

MOC3020 THRU MOC3023 OPTOCOUPLEDERS/OPTOISOLATORS

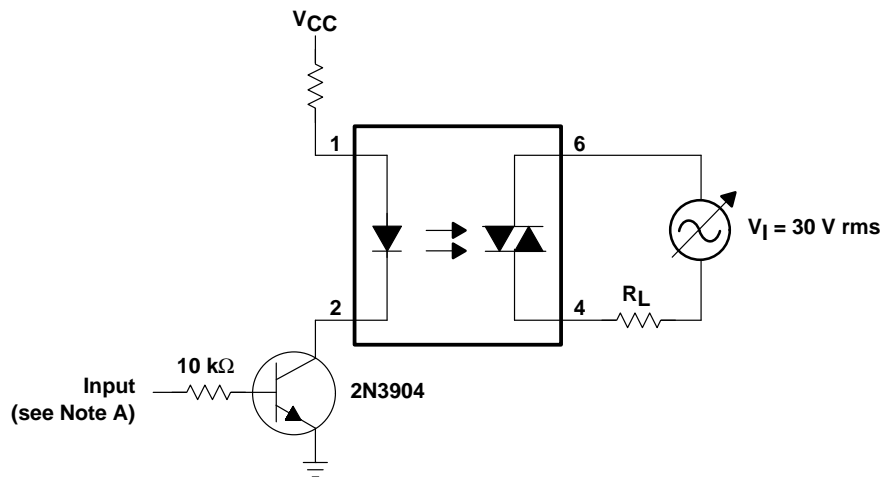
SOES025 – OCTOBER 1986 – REVISED OCTOBER 1995

electrical characteristics at 25°C free-air temperature (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
I_R	Static reverse current	$V_R = 3\text{ V}$		0.05	100	μA
V_F	Static forward voltage	$I_F = 10\text{ mA}$		1.2	1.5	V
$I_{(DRM)}$	Repetitive off-state current, either direction	$V_{(DRM)} = 400\text{ V}$, See Note 5		10	100	nA
dv/dt	Critical rate of rise of off-state voltage	See Figure 1		100		V/ μs
$dv/dt(c)$	Critical rate of rise of commutating voltage	$I_O = 15\text{ mA}$, See Figure 1		0.15		V/ μs
I_{FT}	Input trigger current, either direction	Output supply voltage = 3 V	MOC3020	15	30	mA
			MOC3021	8	15	
			MOC3022	5	10	
			MOC3023	3	5	
V_{TM}	Peak on-state voltage, either direction	$I_{TM} = 100\text{ mA}$		1.4	3	V
I_H	Holding current, either direction			100		μA

NOTE 5: Test voltage must be applied at a rate no higher than 12 V/ μs .

PARAMETER MEASUREMENT INFORMATION



NOTE A. The critical rate of rise of off-state voltage, dv/dt , is measured with the input at 0 V. 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 5-V 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.

