



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

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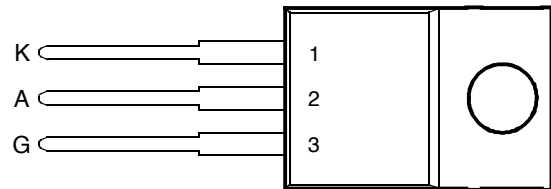
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- 8 A Continuous On-State Current
- 80 A Surge-Current
- Glass Passivated Wafer
- 400 V to 800 V Off-State Voltage
- Max  $I_{GT}$  of 20 mA

TO-220 PACKAGE  
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

MDC1ACA



This series is obsolete and not recommended for new designs.

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

RATING		SYMBOL	VALUE	UNIT
Repetitive peak off-state voltage	TIC116D	$V_{DRM}$	400	V
	TIC116M		600	
	TIC116S		700	
	TIC116N		800	
Repetitive peak reverse voltage	TIC116D	$V_{RRM}$	400	V
	TIC116M		600	
	TIC116S		700	
	TIC116N		800	
Continuous on-state current at (or below) 70°C case temperature (see Note 1)		$I_{T(RMS)}$	8	A
Average on-state current (180° conduction angle) at (or below) 70°C case temperature (see Note 2)		$I_{T(AV)}$	5	A
Surge on-state current at (or below) 25°C case temperature (see Note 3)		$I_{TM}$	80	A
Peak positive gate current (pulse width $\leq 300 \mu s$ )		$I_{GM}$	3	A
Peak gate power dissipation (pulse width $\leq 300 \mu s$ )		$P_{GM}$	5	W
Average gate power dissipation (see Note 4)		$P_{G(AV)}$	1	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 for continuous dc operation with resistive load. Above 70°C derate linearly to zero at 110°C.  
 2. This value may be applied continuously under single phase 50 Hz half-sine-wave operation with resistive load. Above 70°C derate linearly to zero at 110°C.  
 3. 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.  
 4. This value applies for a maximum averaging time of 20 ms.

**PRODUCT INFORMATION**

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

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

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
$I_{DRM}$	Repetitive peak off-state current	$V_D = \text{rated } V_{DRM}$		$T_C = 110^\circ\text{C}$			2	mA
$I_{RRM}$	Repetitive peak reverse current	$V_R = \text{rated } V_{RRM}$	$I_G = 0$	$T_C = 110^\circ\text{C}$			2	mA
$I_{GT}$	Gate trigger current	$V_{AA} = 12\text{ V}$	$R_L = 100\ \Omega$	$t_{p(g)} \geq 20\ \mu\text{s}$		8	20	mA
$V_{GT}$	Gate trigger voltage	$V_{AA} = 12\text{ V}$	$R_L = 100\ \Omega$	$T_C = -40^\circ\text{C}$			2.5	V
		$V_{AA} = 12\text{ V}$	$R_L = 100\ \Omega$			0.8	1.5	
		$V_{AA} = 12\text{ V}$	$R_L = 100\ \Omega$	$T_C = 110^\circ\text{C}$	0.2			
$I_H$	Holding current	$V_{AA} = 12\text{ V}$		$T_C = -40^\circ\text{C}$			100	mA
		Initiating $I_T = 100\text{ mA}$					40	
$V_T$	On-state voltage	$I_T = 8\text{ A}$	(see Note 5)				1.7	V
dv/dt	Critical rate of rise of off-state voltage	$V_D = \text{rated } V_D$	$I_G = 0$	$T_C = 110^\circ\text{C}$		400		V/ $\mu\text{s}$

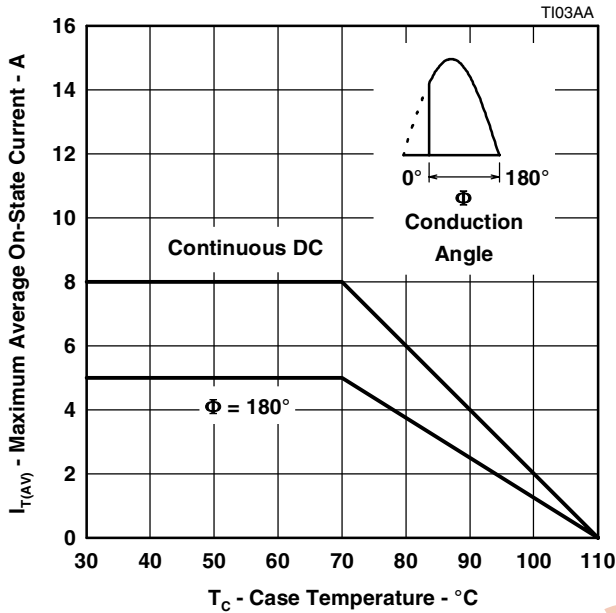
NOTE 5: This parameter must be measured using pulse techniques,  $t_p = 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ . Voltage sensing-contacts, separate from the current carrying contacts, are located within 3.2 mm from the device body.

