PRODUCT FEATURES

☐ IGBT CHIP(1700V Trench+Field Stop technology)

☐ Low turn-off losses, short tail current

☐ $V_{CE(sat)}$ with positive temperature coefficient

☐ Ultra Low Loss,High Ruggedness

☐ Free wheeling diodes with fast and soft reverse recovery

APPLICATIONS

☐ AC motor control

☐ Motion/servo control

☐ Inverter and power supplies

☐ Photovoltaic/Fuel cell

IGBT-inverter

ABSOLUTE MAXIMUM RATINGS(T_C=25°C unless otherwise specified)

Symbol	Parameter/Test Conditions		Values	Unit
V_{CES}	Collector Emitter Voltage	T_J=25℃	1700	V
V_{GES}	Gate Emitter Voltage		±20	
I_C	DC Collector Current	T_C=25℃,T_{Jmax}=175℃	300	A
		T_C=95℃,T_{Jmax}=175℃	200	
I_{CM}	Repetitive Peak Collector Current	tp=1ms	400	
P_{tot}	Power Dissipation Per IGBT	T_C=25℃,T_{Jmax}=175℃	1500	W

Diode-inverter

ABSOLUTE MAXIMUM RATINGS (T_C=25°C unless otherwise specified)

Symbol	Parameter/Test Conditions		Values	Unit
V_{RRM}	Repetitive Reverse Voltage	T_J=25℃	1700	V
$I_{F(AV)}$	Average Forward Current		200	A
I_{FRM}	Repetitive Peak Forward Current	tp=1ms	400	
I^2t		T_J=125℃, t=10ms, V_R=0V	6500	A^2S

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IGBT-inverter
ELECTRICAL CHARACTERISTICS *(T$_C$=25℃ unless otherwise specified)*

Symbol	Parameter/Test Conditions			Min.	Typ.	Max.	Unit
V$_{GE(th)}$	Gate Emitter Threshold Voltage	V$_{CE}$=V$_{GE}$, I$_C$=8mA		5.0	6.0	6.5	
V$_{CE(sat)}$	Collector Emitter Saturation Voltage	I$_C$=200A, V$_{GE}$=15V, T$_J$=25℃			2.2	2.6	V
		I$_C$=200A, V$_{GE}$=15V, T$_J$=125℃			2.5		
		I$_C$=200A, V$_{GE}$=15V, T$_J$=150℃			2.6		
I$_{CES}$	Collector Leakage Current	V$_{CE}$=1700V, V$_{GE}$=0V, T$_J$=25℃				2	mA
		V$_{CE}$=1700V, V$_{GE}$=0V, T$_J$=150℃				20	mA
I$_{GES}$	Gate Leakage Current	V$_{CE}$=0V,V$_{GE}$=±20V, T$_J$=25℃		-500		500	nA
R$_{gint}$	Integrated Gate Resistor				3		Ω
Q$_g$	Gate Charge	V$_{CE}$=900V, I$_C$=200A , V$_{GE}$=15V			1.6		µC
C$_{ies}$	Input Capacitance	V$_{CE}$=25V, V$_{GE}$=0V, f =1MHz			19		nF
C$_{res}$	Reverse Transfer Capacitance				610		pF
t$_{d(on)}$	Turn on Delay Time	V$_{CC}$=900V,I$_C$=200A R$_G$ =5.1Ω, V$_{GE}$=±15V, Inductive Load	T$_J$=25℃		160		ns
			T$_J$=150℃		180		ns
t$_r$	Rise Time		T$_J$=25℃		130		ns
			T$_J$=150℃		140		ns
t$_{d(off)}$	Turn off Delay Time	V$_{CC}$=900V,I$_C$=200A R$_G$ =5.1Ω, V$_{GE}$=±15V, Inductive Load	T$_J$=25℃		600		ns
			T$_J$=150℃		700		ns
t$_f$	Fall Time		T$_J$=25℃		200		ns
			T$_J$=150℃		300		ns
E$_{on}$	Turn on Energy	V$_{CC}$=900V,I$_C$=200A R$_G$ =5.1Ω, V$_{GE}$=±15V, Inductive Load	T$_J$=25℃		111		mJ
			T$_J$=125℃		140		mJ
			T$_J$=150℃		150		mJ
E$_{off}$	Turn off Energy		T$_J$=25℃		34		mJ
			T$_J$=125℃		52		mJ
			T$_J$=150℃		56		mJ
I$_{SC}$	Short Circuit Current	tpsc≤10µS , V$_{GE}$=15V T$_J$=150℃,V$_{CC}$=1000V			720		A
R$_{thJC}$	Junction to Case Thermal Resistance （Per IGBT）					0.1	K /W

