

Features

- High isolation 3750 VRMS
- DC input with zero-cross photo triac output
- Operating temperature range - 40 °C to 100 °C
- REACH compliance
- Halogen free
- MSL class 1
- Regulatory Approvals
 - UL - UL1577
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC - GB4943.1

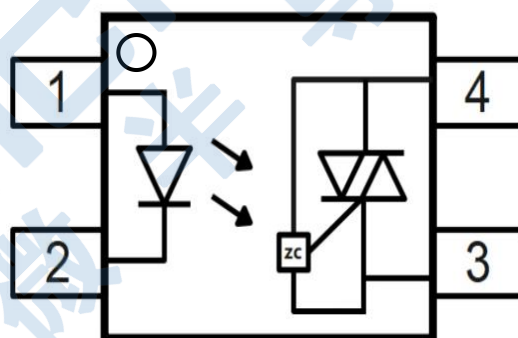
Applications

- Solenoid/valve controls
- Lighting controls / Motor controls
- Temperature controls
- Static AC power switches
- Solid state relays
- Interfacing microprocessors to 115 to 240VAC peripherals

Description

The MOC304X-S, MOC306X-S series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a monolithic silicon zero-cross photo triac in a plastic SOP4 package.

With the robust coplanar double mold structure, MOC304X-S, MOC306X-S series provide the most stable isolation feature.



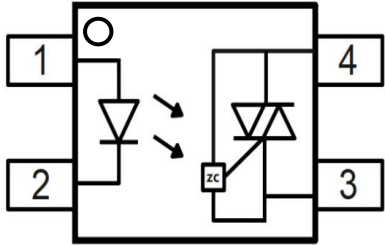
ORDERING INFORMATION

Outline	Part Number	Package	Marking	Packing	Packing Size	Quantity
	MOC304X-SVSE(1)	SOP4	MOC30XX /YYWW 1	Reel	13 "	3000
	MOC306X-SVSE(1)					

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PIN CONFIGURATION AND FUNCTIONS

	Pin	Name
	1	Anode
	2	Cathode
	3	Terminal
	4	Terminal

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit	Note
INPUT					
Forward Current		I_F	60	mA	
Reverse Voltage		V_R	6	V	
Junction Temperature		T_j	125	°C	
Input Power Dissipation		P_I	100	mW	
OUTPUT					
Off-state Output Terminal Voltage	MOC304X-SVSE(1)	V_{DRM}	400	V	
	MOC306X-SVSE(1)		600	V	
Peak Repetitive Surge Current PW=100μs, 120pps		I_{TSM}	1	A	
On-State RMS Current		$I_{T(RMS)}$	100	mA	
Junction Temperature		T_j	125	°C	
Output Power Dissipation		P_O	300	mW	
COMMON					
Total Power Dissipation		P_{tot}	400	mW	
Isolation Voltage		V_{iso}	3750	Vrms	1
Operating Temperature		T_{opr}	-40~100	°C	
Storage Temperature		T_{stg}	-55~150	°C	
Soldering Temperature		T_{sol}	260	°C	2

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

Note 2. For 10 seconds

ELECTRICAL OPTICAL CHARACTERISTICS(T_a=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition	Note
INPUT							
Forward Voltage	V _F	-	1.24	1.4	V	I _F =10mA	
Reverse Current	I _R	-	-	10	μA	V _R =6V	
Input Capacitance	C _{in}	-	8.5	250	pF	V=0, f=1kHz	
OUTPUT							
Peak Off-state Current, Either Direction	I _{DRM}	-	-	500	nA	V _{DRM} =Rated V _{DRM} I _F =0	3
Peak On-state Voltage, Either Direction	V _{TM}	-	1.42	2.5	V	I _{TM} =100mA	
Critical Rate of Rise of Off-state Voltage	dV/dt	1000	-	-	V/μs	V _{PEAK} =Rated V _{DRM}	4
TRANSFER CHARACTERISTICS							
LED Trigger Current	MOC3041,MOC3061	I _{FT}	-	-	15	Terminal Voltage = 3V I _{TM} =100mA	
	MOC3042,MOC3062		-	-	10		
	MOC3043,MOC3063		-	-	5		
Holding Current	I _H	-	450	-	μA		
Isolation Resistance	R _{iso}	10 ¹²	10 ¹⁴	-	Ω	DC500V, 40 ~ 60% R.H.	
Floating Capacitance	C _{IO}	-	0.4	1	pF	V=0, f=1MHz	
ZERO-CROSSING CHARACTERISTICS							
Inhibit Voltage	V _{INH}	-	-	20	V	I _F =Rated I _{FT}	
Leakage in Inhibited State	I _{DRM2}	-	-	500	μA	I _F =Rated I _{FT} V _{DRM} =Rated V _{DRM}	

Note3. Test voltage must be applied within dV/dt rating.

