

## Description

The CYMOC302X,CYMOC305X series of devices each consists of a GaAs infrared emitting diode optically coupled to a monolithic silicon photo Triac.

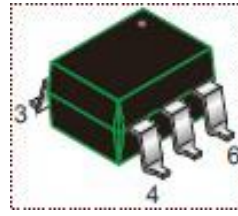
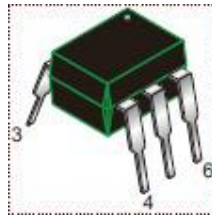
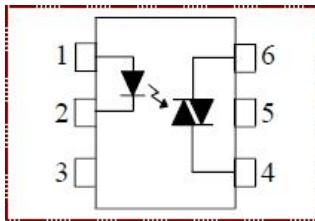
## Features

- Peak breakdown voltage,  
- 400V: CYMOC302X  
- 600V: CYMOC305X
- High isolation voltage between input and output (Viso=5000V rms )
- Compact dual-in-line package
- Pb free and RoHS compliant.

## Applications

- Isolated Line Receiver
- Solenoid/valve controls
- Light controls
- Static power switch
- AC motor drivers
- E.M. contactors
- Temperature controls
- AC Motor starters
- Solid state relays

## Block Diagram and Package



## Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward Current	IF	60	mA
	Reverse Voltage	VR	6	V
	Power Dissipation	PD	100	mW
	Derating Factor (above Ta = 85°C)		3.8	mW/°C
Output	Off-state Output Terminal Voltage	VDRM	400	V
	CYMOC302X			
	CYMOC305X		600	
	Peak Repetitive Surge Current (pw=100μs,120pps)	ITSM	1	A
	On-State RMS Current	IT(RMS)	100	mA
	Power Dissipation	PC	300	mW
	Derating Factor (above Ta = 85°C)		7.4	mW/°C
Total Power Dissipation		Ptot	330	mW
Isolation Voltage *		Viso	5000	Vrms
Operating Temperature		Topr	-55~+100	°C
Storage Temperature		Tstg	-55~+125	°C
Soldering Temperature (10s)		Tsol	260	°C

\* AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2 & 3 are shorted together, and pins 4, 5 & 6 are shorted together.

**Electrical Characteristics (Ta=25° C, unless specified otherwise)**

Characteristics			Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage		VF	IF=20mA		1.18	1.5	V
	Reverse Current		IR	VR=6V			10	μA
Output	Peak Blocking Current		IDRM	VDRM=Rated VDRM, IF=0mA			100	nA
	Peak On-state Voltage		VTM	ITM=100mA peak, IF=Rated IFT			2.5	V
	Critical Rate of Rise off-state Voltage	CYMOC302X	dv/dt	VPEAK =Rated VDRM, IF=0	-	100	-	V/μs
		CYMOC305X		VPEAK =400V, IF=0	1000			
	Inhibit Voltage (MT1-MT2 voltage above which device will not trigger)		VINH	IF= Rated IFT			20	V
	Leakage in Inhibited State		IDRM2	IF= Rated IFT, VDRM=Rated, VDRM, off state			500	μA
Transfer mA Characteristics	LED Trigger Current	CYMOC3021	IFT	Main terminal Voltage=3V			15	mA
		CYMOC3051						
		CYMOC3022					10	
		CYMOC3052						
		CYMOC3023					5	
		CYMOC3053						
	Holding Current		IH			250		μA

