PRODUCT FEATURES

☐ High short circuit capability,self limiting short circuit current

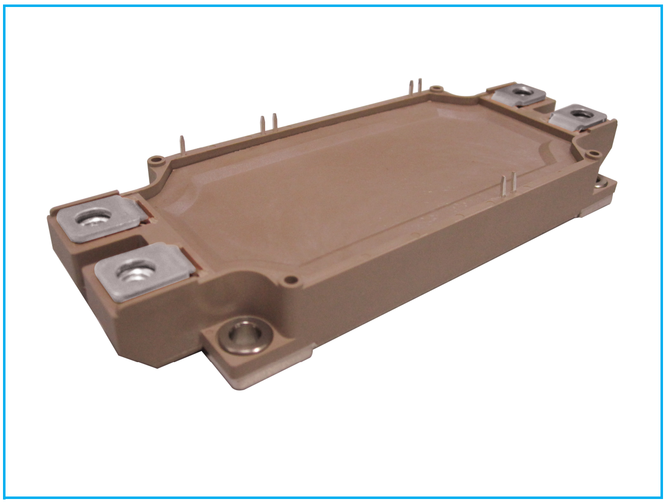
☐ IGBT CHIP(Highly rugged SPT+ design)

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

☐ Ultra Low Loss,High Ruggedness

☐ Free wheeling diodes with fast and soft reverse recovery

☐ Temperature sense included



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℃	670	A
		T_C=100℃	450	
I_{CM}	Repetitive Peak Collector Current	tp=1ms	900	
P_{tot}	Power Dissipation Per IGBT		2700	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	T_C=25℃	450	A
I_{FRM}	Repetitive Peak Forward Current	tp=1ms	900	
I^2t		T_J=150℃, t=10ms, V_R=0V	25000	A^2S

IGBT-inverter

ELECTRICAL CHARACTERISTICS *(T_C =25°C unless otherwise specified)*

Symbol	Parameter/Test Conditions				Min.	Typ.	Max.	Unit
$V_{GE(th)}$	Gate Emitter Threshold Voltage		$V_{CE}=V_{GE}$, I_C=18mA		5.4	6.2	7.4	V
$V_{CE(sat)}$	Collector Emitter Saturation Voltage	chip	I_C=450A, V_{GE}=15V, T_J=25℃			2.25	2.6	
			I_C=450A, V_{GE}=15V, T_J=150℃			2.6		
		terminal	I_C=450A, V_{GE}=15V, T_J=25℃			2.7	3.1	
			I_C=450A, V_{GE}=15V, T_J=150℃			3.1		
I_{CES}	Collector Leakage Current		V_{CE}=1700V, V_{GE}=0V, T_J=25℃				3	mA
			V_{CE}=1700V, V_{GE}=0V, T_J=150℃				20	mA
I_{GES}	Gate Leakage Current		V_{CE}=0V,V_{GE}=±15V, T_J=25℃		-500		500	nA
Q_g	Gate Charge		V_{CE}=900V, I_C=450A , V_{GE}=±15V			3		μC
C_{ies}	Input Capacitance		V_{CE}=25V, V_{GE}=0V, f =1MHz			27.5		nF
C_{res}	Reverse Transfer Capacitance					1.6		nF
$t_{d(on)}$	Turn on Delay Time		V_{CC}=900V,I_C=450A R_G =3Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		210		ns
				T_J=150℃		250		ns
t_r	Rise Time			T_J=25℃		170		ns
				T_J=150℃		175		ns
$t_{d(off)}$	Turn off Delay Time		V_{CC}=900V,I_C=450A R_G =3Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		600		ns
				T_J=150℃		700		ns
t_f	Fall Time			T_J=25℃		170		ns
				T_J=150℃		310		ns
E_{on}	Turn on Energy		V_{CC}=900V,I_C=450A R_G =3Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		190		mJ
				T_J=125℃		240		mJ
				T_J=150℃		260		mJ
E_{off}	Turn off Energy			T_J=25℃		101		mJ
				T_J=125℃		140		mJ
				T_J=150℃		150		mJ
I_{SC}	Short Circuit Current		tpsc≤10μS , V_{GE}=15V T_J=150℃,V_{CC}=1000V			1440		A
R_{thJC}	Junction to Case Thermal Resistance （ Per IGBT）						0.055	K /W