Note4. Refer to Fig.17 & Fig.18

CHARACTERISTIC CURVES

Fig.1 Forward Current vs. Ambient Temperature

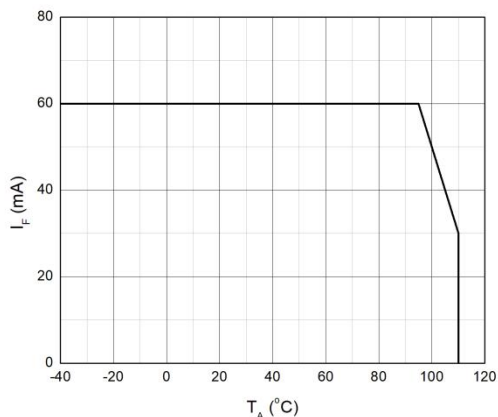


Fig.2 On-state Terminal Current vs. Ambient Temperature

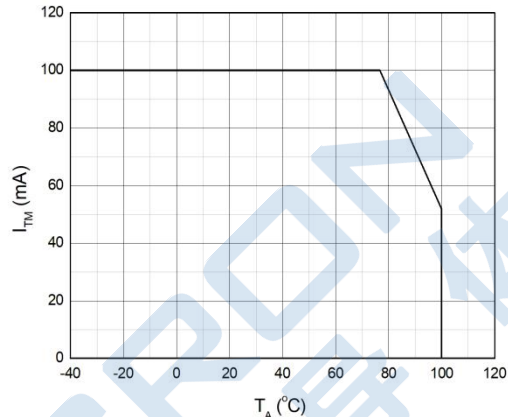


Fig.3 Forward Current vs. Forward Voltage

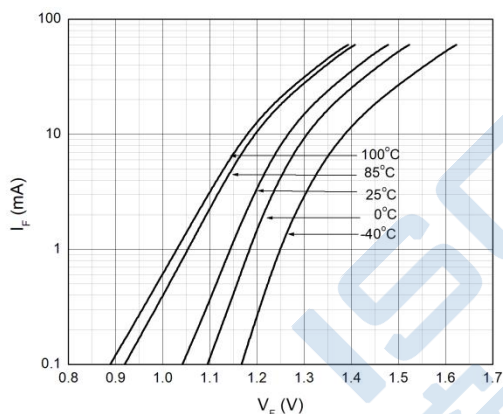


Fig.4 Off-state Terminal Current vs. Ambient Temperature

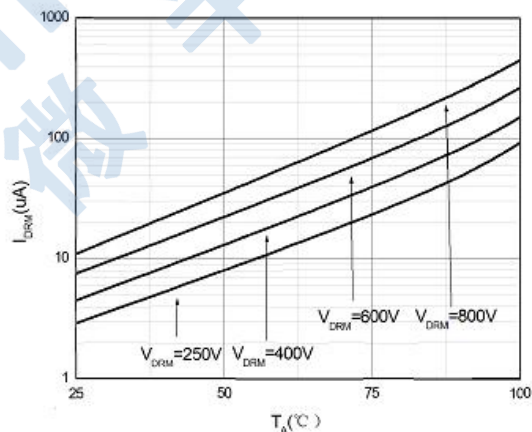


Fig.5 Normalized Off-state Terminal Voltage vs. Ambient Temperature

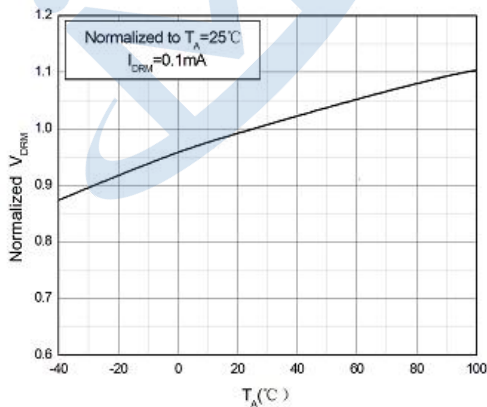


Fig.6 Normalized Trigger Current vs. LED Trigger Pulse Width

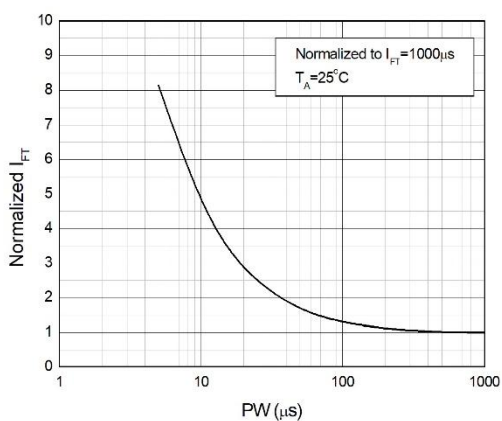


