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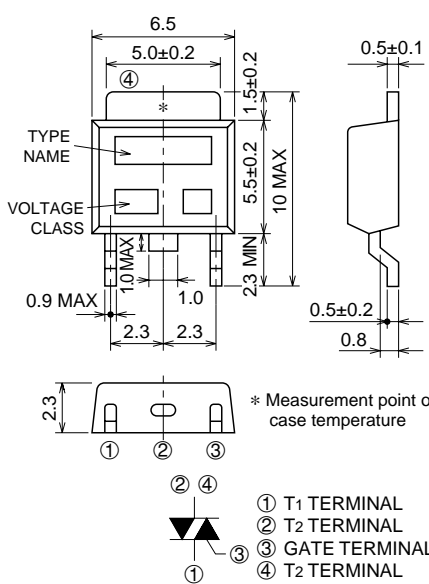
MEDIUM POWER USE
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

BCR5AS



- **IT (RMS)** **5A**
- **VDRM** **400V/600V**
- **IFGT I , IRGT I , IRGT III** **30mA**

OUTLINE DRAWING Dimensions in mm



* Measurement point of case temperature

① T1 TERMINAL
② T2 TERMINAL
③ GATE TERMINAL
④ T2 TERMINAL

MP-3

APPLICATION

Hybrid IC, solid state relay, switching mode power supply, light dimmer, electric fan, electric blankets, control of household equipment such as washing machine, other general purpose control applications

MAXIMUM RATINGS

Symbol	Parameter	Voltage class		Unit
		8	12	
VDRM	Repetitive peak off-state voltage*1	400	600	V
VDSM	Non-repetitive peak off-state voltage*1	500	720	V

Symbol	Parameter	Conditions	Ratings	Unit
IT (RMS)	RMS on-state current	Commercial frequency, sine full wave 360° conduction, Tc=103°C	5	A
ITSM	Surge on-state current	60Hz sinewave 1 full cycle, peak value, non-repetitive	50	A
I ² t	I ² t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	10.4	A ² s
PGM	Peak gate power dissipation		3	W
PG (AV)	Average gate power dissipation		0.3	W
VGM	Peak gate voltage		10	V
IGM	Peak gate current		2	A
Tj	Junction temperature		-40 ~ +125	°C
Tstg	Storage temperature		-40 ~ +125	°C
—	Weight	Typical value	0.26	g

*1. Gate open.

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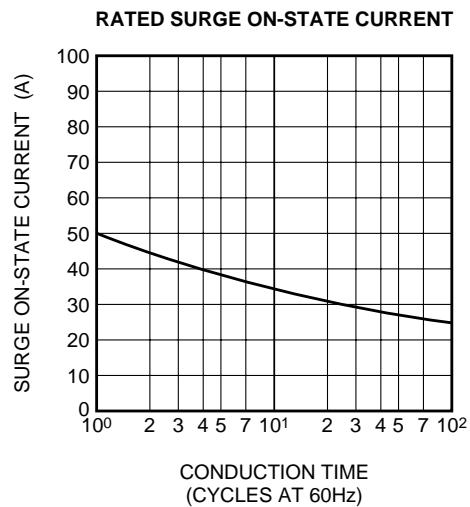
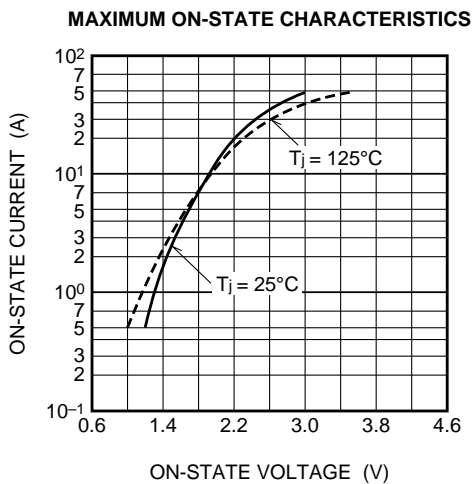
ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit	
			Min.	Typ.	Max.		
IDRM	Repetitive peak off-state current	T _j =125°C, V _{DRM} applied	—	—	2.0	mA	
VTM	On-state voltage	T _c =25°C, I _{TM} =7A, Instantaneous measurement	—	—	1.8	V	
VFGT I	Gate trigger voltage *2	T _j =25°C, V _D =6V, R _L =6Ω, R _G =330Ω	I	—	—	1.5	V
VRGT I			II	—	—	1.5	V
VRGT III			III	—	—	1.5	V
IFGT I	Gate trigger current *2	T _j =25°C, V _D =6V, R _L =6Ω, R _G =330Ω	I	—	—	30	mA
IRGT I			II	—	—	30	mA
IRGT III			III	—	—	30	mA
VGD	Gate non-trigger voltage	T _j =125°C, V _D =1/2V _{DRM}	0.2	—	—	V	
Rth (j-c)	Thermal resistance	Junction to case *4	—	—	3	°C/W	
(dv/dt) _c	Critical-rate of rise of off-state commutating voltage		*3	—	—	V/μs	