Figure 1. Critical Rate of Rise Test Circuit

TYPICAL CHARACTERISTICS

EMITTING-DIODE TRIGGER CURRENT (NORMALIZED)
vs
FREE-AIR TEMPERATURE

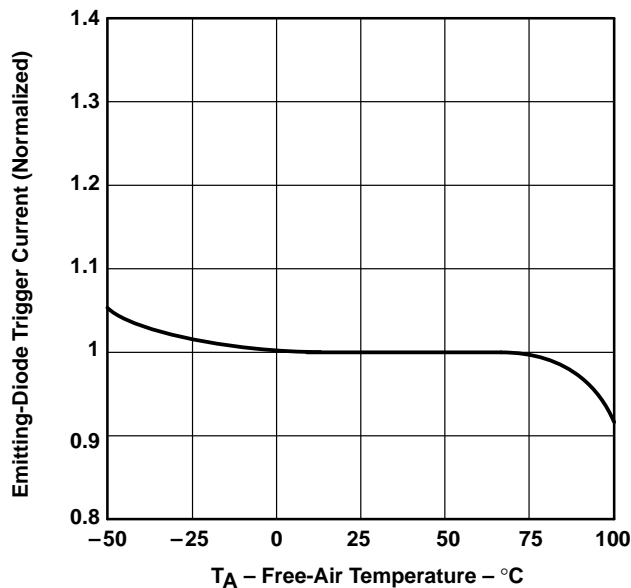


Figure 2

ON-STATE CHARACTERISTICS

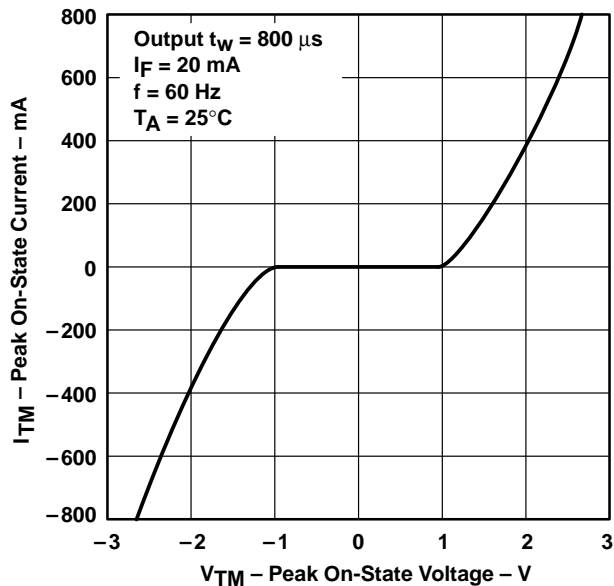


Figure 3

NONREPETITIVE PEAK ON-STATE CURRENT
vs
PULSE DURATION

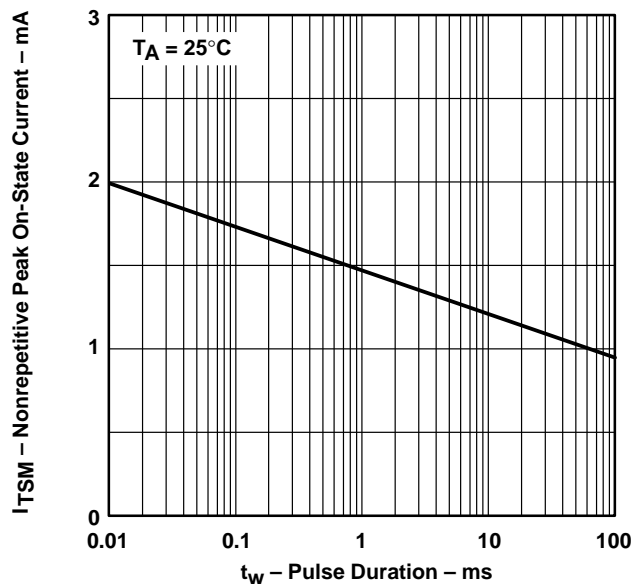


Figure 4

APPLICATIONS INFORMATION

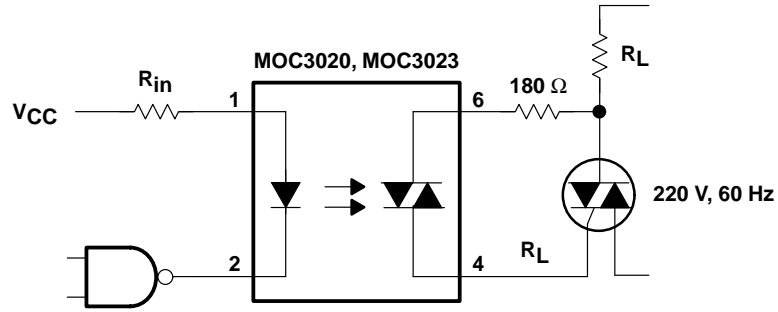


Figure 5. Resistive Load

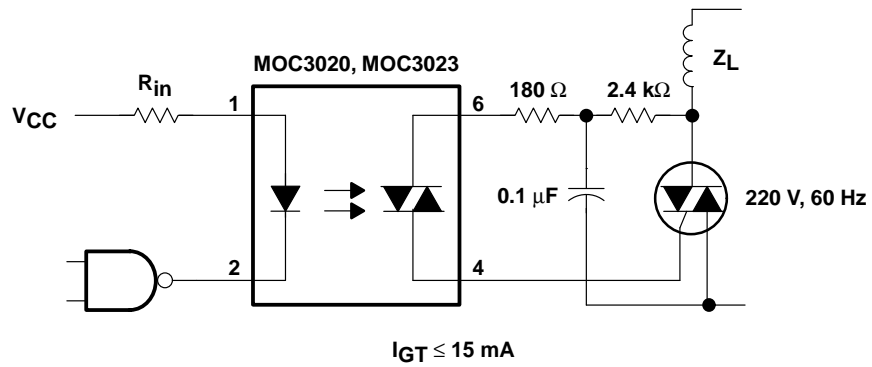


Figure 6. Inductive Load With Sensitive-Gate Triac

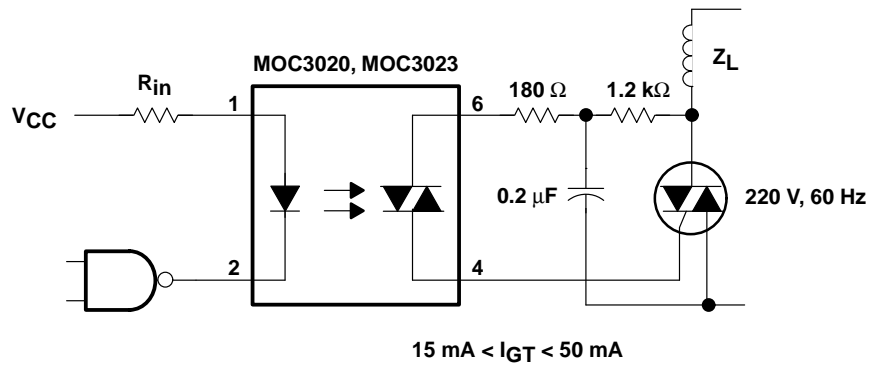
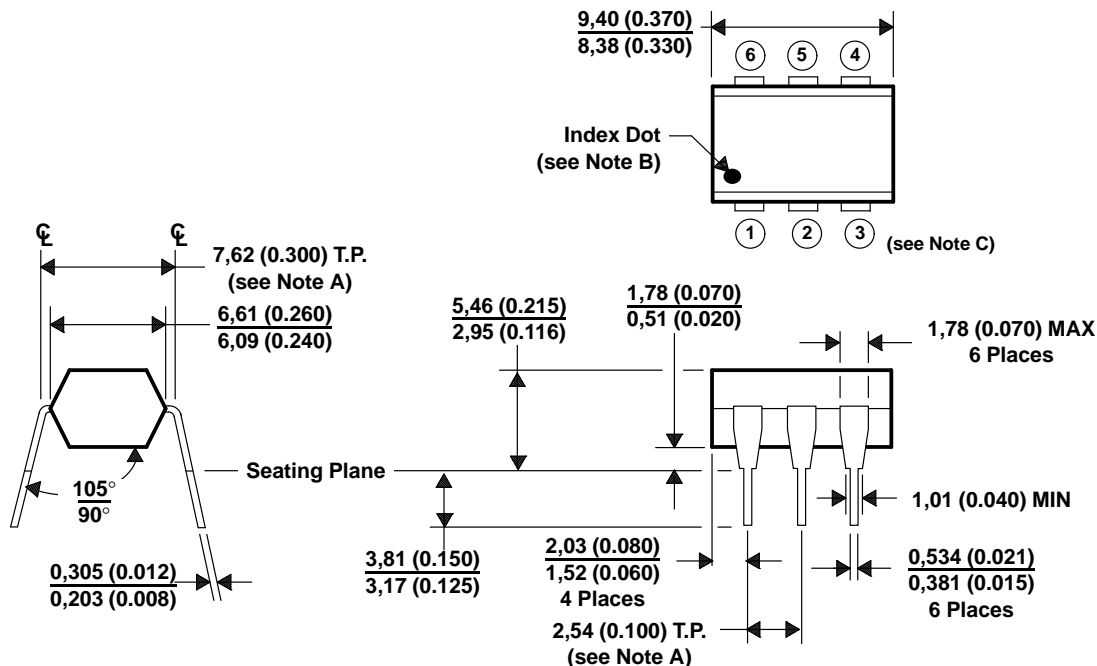


Figure 7. Inductive Load With Nonsensitive-Gate Triac

MECHANICAL INFORMATION

Each device consists of a gallium-arsenide infrared-emitting diode optically coupled to a silicon phototriac mounted on a 6-terminal lead frame encapsulated within an electrically nonconductive plastic compound. The case can withstand soldering temperature with no deformation and device performance characteristics remain stable when operated in high-humidity conditions.



- NOTES: A. Leads are within 0,13 (0.005) radius of true position (T.P.) with maximum material condition and unit installed.
 B. Pin 1 identified by index dot.
 C. Terminal connections:
 1. Anode (part of the infrared-emitting diode)
 2. Cathode (part of the infrared-emitting diode)
 3. No internal connection
 4. Main terminal (part of the phototransistor)
 5. Triac Substrate (DO NOT connect) (part of the phototransistor)
 6. Main terminal (part of the phototransistor)
 D. The dimensions given fall within JEDEC MO-001 AM dimensions.
 E. All linear dimensions are given in millimeters and parenthetically given in inches.

Figure 8. Mechanical Information

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