Diode-inverter

ELECTRICAL CHARACTERISTICS *(T_C =25°C unless otherwise specified)*

Symbol	Parameter/Test Conditions			Min.	Typ.	Max.	Unit
V_F	Forward Voltage	chip	I_F=450A , V_{GE}=0V, T_J=25℃		1.65	2.2	V
			I_F=450A , V_{GE}=0V, T_J=150℃		1.8		
		terminal	I_F=450A , V_{GE}=0V, T_J=25℃		2.15	2.5	
			I_F=450A , V_{GE}=0V, T_J=150℃		2.3		
t_{rr}	Reverse Recovery Time		I_F=450A , V_R=900V dI_F/dt=-2500A/μs T_J =150℃		1000		ns
I_{RRM}	Max. Reverse Recovery Current				370		A
Q_{RR}	Reverse Recovery Charge				175		μC
E_{rec}	Reverse Recovery Energy				130		mJ
R_{thJCD}	Junction to Case Thermal Resistance （ Per Diode）					0.1	K /W

NTC CHARACTERISTICS *(T_C =25°C unless otherwise specified)*

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
R_{25}	Resistance	T_C =25℃		5		KΩ
$B_{25/50}$	$R_2 = R_{25} \exp [B_{25/50}(1/T_2 - 1/(298.15\ K))]$			3375		K

MODULE CHARACTERISTICS *(T_C =25°C 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（M5）	2.5~5	Nm
	to terminal	Recommended（M6）	3~5	Nm
Weight			350	g

