

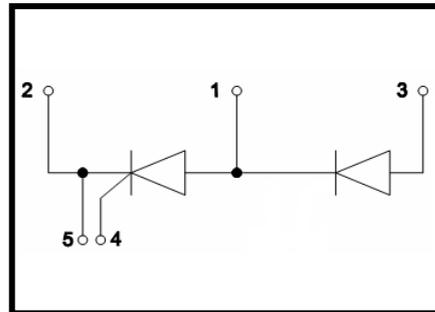
## Features

- Isolation voltage 3000 V~
- Industrial Standard Package
- High Surge Capability
- Glass Passivated Chips
- Simple Mounting
- Electrically Isolated by DBC Ceramic



## Applications

- DC Motor Control and Drives
- Battery Charges
- Welders
- Power Converters
- Lighting Control
- Heat and Temperature Control



## Advantages

- Space and weight savings
- Improved temperature and power cycling

## ■ Diode

### ABSOLUTE MAXIMUM RATINGS

$T_C=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Test Condition	Value	Unit
$V_{RRM}$		1600	V
$I_{d(AV)}$	$T_C=100^{\circ}\text{C}$ , module	40	A
$I_{FSM}$	$T_J=45^{\circ}\text{C}$ ; $t=10\text{ms}$ (50Hz),sine	1000	A
	$V_R=0$ $t=8.3\text{ms}$ (60Hz),sine	1080	A
	$T_J=150^{\circ}\text{C}$ ; $t=10\text{ms}$ (50Hz),sine	800	A
	$V_R=0$ $t=8.3\text{ms}$ (60Hz),sine	860	A
$i^2t$	$T_J=45^{\circ}\text{C}$ ; $t=10\text{ms}$ (50Hz),sine	5.0	KA <sup>2</sup> s
	$V_R=0$ $t=8.3\text{ms}$ (60Hz),sine	4.8	
	$T_J=150^{\circ}\text{C}$ ; $t=10\text{ms}$ (50Hz),sine	3.2	
	$V_R=0$ $t=8.3\text{ms}$ (60Hz),sine	3.1	
$T_J$	Junction Temperature	-40~150	$^{\circ}\text{C}$

**ELECTRICAL AND THERMAL CHARACTERISTICS**  $T_C=25^\circ\text{C}$  unless otherwise specified

Symbol	Test Condition	Value	Unit
$I_R$	$V_R = V_{RRM}; T_J = 25^\circ\text{C}$	$\leq 0.5$	mA
	$V_R = V_{RRM}; T_J = T_{JM}$	$\leq 5$	mA
$V_F$	$I_F = 150\text{A}$	1.3	V
$V_{T0}$	For power-loss calculations only	0.8	V
$R_{thJC}$	Thermal Resistance, Junction-to-Case	0.5	K/W
$R_{thCS}$	Thermal Resistance, Case -to-Sink	0.12	K/W

## ■ Thyristor

**ABSOLUTE MAXIMUM RATINGS**  $T_C=25^\circ\text{C}$  unless otherwise specified

Symbol	Test Condition	Value	Unit
$V_{RRM} / V_{DRM}$		1600	V
$I_{T(AV)}$	$T_C=85^\circ\text{C}$ , 180° conduction, half sine wave;	40	A
$I_{T(RMS)}$	as AC switch;	100	A
$I_{TSM}$	$T_J=45^\circ\text{C}$ , $t=10\text{ms}$ (50Hz), sine, $V_R=0$ ;	850	A
	$T_J=45^\circ\text{C}$ , $t=8.3\text{ms}$ (60Hz), sine, $V_R=0$ ;	890	
	$T_J=45^\circ\text{C}$ , $t=10\text{ms}$ (50Hz), sine, $V_R=V_{RRM}$ ;	715	
	$T_J=45^\circ\text{C}$ , $t=8.3\text{ms}$ (60Hz), sine, $V_R=V_{RRM}$ ;	750	
$i^2t$	$T_J=45^\circ\text{C}$ , $t=10\text{ms}$ (50Hz), sine, $V_R=0$ ;	3.6	K A <sup>2</sup> s
	$T_J=45^\circ\text{C}$ , $t=8.3\text{ms}$ (60Hz), sine, $V_R=0$ ;	3.3	
	$T_J=45^\circ\text{C}$ , $t=10\text{ms}$ (50Hz), sine, $V_R=V_{RRM}$ ;	2.6	
	$T_J=45^\circ\text{C}$ , $t=8.3\text{ms}$ (60Hz), sine, $V_R=V_{RRM}$ ;	2.3	
$I_{DRM} / I_{RRM}$	$V_R=V_{RRM}$ , $V_D=V_{DRM}$ , gate open circuit;	0.5	mA
	$T_J=125^\circ\text{C}$ , $V_R=V_{RRM}$ , $V_D=V_{DRM}$ , gate open circuit;	15	mA
$dV/dt$	$T_J=125^\circ\text{C}$ , exponential to 67% rated $V_{DRM}$	1000	V/us
$V_{ISOL}$	50Hz, all terminals shorted, $t=1\text{min}$ , $I_{ISOL} \leq 1\text{mA}$ ;	3000	V~
$T_J$	Max. junction operating temperature range	-40~125	°C
$T_{STG}$	Max. storage temperature range	-40~125	°C

