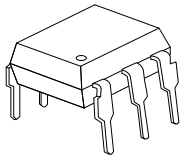
6-PIN DIP ZERO-CROSS DRIVER PHOTOCOUPLER



DIP-6

■ DESCRIPTION

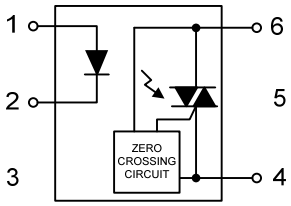
The UTC **UMOC306X/UMOC308X** is consist of a GaAs infrared emitting diode optically coupled to a monolithic silicon zero voltage crossing photo triac.

The UTC **UMOC306X/UMOC308X** designed for use with a discrete power triac in the interface of logic systems to equipment powered from 110 to 380 VAC lines, such as solid-state relays, industrial controls, motors, solenoids and consumer appliances.

■ FEATURES

* Peak off-state voltage
  600V: UMOC306X
  800V: UMOC308X
* Isolation voltage between input and output V_{ISO}: 5,000Vrms
* 6pin DIP photocoupler, triac driver output
* High repetitive peak off-state voltage
* High critical rate of rise of off-state voltage

■ SYMBOL



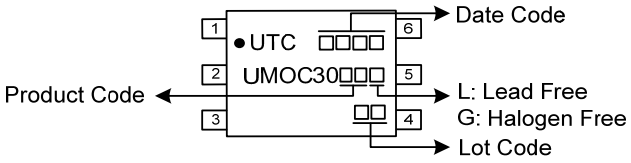
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UMOC306XL-D06-T	UMOC306XG-D06-T	DIP-6	Tube
UMOC308XL-D06-T	UMOC308XG-D06-T	DIP-6	Tube

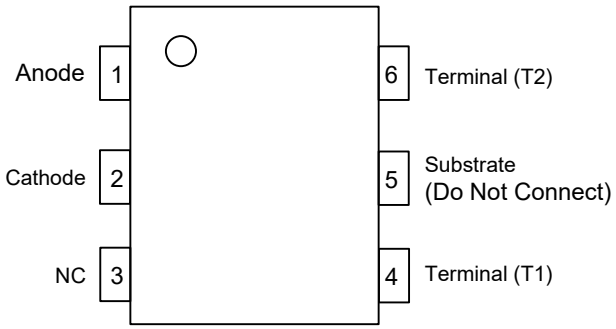
UMOC306XG-D06-T

(1)Packing Type	(1) T: Tube
(2)Package Type	(2) D06: DIP-6
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free
(4)Trigger LED Current	(4) refer to ELECTRICAL CHARACTERISTICS of I_{FT}

■ MARKING



■ PIN CONFIGURATION



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Input	LED Reverse Voltage		V_R	6	V
	LED Forward Current		I_F	60	mA
	Power Dissipation		P_D	100	mW
Output	Off-State Output Terminal Voltage	UMOC306X	V_{DRM}	600	V
		UMOC308X		800	V
	ON-State RMS Current		$I_{T(RMS)}$	100	mA
	Peak Repetitive Surge Current (PW=100μs, 120pps)		I_{TSM}	1	A
	Collector Power Dissipation		P_C	300	mW
I/O Isolation Voltage			V_{ISO}	5000	V/AC
Power dissipation			P_D	330	mW
Operating Temperature			T_{OPR}	-40 ~ +100	°C
Storage Temperature			T_{STG}	-40 ~ +150	°C

