BOURNS®

- 5 A Continuous On-State Current
- 20 A Surge-Current
- Glass Passivated Wafer
- 400 V to 800 V Off-State Voltage
- Max I_{GT} of 1 mA

Pin 2 is in electrical contact with the mounting base.

MDC1ACA

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

RATING		SYMBOL	VALUE	UNIT	
	TIC108D		400		
Repetitive peak off-state voltage (see Note 1)	TIC108M	V	600	V	
	TIC108S	V_{DRM}	700		
	TIC108N		800		
	TIC108D		400		
Repetitive peak reverse voltage	TIC108M	V _{RRM}	600	V	
	TIC108S		700		
	TIC108N		800		
Continuous on-state current at (or below) 80°C case temperature (see Note 2)		I _{T(RMS)}	5	Α	
Average on-state current (180° conduction angle) at (or below) 80°C case temperature		L	3.2	Α	
(see Note 3)		I _{T(AV)}	5.2	^	
Surge on-state current (see Note 4)		I _{TSM}	20	Α	
Peak positive gate current (pulse width ≤ 300 μs)		I _{GM}	0.2	Α	
Peak gate power dissipation (pulse width ≤ 300 μs)		P_{GM}	1.3	W	
Average gate power dissipation (see Note 5)		$P_{G(AV)}$	0.3	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		TL	230	°C	

NOTES: 1. These values apply when the gate-cathode resistance R_{GK} = 1 $k\Omega$.

- 2. These values apply for continuous dc operation with resistive load. Above 80°C derate linearly to zero at 110°C.
- 3. This value may be applied continuously under single phase 50 Hz half-sine-wave operation with resistive load. Above 80°C derate linearly to zero at 110°C.
- 4. This value applies for one 50 Hz half-sine-wave when the device is operating at (or below) the rated value of peak reverse voltage and on-state current. Surge may be repeated after the device has returned to original thermal equilibrium.
- 5. This value applies for a maximum averaging time of 20 ms.



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

	PARAMETER		TEST CONDITI	ONS	MIN	TYP	MAX	UNIT
I _{DRM}	Repetitive peak off-state current	V _D = rated V _{DRM}	R _{GK} = 1 kΩ	T _C = 110°C			400	μΑ
I _{RRM}	Repetitive peak reverse current	V _R = rated V _{RRM}	I _G = 0	T _C = 110°C			1	mA
I _{GT}	Gate trigger current	V _{AA} = 12 V	$R_L = 100 \Omega$	t _{p(g)} ≥ 20 μs	0.2	0.5	1	mA
V _{GT} Gate trigger voltage	$V_{AA} = 12 \text{ V}$ $t_{p(g)} \ge 20 \mu\text{s}$	$R_L = 100 \Omega$ $R_{GK} = 1 k\Omega$	T _C = - 40°C			1.2		
	Gate trigger voltage	$V_{AA} = 12 \text{ V}$ $t_{p(g)} \ge 20 \mu \text{s}$	$R_L = 100 \Omega$ $R_{GK} = 1 k\Omega$		0.4	0.6	1	٧
		$V_{AA} = 12 \text{ V}$ $t_{p(g)} \ge 20 \mu\text{s}$	$R_L = 100 \Omega$ $R_{GK} = 1 k\Omega$	T _C = 110°C	0.2			
I _H Holding current	Holding current	$V_{AA} = 12 \text{ V}$ Initiating $I_T = 20 \text{ mA}$	$R_{GK} = 1 k\Omega$	T _C = - 40°C		3.5	15	mA
	riolaling current	$V_{AA} = 12 \text{ V}$ Initiating $I_T = 20 \text{ mA}$	$R_{GK} = 1 k\Omega$			2	10	
V_{T}	On-state voltage	I _T = 5 A	(see Note 6)			1.3	1.7	V
dv/dt	Critical rate of rise of off-state voltage	V _D = rated V _D	R _{GK} = 1 kΩ	T _C = 110°C		20		V/µs

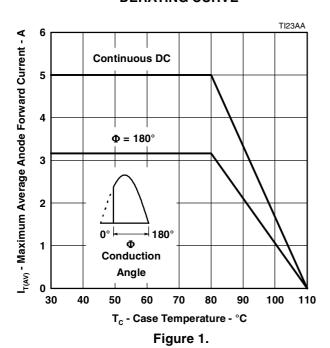
NOTE 6: This parameter must be measured using pulse techniques, $t_p = 300 \mu s$, duty cycle $\leq 2 \%$. Voltage sensing-contacts, separate from the current carrying contacts, are located within 3.2 mm from the device body.

thermal characteristics

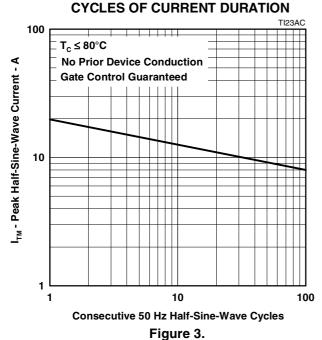
	PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			3.5	°C/W
$R_{\theta JA}$	Junction to free air thermal resistance			62.5	°C/W

THERMAL INFORMATION

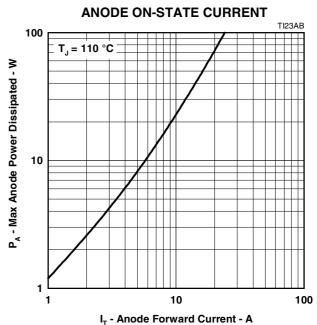
AVERAGE ANODE ON-STATE CURRENT DERATING CURVE



SURGE ON-STATE CURRENT vs



MAX ANODE POWER DISSIPATED vs



TRANSIENT THERMAL RESISTANCE
vs

Figure 2.

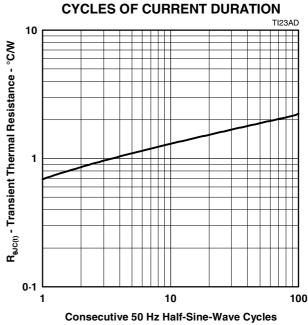
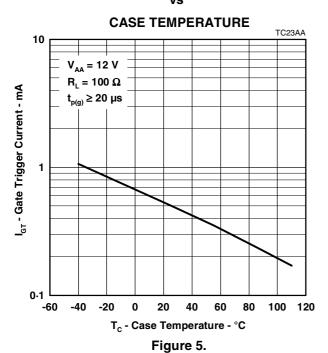


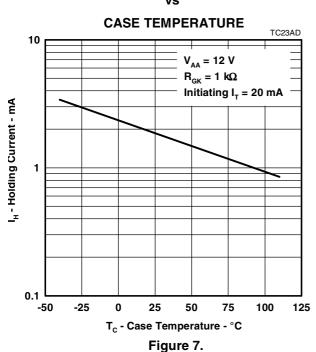
Figure 4.

TYPICAL CHARACTERISTICS

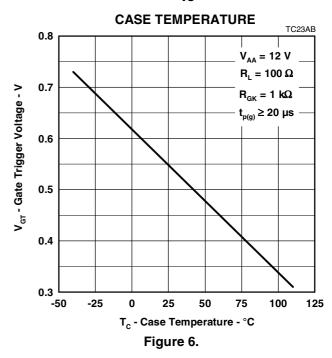
GATE TRIGGER CURRENT vs



HOLDING CURRENT vs



GATE TRIGGER VOLTAGE vs



PEAK ON-STATE VOLTAGE vs PEAK ON-STATE CURRENT