**ELECTRICAL CHARACTERISTICS** $T_C=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Test Condition	Min.	Typ.	Max.	Unit
$V_{TO}$	$16.7\% \times \pi \times I_{AV} < I < \pi \times I_{AV}, T_J = 125^{\circ}\text{C};$			0.88	V
	$I > \pi \times I_{AV}, T_J = 125^{\circ}\text{C};$			0.91	V
$r_t$	$16.7\% \times \pi \times I_{AV} < I < \pi \times I_{AV}, T_J = 125^{\circ}\text{C};$			5.9	m $\Omega$
	$I > \pi \times I_{AV}, T_J = 125^{\circ}\text{C};$			5.74	m $\Omega$
$I_H$	$V_{AK} = 6\text{V}$ , resistive load;			200	mA
$I_L$	Anode supply = 6V, resistive load = 1 $\Omega$ , gate pulse = 10V, 100 $\mu\text{s}$ ;			400	mA
$V_{TM}$	$I_{TM} = 150\text{A}$ , $t_d = 10\text{ ms}$ , half sine			2.2	V
$P_{GM}$	$t_p \leq 5\text{ms}$ , $T_J = 125^{\circ}\text{C};$			10	W
$P_{GM(AV)}$	$f = 50\text{Hz}$ , $T_J = 125^{\circ}\text{C};$			2.5	W
$I_{GM}$	$t_p \leq 5\text{ms}$ , $T_J = 125^{\circ}\text{C};$			2.5	A
$-V_{GT}$				10	V
$V_{GT}$	$V_A = 6\text{V}$ , $R_A = 1\Omega$ , $T_J = -40^{\circ}\text{C};$			4	V
	$V_A = 6\text{V}$ , $R_A = 1\Omega;$			2.5	
	$V_A = 6\text{V}$ , $R_A = 1\Omega$ , $T_J = 125^{\circ}\text{C};$			1.7	
$I_{GT}$	$V_A = 6\text{V}$ , $R_A = 1\Omega$ , $T_J = -40^{\circ}\text{C};$			270	mA
	$V_A = 6\text{V}$ , $R_A = 1\Omega;$			150	
	$V_A = 6\text{V}$ , $R_A = 1\Omega$ , $T_J = 125^{\circ}\text{C};$			80	
$V_{GD}$	$V_{AK} = V_{DRM}$ , $T_J = 125^{\circ}\text{C}$			0.25	V
$I_{GD}$				6	mA
di/dt	$T_J = 25^{\circ}\text{C}$ , $V_D = 0.67V_{DRM}$ , $I_{TM} = 345\text{A}$ , $I_g = 500\text{mA}$ , $t_r < 0.5\ \mu\text{s}$ , $t_p > 6\ \mu\text{s}$			150	A/ $\mu\text{s}$

**THERMAL AND MECHANICAL CHARACTERISTICS** $T_C=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Test Condition	value	Unit
$R_{thjc}$	Thermal Resistance , Junction-to-Case	0.5	K/W
$R_{THCS}$	Thermal Resistance, Case -to-Sink	0.12	K/W
Md	Mounting torque(M5)	3 to 5	N·m
	Terminal connection torque(M5)		
Weight	Typical value	105	g