**thermal characteristics**

PARAMETER		MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			3	$^\circ\text{C/W}$
$R_{\theta JA}$	Junction to free air thermal resistance			62.5	$^\circ\text{C/W}$

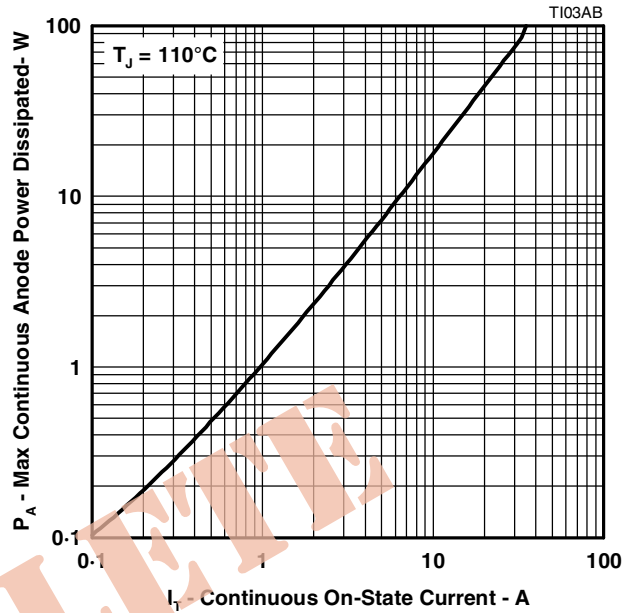
**THERMAL INFORMATION**

**AVERAGE ON-STATE CURRENT  
DERATING CURVE**



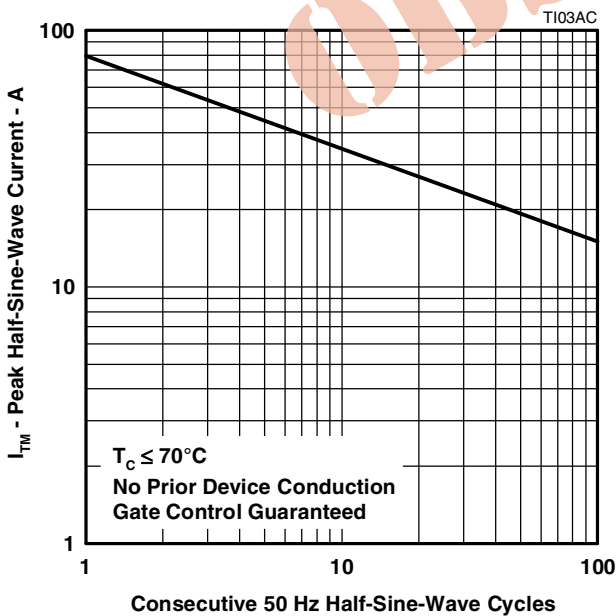
**Figure 1.**

**MAX ANODE POWER LOSS  
vs  
ON-STATE CURRENT**



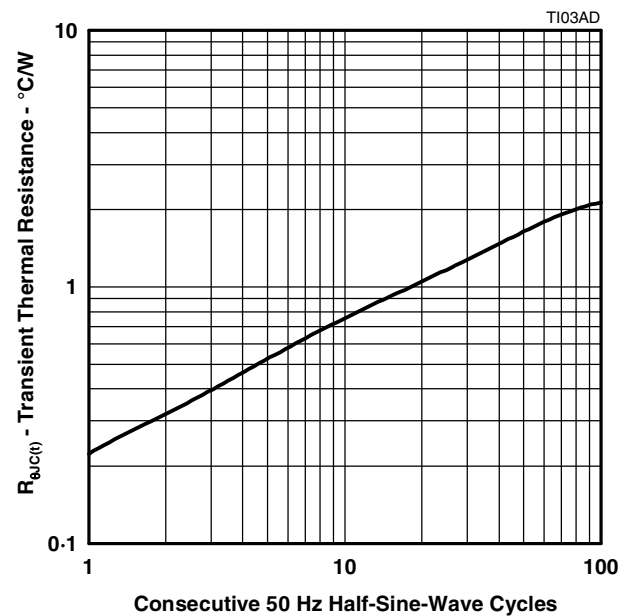
**Figure 2.**

**SURGE ON-STATE CURRENT  
vs  
CYCLES OF CURRENT DURATION**



**Figure 3.**

**TRANSIENT THERMAL RESISTANCE  
vs  
CYCLES OF CURRENT DURATION**



**Figure 4.**

**PRODUCT INFORMATION**



TYPICAL CHARACTERISTICS

GATE TRIGGER CURRENT  
vs  
CASE TEMPERATURE

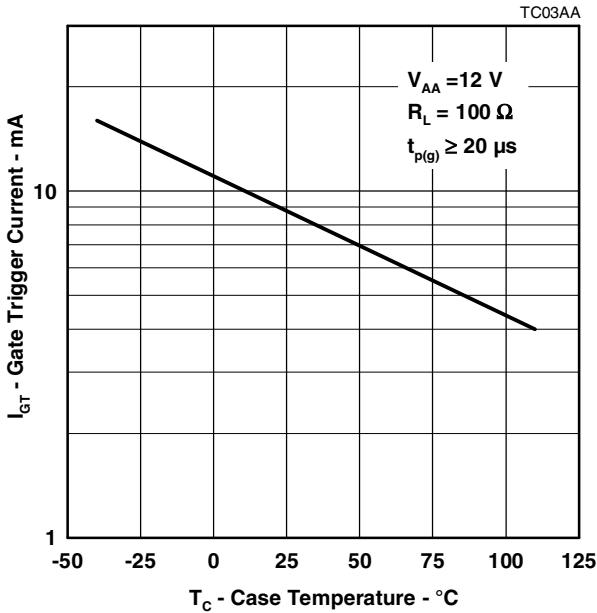


Figure 5.

