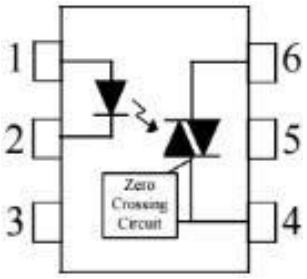
Description

The UMW MOC302X and UMW MOC305X series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a monolithic silicon random-phase photo triac in a plastic DIP6 package with different lead forming options.
With the robust coplanar double mold structure, UMW MOC302X and UMW MOC305X series provide the most stable isolation feature.

Features

- High isolation 5000 VRMS
- DC input with random-phase photo triac output
- Operating temperature range - 40 °C to 100 °C
- REACH & RoHS compliance
- Regulatory Approvals
- UL-approved: UL1577, File No.E492440

SCHEMATIC



PIN DEFINITION

1. Anode
2. Cathode
3. NC
4. Terminal
5. Substrate
6. Terminal

Applications

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

ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	VALUE	UNIT	NOTE
INPUT					
Forward Current		I_F	60	mA	
Reverse Voltage		V_R	6	V	
Junction Temperature		Tj	125	°C	
Input Power Dissipation		P_I	100	mW	
OUTPUT					
Off-state Output Terminal Voltage	UMW MOC302X	V_{DRM}	400	V	
	UMW MOC305X		600		
Peak Repetitive Surge Current PW=100μs, 120pps		I_{TSM}	1	A	
On-State RMS Current		$I_{T(RMS)}$	100	mA	
Junction Temperature		Tj	125	°C	
Output Power Dissipation		P_O	300	mW	
COMMON					
Total Power Dissipation		Ptot	400	mW	
Isolation Voltage		Viso	5000	Vrms	1
Operating Temperature		Topr	-40~100	°C	
Storage Temperature		Tstg	-55~125	°C	
Soldering Temperature		Tsol	260	°C	2

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

Note 2. For 10 seconds

ELECTRICAL OPTICAL CHARACTERISTICS at Ta=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		Cin	-	8.5	250	pF	V=0, f=1kHz	
OUTPUT								
Peak Off-state Current, Either Direction		I_{DRM}	-	-	100	nA	V_{DRM}=Rated V_{DRM} I_F=0	3
Peak On-state Current, Either Direction		V_{TM}	-	1.58	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	UMW MOC3021 UMW MOC3051	I_{FT}	-	-	15	mA	Terminal Voltage = 3V I_{TM}=100mA	
	UMW MOC3022 UMW MOC3052		-	-	10			
	UMW MOC3023 UMW MOC3053		-	-	5			
Holding Current		I_H	-	257	-	μA		
Isolation Resistance		Riso	10^12	10^14	-	Ω	DC500V, 40 ~ 60% R.H.	
Floating Capacitance		C_{IO}	-	0.8	-	pF	V=0, f=1MHz	