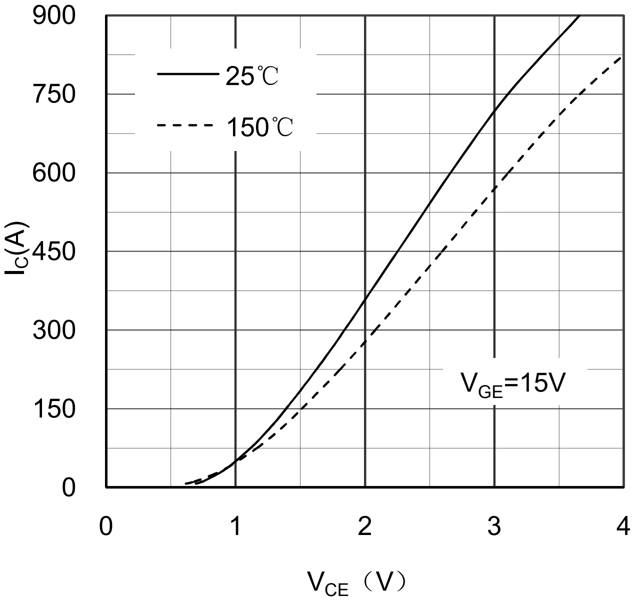


Figure 1. Typical Output Characteristics IGBT-inverter

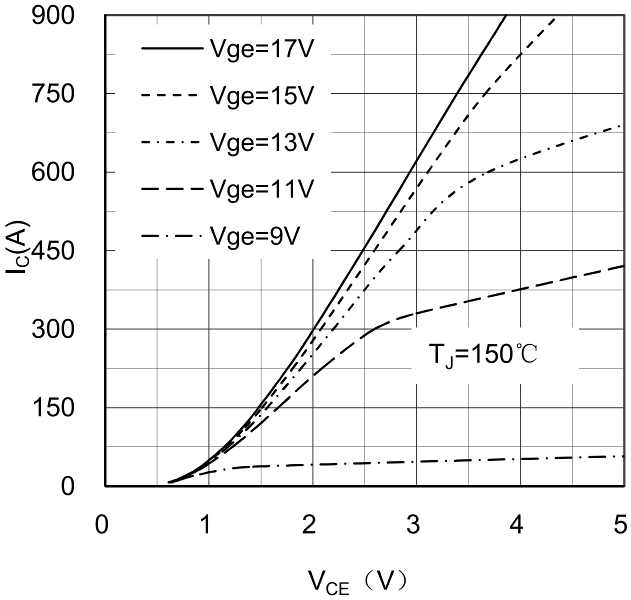


Figure 2. Typical Output Characteristics IGBT-inverter

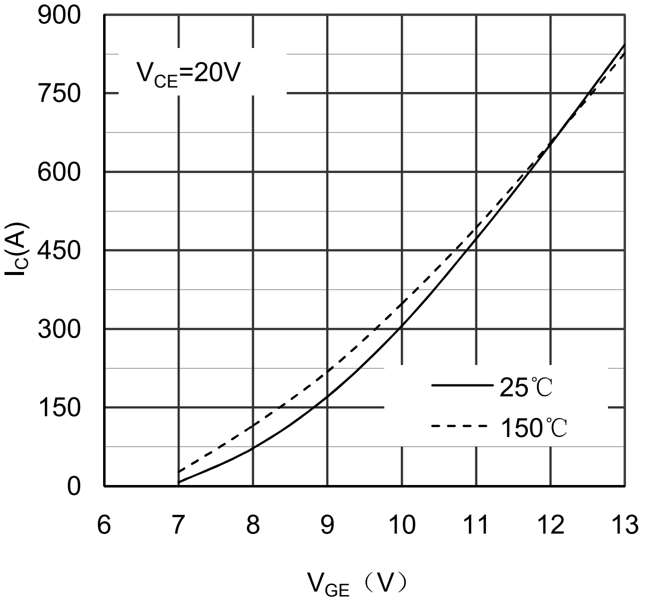


Figure 3. Typical Transfer characteristics IGBT-inverter

