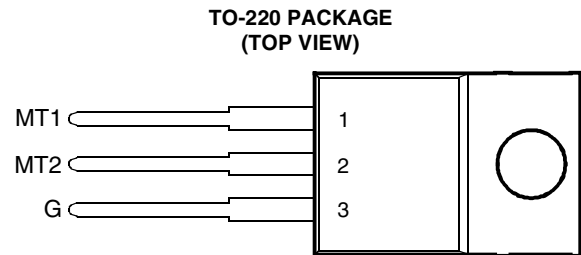




# THE DATASHEET OF TIC216M-S



- Sensitive Gate Triacs
- 6 A RMS
- Glass Passivated Wafer
- 400 V to 800 V Off-State Voltage
- Max  $I_{GT}$  of 5 mA (Quadrants 1 - 3)



Pin 2 is in electrical contact with the mounting base.

MDC2ACA

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

RATING		SYMBOL	VALUE	UNIT
Repetitive peak off-state voltage (see Note 1)	TIC216D	$V_{DRM}$	400	V
	TIC216M		600	
	TIC216S		700	
	TIC216N		800	
Full-cycle RMS on-state current at (or below) 70°C case temperature (see Note 2)		$I_{T(RMS)}$	6	A
Peak on-state surge current full-sine-wave at (or below) 25°C case temperature (see Note 3)		$I_{TSM}$	60	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 4)		$P_{G(AV)}$	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 70°C derate linearly to 110°C case temperature at the rate of 150 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 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	$V_D = \text{rated } V_{DRM}$	$I_G = 0$	$T_C = 110^\circ\text{C}$			±2	mA
$I_{GT}$ Gate trigger current	$V_{supply} = +12 \text{ V}^\dagger$	$R_L = 10 \Omega$	$t_{p(g)} > 20 \mu\text{s}$			5	mA
	$V_{supply} = +12 \text{ V}^\dagger$	$R_L = 10 \Omega$	$t_{p(g)} > 20 \mu\text{s}$			-5	
	$V_{supply} = -12 \text{ V}^\dagger$	$R_L = 10 \Omega$	$t_{p(g)} > 20 \mu\text{s}$			-5	
	$V_{supply} = -12 \text{ V}^\dagger$	$R_L = 10 \Omega$	$t_{p(g)} > 20 \mu\text{s}$			10	

† All voltages are with respect to Main Terminal 1.

**PRODUCT INFORMATION**

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

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
V <sub>GT</sub>	Gate trigger voltage	V <sub>supply</sub> = +12 V†	R <sub>L</sub> = 10 Ω	t <sub>p(g)</sub> > 20 μs			2.2	V
		V <sub>supply</sub> = +12 V†	R <sub>L</sub> = 10 Ω	t <sub>p(g)</sub> > 20 μs			-2.2	
		V <sub>supply</sub> = -12 V†	R <sub>L</sub> = 10 Ω	t <sub>p(g)</sub> > 20 μs			-2.2	
		V <sub>supply</sub> = -12 V†	R <sub>L</sub> = 10 Ω	t <sub>p(g)</sub> > 20 μs			3	
V <sub>T</sub>	On-state voltage	I <sub>T</sub> = ±8.4 A	I <sub>G</sub> = 50 mA	(see Note 5)			±1.7	V
I <sub>H</sub>	Holding current	V <sub>supply</sub> = +12 V†	I <sub>G</sub> = 0	Init' I <sub>TM</sub> = 100 mA			30	mA
		V <sub>supply</sub> = -12 V†	I <sub>G</sub> = 0	Init' I <sub>TM</sub> = -100 mA			-30	
I <sub>L</sub>	Latching current	V <sub>supply</sub> = +12 V†	(see Note 6)			4		mA
		V <sub>supply</sub> = -12 V†				-2		
dv/dt	Critical rate of rise of off-state voltage	V <sub>DRM</sub> = Rated V <sub>DRM</sub>	I <sub>G</sub> = 0	T <sub>C</sub> = 110°C		±20		V/μs
dv/dt <sub>(c)</sub>	Critical rise of commutation voltage	V <sub>DRM</sub> = Rated V <sub>DRM</sub>	I <sub>TRM</sub> = ±8.4 A	T <sub>C</sub> = 70°C	±2	±5		V/μs

† All voltages are with respect to Main Terminal 1.

NOTES: 5. This parameter must be measured using pulse techniques, t<sub>p</sub> = ≤ 1 ms, duty cycle ≤ 2 %. Voltage-sensing contacts separate from the current carrying contacts are located within 3.2 mm from the device body.

6. The triacs are triggered by a 15-V (open-circuit amplitude) pulse supplied by a generator with the following characteristics: R<sub>G</sub> = 100 Ω, t<sub>p(g)</sub> = 20 μs, t<sub>r</sub> = ≤ 15 ns, f = 1 kHz.

**thermal characteristics**

PARAMETER		MIN	TYP	MAX	UNIT
R <sub>θJC</sub>	Junction to case thermal resistance			2.5	°C/W
R <sub>θJA</sub>	Junction to free air thermal resistance			62.5	°C/W

**PRODUCT INFORMATION**

DECEMBER 1971 - REVISED SEPTEMBER 2002  
Specifications are subject to change without notice.

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