

BCR5KM

MEDIUM POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

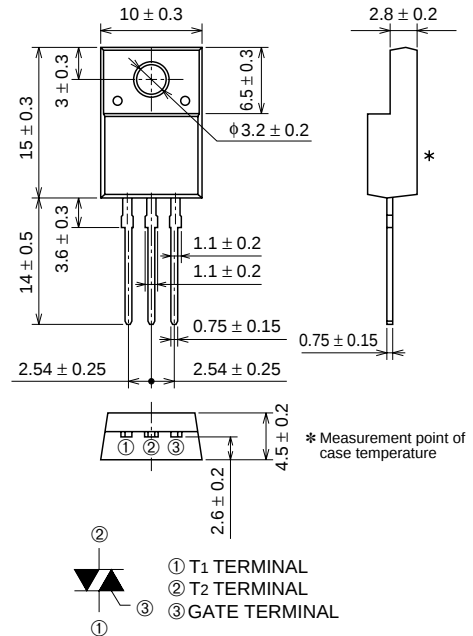
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- I_T (RMS) 5A
- V_{DRM} 400V / 600V
- I_{FGT} I , I_{RGT} I , I_{RGT} III 15mA (10mA) *2
- UL Recognized : File No. E80271

OUTLINE DRAWING

Dimensions in mm



TO-220FN

APPLICATION

Control of heater such as electric rice cooker, electric pot

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, $T_c=103^\circ\text{C}$	5	A
I_{TSM}	Surge on-state current	60Hz sinewave 1 full cycle, peak value, non-repetitive	50	A
I_t^2	I_t^2 for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	10.4	A ² s
P_{GM}	Peak gate power dissipation		3	W
P_G (AV)	Average gate power dissipation		0.3	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		2.0	g
V_{iso}	Isolation voltage	$T_a=25^\circ\text{C}$, AC 1 minute, $T_1 \cdot T_2 \cdot G$ terminal to case	2000	V

*1. Gate open.

Feb.1999

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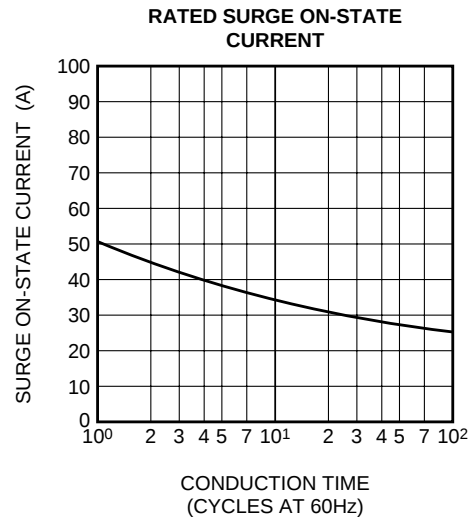
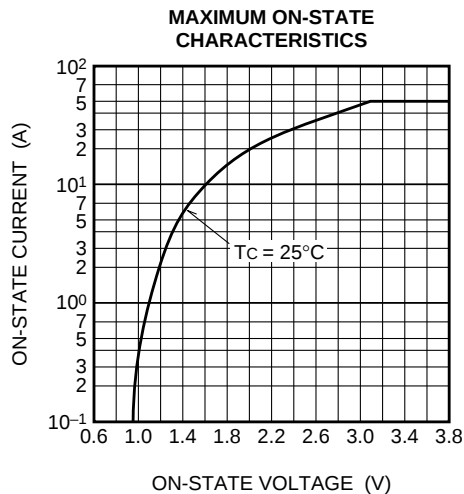
ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I_{DRM}	Repetitive peak off-state current	$T_j=125^{\circ}\text{C}$, V_{DRM} applied	—	—	2.0	mA
V_{TM}	On-state voltage	$T_c=25^{\circ}\text{C}$, $I_{TM}=7\text{A}$, Instantaneous measurement	—	—	1.5	V
$V_{FGT\text{ I}}$	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
$V_{RGT\text{ I}}$			—	—	1.5	V
$V_{RGT\text{ III}}$			—	—	1.5	V
$I_{FGT\text{ I}}$	Gate trigger current *2	$T_j=25^{\circ}\text{C}$, $V_D=6\text{V}$, $R_L=6\Omega$, $R_G=330\Omega$	—	—	15*2	mA
$I_{RGT\text{ I}}$			—	—	15*2	mA
$I_{RGT\text{ III}}$			—	—	15*2	mA
V_{GD}	Gate non-trigger voltage	$T_j=125^{\circ}\text{C}$, $V_D=1/2V_{DRM}$	0.2	—	—	V
$R_{th(j-c)}$	Thermal resistance	Junction to case *3	—	—	3.8	$^{\circ}\text{C/W}$
$R_{th(j-a)}$	Thermal resistance	Junction to ambient	—	—	50	$^{\circ}\text{C/W}$

*2. High sensitivity ($I_{GT} \leq 10\text{mA}$) is also available. (IGT item ①)

*3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C/W .

