

## Photocoupler MOC306X series

### 1. DESCRIPTION

#### 1.1 Features

- Isolation voltage between input and output  $V_{iso}$  : 5,000V<sub>rms</sub>
- 6pin DIP zero-cross photocoupler, 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 /  $\mu$ s )
- 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-TA / MOC3062S-TA1 / MOC3063S-TA1  
MOC3061S-TA1 / MOC3062S-TA1 / MOC3063S-TA1
- Safety approval  
UL 1577, Cert. No.E113898  
CSA CA5A, Cert. No. 1020087 (CA 91533-1)  
FIMKO EN/IEC 60950-1, EN/IEC 60065; Cert. No.NCS/FI 24426 M3  
VDE DIN EN60747-5-2, Cert. No. 40015248  
CQC GB4943.1-2011/ GB8898-2011
- RoHS Compliance  
All materials be used in device are followed EU RoHS directive (No.2002/95/EC).
- MSL class1
- Halogen free option

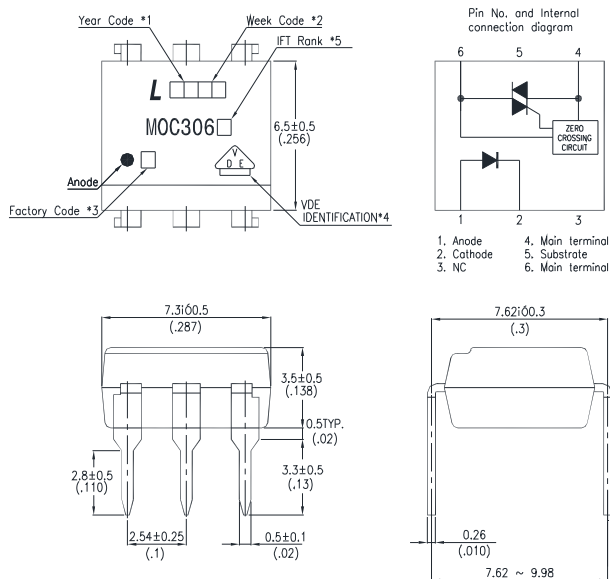
#### 1.2 Applications

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

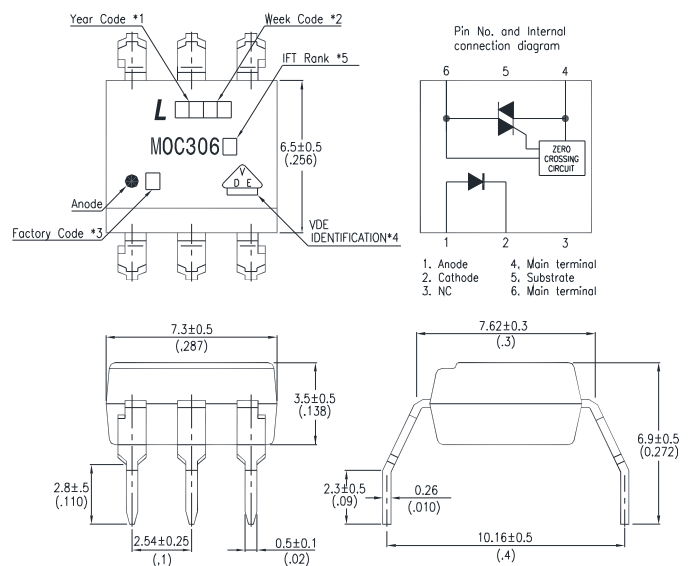
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### 2. PACKAGE DIMENSIONS

