

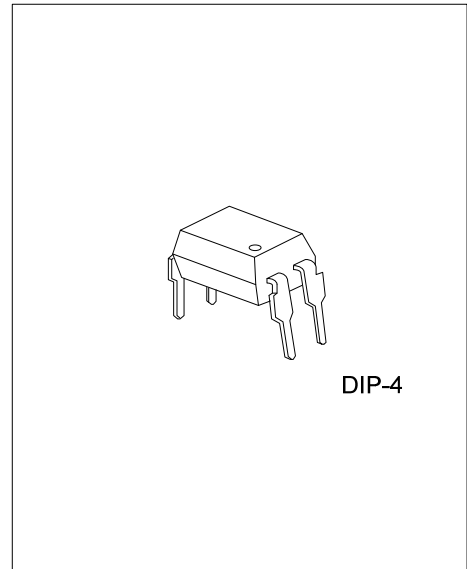


## UOC3020S

Preliminary

PHOTOCOUPLER

### 4-PIN DIP RANDOM-PHASE OPTOISOLATORS TRIAC DRIVER OUTPUT



#### DESCRIPTION

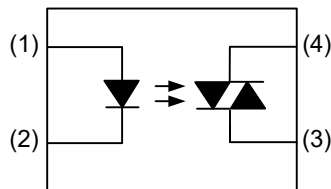
The UTC **UOC3020S** consists of gallium arsenide infrared emitting diodes, optically coupled to a silicon bilateral switch.

The UTC **UOC3020S** is suitable for applications requiring isolated triac triggering.

#### FEATURES

- \* 250V Phototriac Driver Output
- \* Gallium-Arsenide-Diode Infrared Source and Optically-Coupled Silicon Triac Driver (Bilateral Switch)
- \* High Isolation 7500V Peak
- \* Output Driver Designed for 220V ac

#### SYMBOL



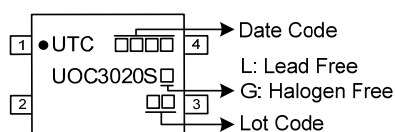
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment				Packing
Lead Free	Halogen Free		1	2	3	4	
UOC3020SL-D04-T	UOC3020SG-D04-T	DIP-4	A	K	M	M	Tube

Note: Pin Assignment: A: ANODE K: CATHODE M: MAIN TERMINAL

<p>UOC3020SG-D04-T</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) T: Tube</li> <li>(2) D04: DIP-4</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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#### MARKING



■ ABSOLUTE MAXIMUM RATING ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT	
Input	LED Forward Current	$I_F$	50	mA	
	LED Reverse Voltage	$V_R$	3	V	
Output	Repetitive Peak OFF-State Voltage	$V_{DRM}$	400	V	
	ON-State RMS Current	$I_{T(RMS)}$	$T_A=25^{\circ}\text{C}$	100	mA
			$T_A=70^{\circ}\text{C}$	50	mA
Non-Repetitive Surge Current (50~60Hz, 1 Cycle)	$I_{TSM}$	1.2	A		
Operating Junction Temperature		$T_J$	-40 ~ +100	$^{\circ}\text{C}$	
Storage Temperature		$T_{STG}$	-40 ~ +150	$^{\circ}\text{C}$	

Note: 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.

■ ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>INPUT</b>						
LED Dropout Voltage	$V_F$	$I_F=10\text{mA}$		1.2	1.5	V
LED Reverse Voltage	$I_R$	$V_R=3\text{V}$			100	$\mu\text{A}$
<b>OUTPUT</b>						
Peak OFF-State Current	$I_{DRM}$	$I_F=0\text{mA}, V_{DRM}=400\text{V}$			100	nA
Peak ON-State Voltage	$V_{TM}$	$I_{TM}=100\text{mA}$		1.4	2.5	V
Holding Current	$I_H$			100		$\mu\text{A}$
<b>TRANSFER CHARACTERISTICS</b>						
Trigger LED Current	$I_{FT}$	$V_D=3\text{V}, R_L=100\Omega$		15	30	mA

■ TEST CIRCUITS

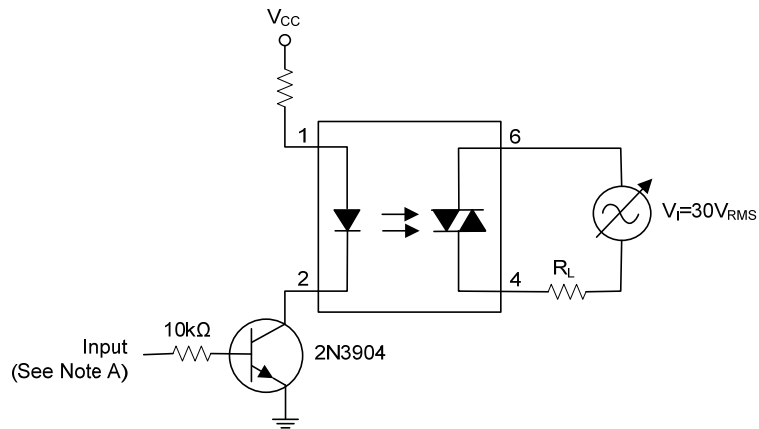


Figure 1. Critical Rate of Rise Test Circuit

NOTE A. The critical rate of rise of off-state voltage,  $dv/dt$ , is measured with the input at 0V. The frequency of  $V_{IN}$  is increased until the phototriac turns on. This frequency is then used to calculate the  $dv/dt$  according to the formula:

