

### Description

The UMW MOC304X,UMW MOC306X and UMW MOC308X 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.

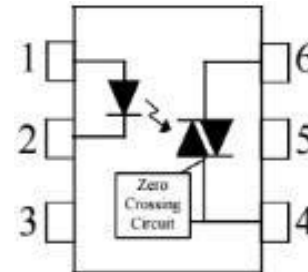
### Features

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

### Applications

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

### SCHEMATIC



### PIN DEFINITION

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

**ABSOLUTE MAXIMUM RATINGS**

PARAMETER	SYMBOL	VALUE	UNIT	NOTE
<b>INPUT</b>				
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	
<b>OUTPUT</b>				
Off-state Output Terminal Voltage	UMW MOC304X	400	V	
	UMW MOC306X	600		
	UMW MOC308X	800		
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	
<b>COMMON</b>				
Total Power Dissipation	$P_{tot}$	400	mW	
Isolation Voltage	$V_{iso}$	5000	V <sub>rms</sub>	1
Operating Temperature	$T_{opr}$	-40~100	°C	
Storage Temperature	$T_{stg}$	-55~125	°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 at Ta=25°C

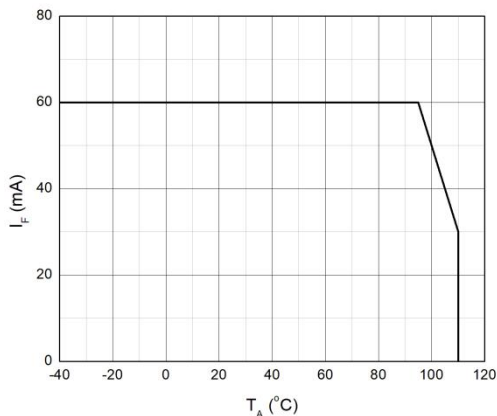
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION	NOTE
INPUT							
Forward Voltage	$V_F$	-	1.24	1.4	V	$I_F=10mA$	
Reverse Current	$I_R$	-	-	10	$\mu A$	$V_R=6V$	
Input Capacitance	$C_{in}$	-	8.5	25	pF	$V=0, f=1kHz$	
OUTPUT							
Peak Off-state Current, Either Direction	$I_{DRM}$	-	-	10	nA	$V_{DRM}=\text{Rated } V_{DRM}$ $I_F=0$	3
Peak On-state Current, Either Direction	$V_{TM}$	-	1.59	2.5	V	$I_{TM}=100mA$	
Critical Rate of Rise of Off-state Voltage	$dV/dt$	1000	-	-	V/ $\mu s$	$V_{PEAK}=\text{Rated } V_{DRM}$	4
TRANSFER CHARACTERISTICS							
LED Trigger Current	UMW MOC3041	$I_{FT}$	-	-	15	mA	Terminal Voltage = 3V $I_{TM}=100mA$
	UWM MOC3061						
	UMW MOC3081						
	UMW MOC3042						
	UMW MOC3062						
	UMW MOC3082						
UMW MOC3043	-	-	5				
UMW MOC3063							
UMW MOC3083							
Holding Current	$I_H$	-	237	-	$\mu A$		
Isolation Resistance	Riso	$10^{12}$	$10^{14}$	-	$\Omega$	DC500V, 40 ~ 60% R.H.	
Floating Capacitance	$C_{IO}$	-	0.4	-	pF	$V=0, f=1MHz$	