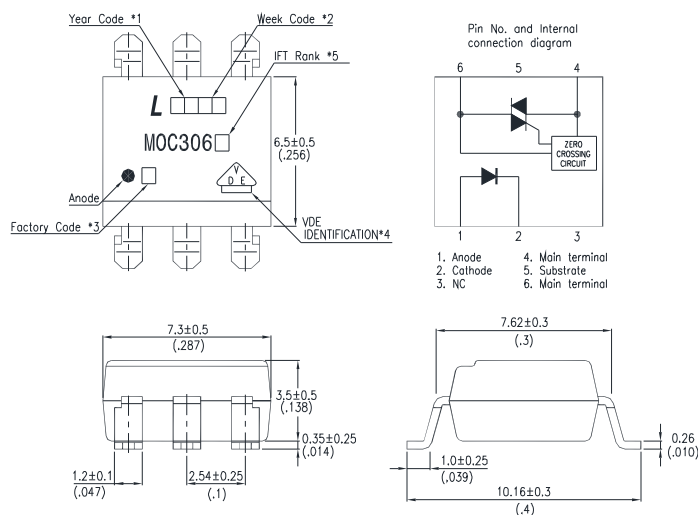
#### 2.1 MOC306X



#### 2.2 MOC306XM



#### 2.3 MOC306XS



#### Notes :

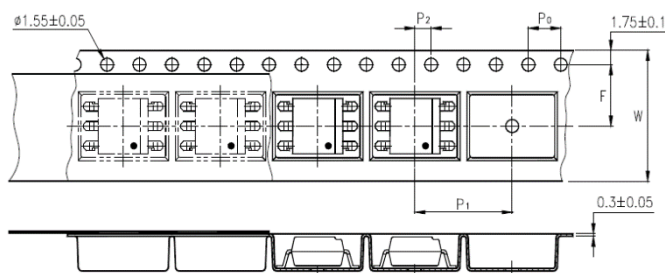
- 2-digit year code, example : 2016 = 16
- 2-digit work week ranging from '01' to '53'
- Factory identification mark shall be marked (W: China-CZ, Y: Thailand)
- VDE option
- I<sub>FT</sub> rank

\* Dimensions are in Millimeters and (Inches).

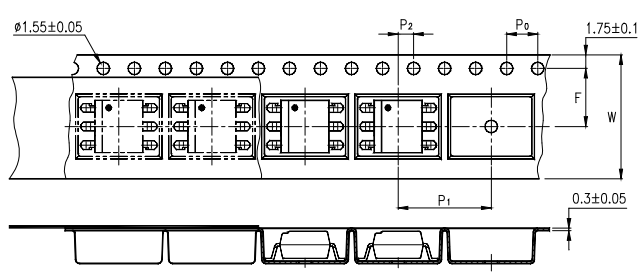
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### 3. TAPING DIMENSIONS

#### 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 <sub>0</sub>	4±0.1 (0.15)
Distance of compartment	F	7.5±0.1 (0.295)
	P <sub>2</sub>	2±0.1 (0.079)
Distance of compartment to compartment	P <sub>1</sub>	12±0.1 (0.472)

#### 3.3 Quantities Per Reel

Package Type	MOC306XS series
Quantities (pcs)	1000

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### 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
	Output Power Dissipation	$P_C$	300	mW
	Total Power Dissipation	$P_{tot}$	330	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

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### 4.2 Recommended Operating Conditions (Note)

Characteristics		Symbol	Min.	Typ.	Max.	Unit
Supply Voltage		$V_{AC}$	-	-	240	Vac
Forward Current	MOC3061	$I_F$	22.5	25	30	mA
	MOC3062		15	20	30	mA
	MOC3063		7.5	10	30	mA
Operating Temperature		$T_{opr}$	-25	-	85	°C

Note: Recommended operating conditions are given as a design guideline to obtain expected performance of the device.

Additionally, each item is an independent guideline respectively. In developing designs using this product, please confirm specified characteristics shown in this document.