$$dv/dt = 2\sqrt{2\pi f V_{IN}}$$

The critical rate of rise of commutating voltage,  $dv/dt(c)$ , is measured by applying occasional 5V pulses to the input and increasing the frequency of  $V_{in}$  until the phototriac stays on (latches) after the input pulse has ceased. With no further input pulses, the frequency of  $V_{in}$  is then gradually decreased until the phototriac turns off. The frequency at which turn-off occurs may then be used to calculate the  $dv/dt(c)$  according to the formula shown above.

■ TYPICAL APPLICATIONS

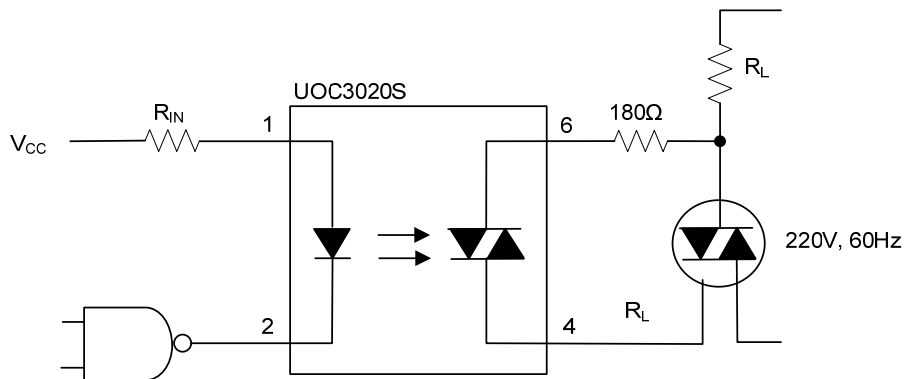


Figure 2. Resistive Load

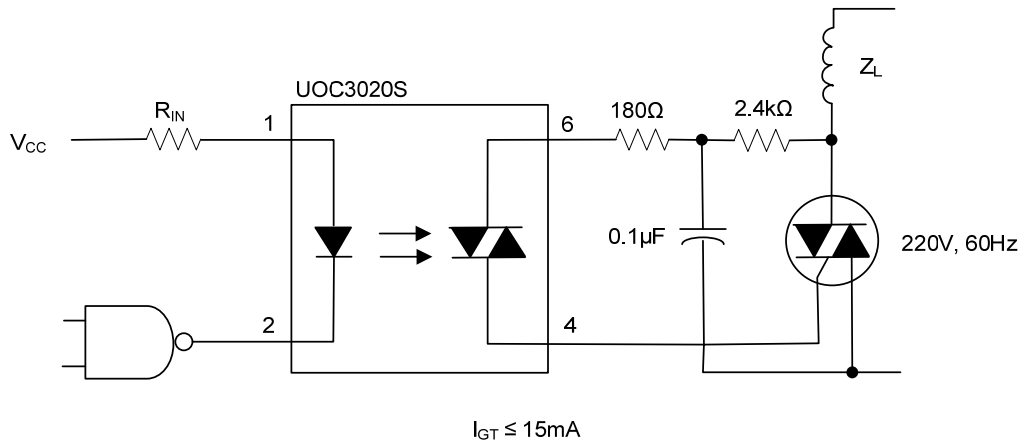


Figure 3. Inductive Load With Sensitive-Gate Triac

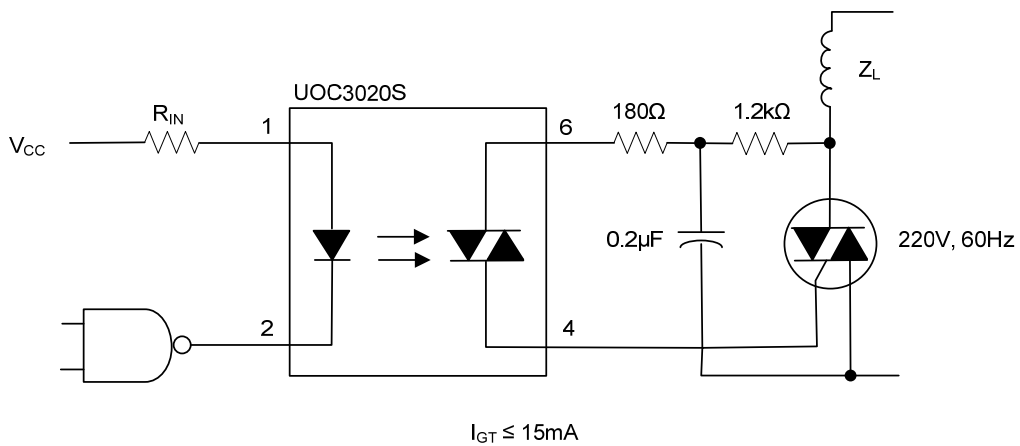


Figure 4. Inductive Load With Nonsensitive-Gate Triac

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