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

Note4. Refer to Fig.15 & Fig.16

CHARACTERISTIC CURVES

Fig.1 Forward Current vs. Ambient Temperature

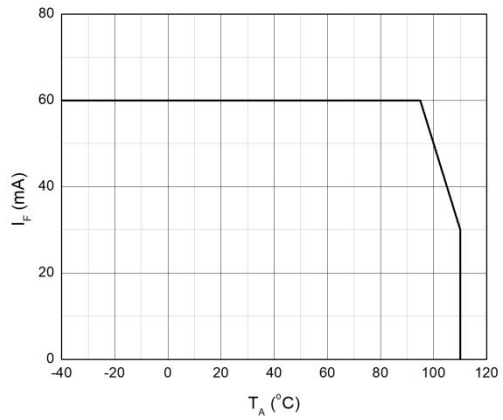


Fig.2 On-state Terminal Current vs. Ambient Temperature

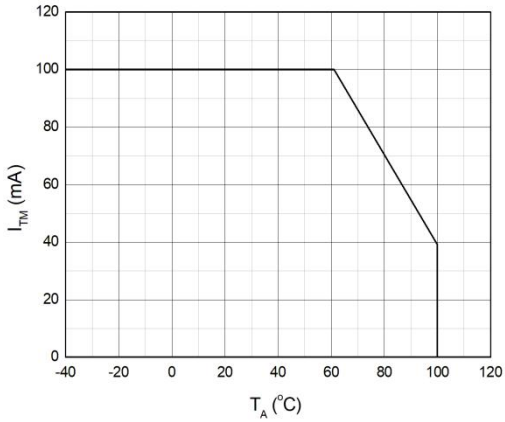


Fig.3 Forward Current vs. Forward Voltage

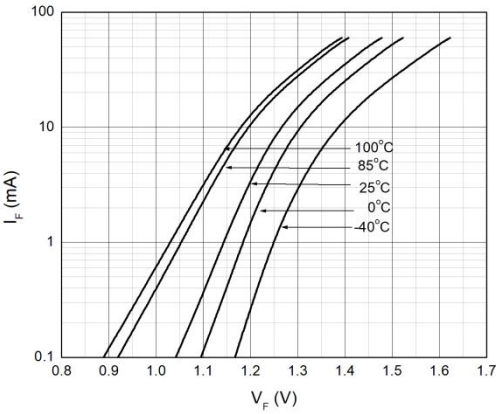


Fig.4 Off-state Terminal Current vs. Ambient Temperature

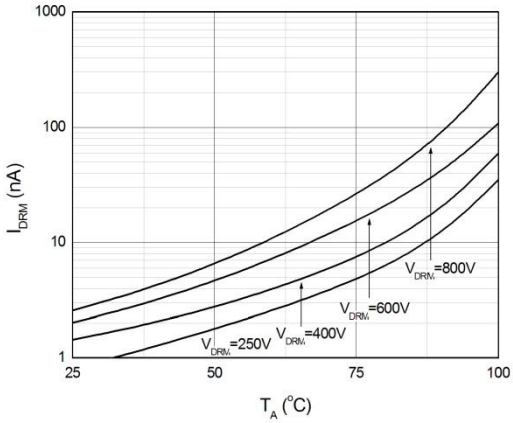


Fig.5 Normalized Off-state Terminal Voltage vs. Ambient Temperature

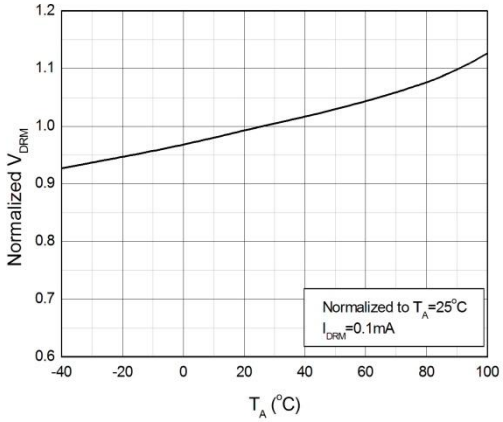
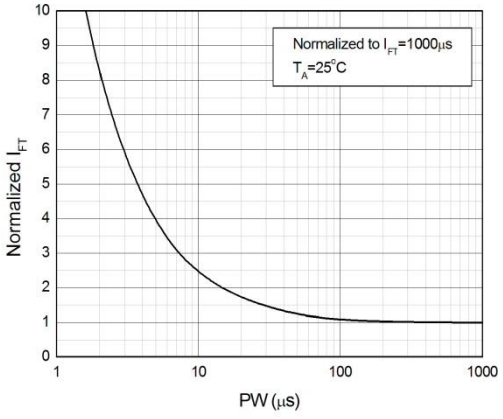