## Typical Performance Curves

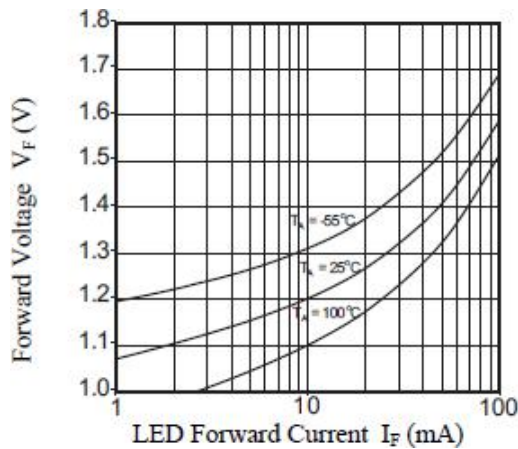


Fig.1 Forward Voltage VS Forward Current

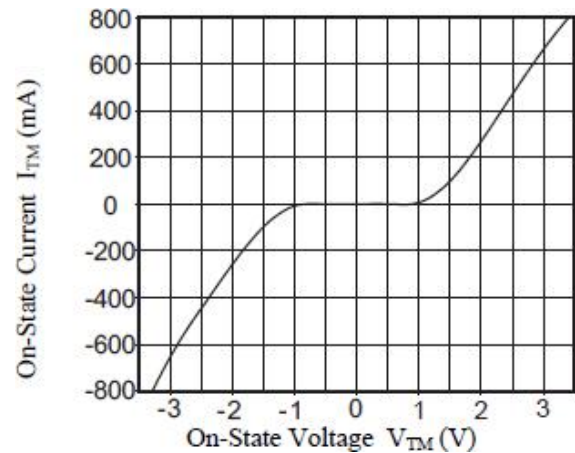


Fig.2 On-State Characteristics

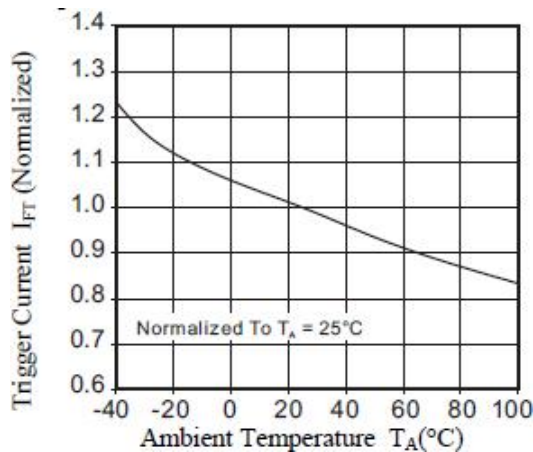


Fig.3 Trigger Current VS Temperature

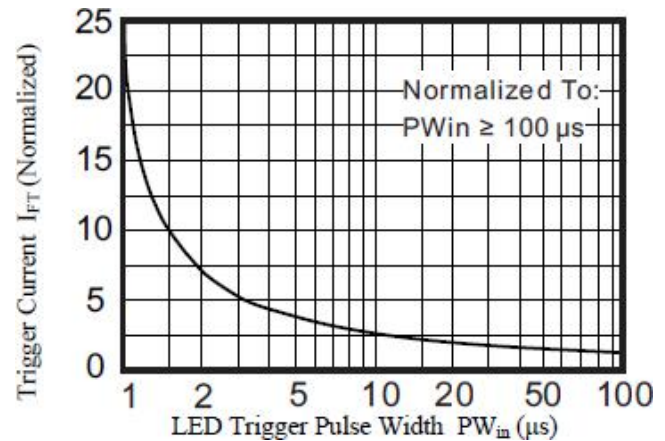