Diode-inverter
ELECTRICAL CHARACTERISTICS *(T$_C$=25℃ unless otherwise specified)*

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
V$_F$	Forward Voltage	I$_F$=200A , V$_{GE}$=0V, T$_J$=25℃		1.8	2.2	V
		I$_F$=200A , V$_{GE}$=0V, T$_J$=125℃		1.9		
		I$_F$=200A , V$_{GE}$=0V, T$_J$=150℃		1.9		
t$_{rr}$	Reverse Recovery Time	I$_F$=200A , V$_R$=900V dI$_F$/dt=-1100A/µs T$_J$ =150℃		1380		ns
I$_{RRM}$	Max. Reverse Recovery Current			141		A
Q$_{RR}$	Reverse Recovery Charge			95		µC
E$_{rec}$	Reverse Recovery Energy			40		mJ
R$_{thJCD}$	Junction to Case Thermal Resistance （Per Diode）				0.16	K /W

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MODULE CHARACTERISTICS *(T$_C$=25℃ unless otherwise specified)*

Symbol	Parameter/Test Conditions		Values	Unit
T$_{Jmax}$	Max. Junction Temperature		175	℃
T$_{Jop}$	Operating Temperature		-40~150	
T$_{stg}$	Storage Temperature		-40~125	
V$_{isol}$	Isolation Breakdown Voltage	AC, 50Hz(R.M.S), t=1minute	4000	V
CTI	Comparative Tracking Index		＞225	
Torque	to heatsink	Recommended（M6）	3~5	Nm
	to terminal	Recommended（M6）	2.5~5	Nm
Weight			300	g
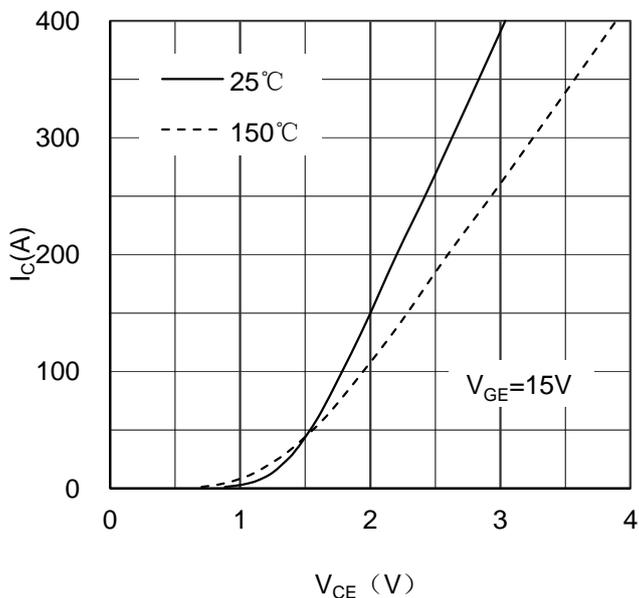
Figure 1. Typical Output Characteristics IGBT-inverter
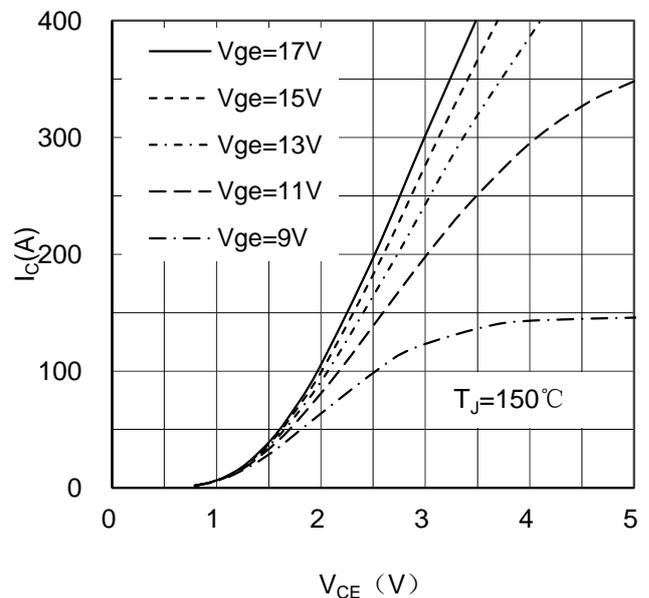
Figure 2. Typical Output Characteristics IGBT-inverter
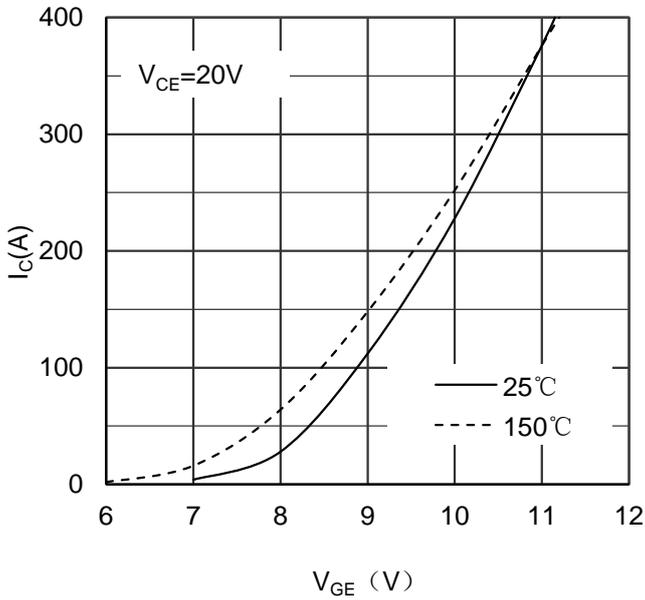
Figure 3. Typical Transfer characteristics IGBT-inverter
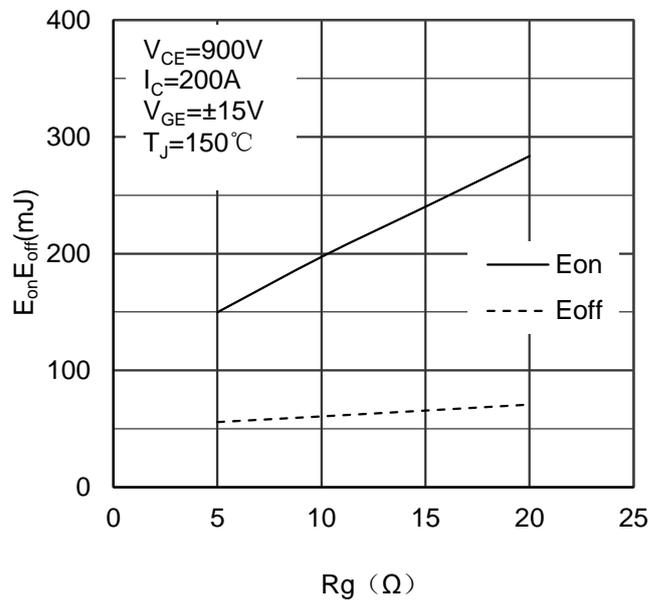
Figure 4. Switching Energy vs Gate Resistor IGBT-inverter
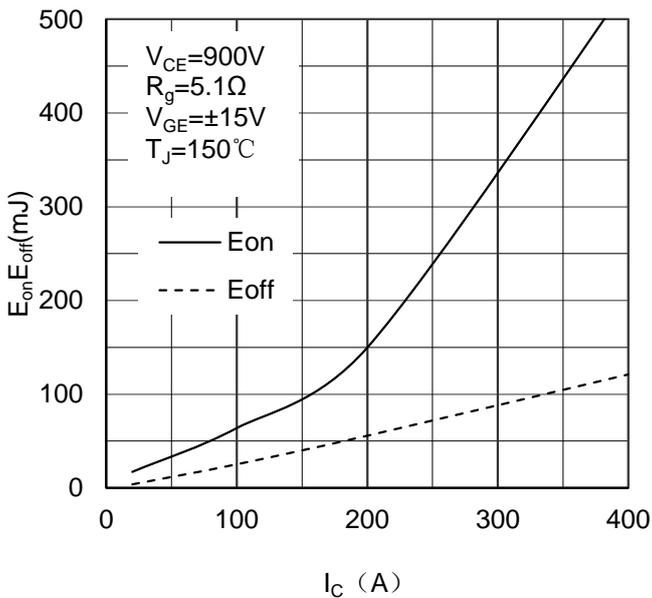
Figure 5. Switching Energy vs Collector Current IGBT-inverter
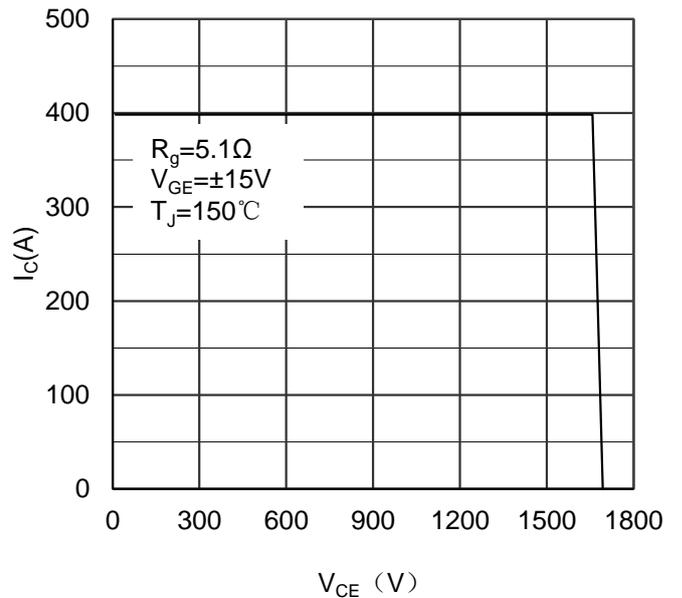
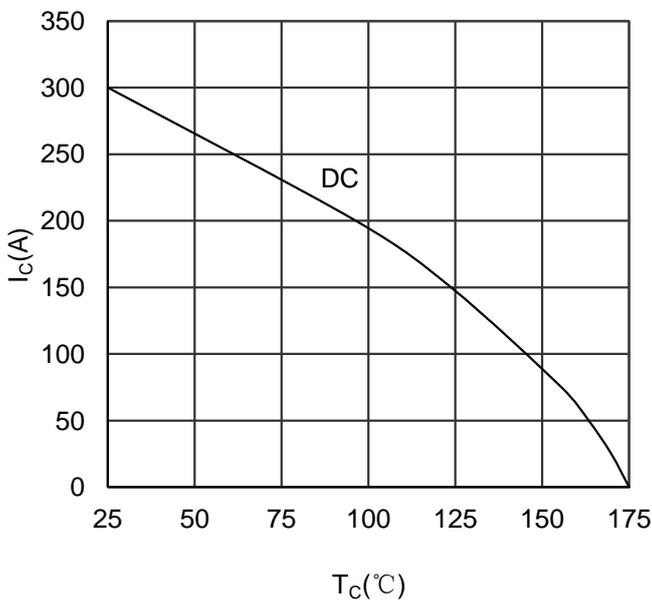Figure 6. Reverse Biased Safe Operating Area IGBT-inverter

