC-STD-020C compliant)

One time soldering reflow is recommended within the condition of temperature and time profile shown below. Do not solder more than three times.

Profile item	Conditions
Preheat	
- Temperature Min (T_{Smin})	150˚C
- Temperature Max (T_{Smax})	200˚C
- Time (min to max) (ts)	90±30 sec
Soldering zone	
- Temperature (T_L)	217˚C
- Time (t_L)	60 sec
Peak Temperature (T_P)	260˚C
Ramp-up rate	3˚C / sec max.
Ramp-down rate	3~6˚C / sec



6.2 Wave soldering (JEDEC22A111 compliant)

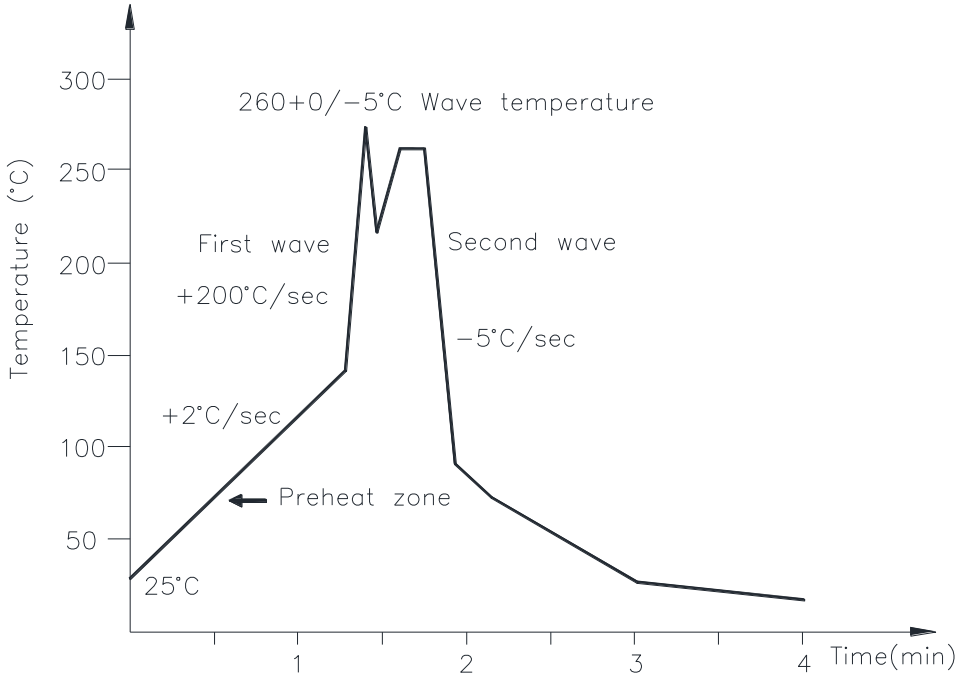
One time soldering is recommended within the condition of temperature.

Temperature: 260+0/-5˚C

Time: 10 sec.

Preheat temperature:25 to 140˚C

Preheat time: 30 to 80 sec.



6.3 Hand soldering by soldering iron

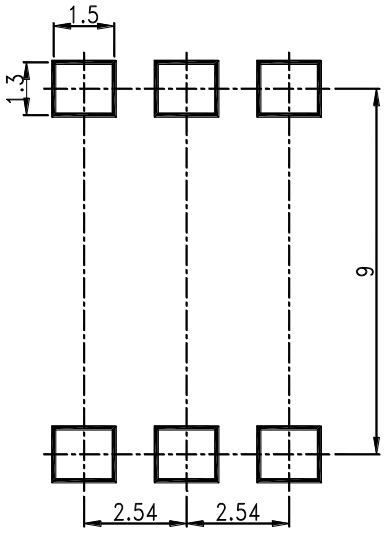
Allow single lead soldering in every single process. One time soldering is recommended.

Temperature: 380+0/-5˚C

Time: 3 sec max.

7. RRECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)

Unit: mm



8. NAMING RULE

MOC306(X)(1)-(2)

DEVICE PART NUMBER (MOC306X)

Please refer to Electrical Optical Characteristics Table on Page P5

(1) FORM TYPE (S, M or none)

(2) TAPING TYPE (TA, TA1)

Example : MOC3061S-TA1

MOC306(X)(1)(2)-V

DEVICE PART NUMBER (MOC306X)

Please refer to Electrical Optical Characteristics Table on Page P5

(1) FORM TYPE (S, M or none)

(2) TAPING TYPE (TA, TA1)

(3) VDE option

Example : MOC3061STA1-V

9. NOTES

- LiteOn is continually improving the quality, reliability, function or design and LiteOn 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/devices 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 in advice.
- If there are any questions about the contents of this publication, please contact us at your convenience.
- The contents described herein are subject to change without prior notice.
- Immerge unit’s body in solder paste is not recommended.