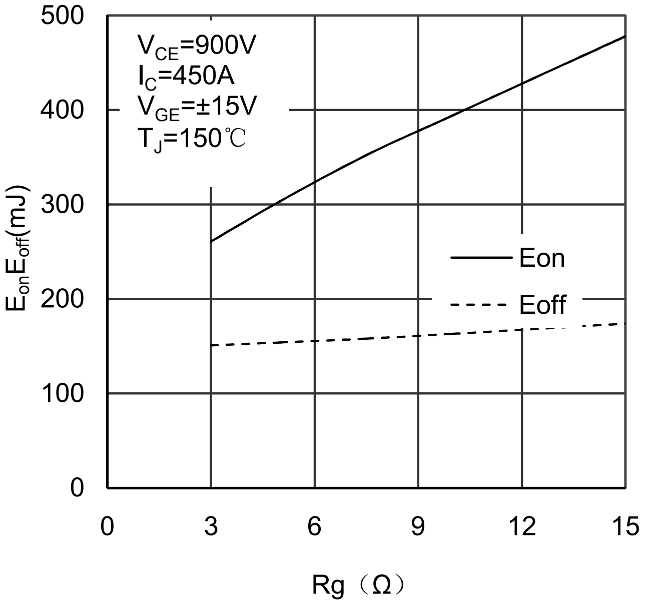


Figure 4. Switching Energy vs Gate Resistor IGBT-inverter

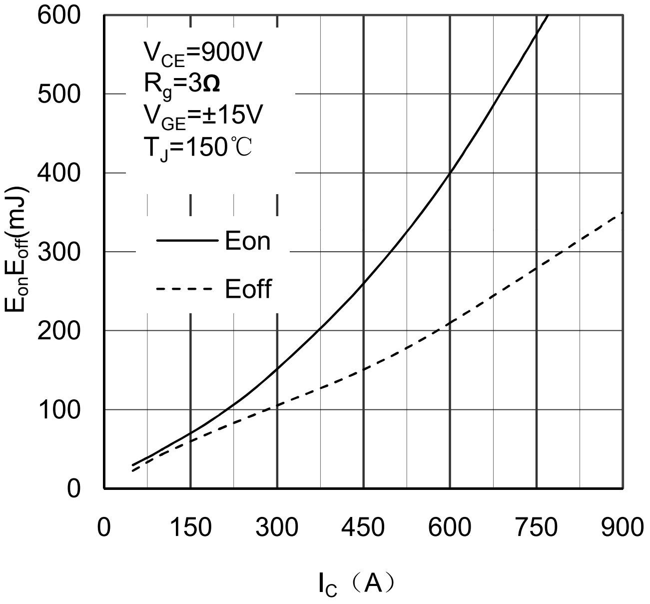


Figure 5. Switching Energy vs Collector Current IGBT-inverter

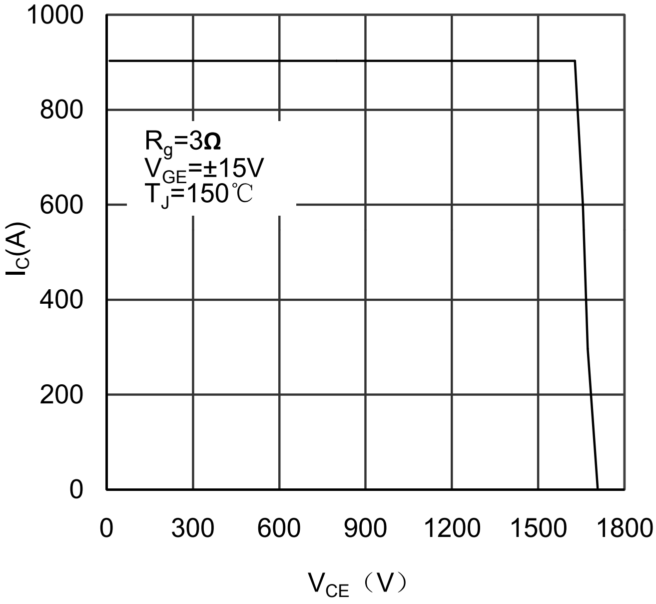


Figure 6. Reverse Biased Safe Operating Area IGBT-inverter

