

BCR10CS

MEDIUM POWER USE

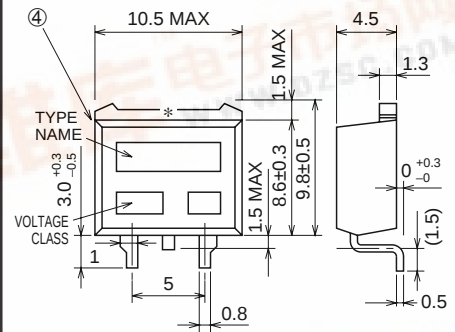
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

BCR10CS



- I_T (RMS) 10A
- V_{DRM} 400V/600V
- I_{FGT} I, I_{RGT} I, I_{RGT} III 30mA (20mA) *5

OUTLINE DRAWING

 Dimensions
in mm


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

TO-220S

APPLICATION

Solid state relay, hybrid IC

MAXIMUM RATINGS

Symbol	Parameter	Voltage class		Unit
		8	12	
V_{DRM}	Repetitive peak off-state voltage *1	400	600	V
V_{DSM}	Non-repetitive peak off-state voltage *1	500	720	V

Symbol	Parameter	Conditions	Ratings	Unit
I_T (RMS)	RMS on-state current	Commercial frequency, sine full wave 360° conduction, $T_c=103^\circ\text{C}$	10	A
I_{TSM}	Surge on-state current	60Hz sinewave 1 full cycle, peak value, non-repetitive	100	A
I^2_t	I^2_t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	41.6	A ² s
P_{GM}	Peak gate power dissipation		5	W
P_G (AV)	Average gate power dissipation		0.5	W
V_{GM}	Peak gate voltage		10	V
I_{GM}	Peak gate current		2	A
T_j	Junction temperature		-40 ~ +125	°C
T_{stg}	Storage temperature		-40 ~ +125	°C
—	Weight	Typical value	1.2	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	$T_j=125^{\circ}\text{C}$, V_{DRM} applied	—	—	2.0	mA
VTM	On-state voltage	$T_c=25^{\circ}\text{C}$, $I_{\text{TM}}=15\text{A}$, Instantaneous measurement	—	—	1.5	V
VFGT I	Gate trigger voltage *2	$T_j=25^{\circ}\text{C}$, $V_D=6\text{V}$, $R_L=6\Omega$, $R_G=330\Omega$	—	—	1.5	V
VRGT I			—	—	1.5	V
VRGT III			—	—	1.5	V
IFGT I	Gate trigger current *2	$T_j=25^{\circ}\text{C}$, $V_D=6\text{V}$, $R_L=6\Omega$, $R_G=330\Omega$	—	—	30*5	mA
IRGT I			—	—	30*5	mA
IRGT III			—	—	30*5	mA
VGD	Gate non-trigger voltage	$T_j=125^{\circ}\text{C}$, $V_D=1/2V_{\text{DRM}}$	0.2	—	—	V
Rth (j-c)	Thermal resistance	Junction to case *4	—	—	1.8	$^{\circ}\text{C/W}$
(dv/dt)c	Critical-rate of rise of off-state commutating voltage		*3	—	—	V/ μs

*2. Measurement using the gate trigger characteristics measurement circuit.

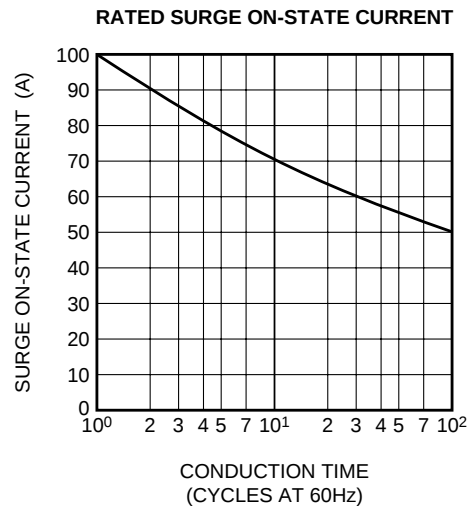
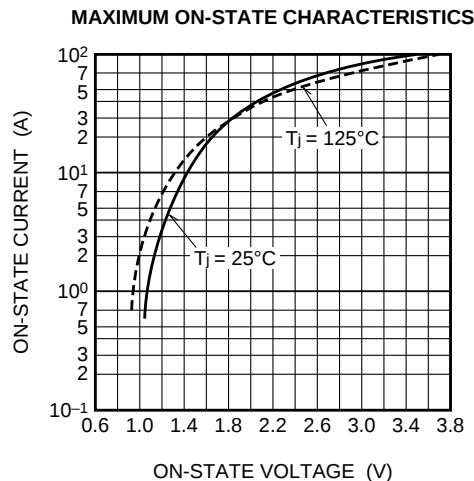
*3. The critical-rate of rise of the off-state commutating voltage is shown in the table below.

