New Jersey Semi-Conductor Products, Inc.

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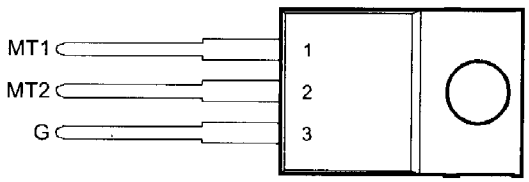
TIC226 SERIES
SILICON TRIACS

- **8 A RMS, 70 A Peak**
- **Glass Passivated Wafer**
- **400 V to 800 V Off-State Voltage**
- **Max I_{GT} of 50 mA (Quadrants 1 - 3)**

TO-220 PACKAGE
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

absolute maximum ratings over operating case temperature (unless otherwise noted)

RATING		SYMBOL	VALUE	UNIT
Repetitive peak off-state voltage (see Note 1)	TIC226D	V_{DRM}	400	V
	TIC226M		600	
	TIC226S		700	
	TIC226N		800	
Full-cycle RMS on-state current at (or below) 85°C case temperature (see Note 2)		$I_{T(RMS)}$	8	A
Peak on-state surge current full-sine-wave (see Note 3)		I_{TSM}	70	A
Peak on-state surge current half-sine-wave (see Note 4)		I_{TSM}	80	A
Peak gate current		I_{GM}	±1	A
Peak gate power dissipation at (or below) 85°C case temperature (pulse width ≤ 200 μs)		P_{GM}	2.2	W
Average gate power dissipation at (or below) 85°C case temperature (see Note 5)		$P_{G(AV)}$	0.9	W
Operating case temperature range		T_C	-40 to +110	°C
Storage temperature range		T_{stg}	-40 to +125	°C
Lead temperature 1.6 mm from case for 10 seconds		T_L	230	°C

NOTES: 1. These values apply bidirectionally for any value of resistance between the gate and Main Terminal 1.
2. This value applies for 50-Hz full-sine-wave operation with resistive load. Above 85°C derate linearly to 110°C case temperature at the rate of 320 mA/°C.
3. This value applies for one 50-Hz full-sine-wave when the device is operating at (or below) the rated value of on-state current. Surge may be repeated after the device has returned to original thermal equilibrium. During the surge, gate control may be lost.
4. This value applies for one 50-Hz half-sine-wave when the device is operating at (or below) the rated value of on-state current. Surge may be repeated after the device has returned to original thermal equilibrium. During the surge, gate control may be lost.
5. This value applies for a maximum averaging time of 20 ms.

electrical characteristics at 25°C case temperature (unless otherwise noted)

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
I_{DRM}	Repetitive peak off-state current	V_D = rated V_{DRM}	I_G = 0	T_C = 110°C			±2	mA
I_{GTM}	Peak gate trigger current	V_{supply} = +12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 μs		2	50	mA
		V_{supply} = +12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 μs		-12	-50	
		V_{supply} = -12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 μs		-9	-50	
		V_{supply} = -12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 μs		20		
V_{GTM}	Peak gate trigger voltage	V_{supply} = +12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 μs		0.7	2	V
		V_{supply} = +12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 μs		-0.8	-2	
		V_{supply} = -12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 μs		-0.8	-2	
		V_{supply} = -12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 μs		0.9	2	

† All voltages are with respect to Main Terminal 1.

electrical characteristics at 25°C case temperature (unless otherwise noted) (continued)

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
V_{TM}	Peak on-state voltage	I_{TM} = ±12 A	I_G = 50 mA	(see Note 6)		±1.6	±2.1	V
I_H	Holding current	V_{supply} = +12 V†	I_G = 0	Init' I_{TM} = 100 mA		5	30	mA
		V_{supply} = -12 V†	I_G = 0	Init' I_{TM} = -100 mA		-9	-30	
I_L	Latching current	V_{supply} = +12 V†	(see Note 7)				50	mA
		V_{supply} = -12 V†					-50	
dv/dt	Critical rate of rise of off-state voltage	V_{DRM} = Rated V_{DRM}	I_G = 0	T_C = 110°C		±100		V/µs
$dv/dt_{(c)}$	Critical rise of commutation voltage	V_{DRM} = Rated V_{DRM}	I_{TRM} = ±12 A	T_C = 85°C	±5			V/µs

† All voltages are with respect to Main Terminal 1.

NOTES: 6. This parameter must be measured using pulse techniques, t_p = ≤ 1 ms, duty cycle ≤ 2 %. Voltage-sensing contacts separate from the current carrying contacts are located within 3.2 mm from the device body.

7. The triacs are triggered by a 15-V (open-circuit amplitude) pulse supplied by a generator with the following characteristics: R_G = 100 Ω, $t_{p(g)}$ = 20 µs, t_r = ≤ 15 ns, f = 1 kHz.

thermal characteristics

PARAMETER		MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			1.8	°C/W
$R_{\theta JA}$	Junction to free air thermal resistance			62.5	°C/W

TYPICAL CHARACTERISTICS

GATE TRIGGER CURRENT vs CASE TEMPERATURE

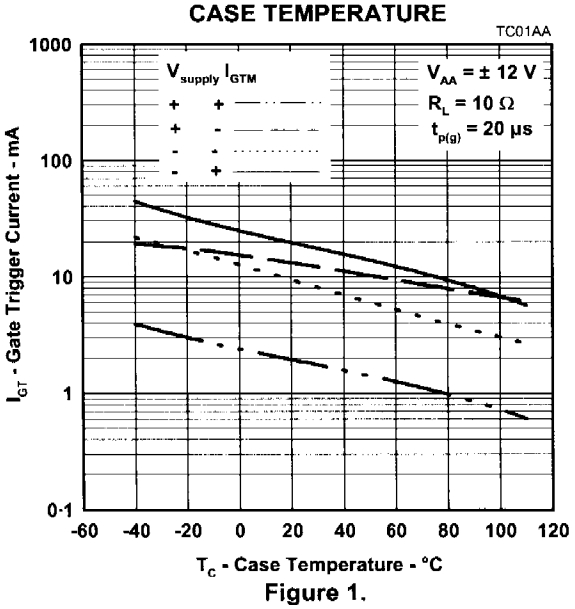


Figure 1.

GATE TRIGGER VOLTAGE vs CASE TEMPERATURE

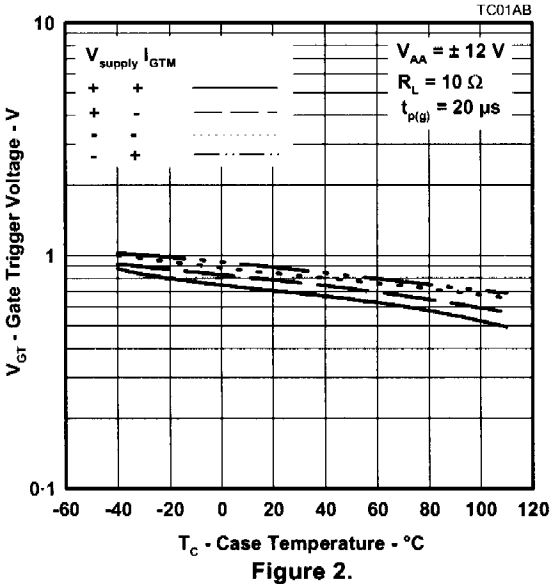


Figure 2.