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

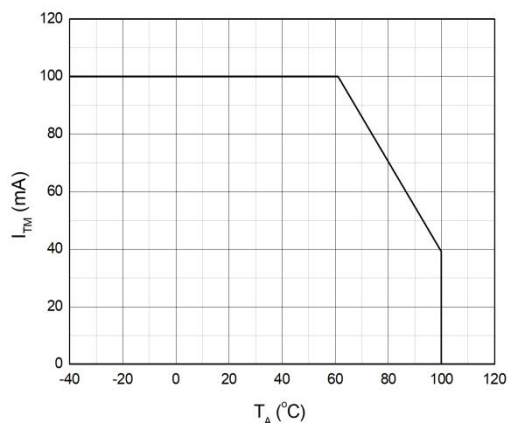
Note4. Refer to Fig.15 & Fig.16

## CHARACTERISTIC CURVES

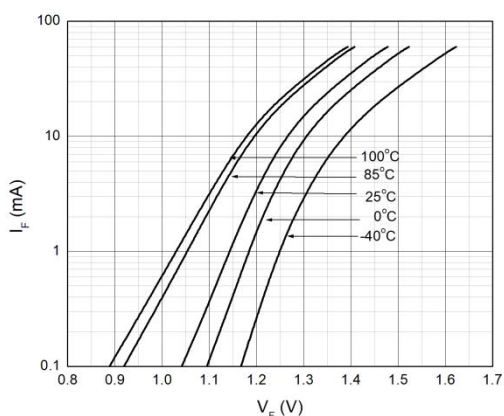
**Fig.1 Forward Current vs. Ambient Temperature**



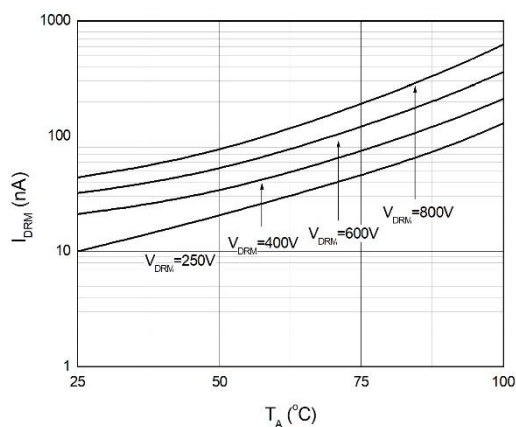
**Fig.2 On-state Terminal Current vs. Ambient Temperature**



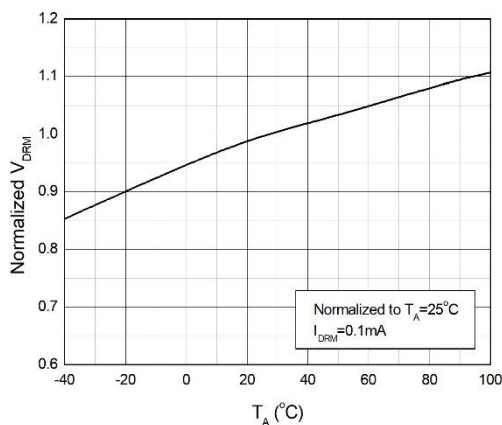
**Fig.3 Forward Current vs. Forward Voltage**



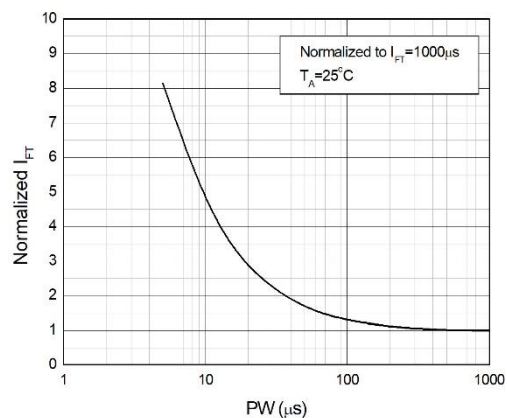
**Fig.4 Off-state Terminal Current vs. Ambient Temperature**