Characteristic curves

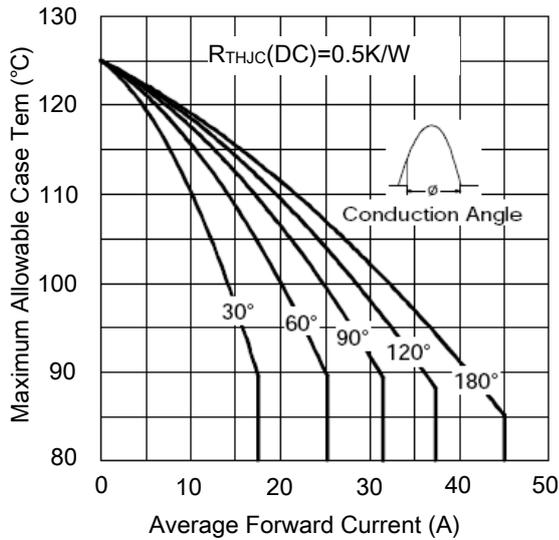


Figure 1. Current Rating Characteristics

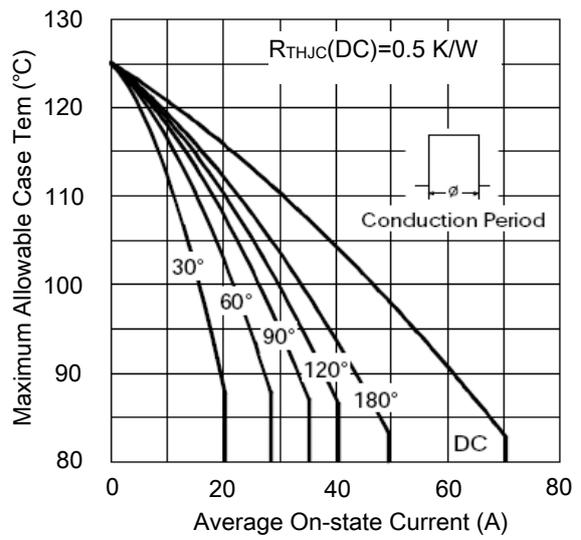


Figure 2. Current Rating Characteristics

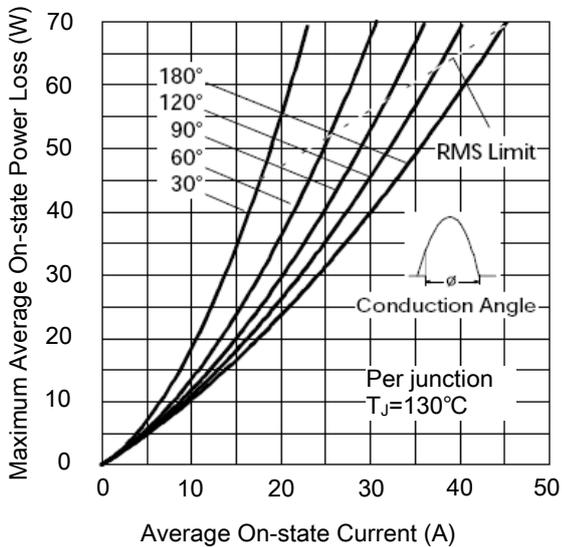


Figure 3. On-state Power Loss Characteristics

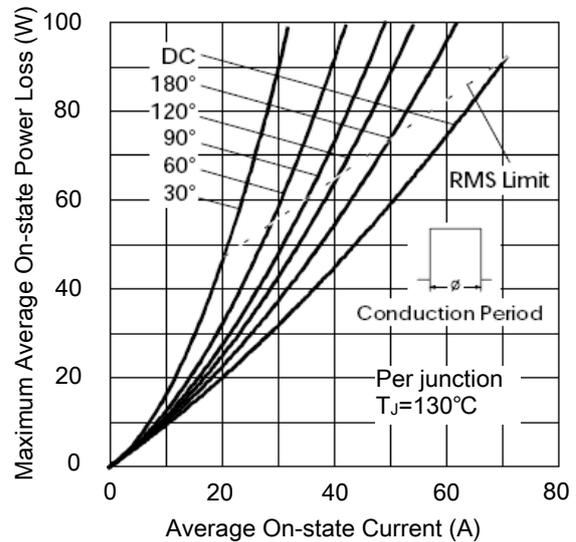