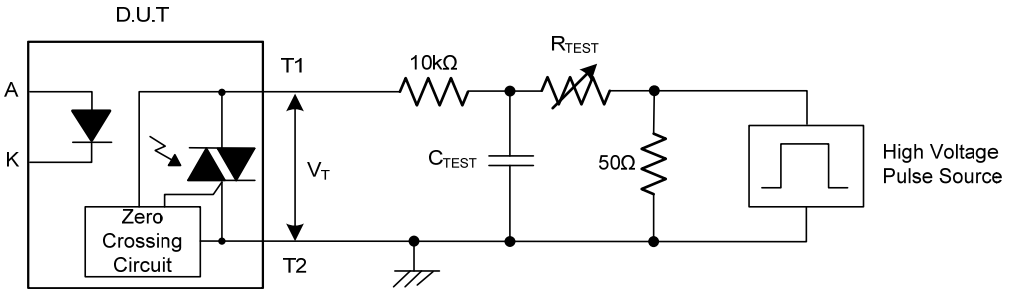
Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. AC for 1 minute, R.H.= 40~60% R.H. In this test, pins 1, 2 are shorted together, and pins 3, 4 are shorted together.

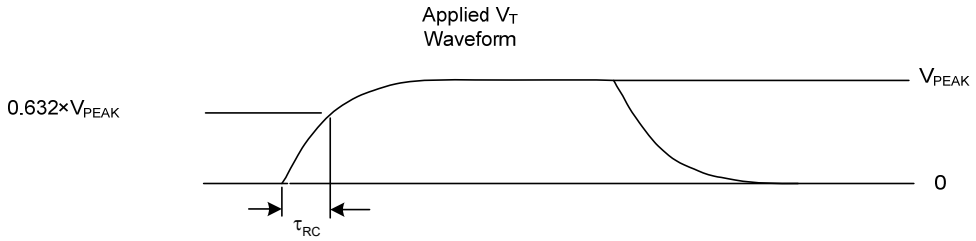
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
INPUT							
LED Dropout Voltage	V_F	I_F=30mA				1.5	V
LED Reverse Voltage	I_R	V_R=6V				10	μA
OUTPUT							
Peak Blocking Current, Either Direction (Rated V_{DRM}, Note 1) @ I_{FT} Per Device	I_{DRM}	V_{DRM}=Rated V_{DRM} I_F = 0mA(Note2)				0.5	μA
Peak On–State Voltage, Either Direction	V_{TM}	I_{TM}=100mA Peak I_F=Rated I_{FT}				3	V
Inhibit Voltage (T1–T2 Voltage above which device will not trigger.)	V_{INH}	I_F=Rated I_{FT}				20	V
Critical Rate of Rise of Off–State Voltage (Note 2)	dv/dt	V_{PEAK}= Rated V_{DRM},I_{FT}=0	UMOC306X	1000			V/μs
			UMOC308X	600			V/μs
TRANSFER CHARACTERISTICS							
Led Trigger Current, Current Required to Latch Output, Either Direction	I_{FT}	Main terminal Voltage=3V (Note 3)	UMOC3061 UMOC3081			15	mA
			UMOC3062 UMOC3082			10	mA
			UMOC3063 UMOC3083			5	mA
Holding Current, Either Direction	I_H				280		μA

Notes: 1. Typical values at T_A=25°C
2. Test voltage must be applied within dv/dt rating.
3. All devices are guaranteed to trigger at an I_F value less than or equal to max I_{FT}. Therefore, recommended operating I_F lies between max. (15mA for UMOC3061/UMOC3081; 10mA for UMOC3062/UMOC3082; 5mA for UMOC3063/UMOC3083) and absolute maximum I_F (60 mA).

■ STATIC dv/dt TEST CIRCUIT & WAVEFORM





■ MEASUREMENT METHOD

The high voltage pulse is set to the required V_{PEAK} value and applied to the D.U.T. output side through the RC circuit above. LED current is not applied. The waveform V_T is monitored using a x100 scope probe. By varying RTEST, 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, tRC is recorded and the dv/dt calculated

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

For example, V_{PEAK} = 600V. The dv/dt value is calculated as follows:

$$dv/dt = \frac{0.63 \times 600}{\tau_{RC}} = \frac{378}{\tau_{RC}}$$