Fig.7 Normalized Trigger Current vs. Ambient Temperature

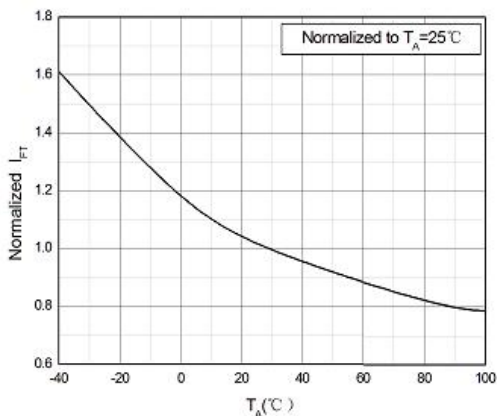


Fig.8 On-state Terminal Voltage vs. Ambient Temperature

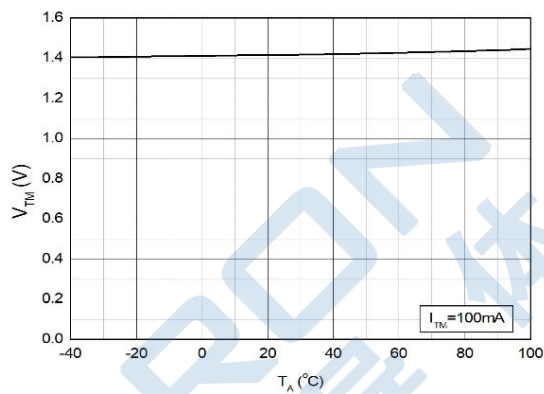


Fig.9 On-state Terminal Voltage vs. On-state Terminal Current

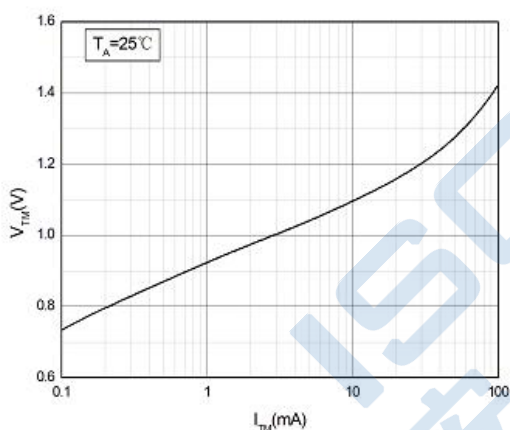


Fig.10 Holding Current vs. Ambient Temperature

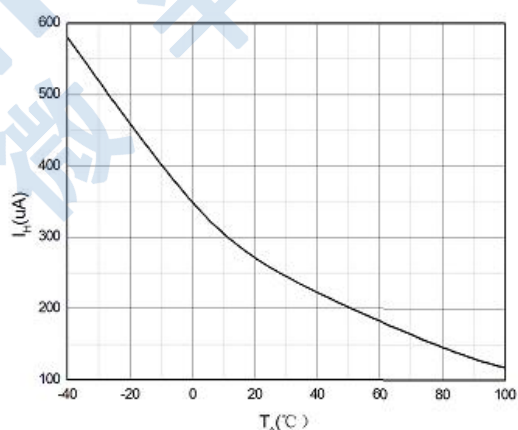


Fig.11 Normalized Inhibit Voltage vs. Ambient Temperature

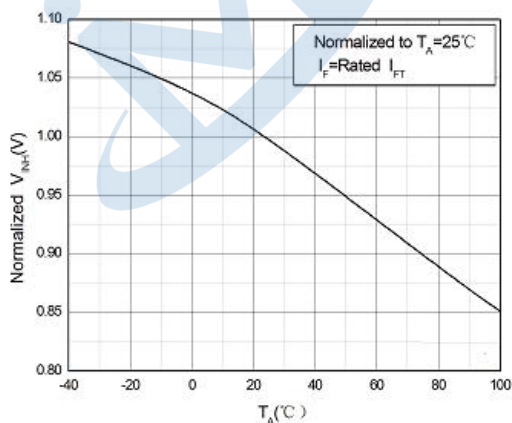
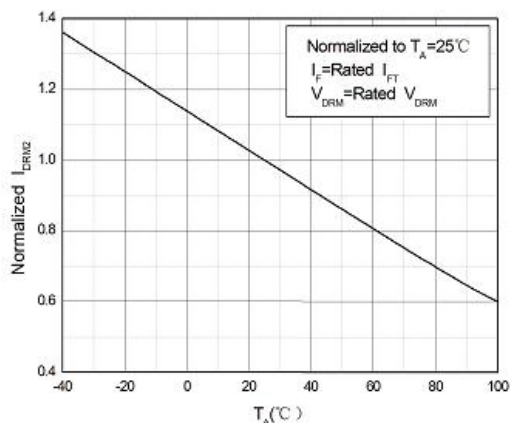
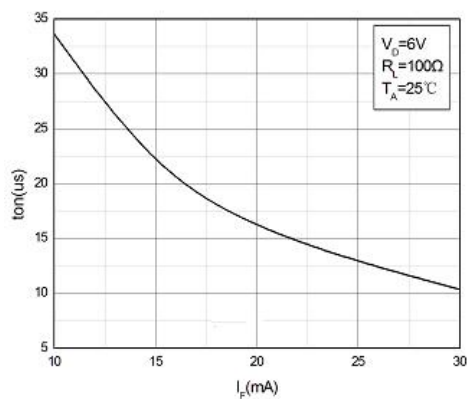


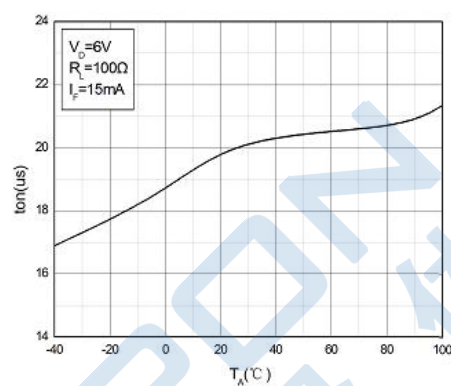
Fig.12 Normalized Leakage in Inhibit State vs. Ambient Temperature