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

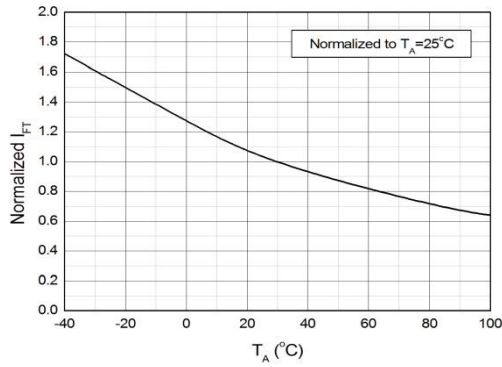


**Fig.6 Normalized Trigger Current vs. LED Trigger Pulse Width**

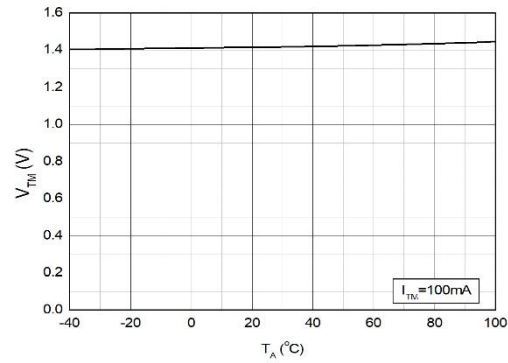


### CHARACTERISTIC CURVES

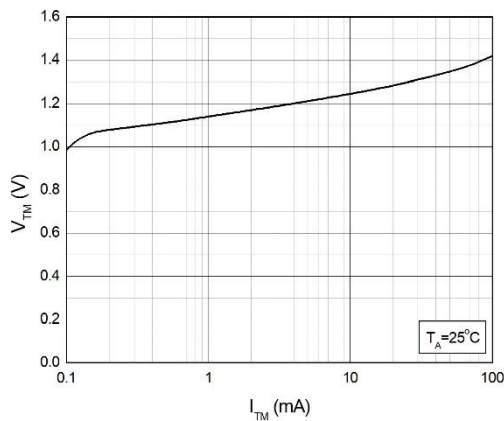
**Fig.7 Normalized Trigger Current vs. Ambient Temperature**



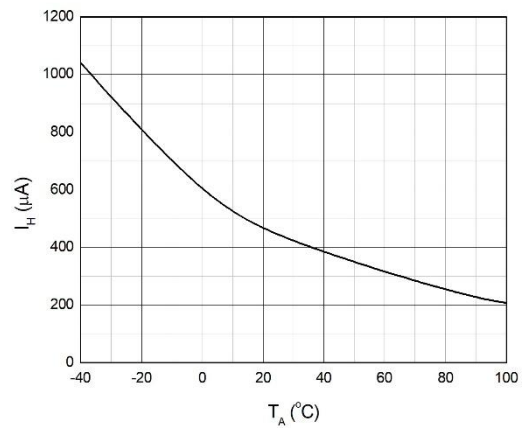
**Fig.8 On-state Terminal Voltage vs. Ambient Temperature**



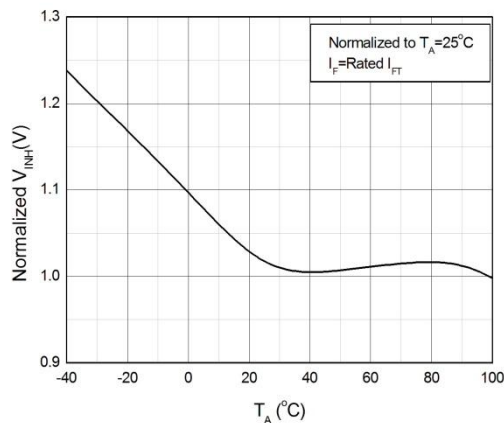
**Fig.9 On-state Terminal Voltage vs. On-state Terminal Current**