*2. Measurement using the gate trigger characteristics measurement circuit.
 *3. The critical-rate of rise of the off-state commutating voltage is shown in the table below.
 *4. Case temperature is measured on the T₂ terminal.

Voltage class	V _{DRM} (V)	(dv/dt) _c		Test conditions	Commutating voltage and current waveforms (inductive load)
		Min.	Unit		
8	400	5	V/μs	1. Junction temperature T _j =125°C 2. Rate of decay of on-state commutating current (di/dt) _c =-2.5A/ms 3. Peak off-state voltage V _D =400V	
12	600				

PERFORMANCE CURVES

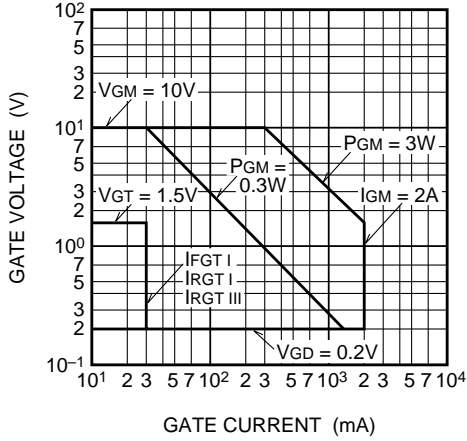


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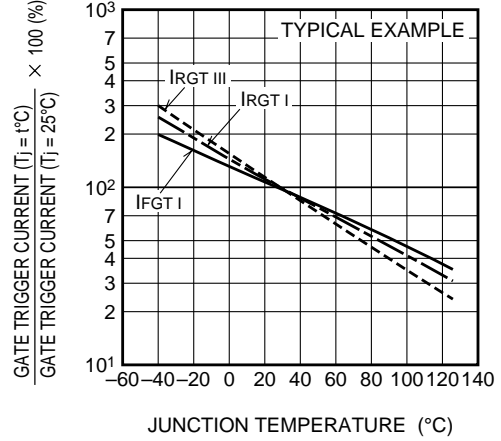
MEDIUM POWER USE

NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

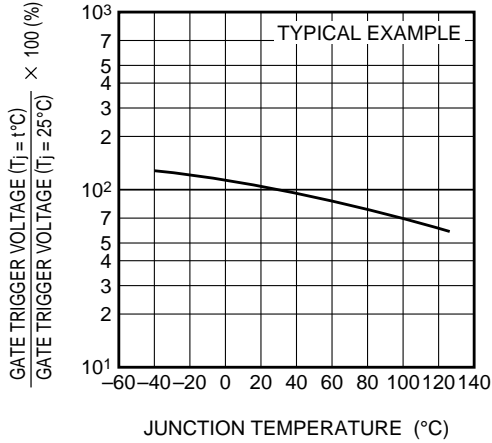
GATE CHARACTERISTICS



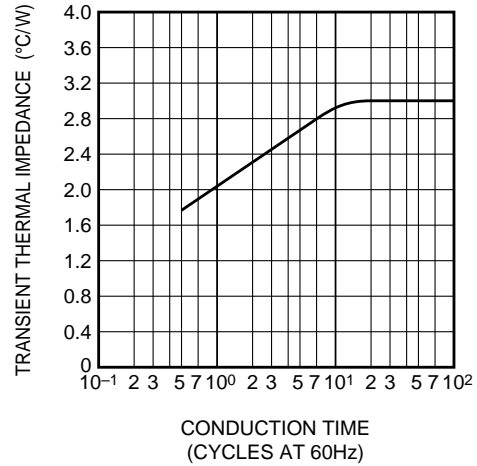
GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE



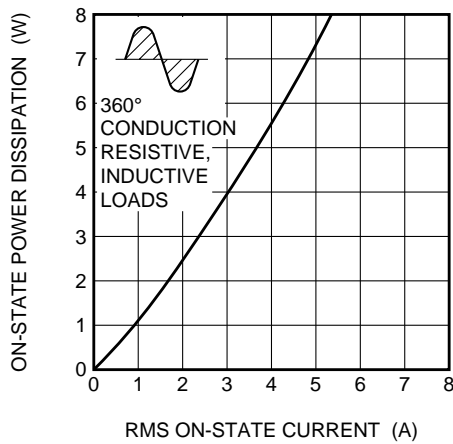
GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE



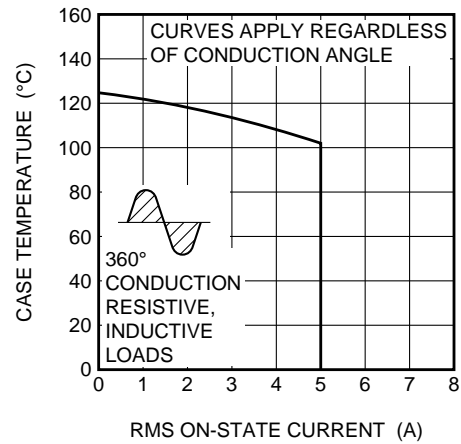
MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



MAXIMUM ON-STATE POWER DISSIPATION



ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT

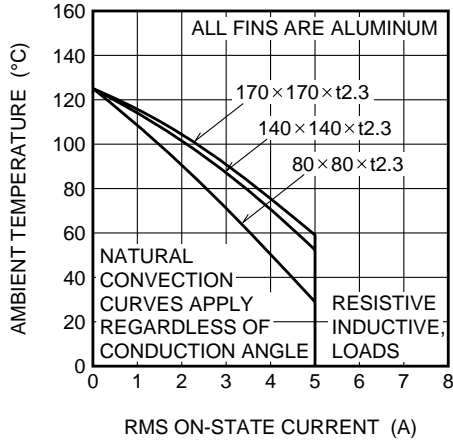


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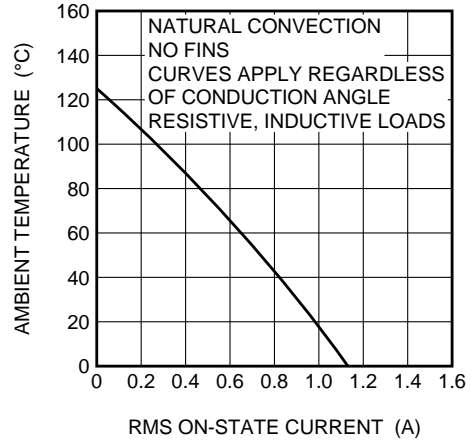
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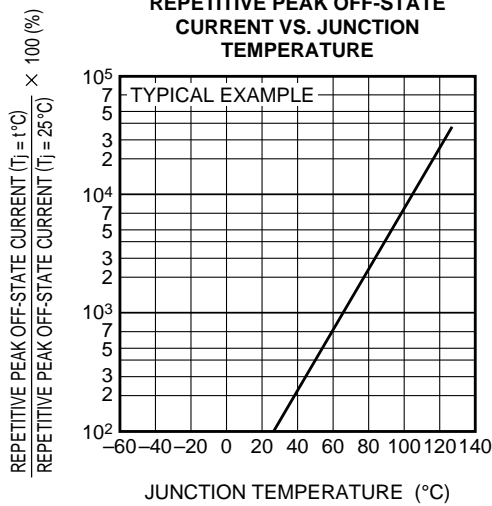
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



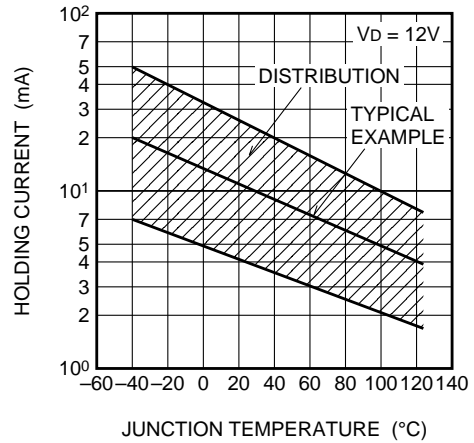
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