**Fig.13 Turn On Time
vs. Forward Current**



**Fig.14 Turn On Time
vs. Ambient Temperature**



TEST CIRCUITS

Fig.15 Test Circuits of Turn On Time

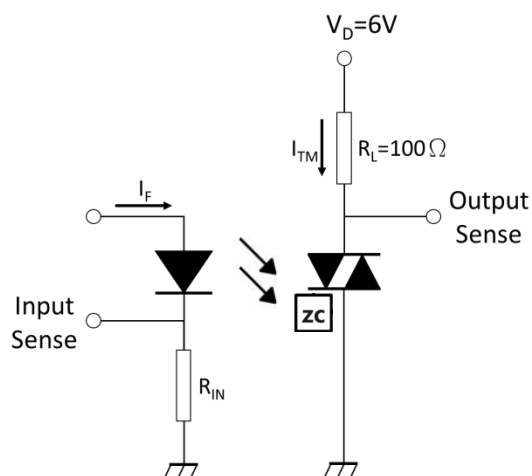


Fig.16 Waveforms of Turn On Time

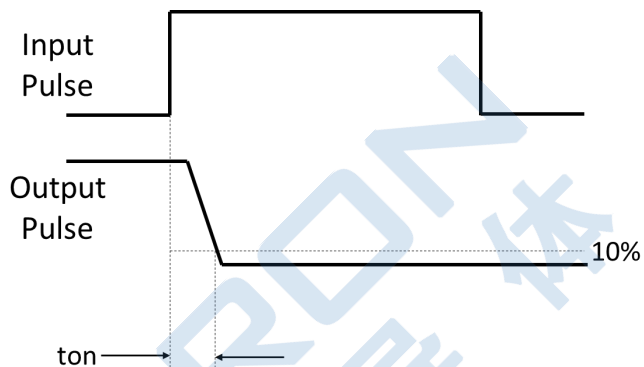