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### 4.3 Electrical Optical Characteristics at Ta=25°C

Parameter			Symb	Min.	Typ.	Max.	Unit	Test Condition
Input	Forward Voltage		$V_F$	—	1.2	1.4	V	$I_F=20\text{mA}$
	Reverse Current		$I_R$	—	0.05	10	$\mu\text{A}$	$V_R=6\text{V}$
Output	1	Peak Blocking Current, Either Direction	$I_{\text{DRM}}$	—	—	500	nA	$V_{\text{DRM}} = 600\text{V}$
		Peak On-State Voltage, Either Direction	$V_{\text{TM}}$	—	—	3.0	V	$I_{\text{TM}}=100\text{ mA Peak}$
	2	Critical rate of Rise of Off-State Voltage	$dv/dt$	1000	—	—	$\text{V}/\mu\text{s}$	$V_{\text{in}}=240\text{Vrms}$
Couple	Led Trigger Current, Current Required to Latch Output, Either Direction	MOC3061	$I_{\text{FT}}$	—	—	15	mA	Main Terminal Voltage = 3V
		MOC3062		—	—	10	mA	
		MOC3063		—	—	5	mA	
	Holding Current, Either Direction		$I_H$	—	200	—	$\mu\text{A}$	
ZERO CROSSING	Inhibit Voltage		$V_{\text{INH}}$	—	5	20	Volts	$I_F=\text{Rated } I_{\text{FT}}, \text{ MT1-MT2}$ Voltage above which device will not trigger.
	Leakage in Inhibited State		$I_{\text{DRM2}}$	—	—	500	$\mu\text{A}$	$I_F = \text{Rated } I_{\text{FT}}, \text{ Rated } V_{\text{DRM}}, \text{ Off State}$

\*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.

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### 5. CHARACTERISTICS CURVES (TYPICAL PERFORMANCE)