Figure 4. On-state Power Loss Characteristics

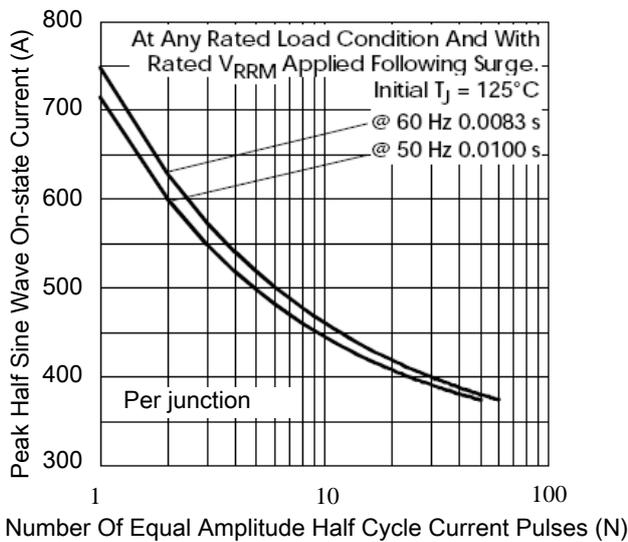


Figure 5. Maximum Non-Repetitive Surge Current

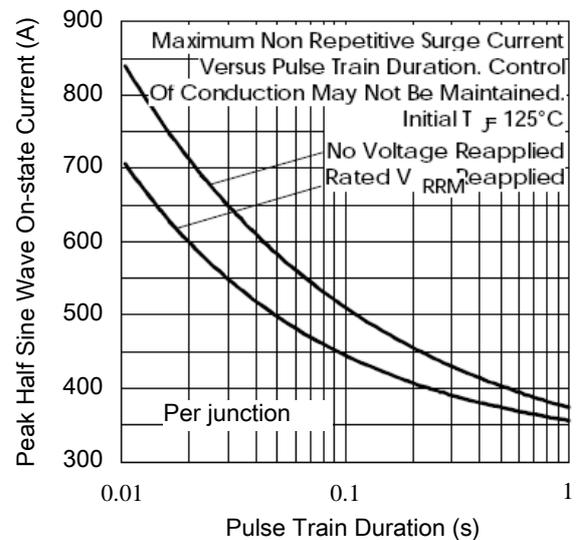


Figure 6. Maximum Non-Repetitive Surge Current

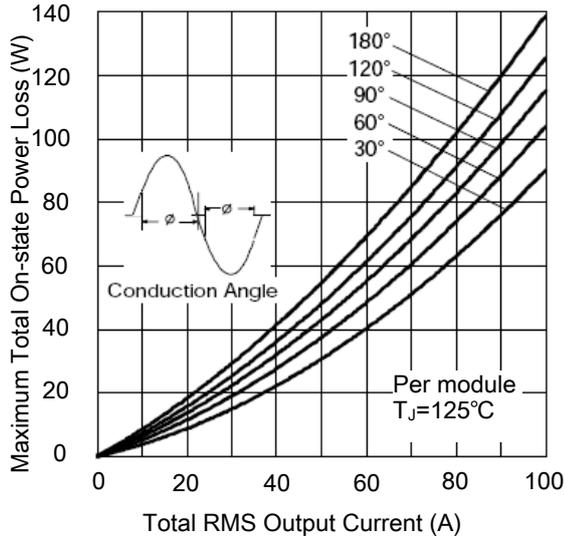


Figure 7. On-State Power Loss Characteristics-1

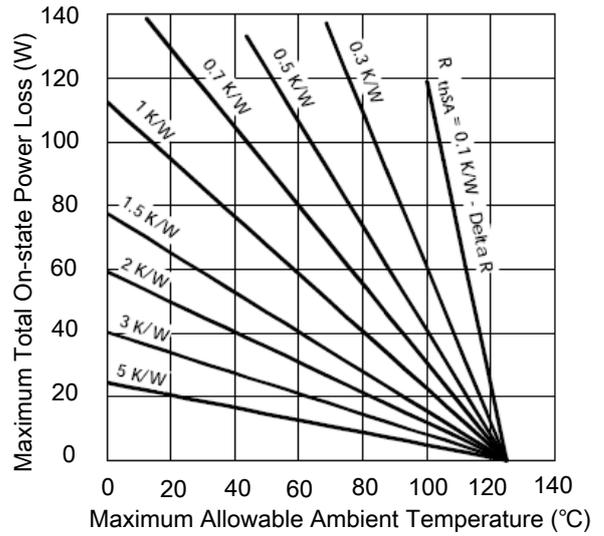