Fig.17 Test Circuits of dV/dt

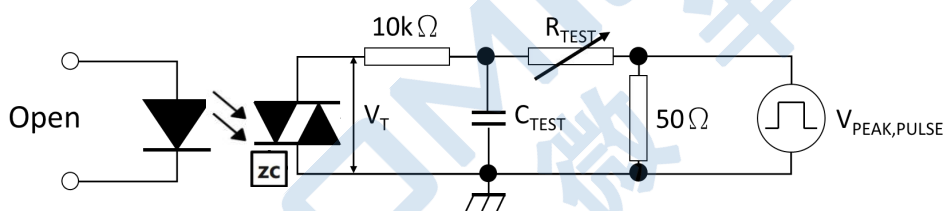
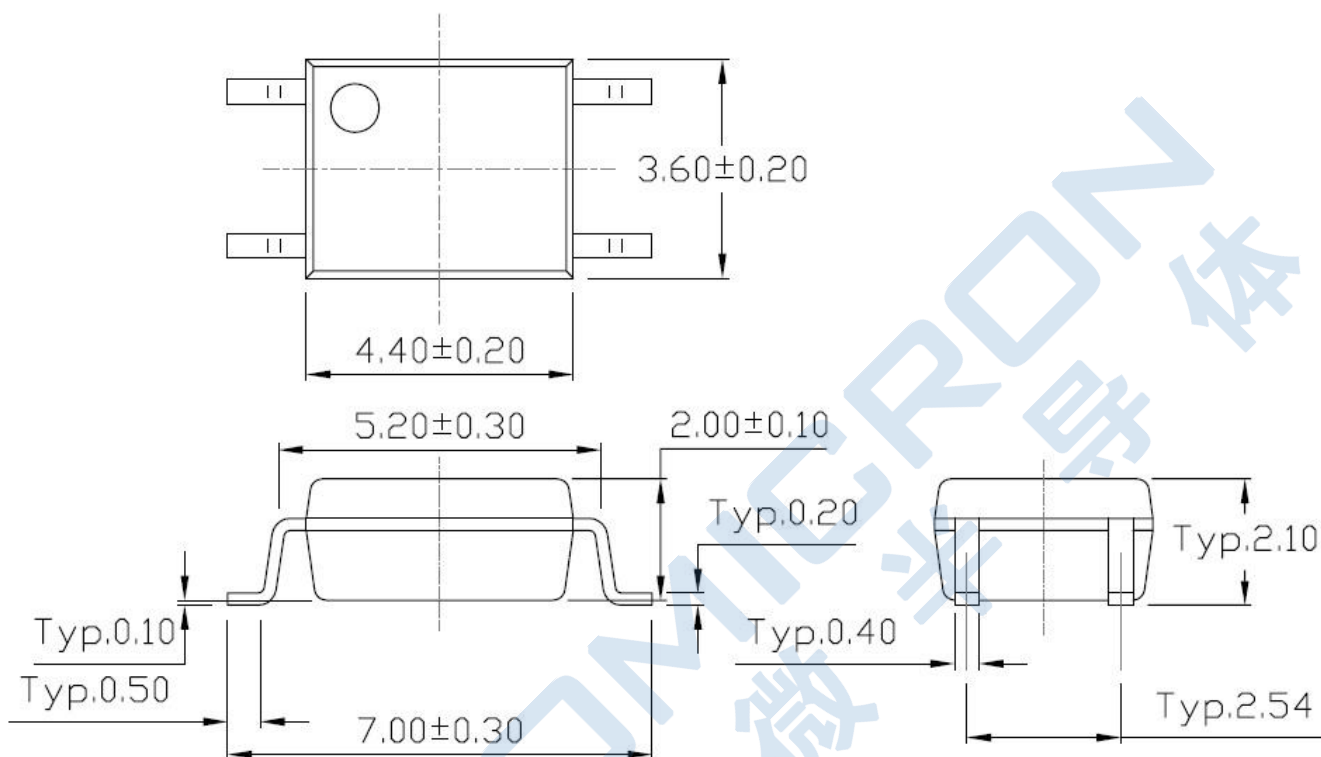


Fig.18 Waveforms of dV/dt

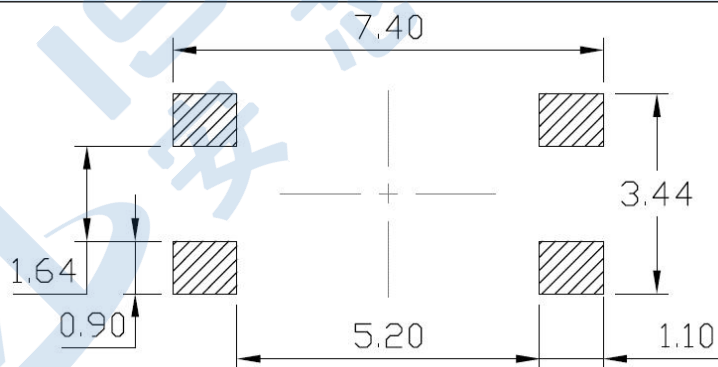


PACKAGE DIMENSIONS

Surface Mount (Low Profile) - (SOP4)



