


BCR8CS

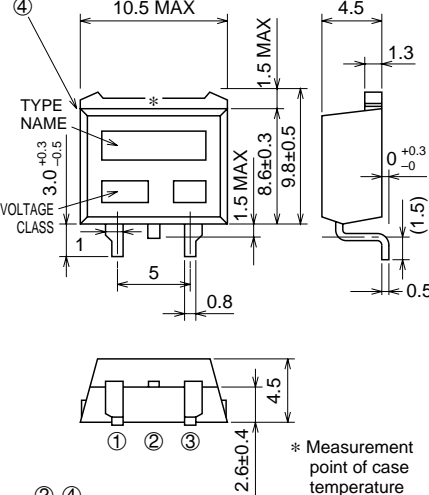
MEDIUM POWER USE
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

BCR8CS



- **IT (RMS)** **8A**
- **VDRM** **400V/600V**
- **IFGT I , IRGT I , IRGT III** **30mA (20mA) *5**

OUTLINE DRAWING Dimensions in mm



* Measurement point of case temperature

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 | |
| 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=105°C | 8 | A |
| ITSM | Surge on-state current | 60Hz sinewave 1 full cycle, peak value, non-repetitive | 80 | A |
| I ² t | I ² t for fusing | Value corresponding to 1 cycle of half wave 60Hz, surge on-state current | 26 | A ² s |
| PGM | Peak gate power dissipation | | 5 | W |
| PG (AV) | Average gate power dissipation | | 0.5 | 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 | 1.2 | g |

*1. Gate open.



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MEDIUM POWER USE

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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 | |
| V _{TM} | On-state voltage | T _c =25°C, I _{TM} =12A, Instantaneous measurement | — | — | 1.5 | V | |
| V _{FGT I} | Gate trigger voltage *2 | T _j =25°C, V _D =6V, R _L =6Ω, R _G =330Ω | I | — | — | 1.5 | V |
| V _{RGT I} | | | II | — | — | 1.5 | V |
| V _{RGT III} | | | III | — | — | 1.5 | V |
| I _{FGT I} | Gate trigger current *2 | T _j =25°C, V _D =6V, R _L =6Ω, R _G =330Ω | I | — | — | 30*5 | mA |
| I _{RGT I} | | | II | — | — | 30*5 | mA |
| I _{RGT III} | | | III | — | — | 30*5 | mA |
| V _{GD} | Gate non-trigger voltage | T _j =125°C, V _D =1/2V _{DRM} | 0.2 | — | — | V | |
| R _{th (j-c)} | Thermal resistance | Junction to case *4 | — | — | 2.0 | °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.

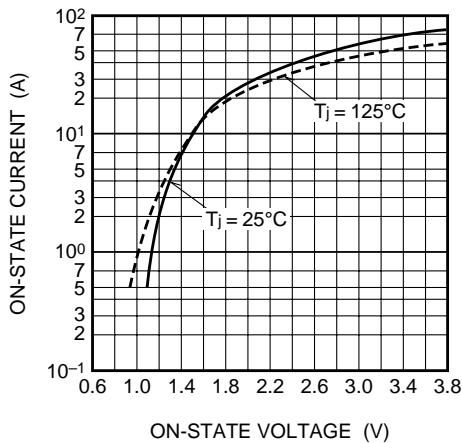
*4. The contact thermal resistance R_{th (c-f)} is 1.0°C/W.

*5. High sensitivity (I_{GT}≤20mA) is also available. (IGT item ①)