Fig.6 Normalized Trigger Current vs. LED Trigger Pulse Width



CHARACTERISTIC CURVES

Fig.7 Normalized Trigger Current vs. Ambient Temperature

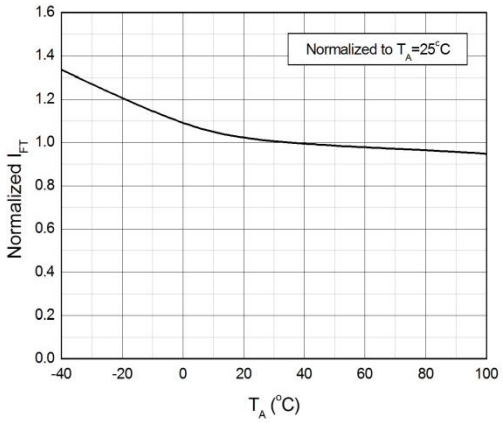


Fig.8 On-state Terminal Voltage vs. Ambient Temperature

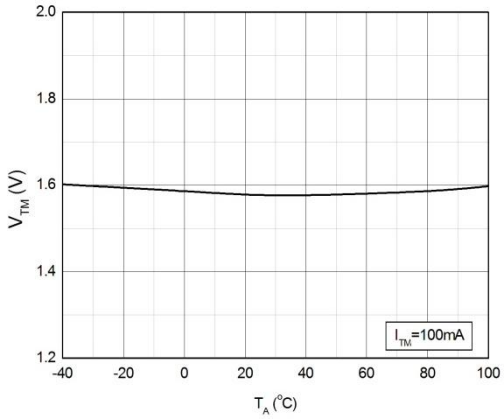


Fig.9 On-state Terminal Voltage vs. On-state Terminal Current

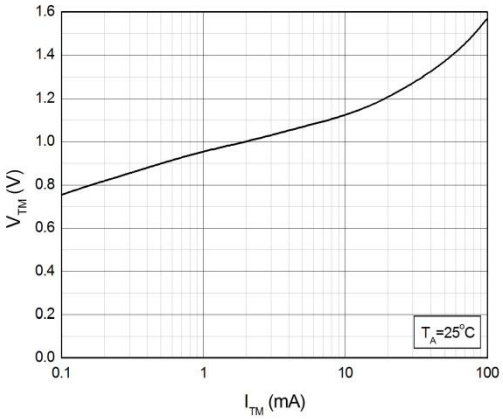


Fig.10 Holding Current vs. Ambient Temperature

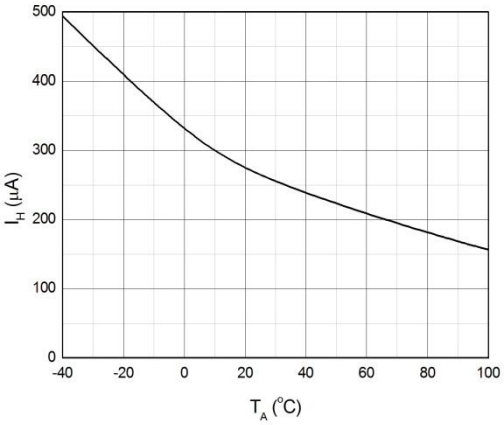


Fig.11 Turn On Time vs. Forward Current

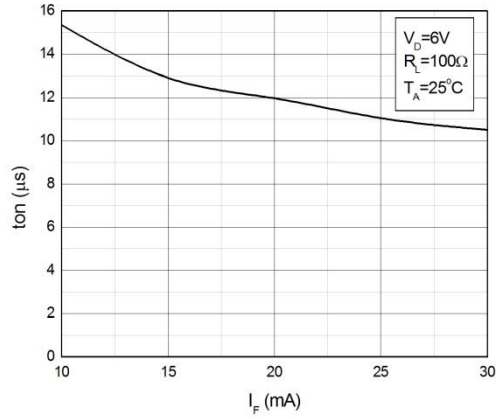
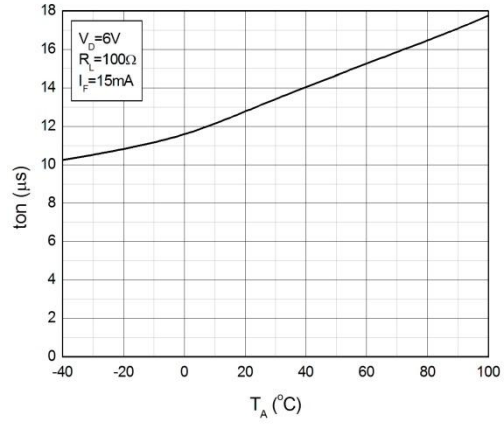


