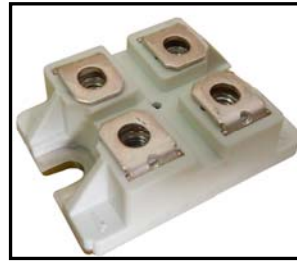


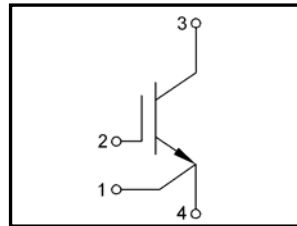
## FEATURES

- Ultra Low Loss
- High Ruggedness
- High Short Circuit Capability
- Positive Temperature Coefficient
- Electrically Isolated by DBC Ceramic
- Popular SOT-227 Package



## APPLICATIONS

- Invertor
- Converter
- Welder
- SMPS and UPS
- Induction Heating



## ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	Test Conditions	Values	Unit
$V_{CES}$	Collector - Emitter Voltage		1200	V
$V_{GES}$	Gate - Emitter Voltage		$\pm 20$	V
$I_C$	DC Collector Current	$T_C=25^{\circ}\text{C}$	105	A
		$T_C=80^{\circ}\text{C}$	75	A
$I_{Cpuls}$	Pulsed Collector Current	$T_C=25^{\circ}\text{C}, t_p=1\text{ms}$	210	A
		$T_C=80^{\circ}\text{C}, t_p=1\text{ms}$	150	A
$P_{tot}$	Power Dissipation		625	W
$T_J$	Junction Temperature Range		-40 to +150	$^{\circ}\text{C}$
$T_{STG}$	Storage Temperature Range		-40 to +125	$^{\circ}\text{C}$
$V_{isol}$	Insulation Test Voltage	AC, $t=1\text{min}$	3000	V
$R_{thJC}$	Junction-to-Case Thermal Resistance		0.20	K/W
Torque	Module-to-Sink	Recommended (M4)	0.7~1.1	N · m
Torque	Module Electrodes	Recommended (M4)	0.7~1.1	N · m
Weight			26.5	g

ELECTRICAL CHARACTERISTICS

T<sub>C</sub>=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>GE(th)</sub>	Gate - Emitter Threshold Voltage	V <sub>CE</sub> =V <sub>GE</sub> , I <sub>C</sub> =3mA	5	6.2	7	V
V <sub>CE(sat)</sub>	Collector - Emitter Saturation Voltage	I <sub>C</sub> =75A, V <sub>GE</sub> =15V, T <sub>J</sub> =25°C		1.8		V
		I <sub>C</sub> =75A, V <sub>GE</sub> =15V, T <sub>J</sub> =125°C		2.0		V
I <sub>CES</sub>	Collector Leakage Current	V <sub>CE</sub> =1200V, V <sub>GE</sub> =0V, T <sub>J</sub> =25°C		0.2	0.5	mA
		V <sub>CE</sub> =1200V, V <sub>GE</sub> =0V, T <sub>J</sub> =125°C		2		mA
I <sub>GES</sub>	Gate Leakage Current	V <sub>CE</sub> =0V, V <sub>GE</sub> =±20V	-100		100	nA
Q <sub>ge</sub>	Gate Charge	V <sub>CC</sub> =600V, I <sub>C</sub> =75A, V <sub>GE</sub> =±15V		780		nC
C <sub>ies</sub>	Input Capacitance	V <sub>CE</sub> =25V, V <sub>GE</sub> =0V, f =1MHz		5.52		nF
C <sub>oes</sub>	Output Capacitance			0.4		nF
C <sub>res</sub>	Reverse Transfer Capacitance			0.26		nF
t <sub>d(on)</sub>	Turn - on Delay Time	V <sub>CC</sub> =600V, I <sub>C</sub> =75A		150		ns
t <sub>r</sub>	Rise Time	R <sub>G</sub> =15 Ω, V <sub>GE</sub> =±15V		65		ns
t <sub>d(off)</sub>	Turn - off Delay Time	T <sub>J</sub> =25°C		440		ns
t <sub>f</sub>	Fall Time	Inductive Load		55		ns
t <sub>d(on)</sub>	Turn - on Delay Time	V <sub>CC</sub> =600V, I <sub>C</sub> =75A		160		ns
t <sub>r</sub>	Rise Time	R <sub>G</sub> =15 Ω, V <sub>GE</sub> =±15V		65		ns
t <sub>d(off)</sub>	Turn - off Delay Time	T <sub>J</sub> =125°C		500		ns
t <sub>f</sub>	Fall Time	Inductive Load		70		ns
E <sub>on</sub>	Turn - on Switching Energy	V <sub>CC</sub> =600V, I <sub>C</sub> =75A    T <sub>J</sub> =25°C		7.45		mJ
		R <sub>G</sub> =15 Ω                    T <sub>J</sub> =125°C		10.3		mJ
E <sub>off</sub>	Turn - off Switching Energy	V <sub>GE</sub> =±15V                    T <sub>J</sub> =25°C		4.9		mJ
		Inductive Load                T <sub>J</sub> =125°C		7.8		mJ