Fig.1 Forward Current vs.  
Ambient Temperature

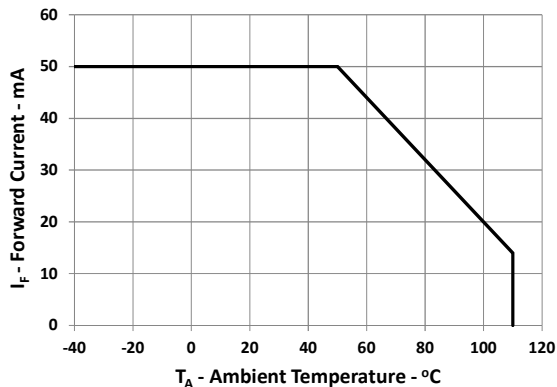


Fig.2 On-state Current vs. Ambient  
Temperature

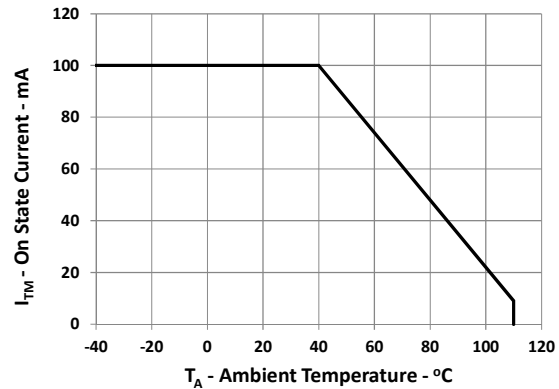


Fig.3 Normalized Trigger Current  
vs Ambient Temperature

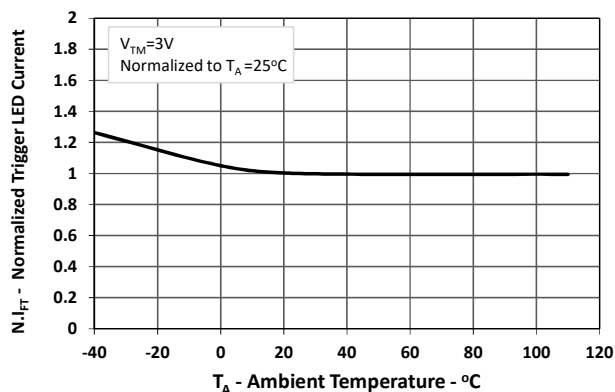


Fig.4 Forward Current vs. Forward  
Voltage

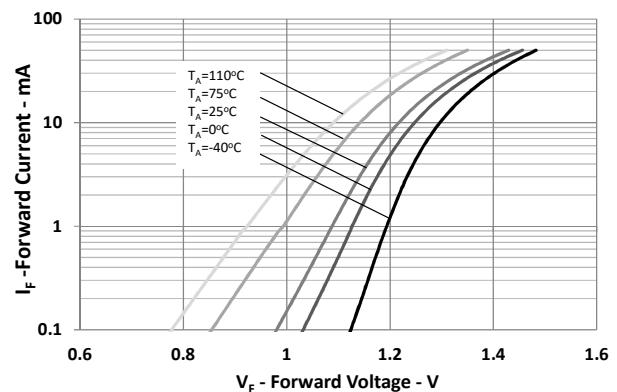


Fig.5 Normalized On-state Voltage  
vs Ambient Temperature

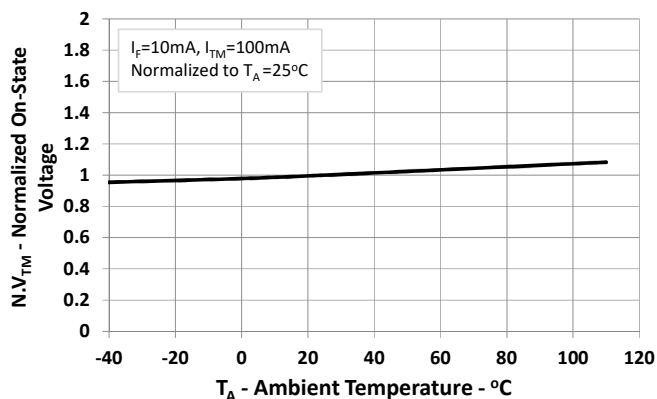
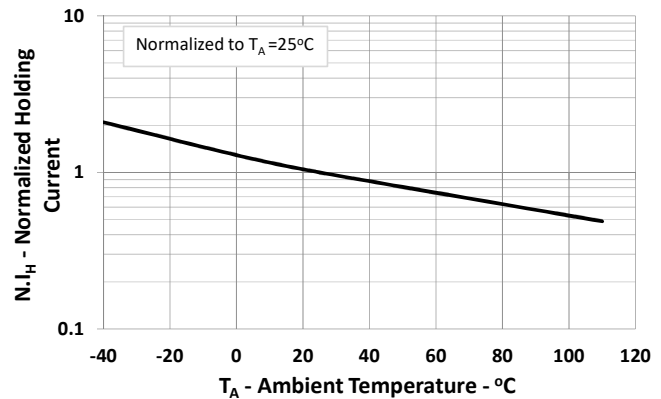


Fig.6 Normalized Holding Current  
vs Ambient Temperature



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Fig.7 Off-state Current vs  
Ambient Temperature