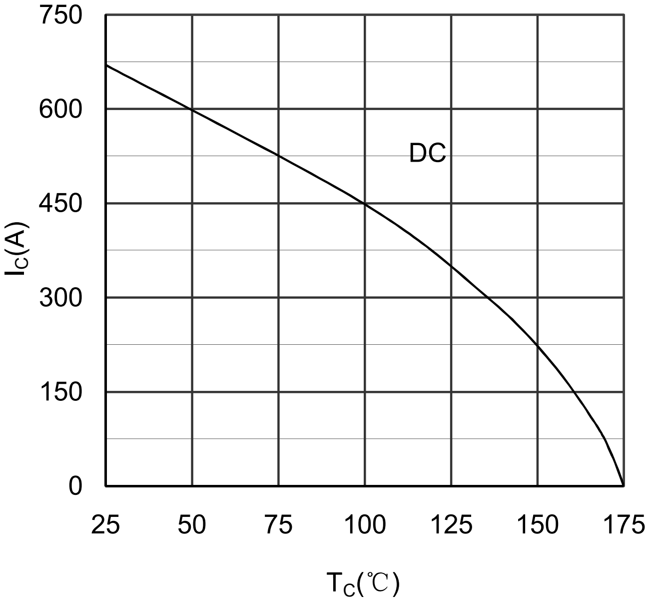


Figure 7. Collector Current vs Case temperature IGBT -inverter

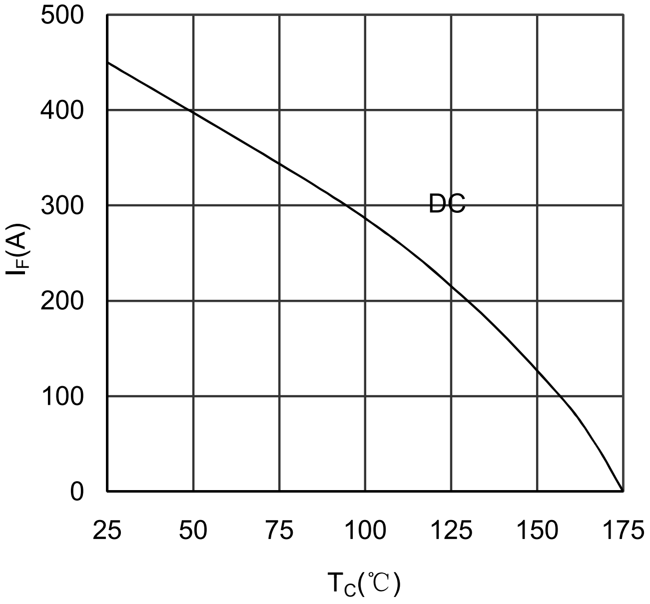


Figure 8. Forward current vs Case temperature Diode -inverter

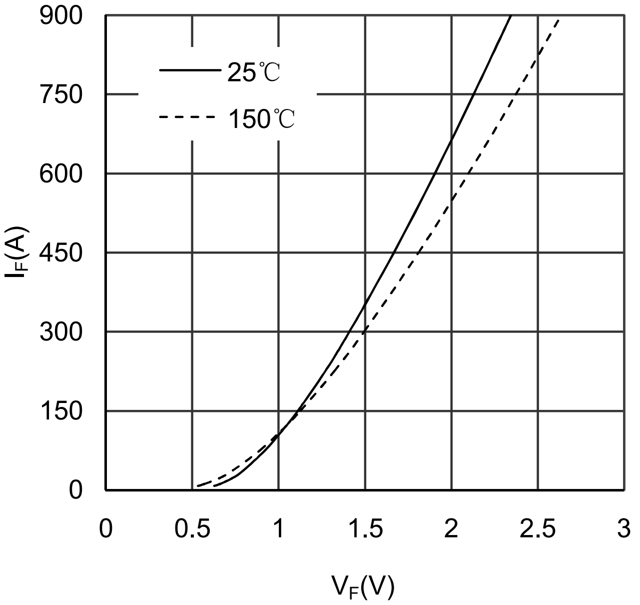