Fig.4 Current Required to Trigger VS Pulse Width

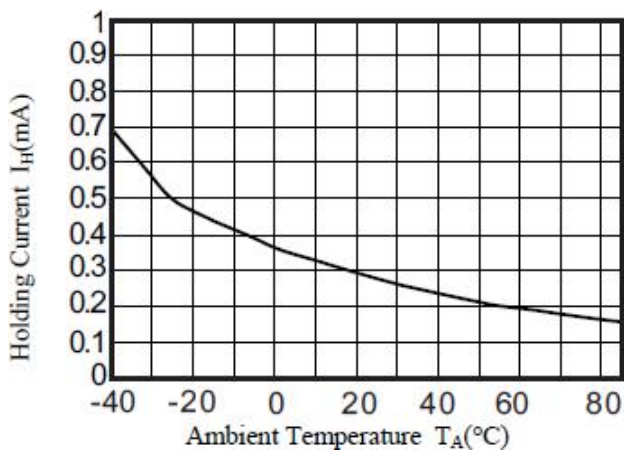


Fig.5 Holding Current VS Temperature

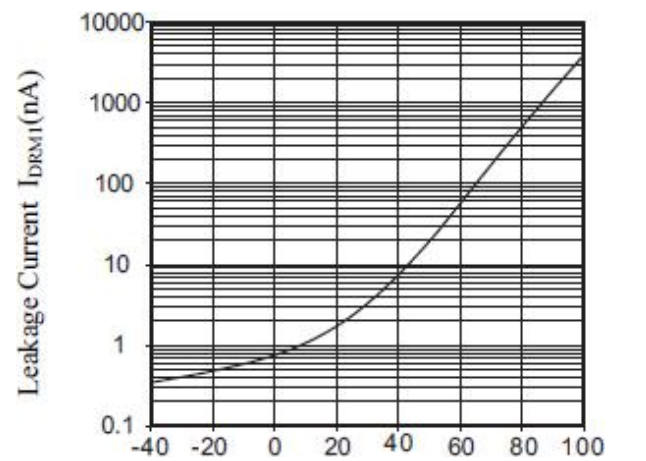
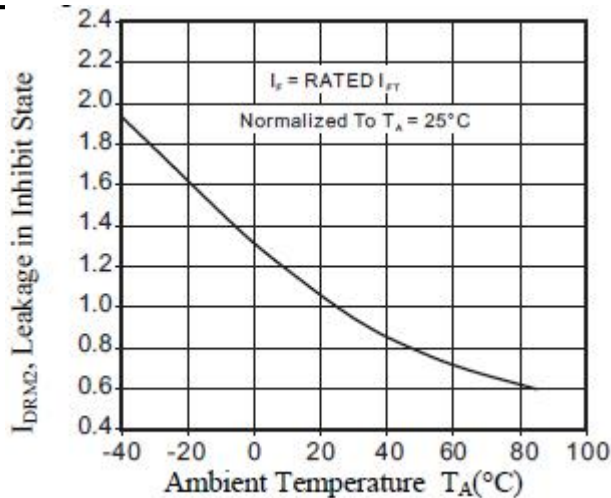
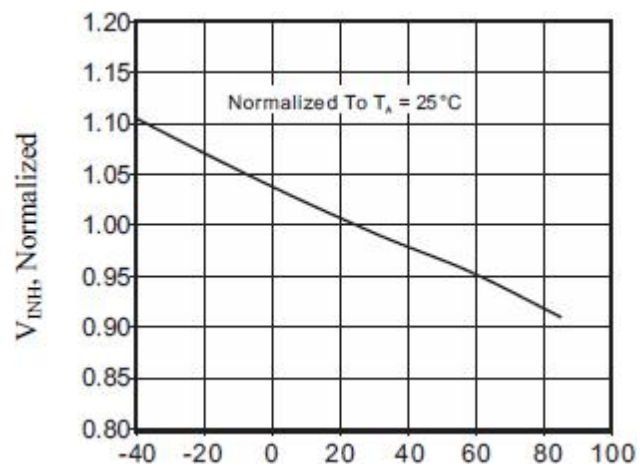
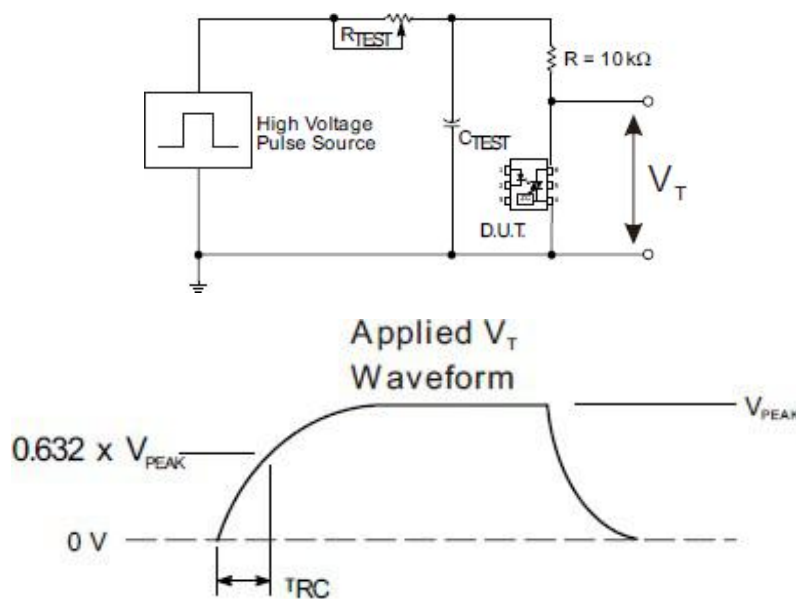