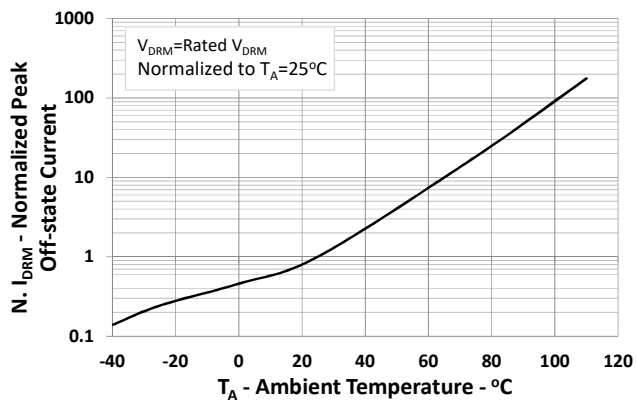


Fig.8 On-state Current vs  
On-state Voltage

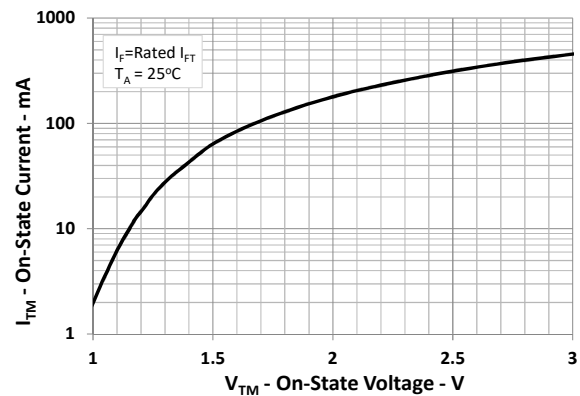
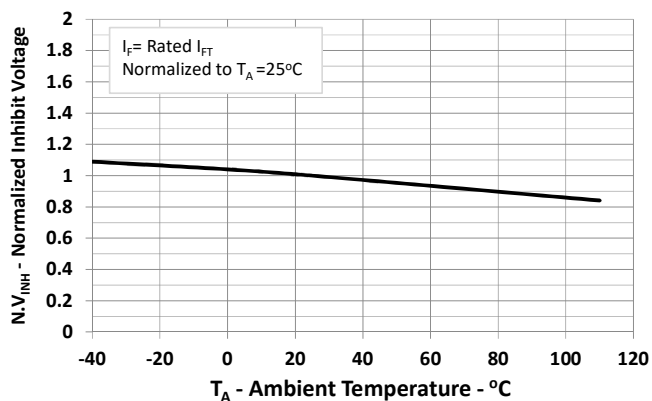


Fig.9 Inhibit Voltage vs  
Ambient Temperature





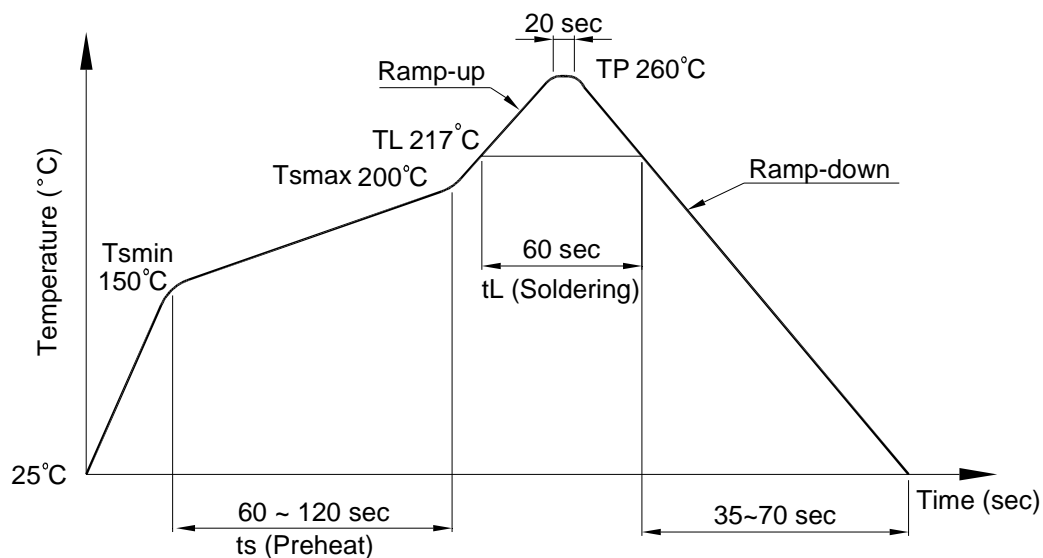
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### 6. TEMPERATURE PROFILE OF SOLDERING

#### 6.1 IR Reflow soldering (JEDEC-STD-020E 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) ( $t_s$ )	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