Fig.12 Turn On Time vs. Ambient Temperature



TEST CIRCUITS

Fig.13 Test Circuits of Turn On Time

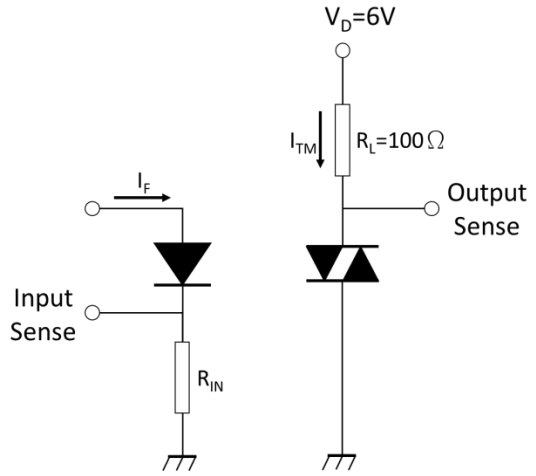


Fig.14 Waveforms of Turn On Time

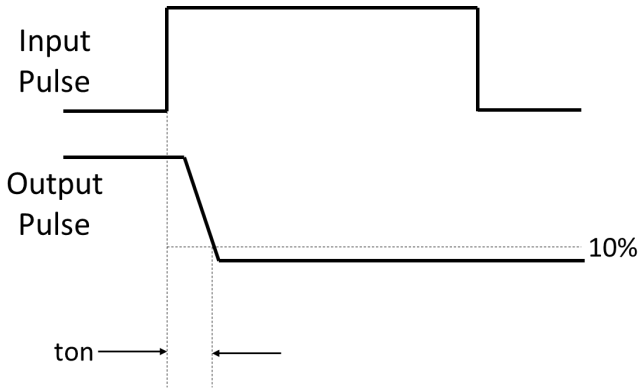


Fig.15 Test Circuits of dV/dt

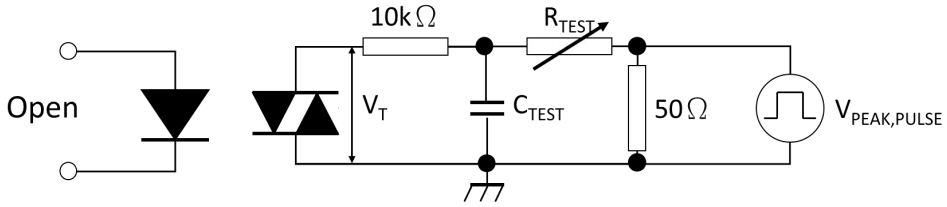
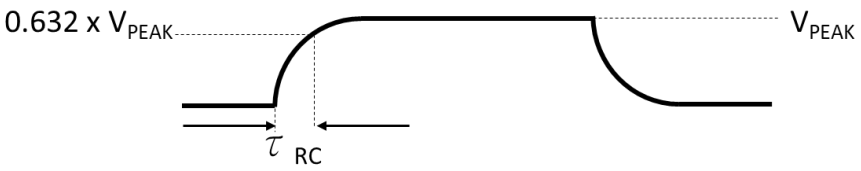