*4. The contact thermal resistance Rth (c-f) in case of greasing is 1.0°C/W .

*5. High sensitivity ($I_{\text{GT}}\leq 20\text{mA}$) is also available. (IGT item ①)

Voltage class	V_{DRM} (V)	(dv/dt) c			Test conditions	Commutating voltage and current waveforms (inductive load)
		Symbol	Min.	Unit		
8	400	R	—	V/ μs	1. Junction temperature $T_j=125^{\circ}\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c=-5\text{A/ms}$ 3. Peak off-state voltage $V_D=400\text{V}$	
		L	10			
12	600	R	—			
		L	10			

PERFORMANCE CURVES

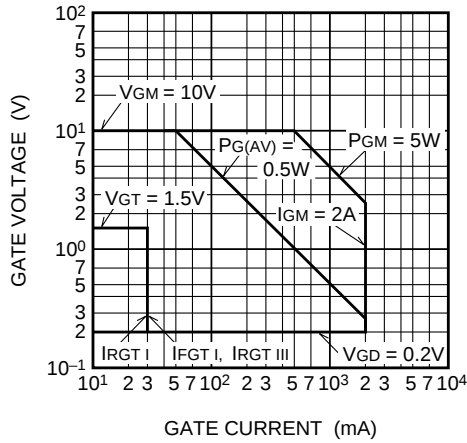


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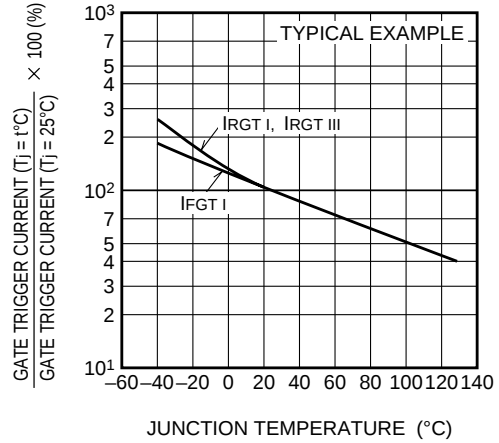
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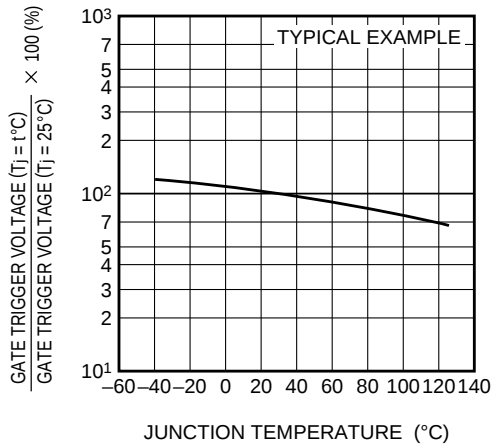
GATE CHARACTERISTICS



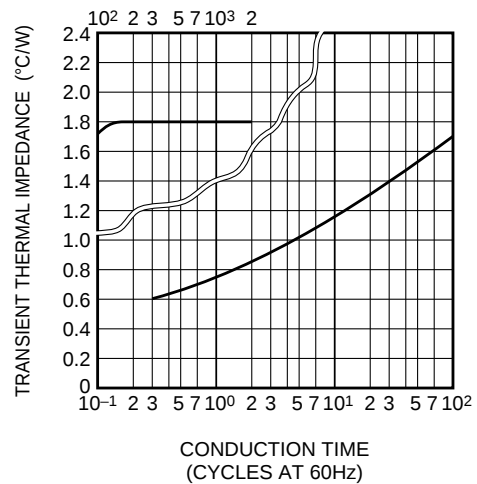
GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE