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### 6.2 Wave soldering (JEDEC22A111 compliant)

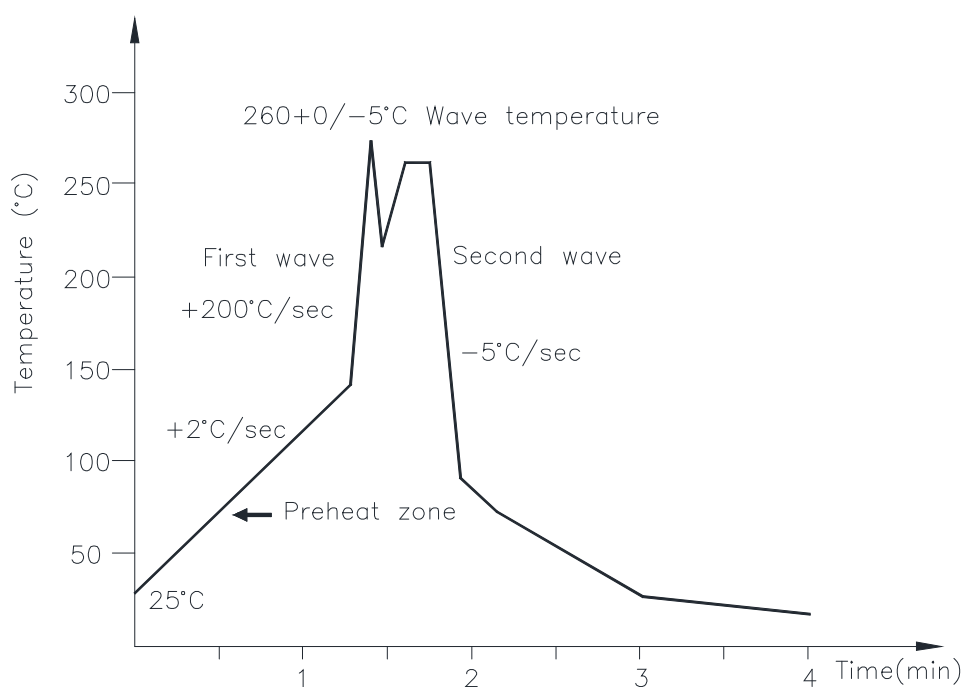
One time soldering is recommended within the condition of temperature.

Temperature:  $260 \pm 0/-5^{\circ}\text{C}$

Time: 10 sec.

Preheat temperature: 25 to  $140^{\circ}\text{C}$

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.

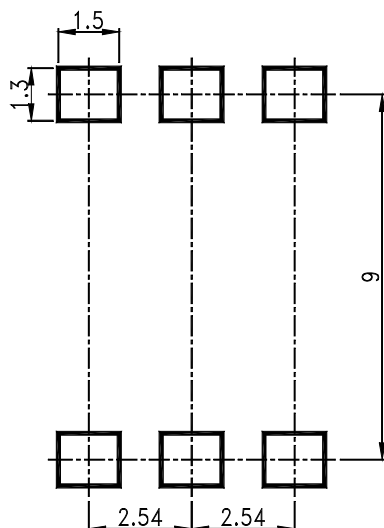
Temperature:  $380 \pm 0/-5^{\circ}\text{C}$

Time: 3 sec max.

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**7. RRECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)**

Unit: mm



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### 8. NAMING RULE

# MOC306(X)(1)-(2)-G

DEVICE PART NUMBER (MOC306X)

Please refer to Electrical Optical  
Characteristics Table on Page 6

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

(2) TAPING TYPE (TA, TA1)

(3) Halogen free

Example : MOC3061S-TA1-G

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

DEVICE PART NUMBER (MOC306X)

Please refer to Electrical Optical  
Characteristics Table on Page 6

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

(2) TAPING TYPE (TA, TA1)

(3) VDE option

(4) Halogen free

Example : MOC3061STA1-V-G

### 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.