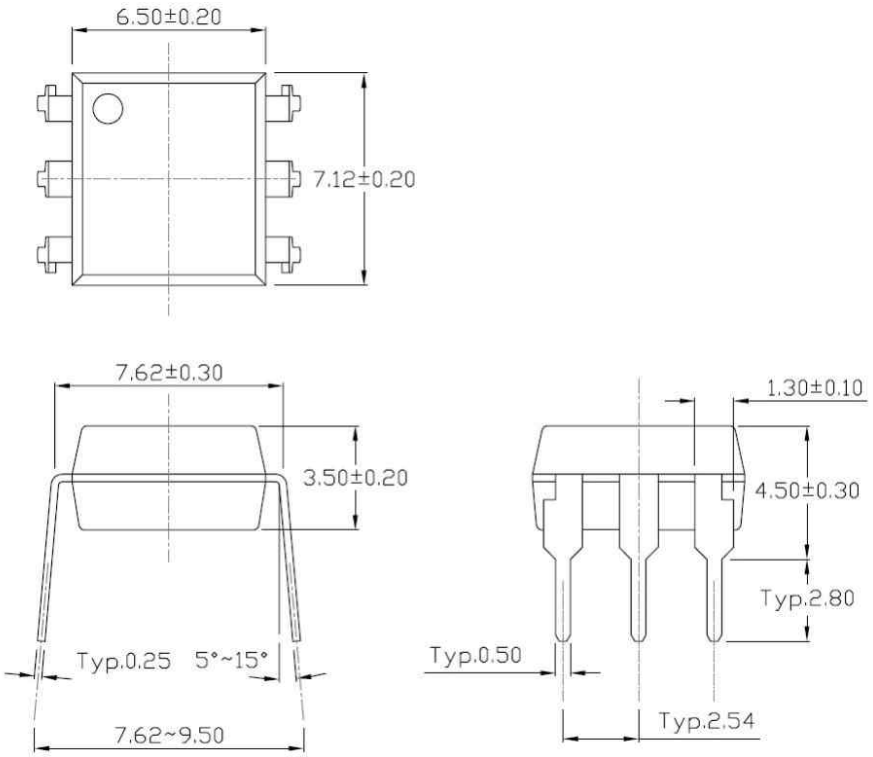
Fig.16 Waveforms of dV/dt



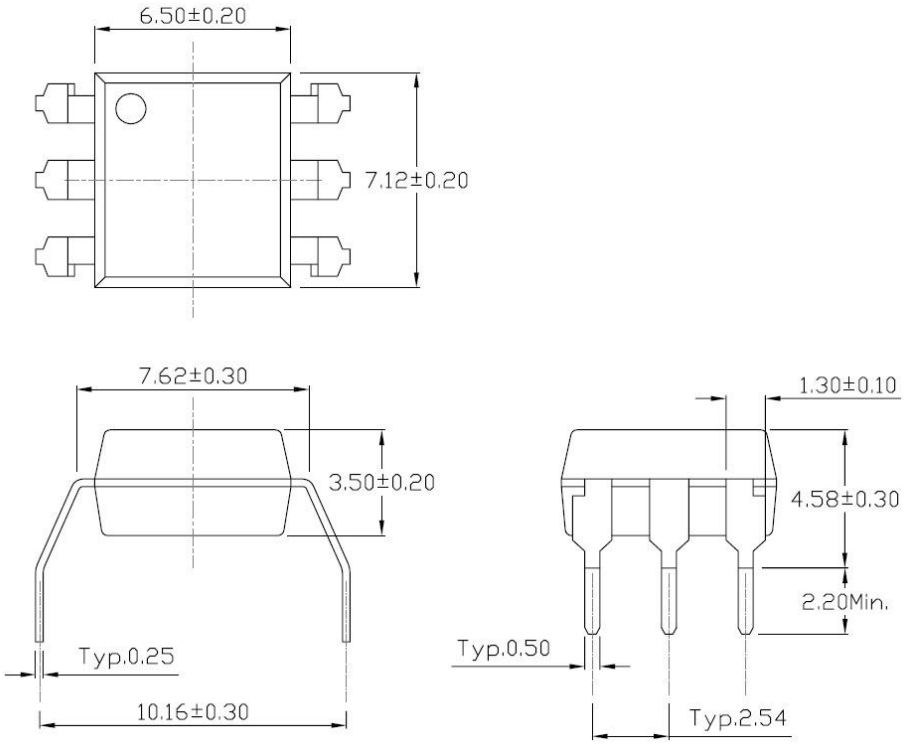
$$dv/dt = \frac{0.632 \times V_{PEAK}}{\tau_{RC}}$$

PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

Standard DIP – Through Hole (DIP Type)