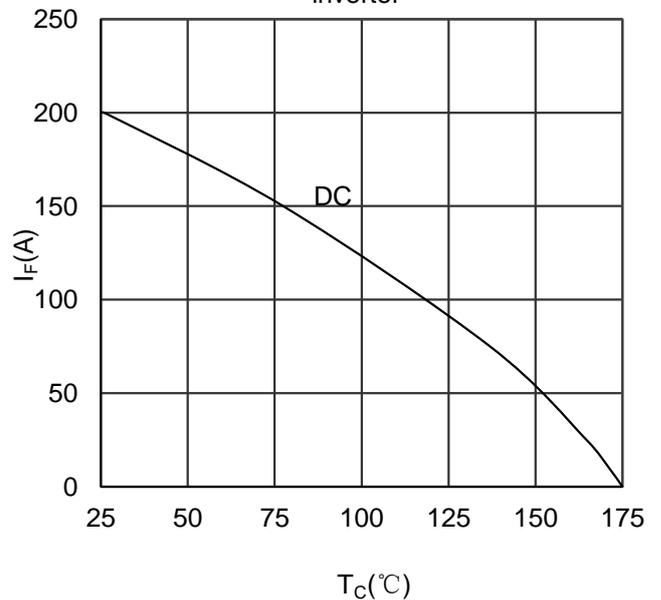Figure 7. Collector Current vs Case temperature IGBT -inverter