Fig.6 Leakage Current VS Temperature


**Fig.7 I<sub>DRM2</sub>, Leakage in Inhibit State VS Temperature**

**Fig.8 Inhibit Voltage vs. Temperature**

## Test Circuits

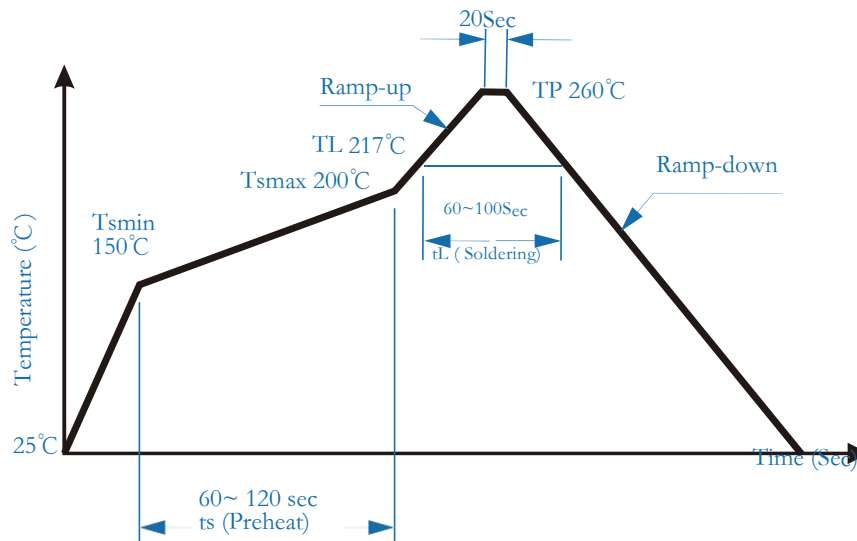

**Fig. 12. Static dv/dt Test Circuit & Waveform.**

The high voltage pulse is set to the required V<sub>PEAK</sub> value and applied to the D.U.T. output side through the RC circuit above. LED current is not applied. The waveform V<sub>T</sub> is monitored using an x100 scope probe. By varying R<sub>TEST</sub>, the dv/dt (slope) is increased, until the D.U.T. is observed to trigger (waveform collapses). The dv/dt is then decreased until the D.U.T. stops triggering. At this point, τ<sub>RC</sub> is recorded and the dv/dt calculated.

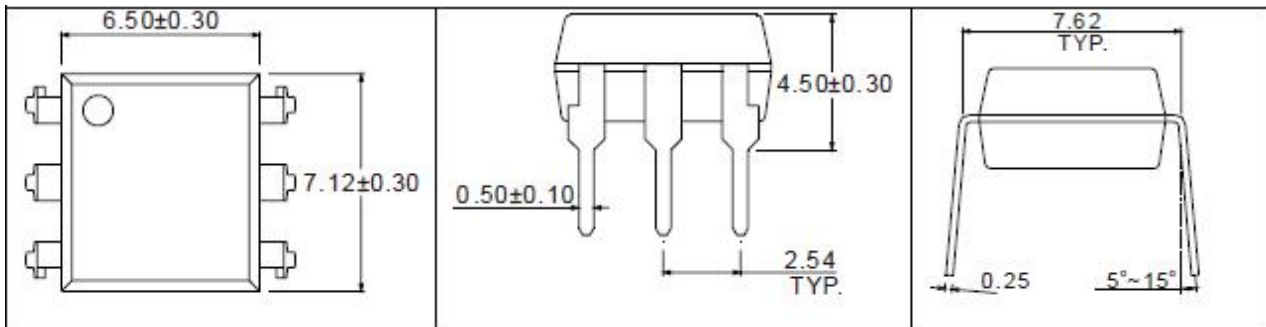
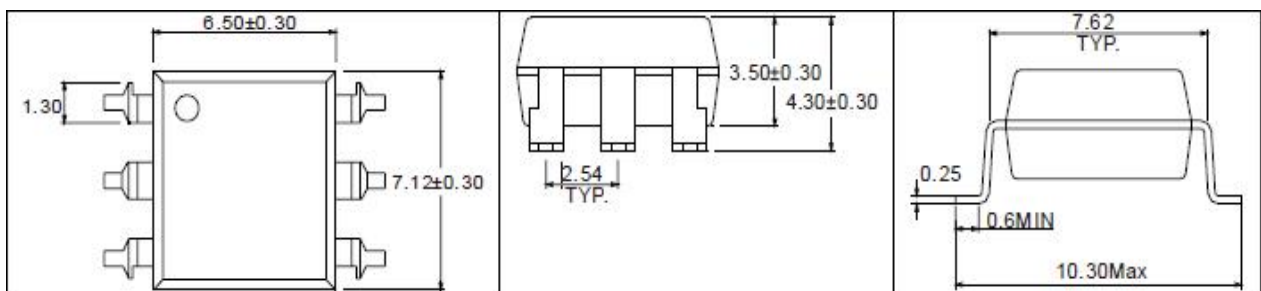
$$dv/dt = \frac{0.632 \times V_{PEAK}}{\tau_{RC}}$$

For example, V<sub>PEAK</sub> = 400V for HK304X series. The dv/dt value is calculated as follows:

$$dv/dt = \frac{0.632 \times 400}{\tau_{RC}} = \frac{252}{\tau_{RC}}$$

**Solder Reflow Profile**

**Outline Dimensions**

Unit: mm


**6-pin DIP**

**6-pin SMD**

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