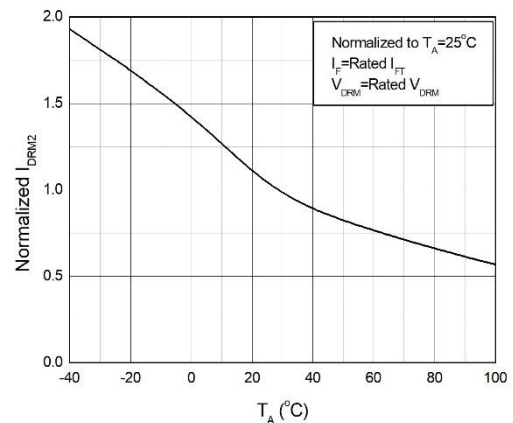
**Fig.10 Holding Current vs. Ambient Temperature**



**Fig.11 Normalized Inhibit Voltage vs. Ambient Temperature**

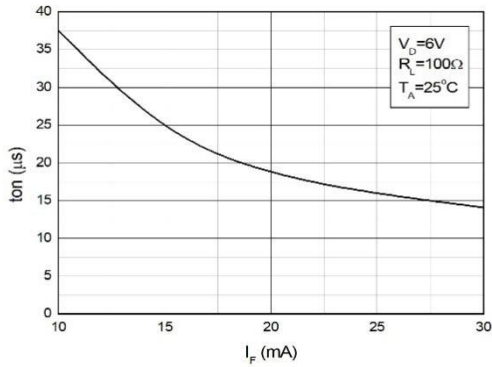


**Fig.12 Normalized Leakage in Inhibit State vs. Ambient Temperature**

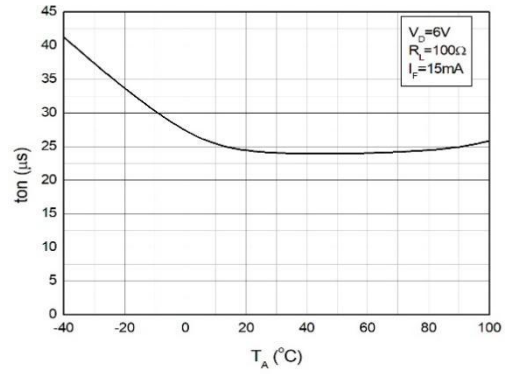


### CHARACTERISTIC CURVES

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

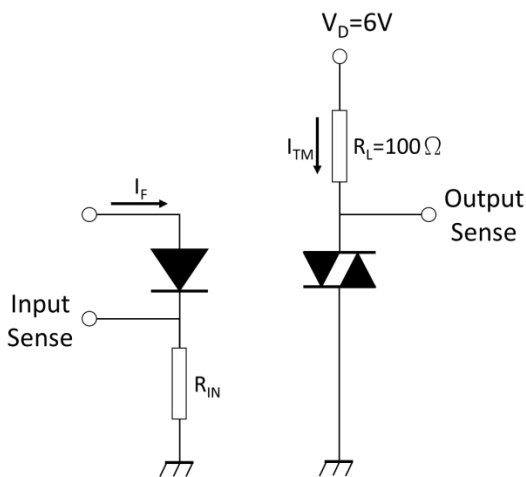


**Fig.14 Turn On Time vs. Ambient Temperature**

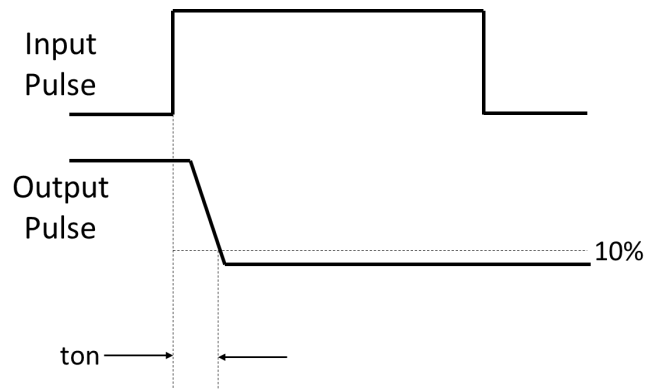


### TEST CIRCUITS

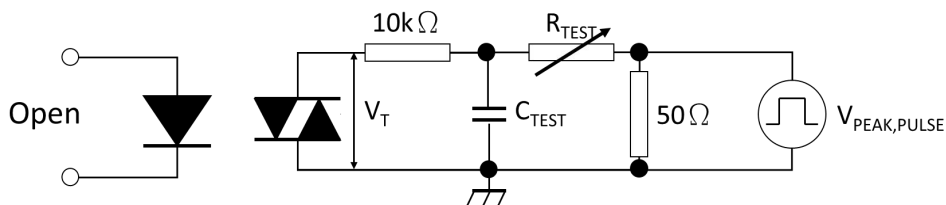
**Fig.15 Test Circuits of Turn On Time**