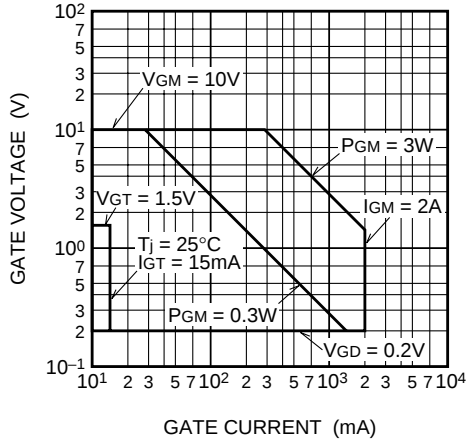
PERFORMANCE CURVES



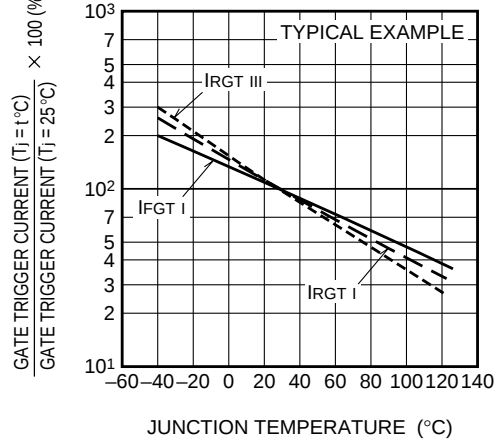
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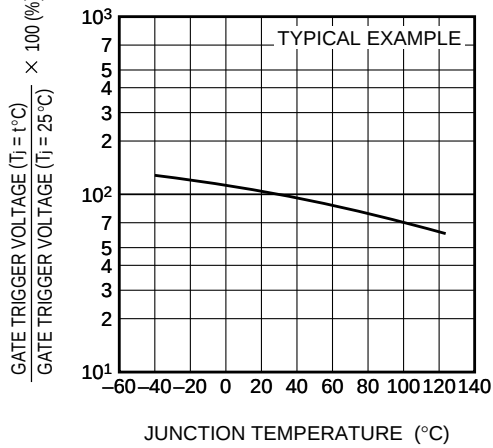
**GATE CHARACTERISTICS
(I, II AND III)**



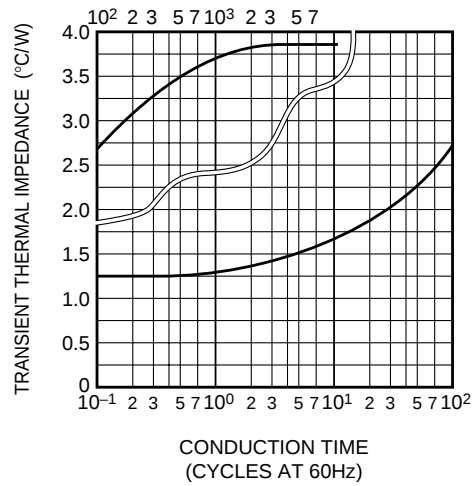
**GATE TRIGGER CURRENT VS.
JUNCTION TEMPERATURE**



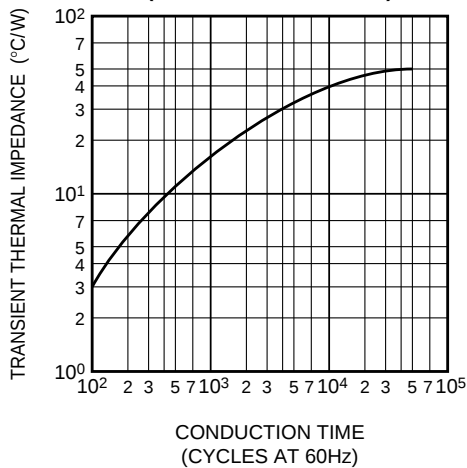
**GATE TRIGGER VOLTAGE VS.
JUNCTION TEMPERATURE**



