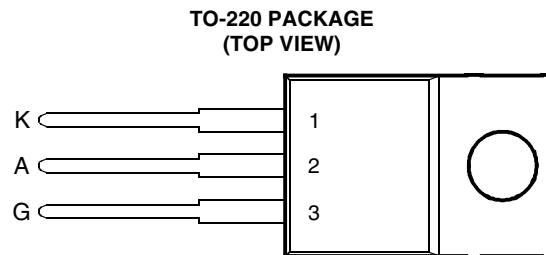


- 8 A Continuous On-State Current
- 80 A Surge-Current
- Glass Passivated Wafer
- 400 V to 800 V Off-State Voltage
- Max I_{GT} of 20 mA



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
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

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}		T_C = 110°C			2	mA
I_{RRM}	Repetitive peak reverse current	V_R = rated V_{RRM}	I_G = 0	T_C = 110°C			2	mA
I_{GT}	Gate trigger current	V_{AA} = 12 V	R_L = 100 Ω	$t_{p(g)}$ ≥ 20 μs		8	20	mA
V_{GT}	Gate trigger voltage	V_{AA} = 12 V	R_L = 100 Ω	T_C = - 40°C			2.5	V
		$t_{p(g)}$ ≥ 20 μs				0.8	1.5	
		V_{AA} = 12 V	R_L = 100 Ω		0.2			
		$t_{p(g)}$ ≥ 20 μs		T_C = 110°C				
I_H	Holding current	V_{AA} = 12 V		T_C = - 40°C			100	mA
		Initiating I_T = 100 mA					40	
V_T	On-state voltage	I_T = 8 A	(see Note 5)				1.7	V
dv/dt	Critical rate of rise of off-state voltage	V_D = rated V_D	I_G = 0	T_C = 110°C		400		V/μs

NOTE 5: This parameter must be measured using pulse techniques, t_p = 300 μs, duty cycle ≤ 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	°C/W
$R_{\theta JA}$	Junction to free air thermal resistance			62.5	°C/W

PRODUCT INFORMATION

THERMAL INFORMATION

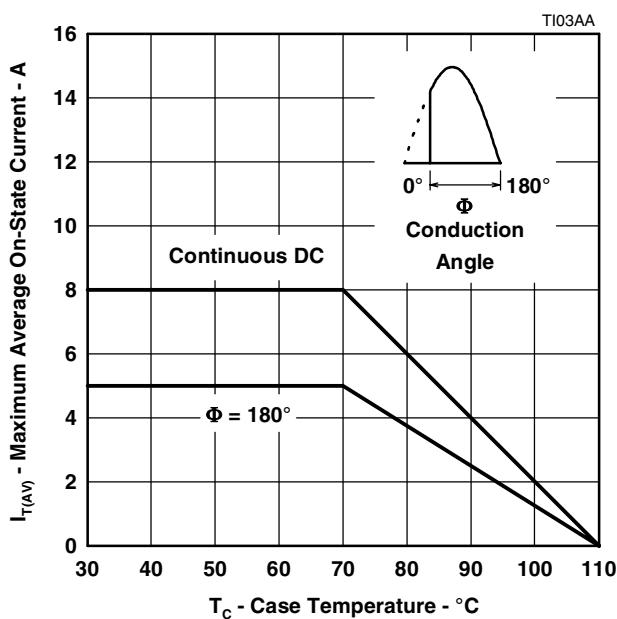
AVERAGE ON-STATE CURRENT
DERATING CURVE

Figure 1.

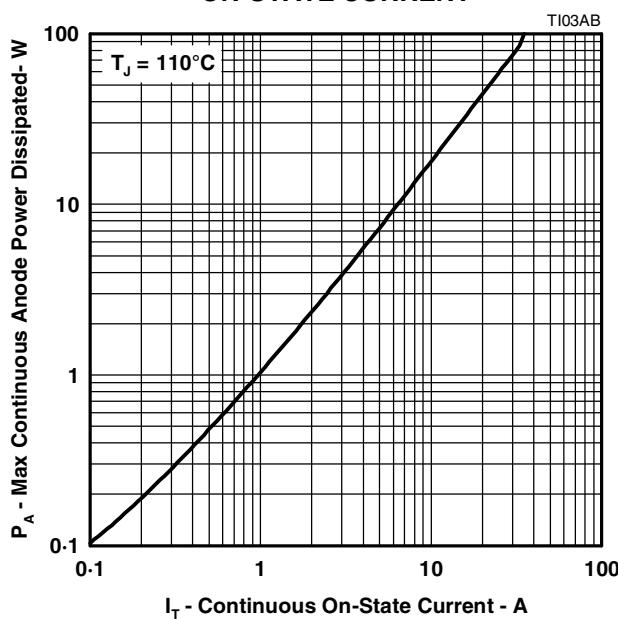
MAX ANODE POWER LOSS
VS
ON-STATE CURRENT

Figure 2.