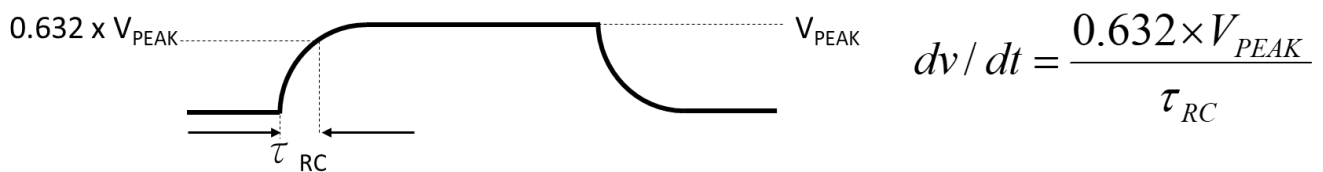
**Fig.16 Waveforms of Turn On Time**



**Fig.17 Test Circuits of dV/dt**

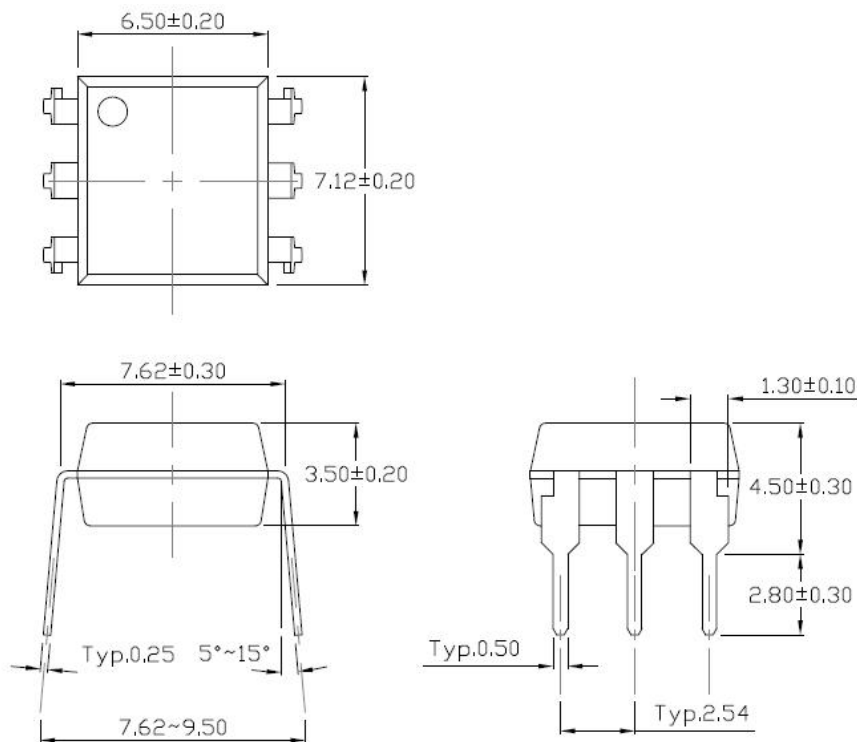


**Fig 18 Waveforms of dV/dt**

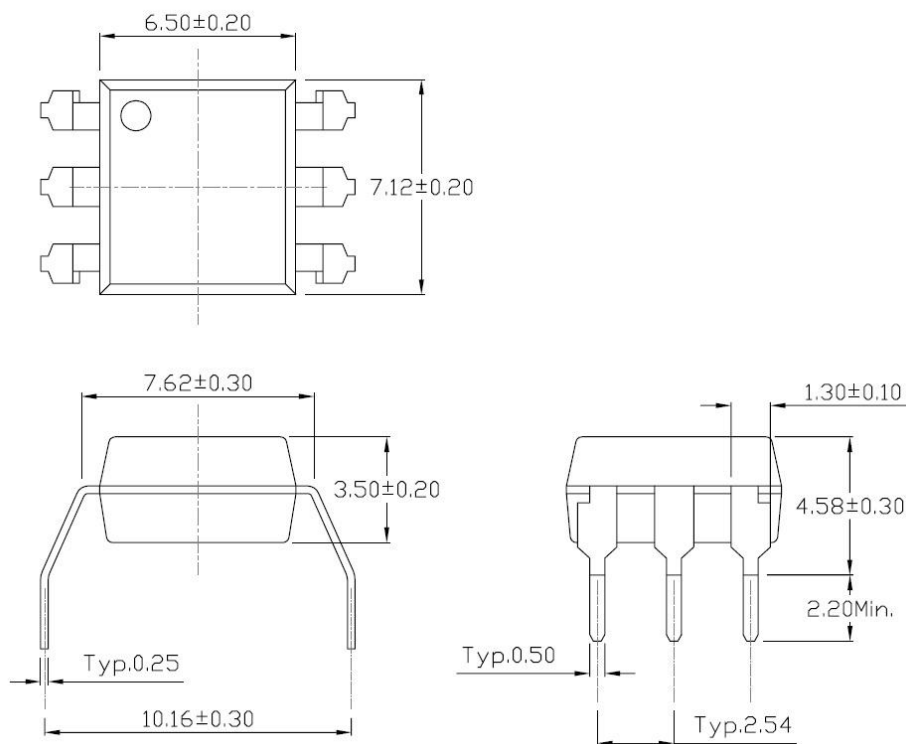


**PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)**