GATE TRIGGER VOLTAGE  
vs  
CASE TEMPERATURE

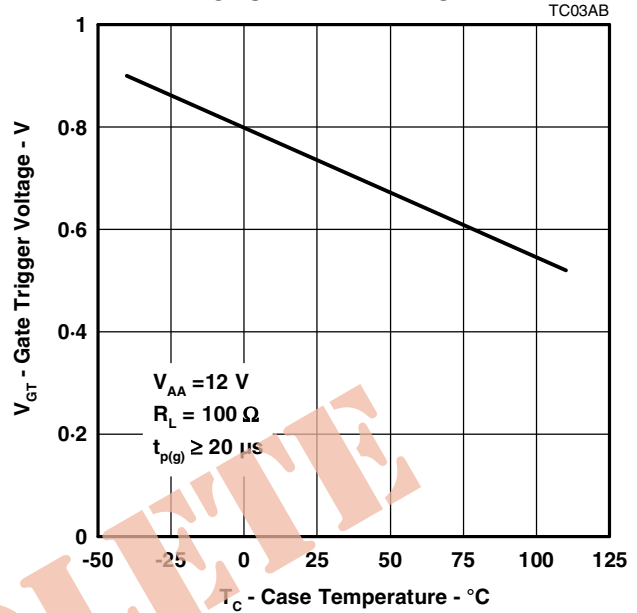


Figure 6.

HOLDING CURRENT  
vs  
CASE TEMPERATURE

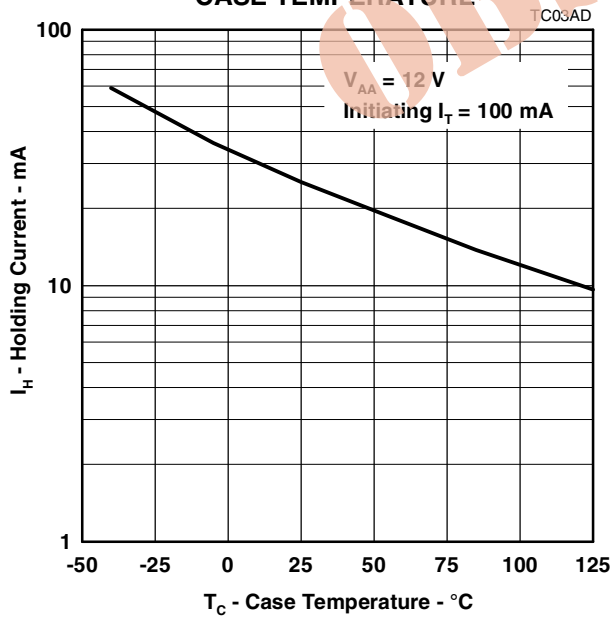


Figure 7.

PEAK ON-STATE VOLTAGE  
vs  
PEAK ON-STATE CURRENT

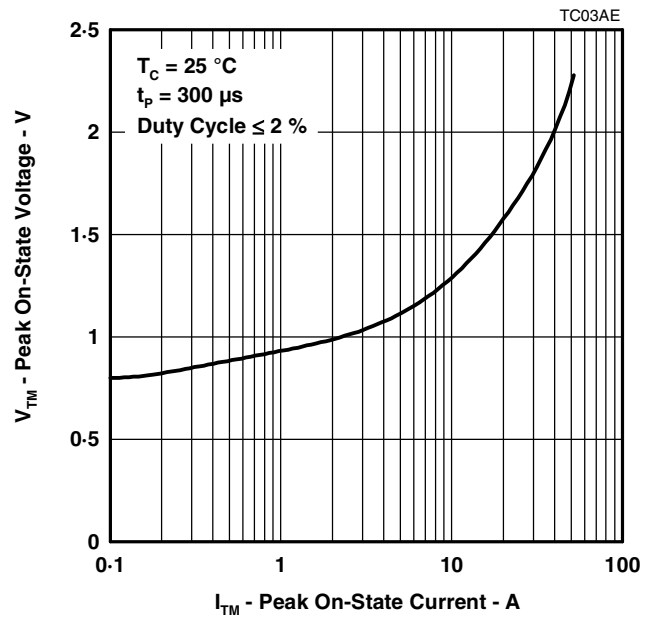


Figure 8.

**PRODUCT INFORMATION**