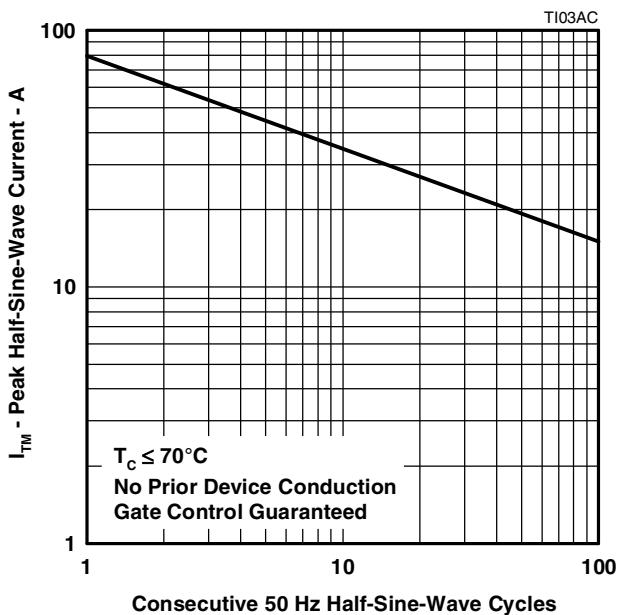
SURGE ON-STATE CURRENT
VS
CYCLES OF CURRENT DURATION

Figure 3.

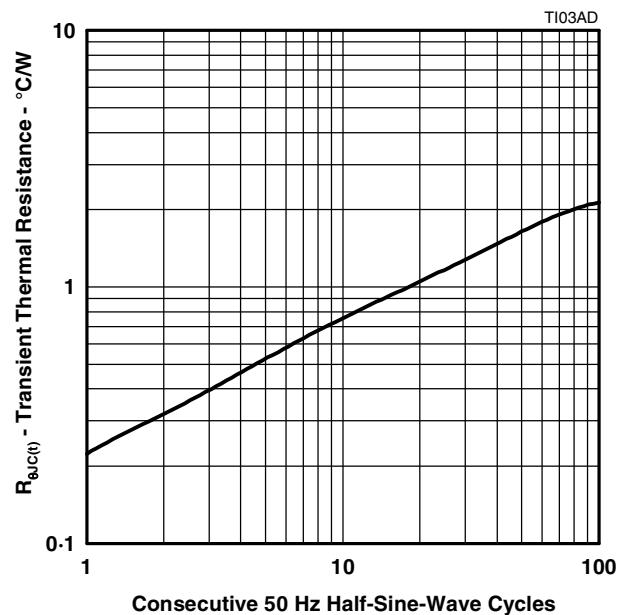
TRANSIENT THERMAL RESISTANCE
VS
CYCLES OF CURRENT DURATION

Figure 4.

PRODUCT INFORMATION

TYPICAL CHARACTERISTICS

**GATE TRIGGER CURRENT
VS
CASE TEMPERATURE**

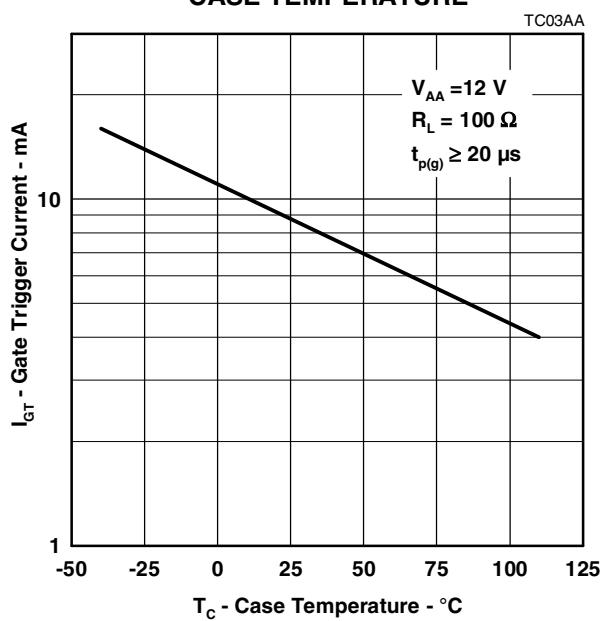


Figure 5.