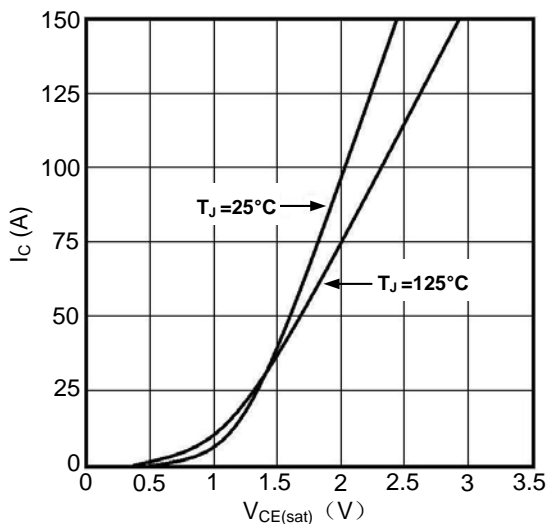


Figure1. Typical Output characteristics

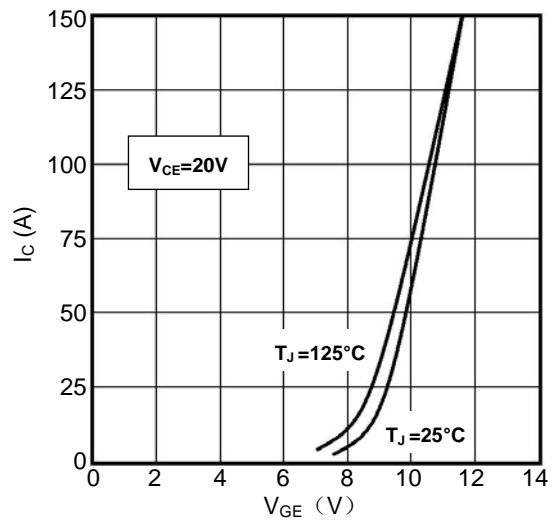


Figure2. Typical Transfer characteristics

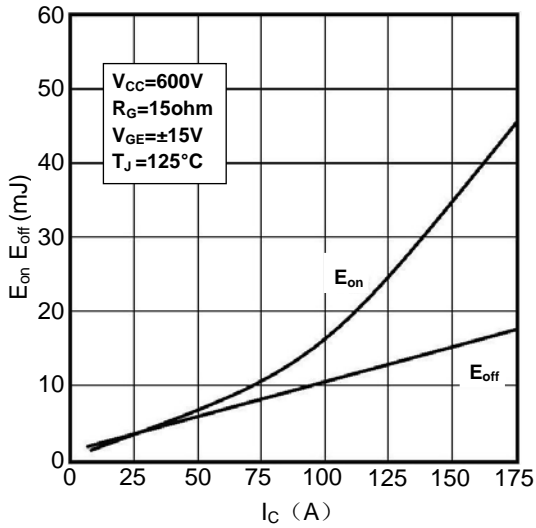


Figure3. Switching Energy vs. Collector Current

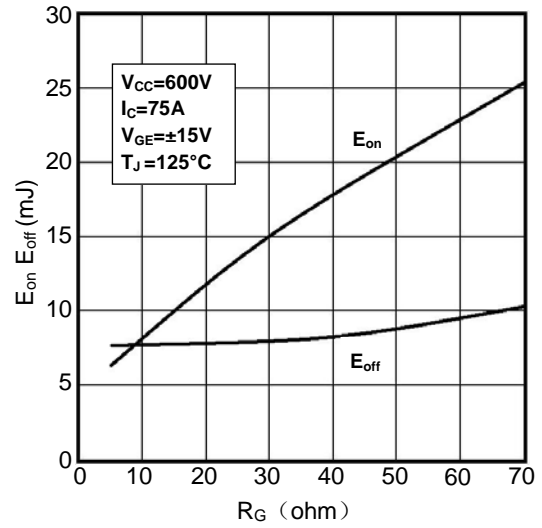


Figure4. Switching Energy vs. Gate Resistor

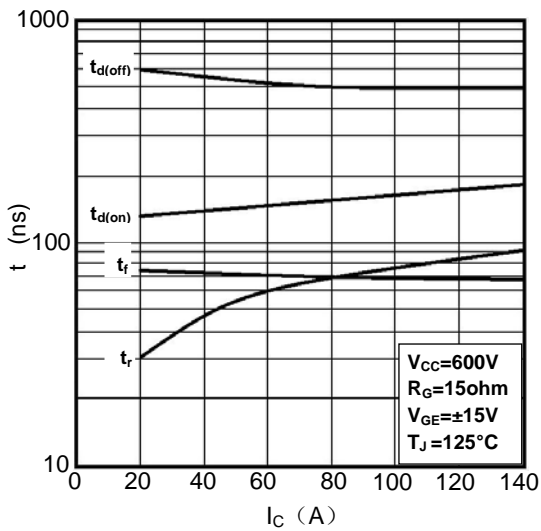