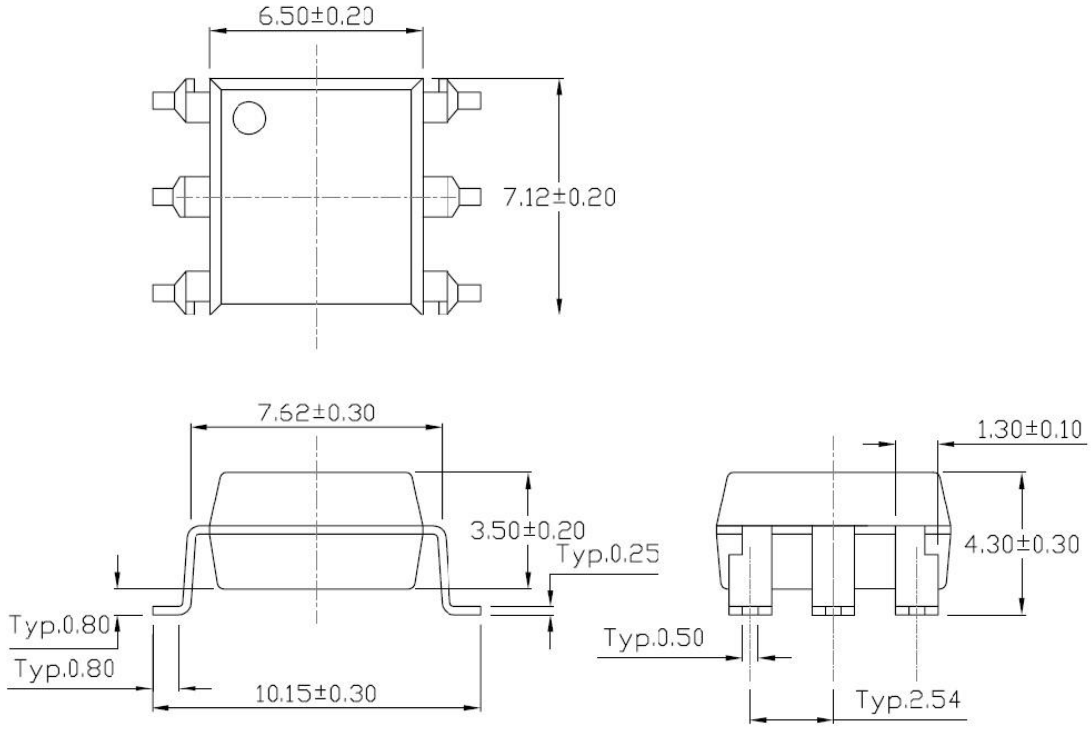


Gullwing (400mil) Lead Forming – Through Hole (M Type)

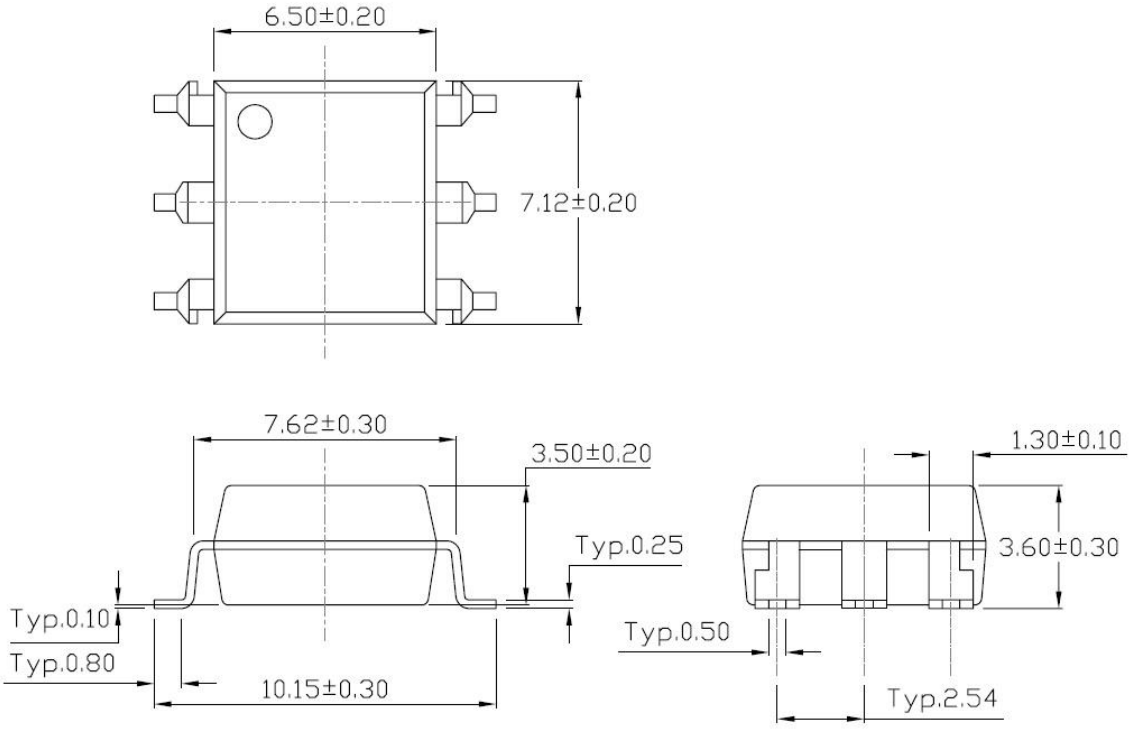


PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

Surface Mount Lead Forming (S Type)