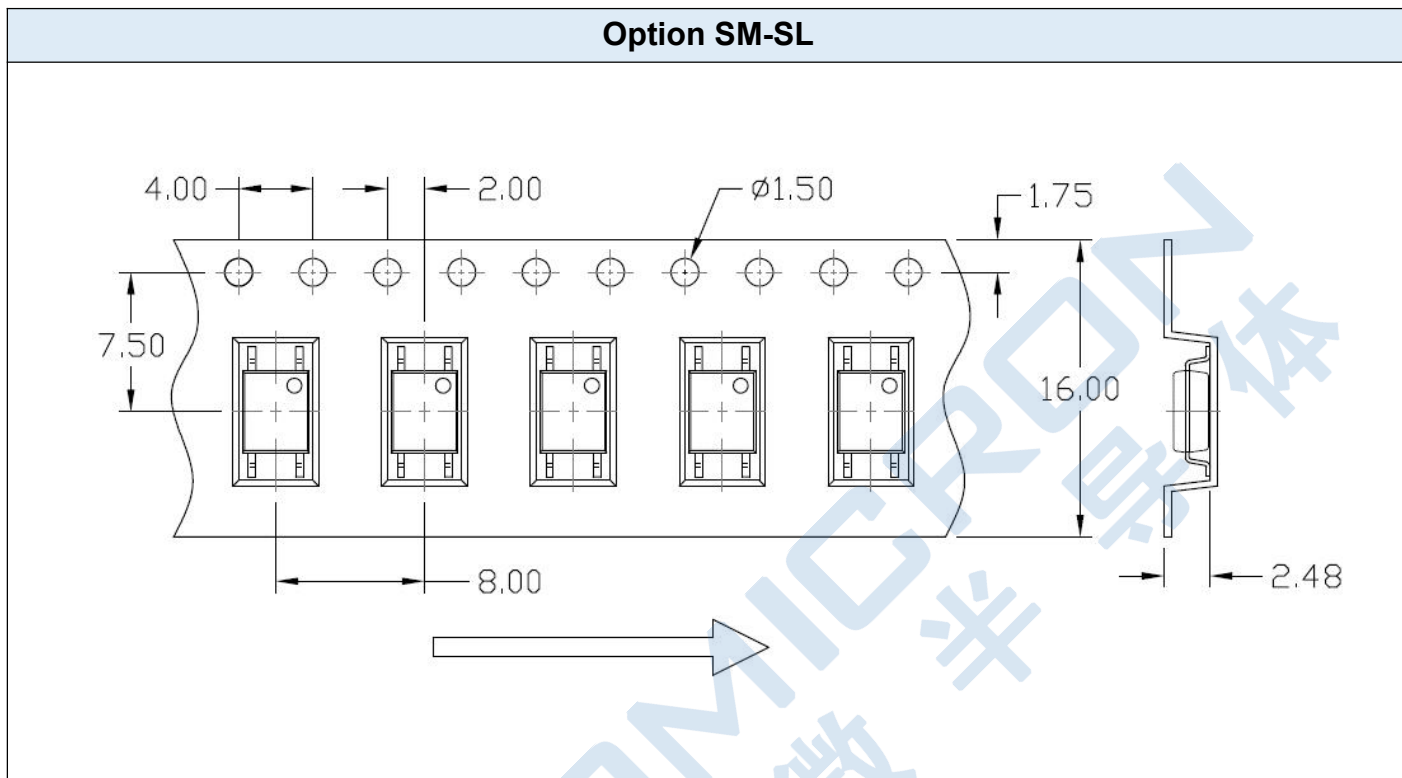
Recommended Solder Mask



- Dimensions in mm unless otherwise stated

CARRIER TAPE SPECIFICATIONS

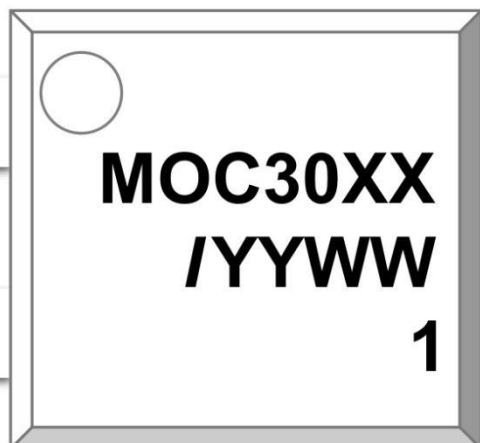
Option SM-SL



- Dimensions in mm unless otherwise stated

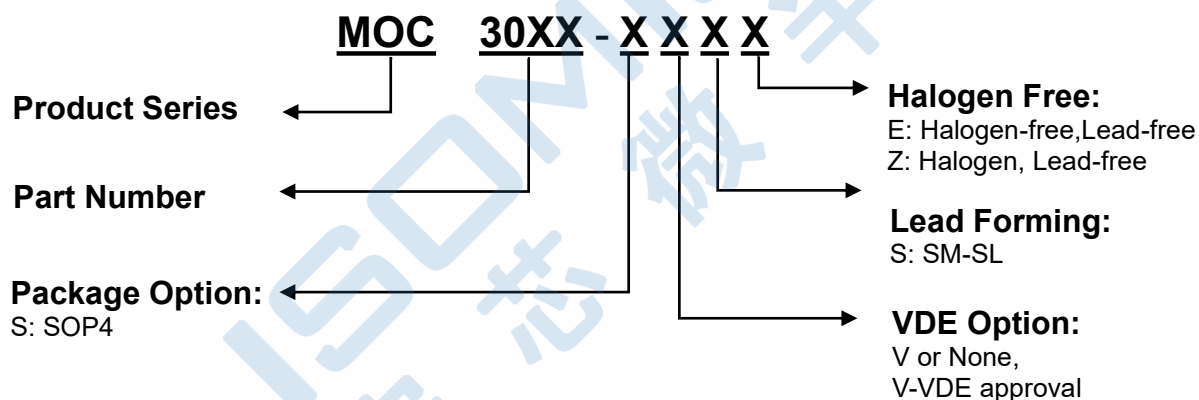
ORDERING AND MARKING INFORMATION