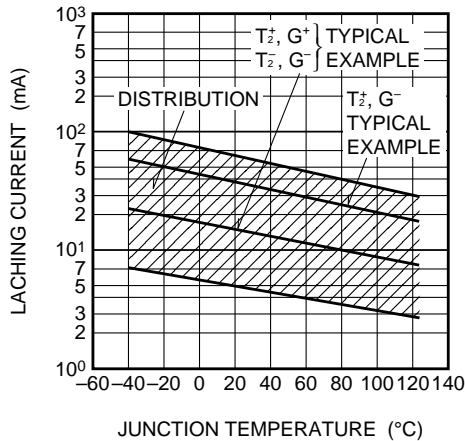
REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE



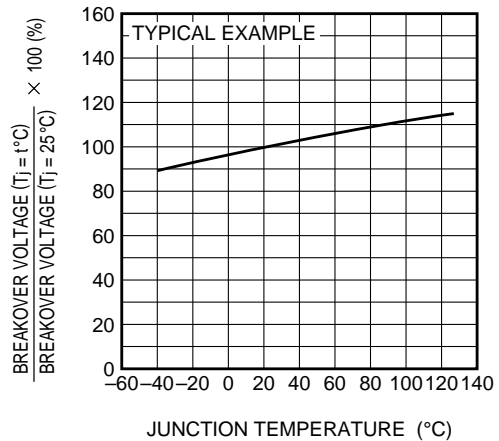
HOLDING CURRENT VS. JUNCTION TEMPERATURE



LATCHING CURRENT VS. JUNCTION TEMPERATURE



BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE

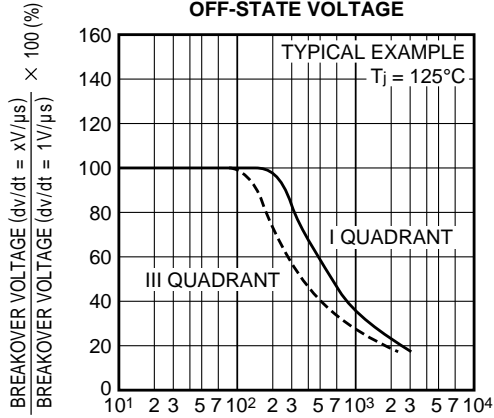


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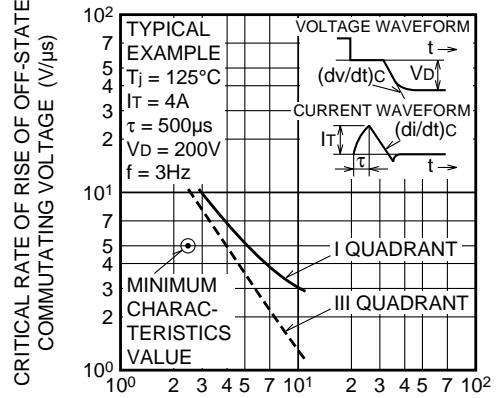
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE



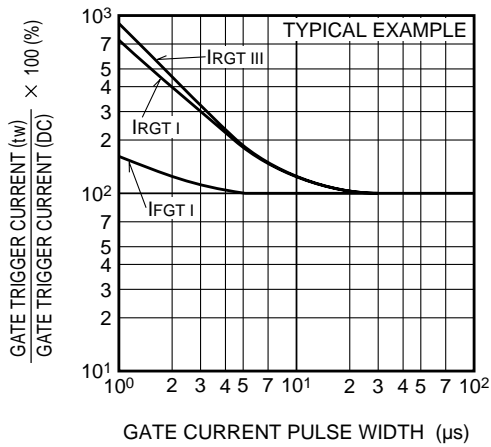
RATE OF RISE OF OFF-STATE VOLTAGE (V/μs)

COMMUTATION CHARACTERISTICS



RATE OF DECAY OF ON-STATE COMMUTATING CURRENT (A/ms)

GATE TRIGGER CURRENT VS. GATE CURRENT PULSE WIDTH



GATE CURRENT PULSE WIDTH (μs)

GATE TRIGGER CHARACTERISTICS TEST CIRCUITS