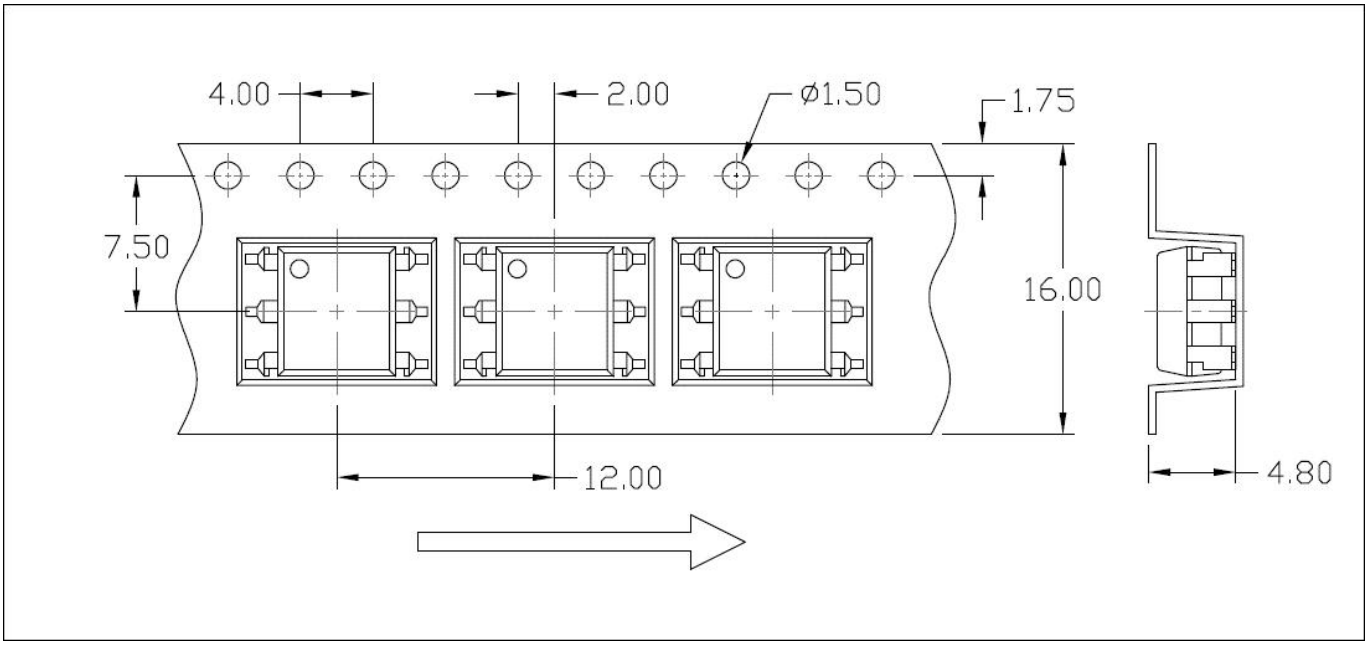


Surface Mount (Low Profile) Lead Forming (SL Type)

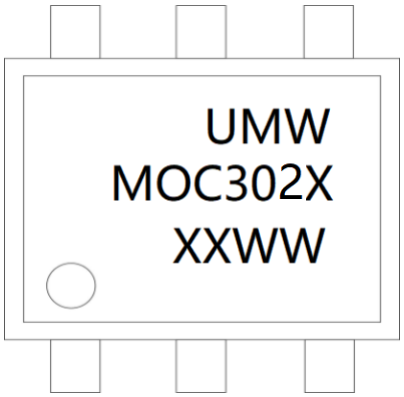


CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option S(T1) & SL(T1)



Priting



- The "X" in the second line of printing stands for IFT digits: 0 / 1 / 2 / 3
- In the third line, the word "XX" stands for the year
- In the third line, WW stands for period

Order information

Order Code	Package	Baseqty	Deliverymode
UMW MOC302XM	DIP-6	3250	Tube and box
UMW MOC302XSM	SOP-6	1000	Tape and reel
UMW MOC305XM	DIP-6	3250	Tube and box
UMW MOC305XSM	SOP-6	1000	Tape and reel