Figure 8. On-State Power Loss Characteristics-2

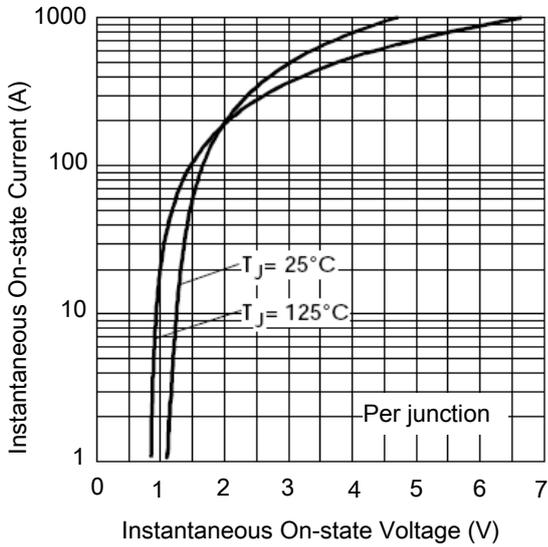


Figure 9. On-state Voltage Drop Characteristics

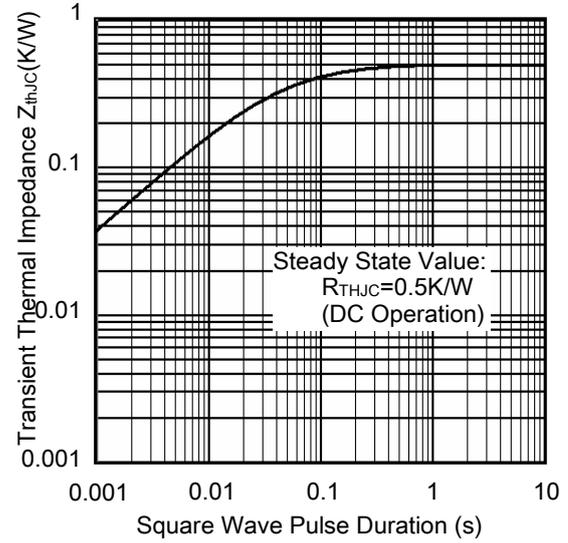


Figure 10. Thermal Impedance  $Z_{thJC}$  Characteristics

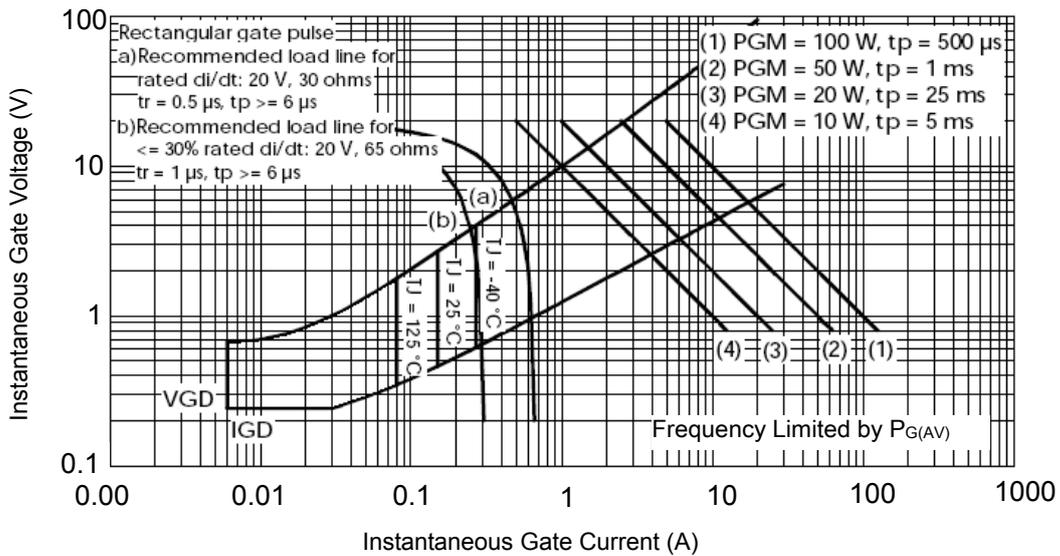


Figure.11 Gate Characteristics

Package Outline (Dimensions in mm)