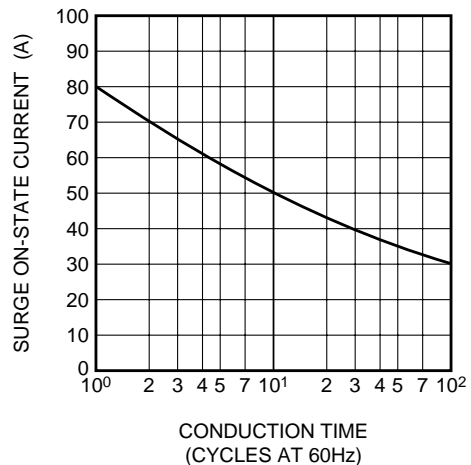
| Voltage class | V _{DRM} (V) | (dv/dt) _c | | | Test conditions | Commutating voltage and current waveforms (inductive load) |
|---------------|----------------------|----------------------|------|------|--|--|
| | | Symbol | Min. | Unit | | |
| 8 | 400 | R | — | V/μs | 1. Junction temperature T _j =125°C 2. Rate of decay of on-state commutating current (di/dt) _c =-4A/ms 3. Peak off-state voltage V _D =400V | |
| | | L | 10 | | | |
| 12 | 600 | R | — | | | |
| | | L | 10 | | | |

PERFORMANCE CURVES

MAXIMUM ON-STATE CHARACTERISTICS



RATED SURGE ON-STATE CURRENT

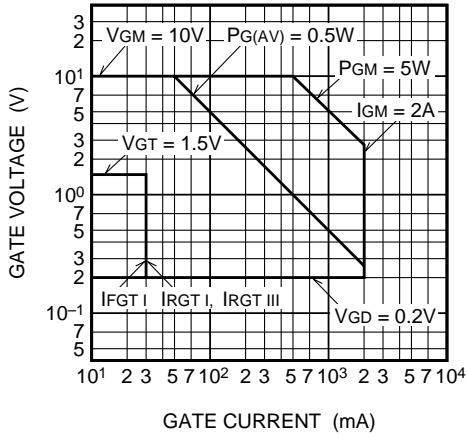


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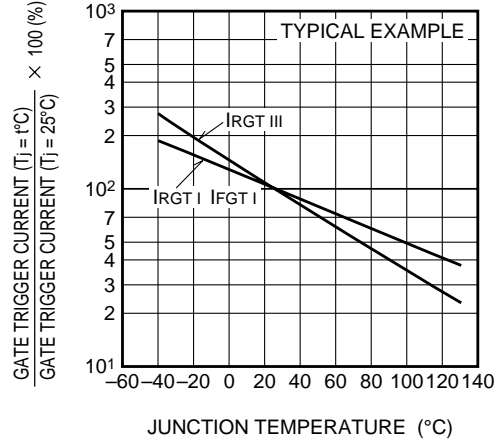
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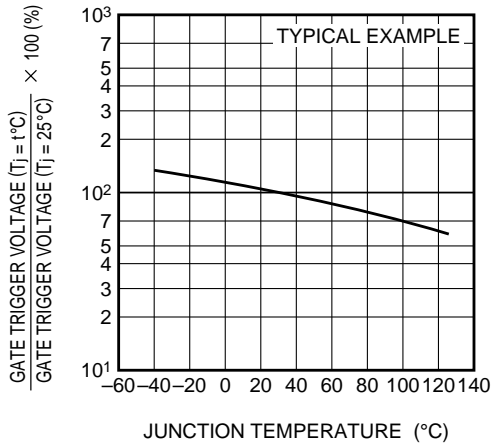
GATE CHARACTERISTICS



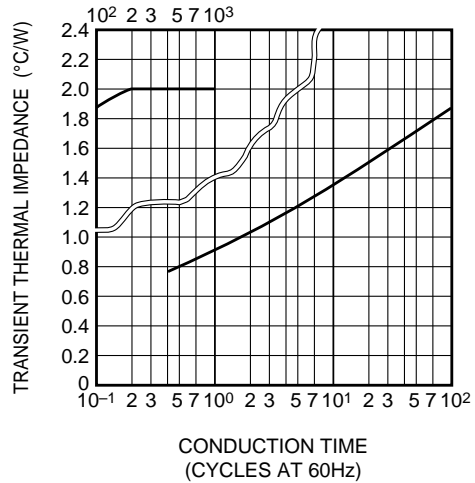
GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE



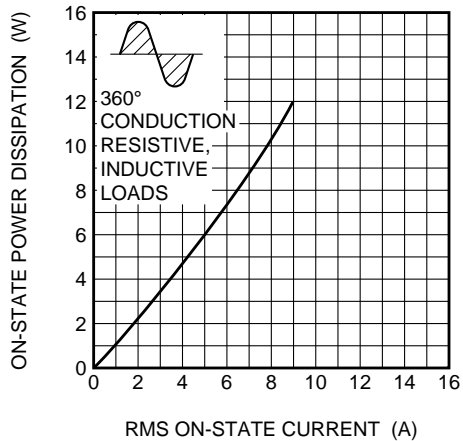
GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE



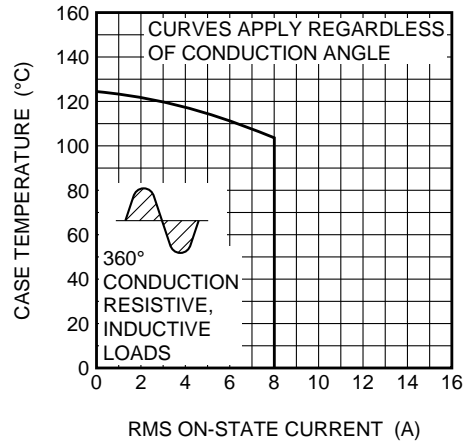
MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



MAXIMUM ON-STATE POWER DISSIPATION



ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT

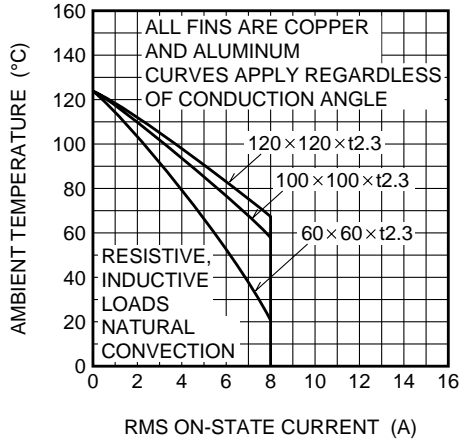


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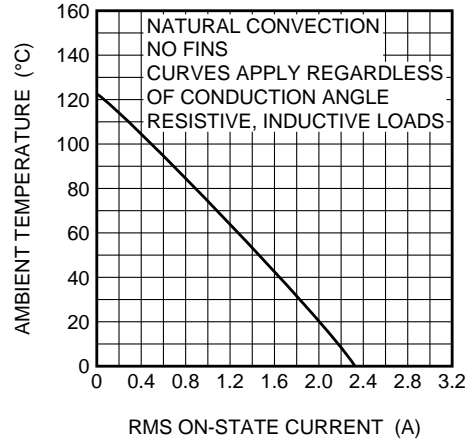
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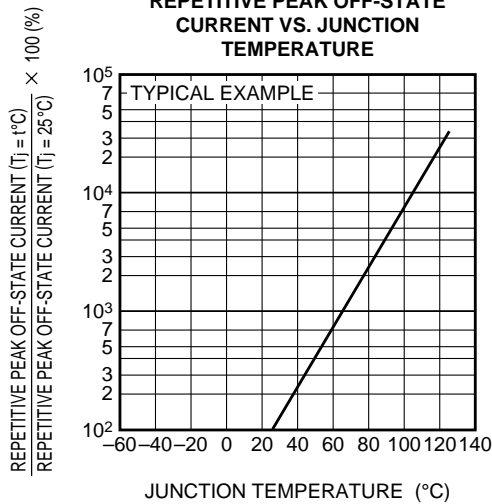
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



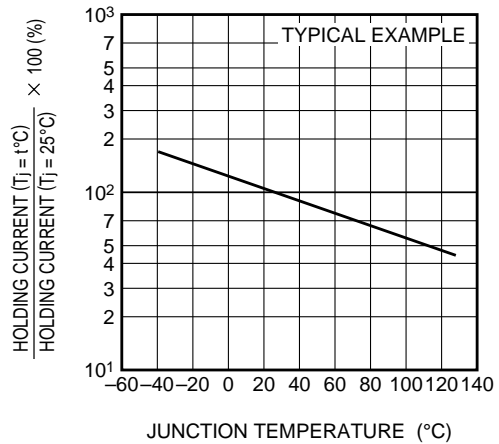
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