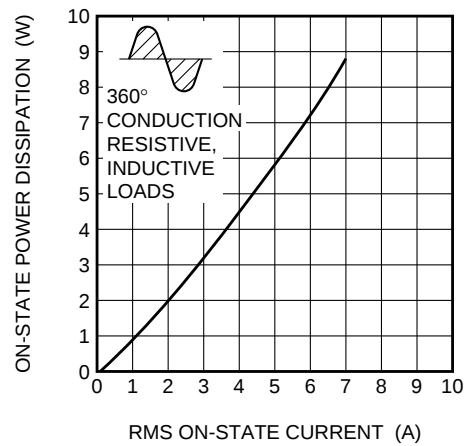
**MAXIMUM TRANSIENT THERMAL
IMPEDANCE CHARACTERISTICS
(JUNCTION TO CASE)**



**MAXIMUM TRANSIENT THERMAL
IMPEDANCE CHARACTERISTICS
(JUNCTION TO AMBIENT)**



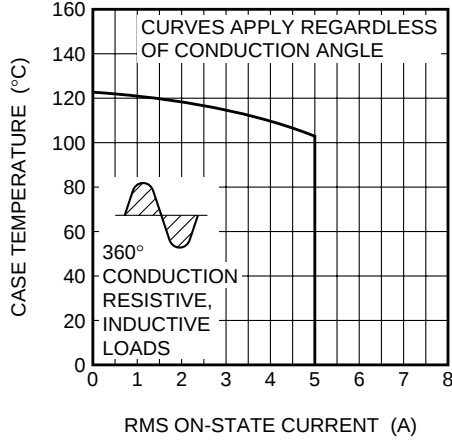
**MAXIMUM ON-STATE POWER
DISSIPATION**



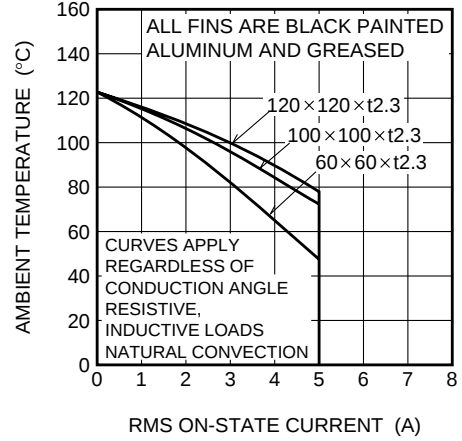
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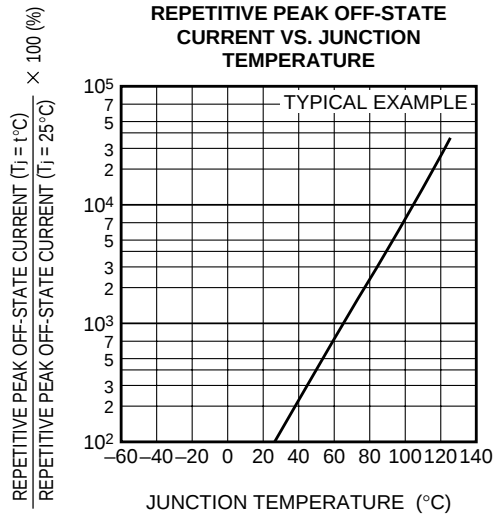
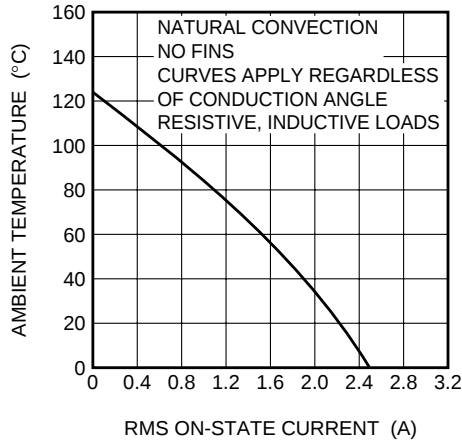
ALLOWABLE CASE TEMPERATURE
VS. RMS ON-STATE CURRENT