**Standard DIP – Through Hole (DIP Type)**

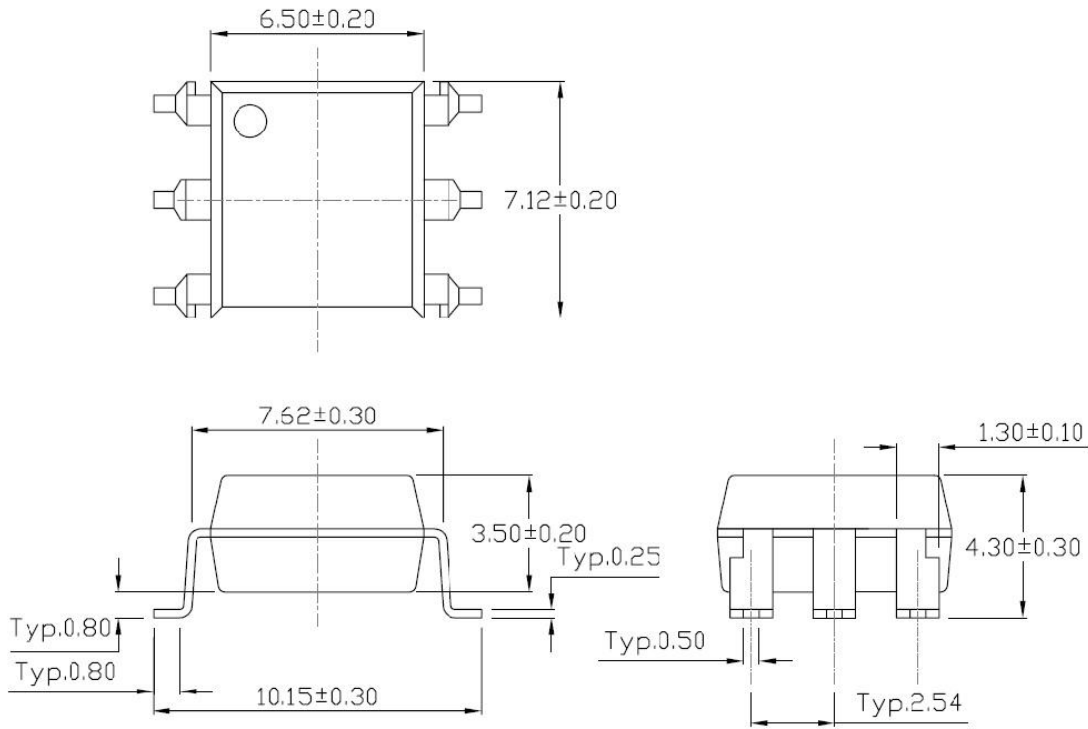


**Gullwing (400mil) Lead Forming Through Hole (M Type)**

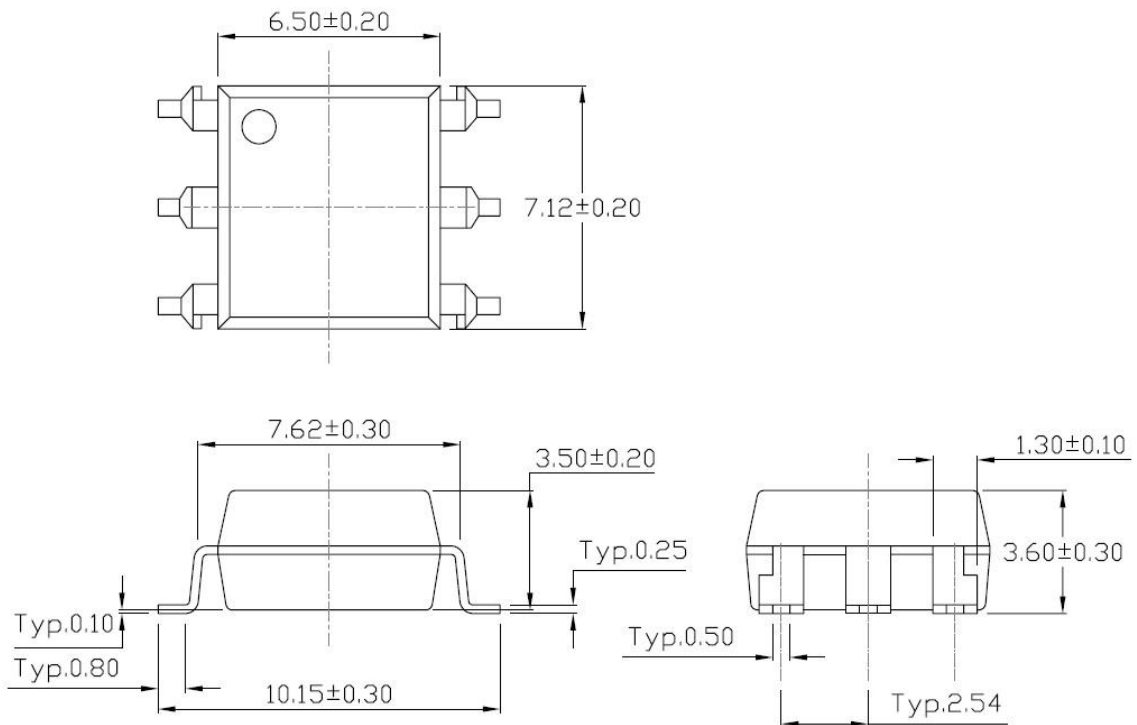


**PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)**

**Surface