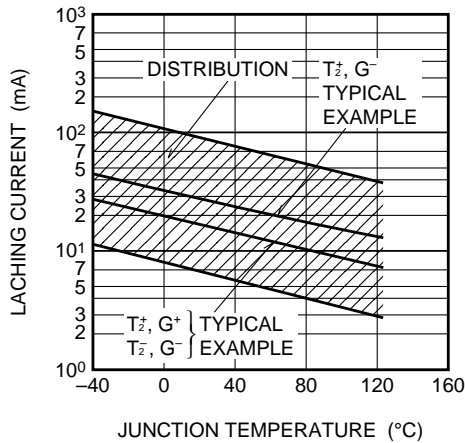
REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE



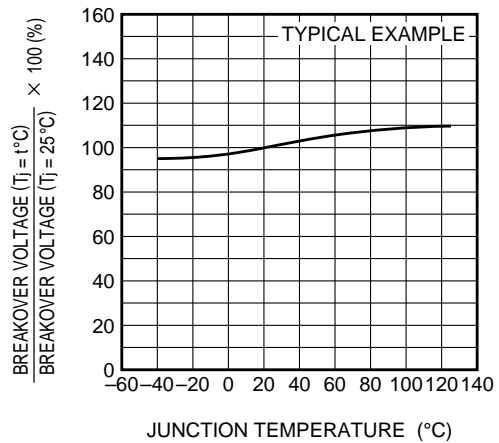
HOLDING CURRENT VS. JUNCTION TEMPERATURE



LACHING CURRENT VS. JUNCTION TEMPERATURE



BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE

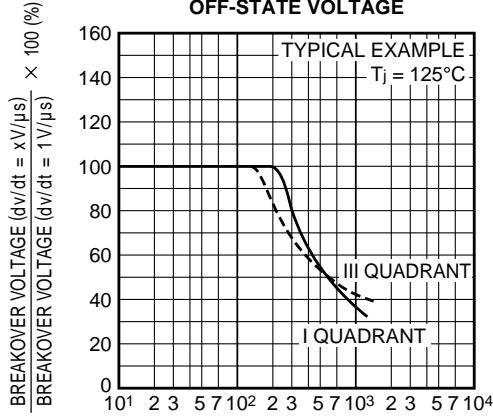


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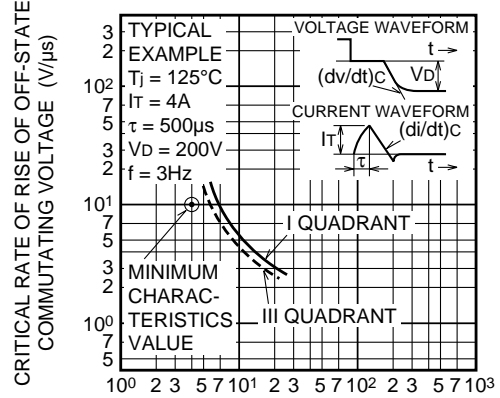
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

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



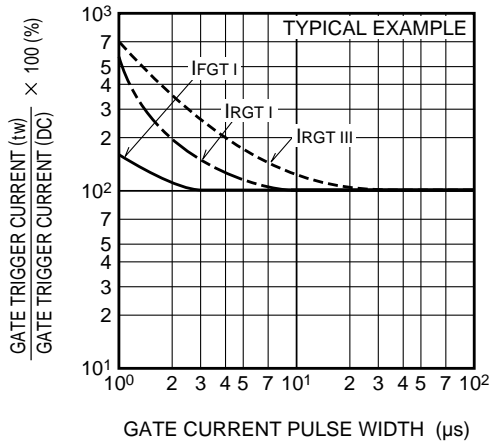
RATE OF RISE OF OFF-STATE VOLTAGE (V/μs)

COMMUTATION CHARACTERISTICS



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

GATE TRIGGER CURRENT VS. GATE CURRENT PULSE WIDTH



GATE TRIGGER CHARACTERISTICS TEST CIRCUITS