Figure5. Switching Times vs. Collector Current

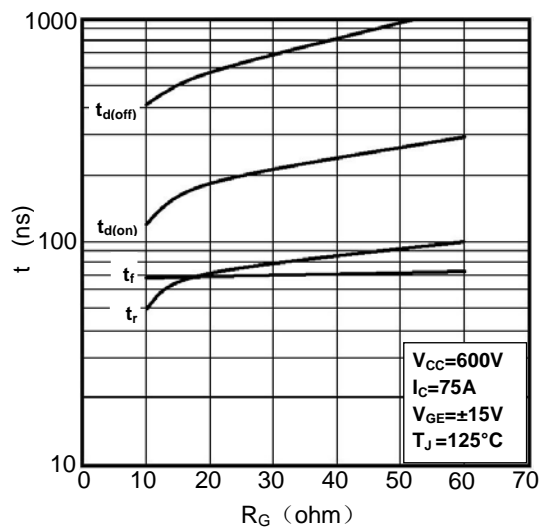


Figure6. Switching Times vs. Gate Resistor

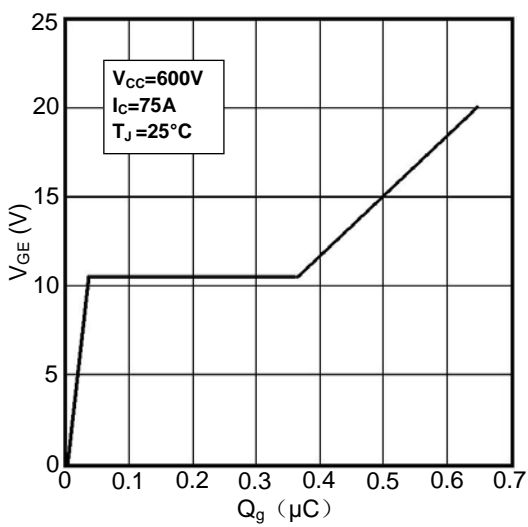


Figure7. Gate Charge characteristics

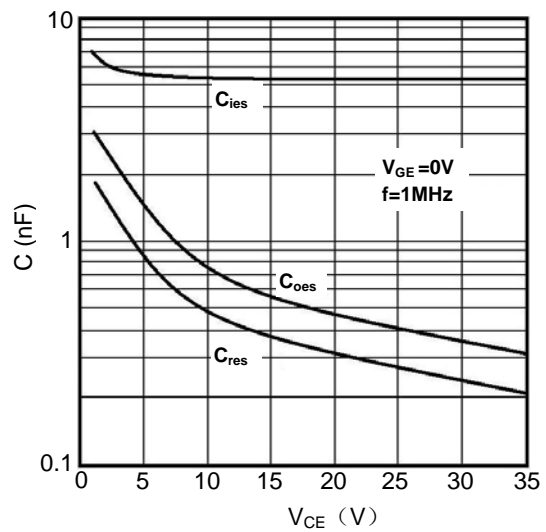


Figure8. Typical Capacitances vs.  $V_{CE}$

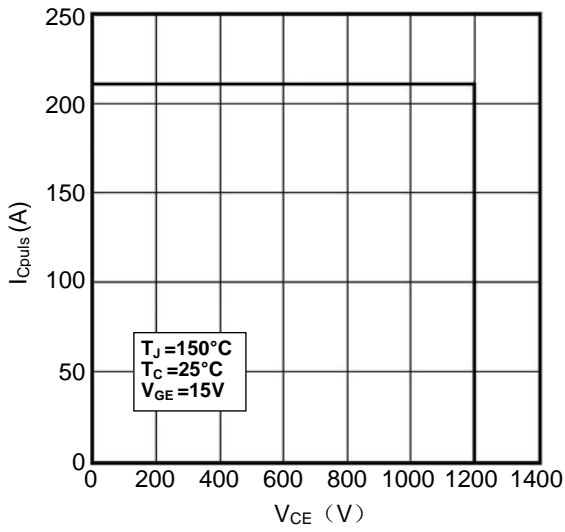