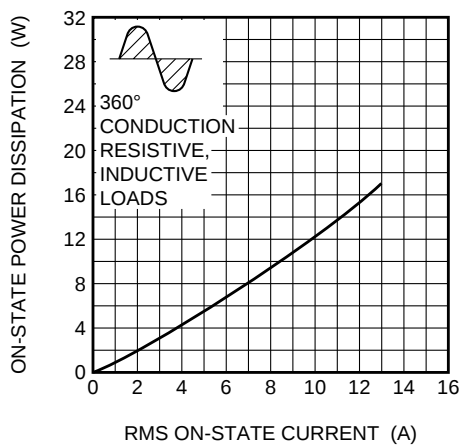
GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE



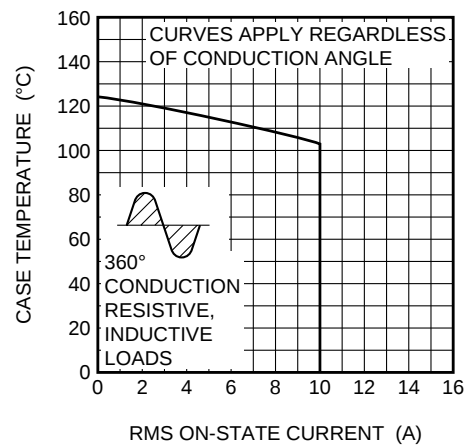
MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



MAXIMUM ON-STATE POWER DISSIPATION



ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT

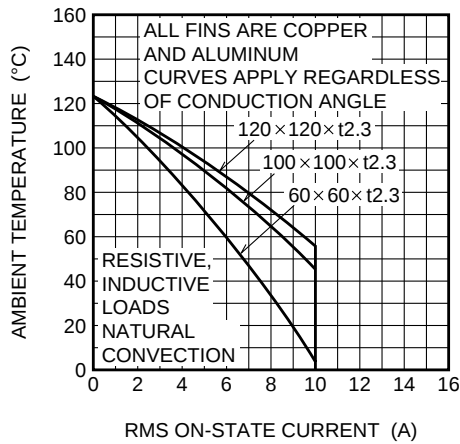


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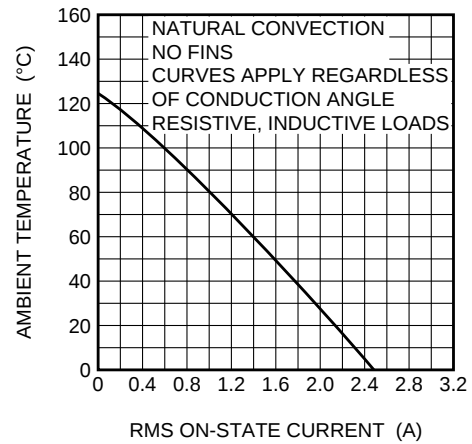
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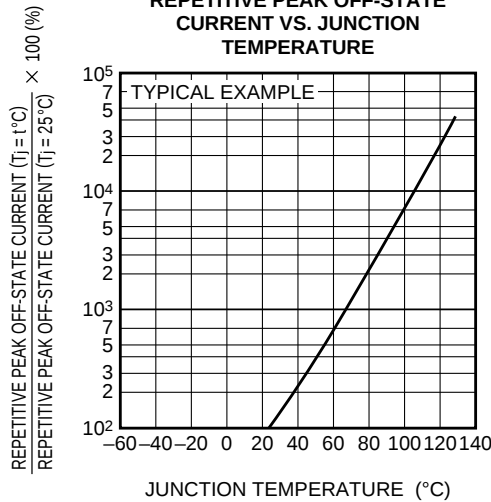
ALLOWABLE AMBIENT TEMPERATURE
VS. RMS ON-STATE CURRENT