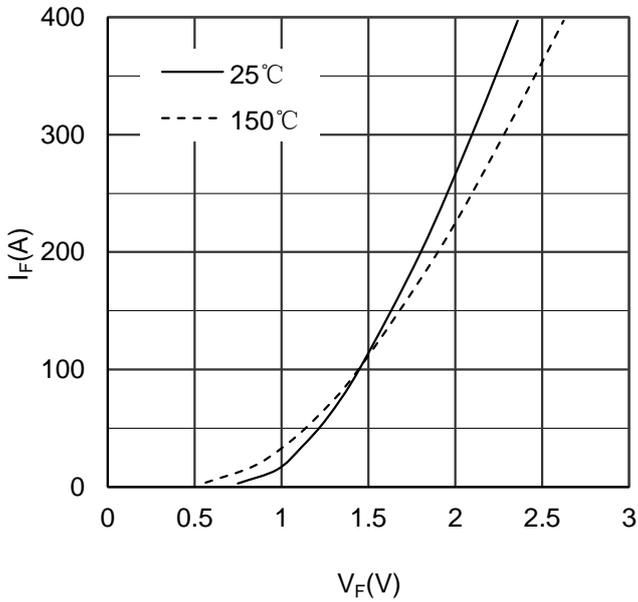Figure 8. Forward current vs Case temperature Diode -inverter

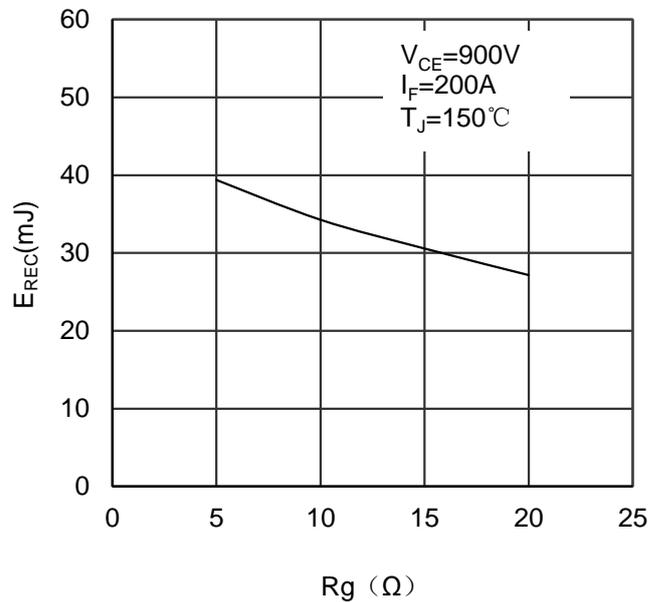Figure 9. Diode Forward Characteristics Diode -inverter

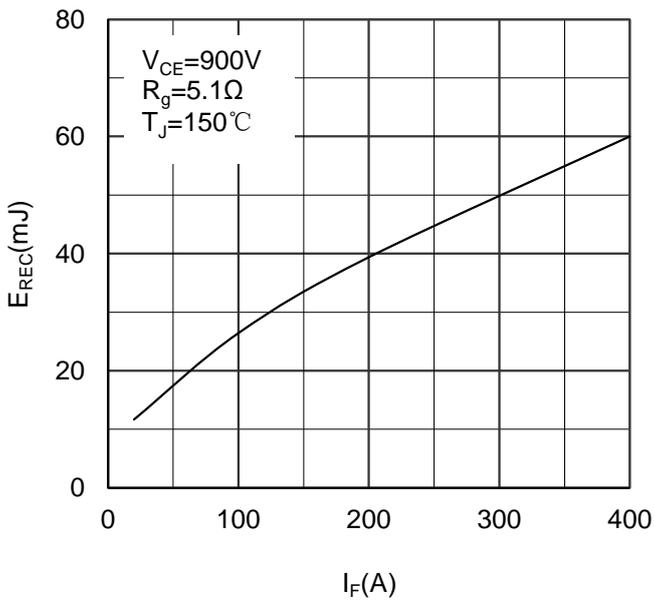Figure 10. Switching Energy vs Gate Resistor Diode - inverter