**GATE TRIGGER VOLTAGE
VS
CASE TEMPERATURE**

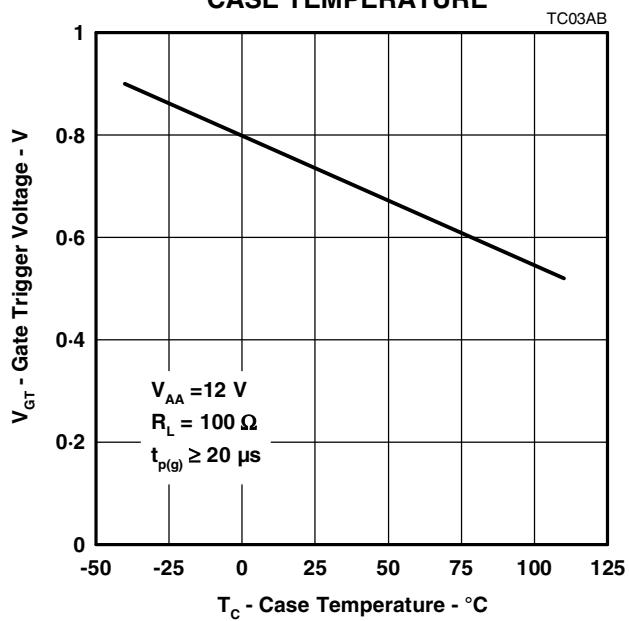


Figure 6.

**HOLDING CURRENT
VS
CASE TEMPERATURE**

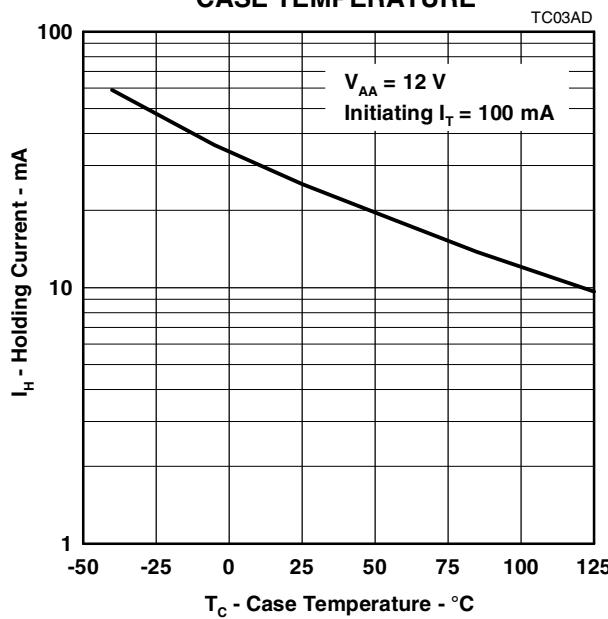


Figure 7.

**PEAK ON-STATE VOLTAGE
VS
PEAK ON-STATE CURRENT**

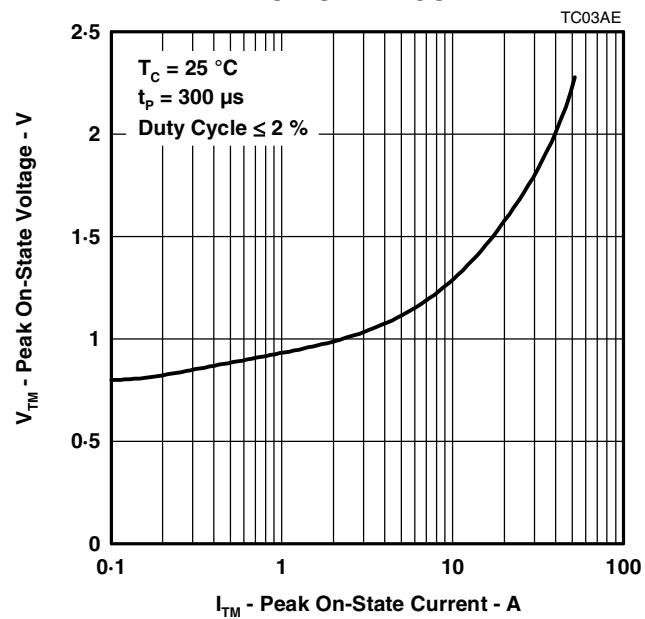


Figure 8.