Figure 9. Diode Forward Characteristics Diode -inverter

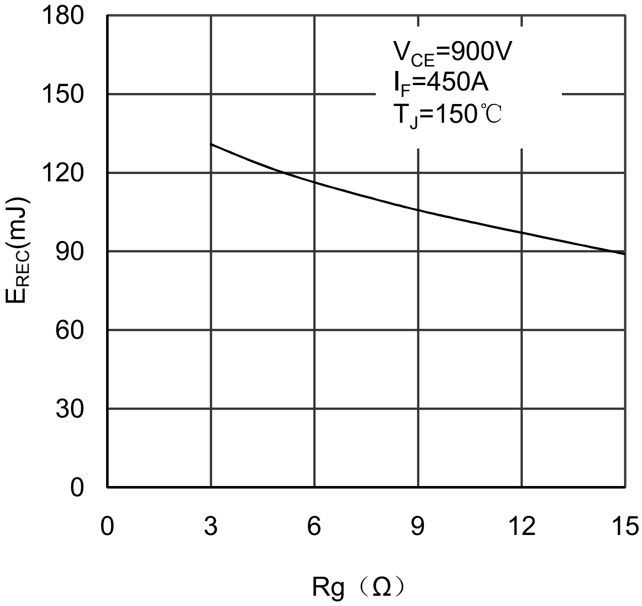


Figure 10. Switching Energy vs Gate Resistor Diode - inverter

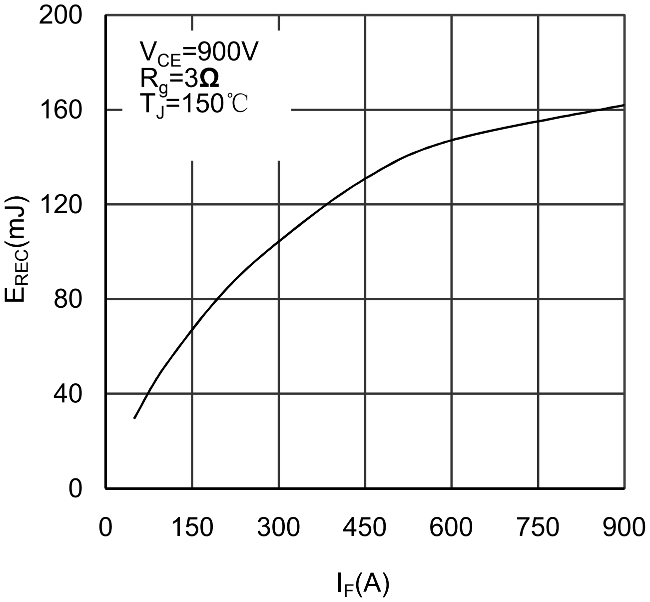


Figure 11. Switching Energy vs Forward Current Diode-inverter

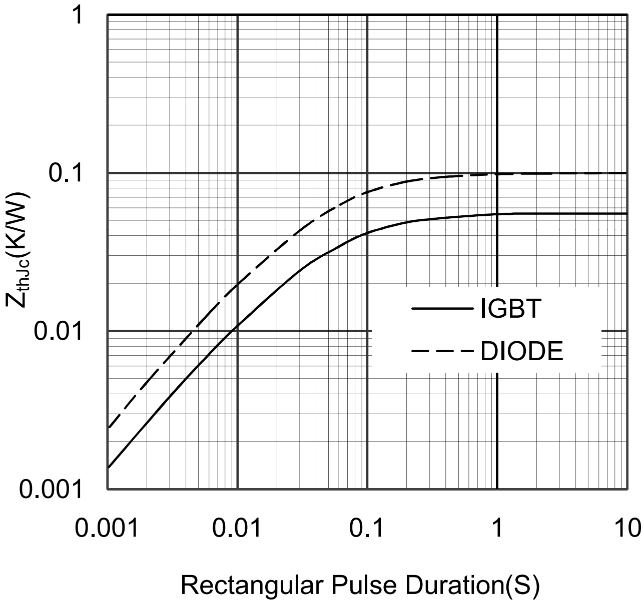