Mount Lead Forming (S Type)**

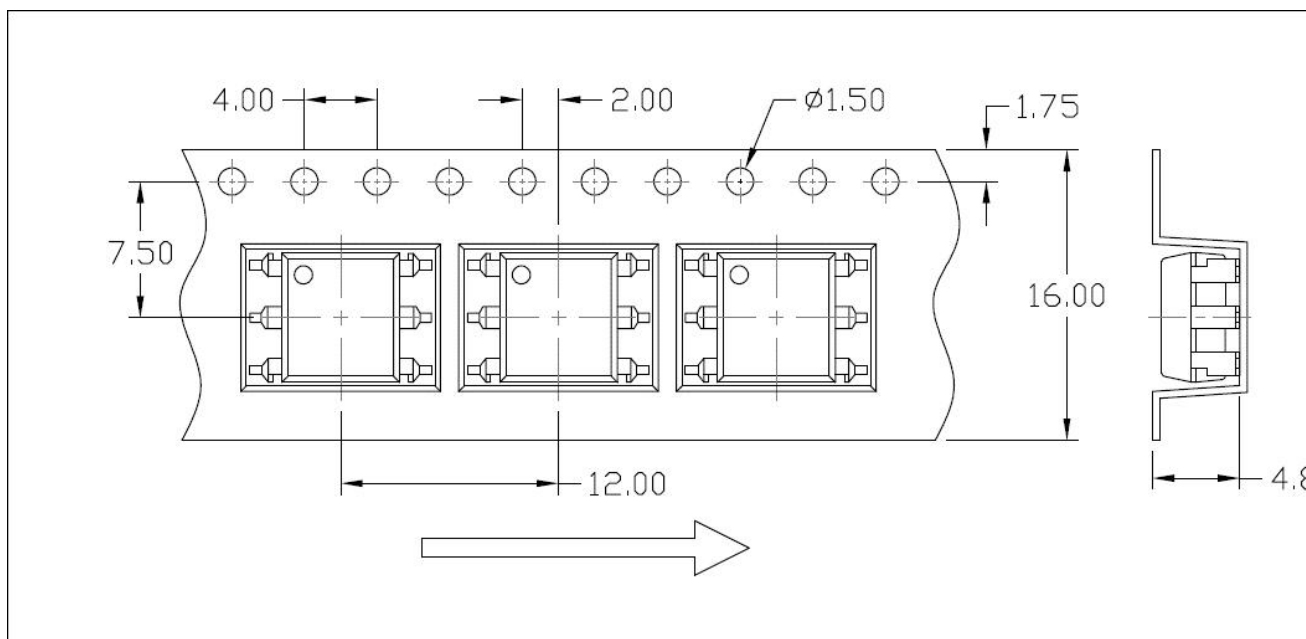


**Surface Mount (Low Profile) Lead Forming (SL Type)**

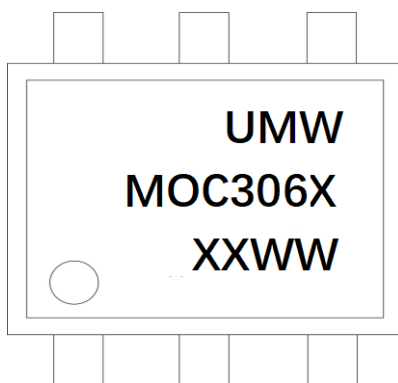


**CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)**

Option S(T1) & SL(T1)



**Marking**



- 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 MOC304XM	DIP-6	3250	Tube and box
UMW MOC304XSM	SOP-6	1000	Tape and reel
UMW MOC306XM	DIP-6	3250	Tube and box
UMW MOC306XSM	SOP-6	1000	Tape and reel
UMW MOC308XM	DIP-6	3250	Tube and box
UMW MOC308XSM	SOP-6	1000	Tape and reel