Marking Information



MOC : Product Series
30XX : Part Number
/ : ISOMICRON
YY : Fiscal Year
WW : Work Week
1 : Manufacturing Code

Order Code

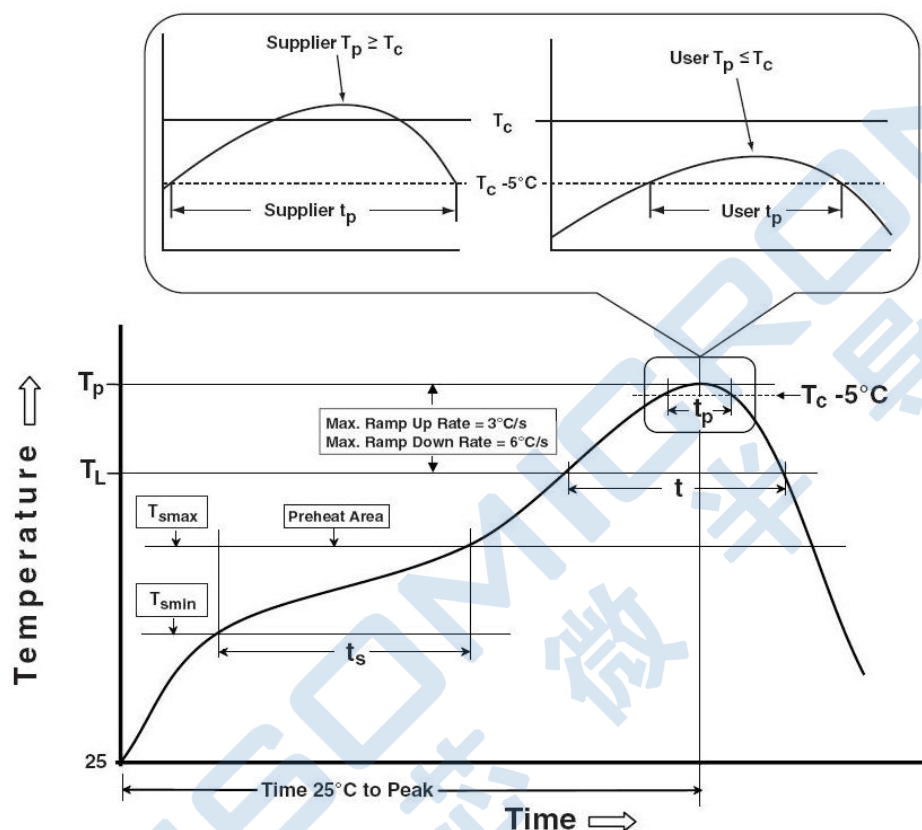


Packing Quantity

Option	Quantity	Quantity – Inner box	Quantity – Outer box
SM-SL	3000 Units/Reel	2 Reels/Inner box	5 Inner box/Outer box = 30k Units