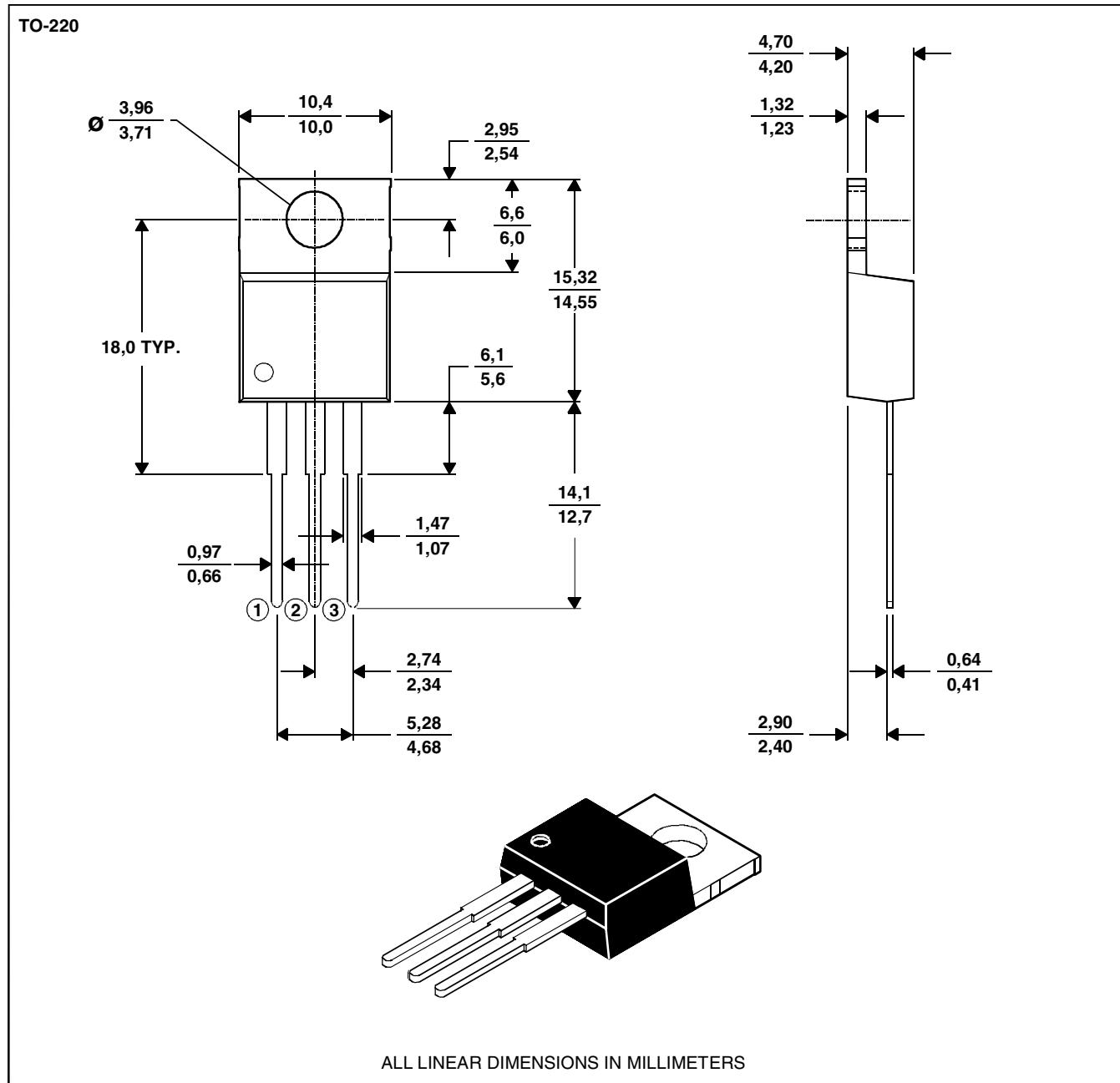
PRODUCT INFORMATION

MECHANICAL DATA

TO-220

3-pin plastic flange-mount package

This single-in-line package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high humidity conditions. Leads require no additional cleaning or processing when used in soldered assembly.



NOTE A: The centre pin is in electrical contact with the mounting tab.

PRODUCT INFORMATION

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