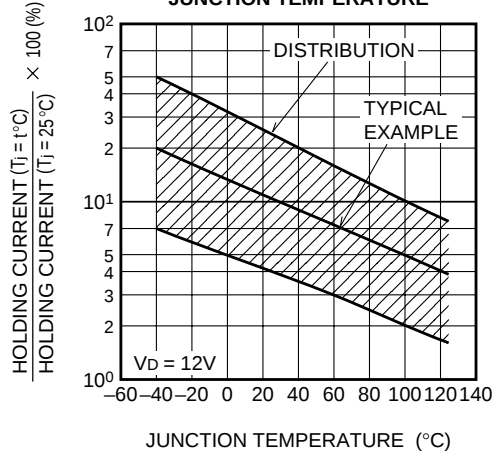
ALLOWABLE AMBIENT TEMPERATURE
VS. RMS ON-STATE CURRENT



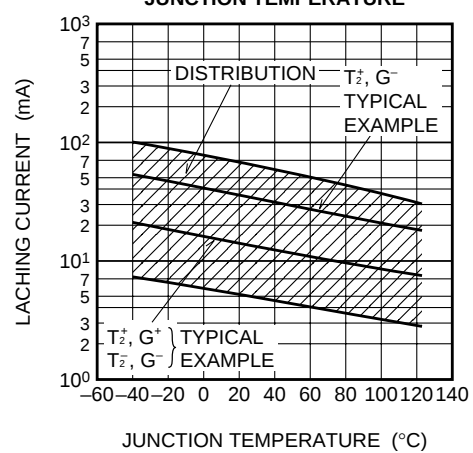
ALLOWABLE AMBIENT TEMPERATURE
VS. RMS ON-STATE CURRENT



HOLDING CURRENT VS.
JUNCTION TEMPERATURE



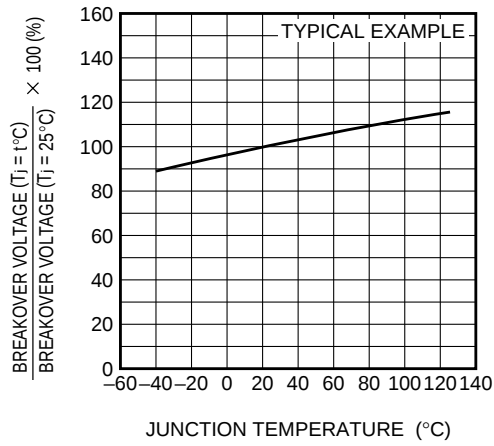
LATCHING CURRENT VS.
JUNCTION TEMPERATURE



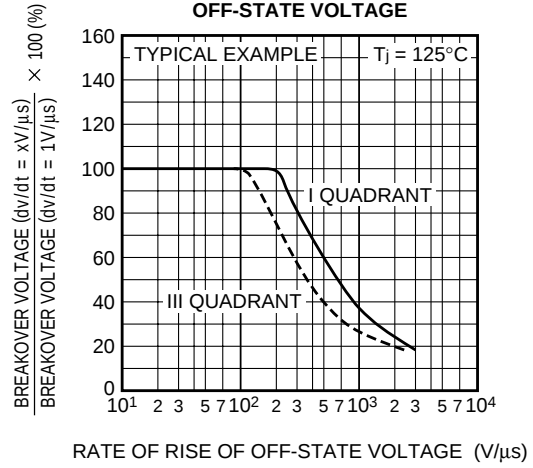
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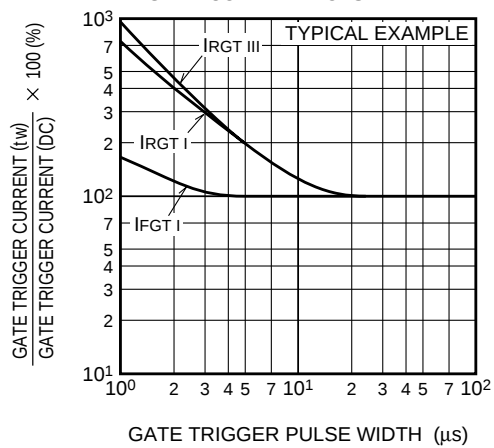
**BREAKOVER VOLTAGE VS.
JUNCTION TEMPERATURE**



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



**GATE TRIGGER CURRENT VS.
GATE CURRENT PULSE WIDTH**



GATE TRIGGER CHARACTERISTICS TEST CIRCUITS