REFLOW INFORMATION

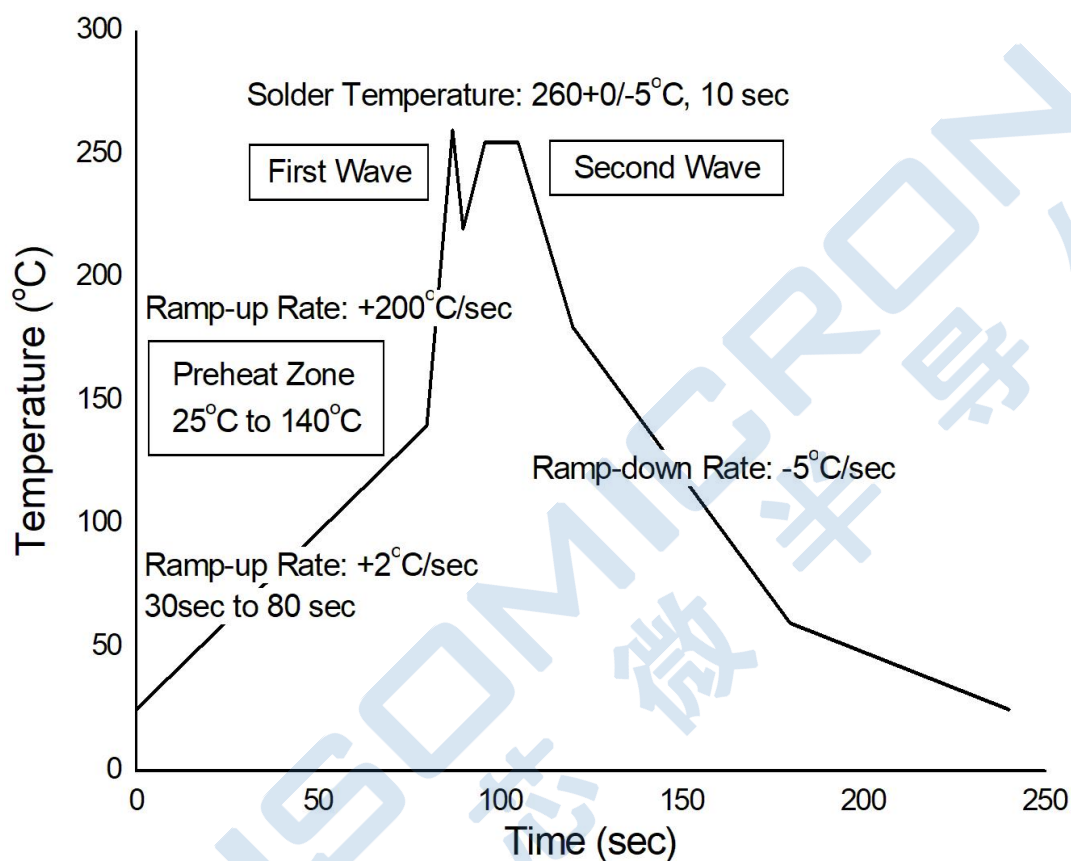
Reflow Profile



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	100	150°C
Temperature Max. (Tsmax)	150	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds	60-120 seconds
Ramp-up Rate (tL to tP)	3°C/second max.	3°C/second max.
Liquidous Temperature (TL)	183°C	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds	60 – 150 seconds
Peak Body Package Temperature	235°C +0°C / -5°C	260°C +0°C / -5°C
Time (tP) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max	6°C/second max
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

TEMPERATURE PROFILE OF SOLDERING

Wave Soldering (JESD22-A111 Compliant)



Hand Soldering By Soldering Iron

Soldering Temperature	380±5°C
Soldering Time	3 sec max.

- One time soldering is recommended for all soldering method.
- Do not solder more than three times for IR reflow soldering.

DISCLAIMER

- ISOMICRON is continually improving the quality, reliability, function and design. ISOMICRON reserves the right to make changes without further notices.
- The characteristic curves shown in this datasheet are representing typical performance which are not guaranteed.
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- This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or lifesaving applications or any other application which can result in human injury or death.
- Please contact ISOMICRON sales agent for special application request.
- Immerge unit's body in solder paste is not recommended.
- Parameters provided in datasheets may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated in each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify ISOMICRON's terms and conditions of purchase, including but not limited to the warranty expressed therein.
- Discoloration might be occurred on the package surface after soldering, reflow or long-time use. It neither impacts the performance nor reliability.