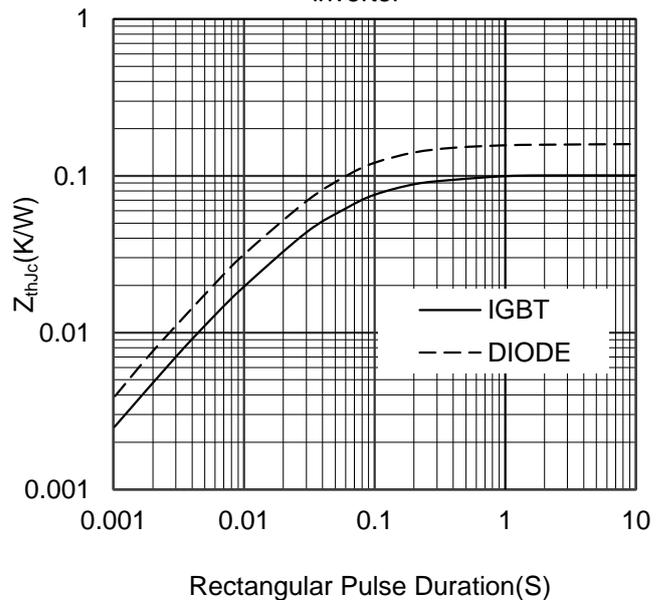Figure 11. Switching Energy vs Forward Current Diode-inverter

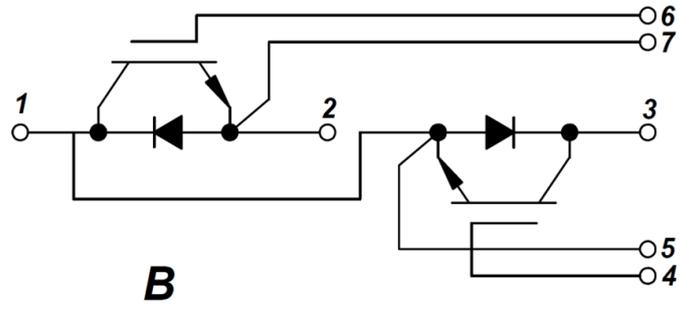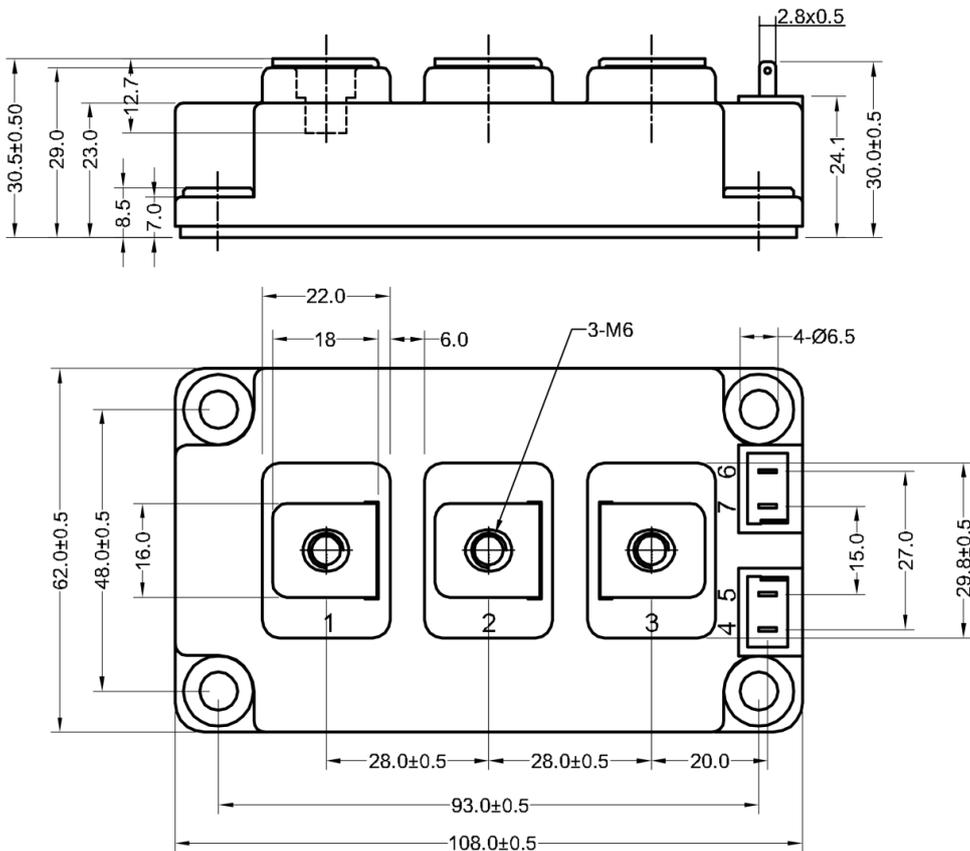Figure 12. Transient Thermal Impedance of Diode and IGBT-inverter

Figure 13. Circuit Diagram

Dimensions in (mm)

Figure 14. Package Outline