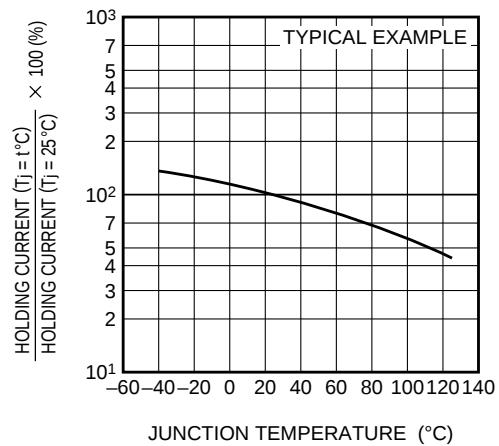
ALLOWABLE AMBIENT TEMPERATURE
VS. RMS ON-STATE CURRENT



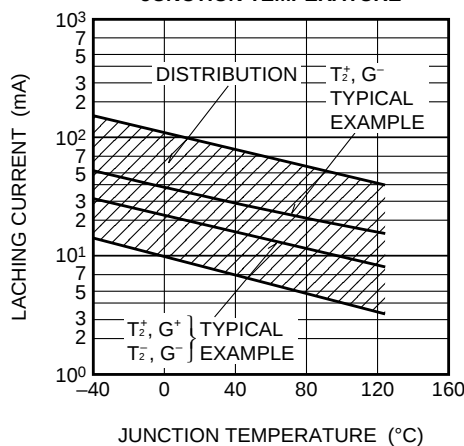
REPETITIVE PEAK OFF-STATE
CURRENT VS. JUNCTION
TEMPERATURE



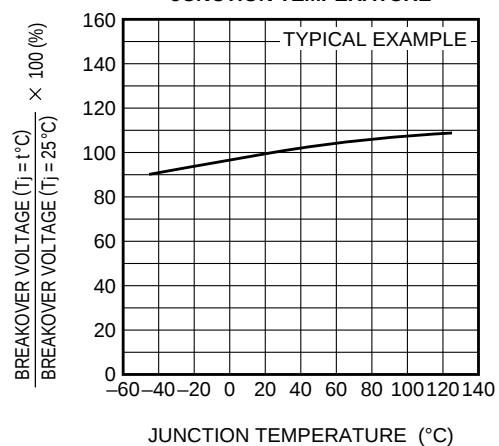
HOLDING CURRENT VS.
JUNCTION TEMPERATURE



LACHING CURRENT VS.
JUNCTION TEMPERATURE



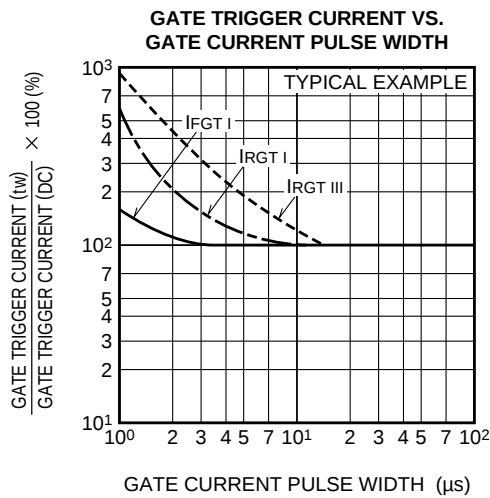
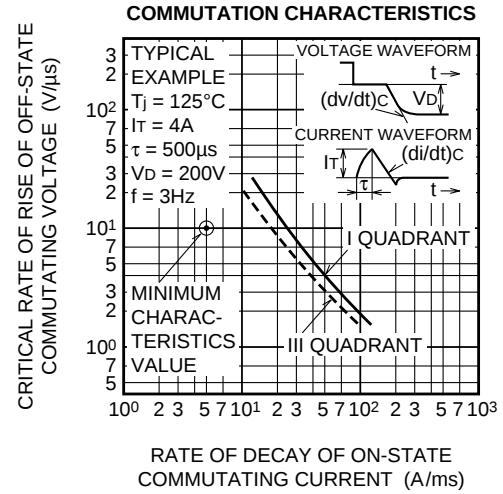
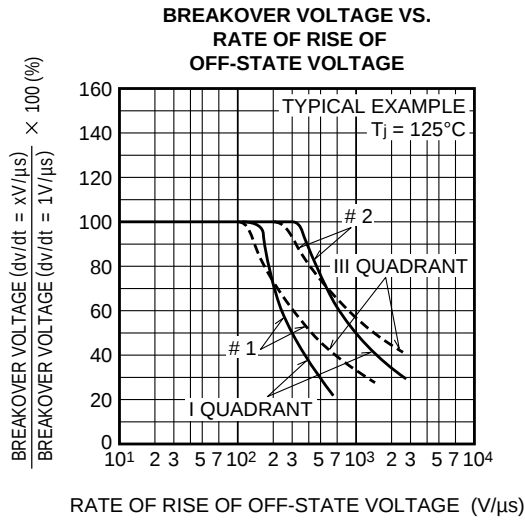
BREAKOVER VOLTAGE VS.
JUNCTION TEMPERATURE



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GATE TRIGGER CHARACTERISTICS TEST CIRCUITS