Figure9. Reverse Biased Safe Operating Area

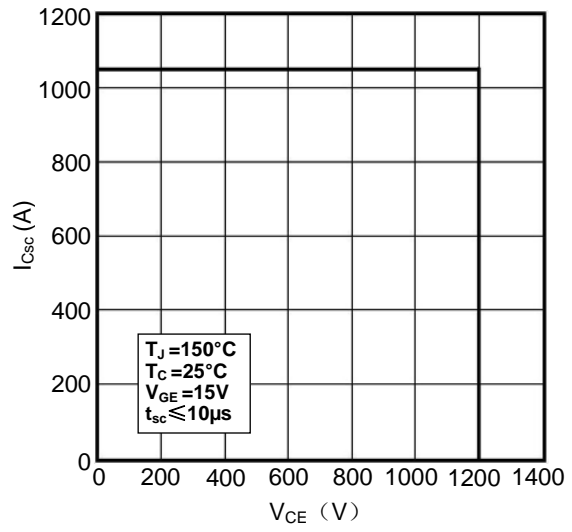


Figure10. Short Circuit Safe Operating Area

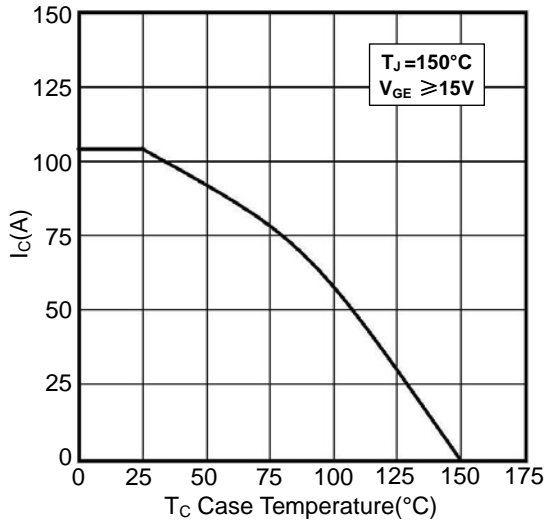


Figure11. Rated Current vs.  $T_C$

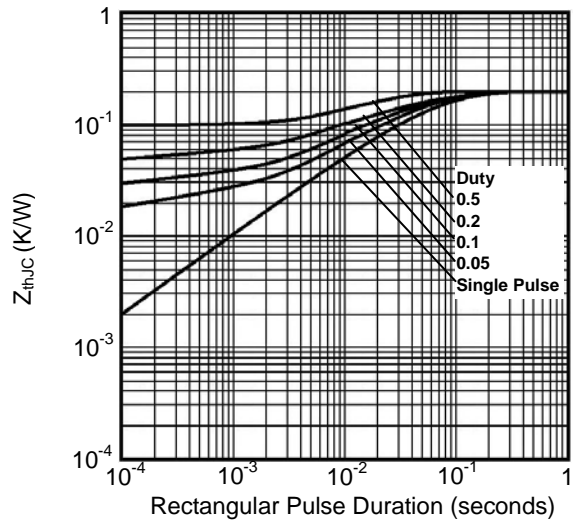
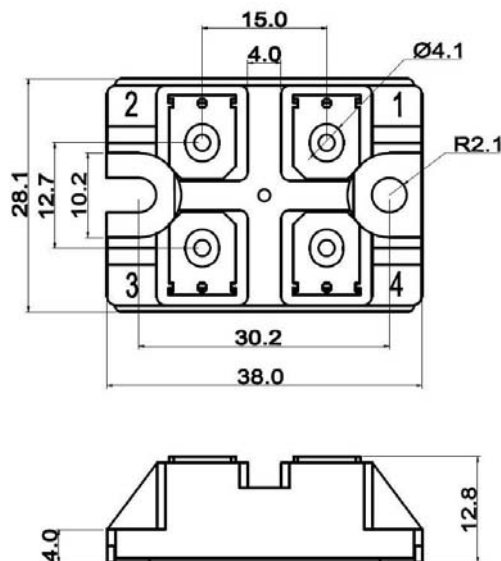


Figure12. Transient Thermal Impedance



Dimensions in mm

Figure13. Package Outlines