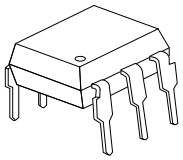
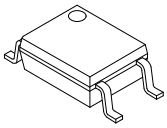
UMOC304X/UMOC306X/UMOC308X Preliminary *PHOTOCOUPLER*

DIP-6/SOP-4 ZERO-CROSS DRIVER PHOTOCOUPLER



DIP-6



SOP-4

■ DESCRIPTION

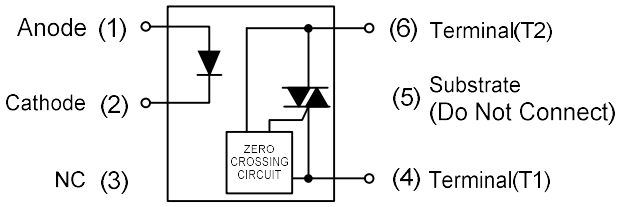
The UTC **UMOC304X/UMOC306X/UMOC308X** is consist of a GaAs infrared emitting diode optically coupled to a monolithic silicon zero voltage crossing photo triac.

The UTC **UMOC304X/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.

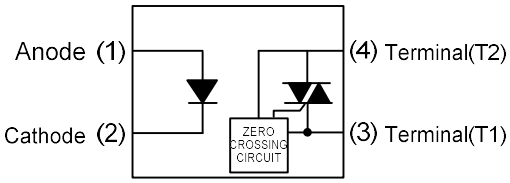
■ FEATURES

* Peak off-state voltage
  400V: UMOC304X
  600V: UMOC306X
  800V: UMOC308X
* Isolation voltage between input and output V_{ISO}: 5,000Vrms
* Photocoupler, triac driver output
* High repetitive peak off-state voltage
* High critical rate of rise of off-state voltage

■ SYMBOL



DIP-6



SOP-4

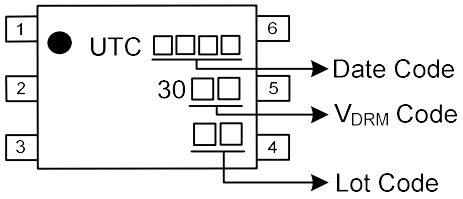
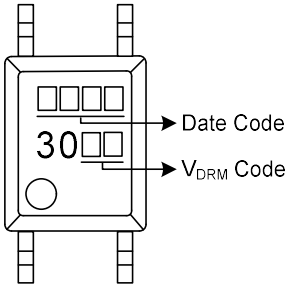
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■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UMOC304XL-D06-T	UMOC304XG-D06-T	DIP-6	A	K	NC	T1	NC	T2	Tube
UMOC306XL-D06-T	UMOC306XG-D06-T	DIP-6	A	K	NC	T1	NC	T2	Tube
UMOC308XL-D06-T	UMOC308XG-D06-T	DIP-6	A	K	NC	T1	NC	T2	Tube
UMOC304XL-S04-R	UMOC304XG-S04-R	SOP-4	A	K	T1	T2	-	-	Tape Reel
UMOC306XL-S04-R	UMOC306XG-S04-R	SOP-4	A	K	T1	T2	-	-	Tape Reel
UMOC308XL-S04-R	UMOC308XG-S04-R	SOP-4	A	K	T1	T2	-	-	Tape Reel

UMOC304XG-D06-T (1)Packing Type (2)Package Type (3)Green Package (4)Trigger LED Current	(1) T: Tube, R: Tape Reel (2) D06: DIP-6, S04: SOP-4 (3) G: Halogen Free and Lead Free, L: Lead Free (4) refer to ELECTRICAL CHARACTERISTICS of I_{FT}

■ MARKING

PACKAGE	MARKING
DIP-6	
SOP-4	

■ 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	SOP-4	P_D	70	mW
		DIP-6		100	mW
Output	Off-State Output Terminal Voltage	UMOC304X	V_{DRM}	400	V
		UMOC306X		600	V
		UMOC308X		800	V
	ON-State RMS Current		$I_{T(RMS)}$	100	mA
	Peak Repetitive Surge Current (P_W=100μs, 120pps)		I_{TSM}	1	A
	Collector Power Dissipation	SOP-4	P_C	150	mW
		DIP-6		300	
I/O Isolation Voltage			V_{ISO}	5000	V/AC
Power Dissipation		SOP-4	P_D	170	mW
		DIP-6		330	
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)

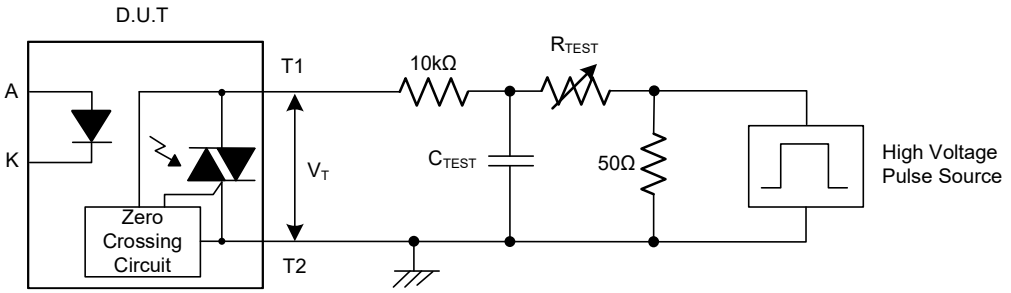
PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
INPUT							
LED Dropout Voltage	V_F	I_F=30mA				1.5	V
LED Reverse Voltage	I_R	V_R=6V				10	μA
OUTPUT							
Peak Blocking Current, Either Direction (Rated V_{DRM}, Note 1) @ I_{FT} Per Device	I_{DRM}	V_{DRM}=Rated V_{DRM} I_F = 0mA(Note2)				0.5	μA
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	UMOC304X 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)	UMOC3041 UMOC3061 UMOC3081			15	mA
			UMOC3042 UMOC3062 UMOC3082			10	mA
			UMOC3043 UMOC3063 UMOC3083			5	mA
Holding Current, Either Direction	I_H				280		μA

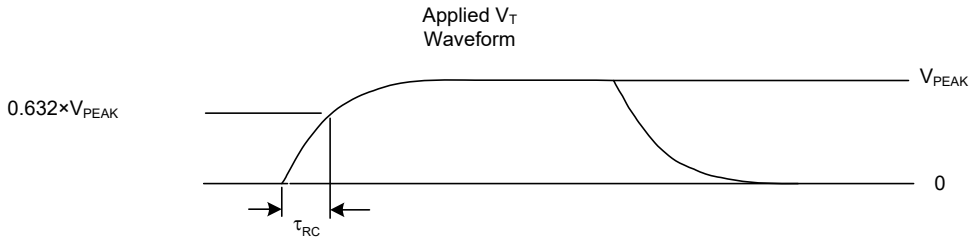
Notes: 1. Typical values at T_A=25°C.

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 UMOC3041/UMOC3061/UMOC3081; 10mA for UMOC3042/UMOC3062/UMOC3082; 5mA for UMOC3043/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:

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

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