Figure 12. Transient Thermal Impedance of Diode and IGBT-inverter

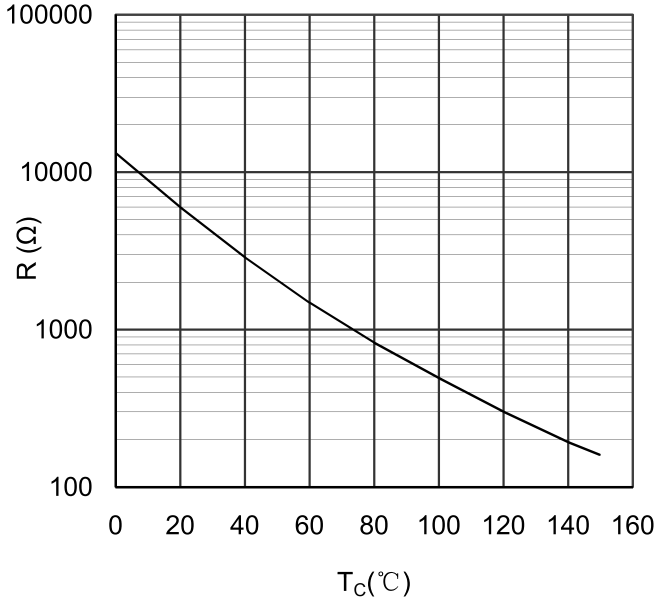


Figure 13. NTC Characteristics

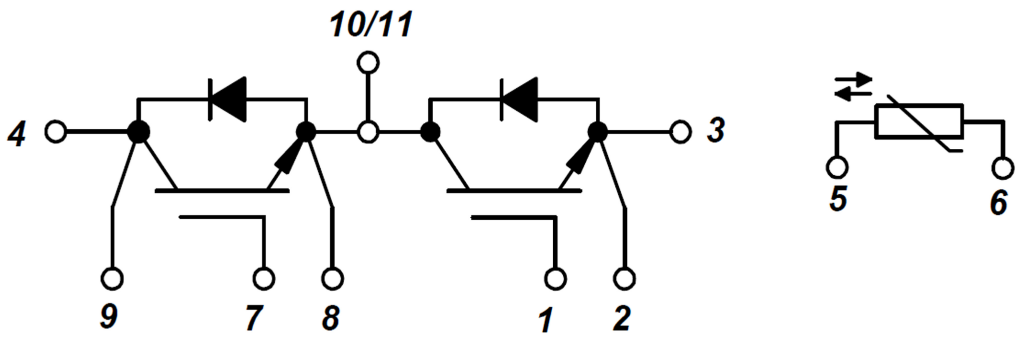
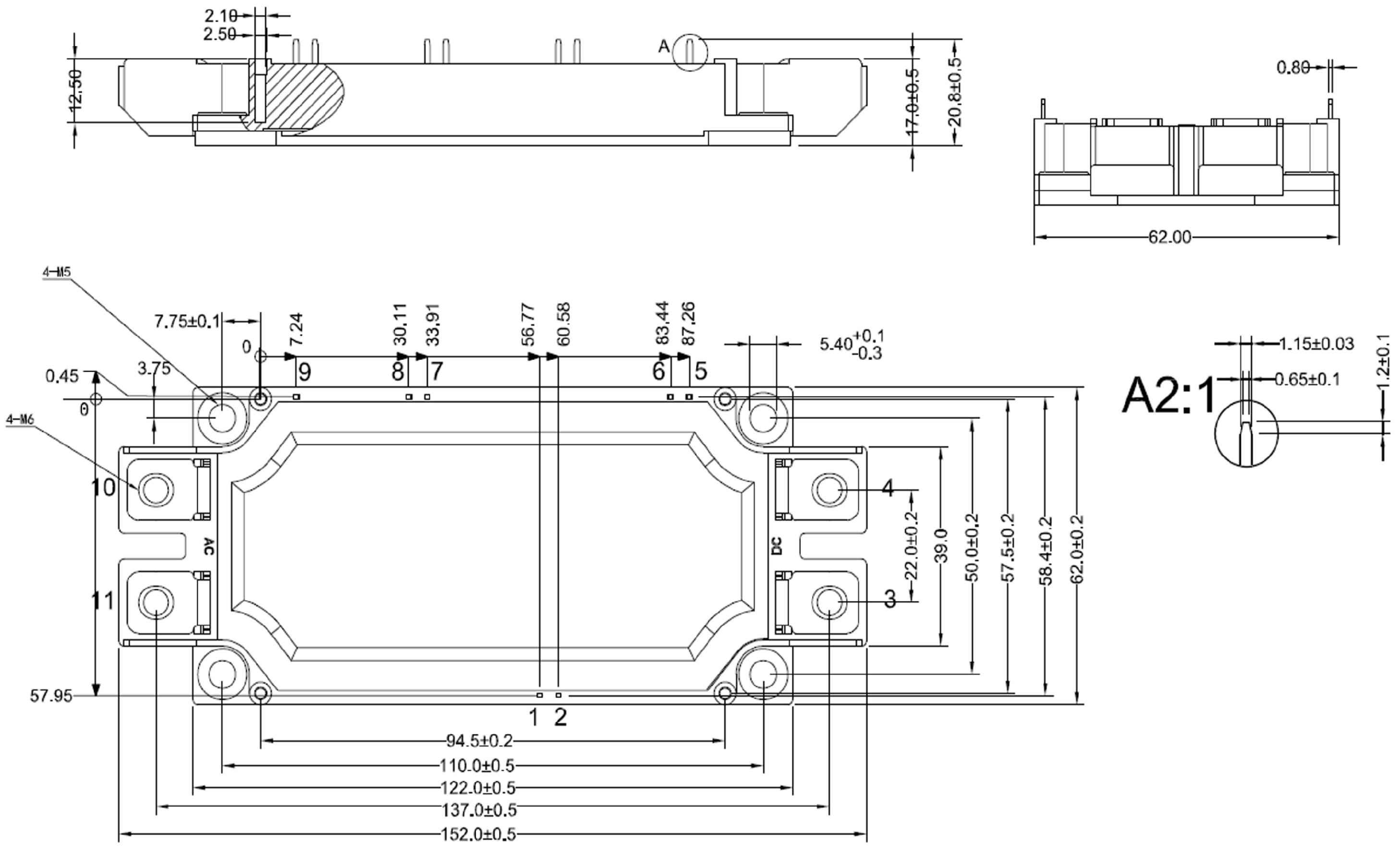


Figure 14. Circuit Diagram



Dimensions in (mm)

Figure 15. Package Outline