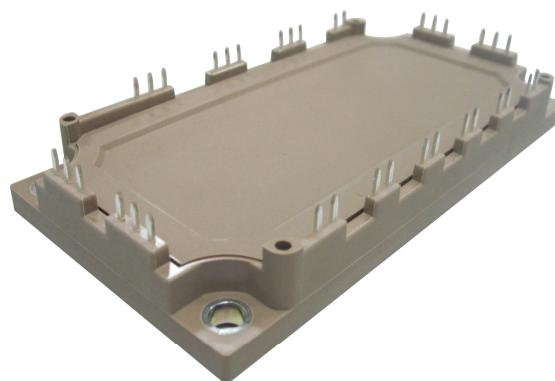


PRODUCT FEATURES

- ☐ High level of integration
- ☐ IGBT CHIP(Trench+Field Stop technology)
- ☐ Low saturation voltage and positive temperature coefficient
- ☐ Fast switching and short tail current
- ☐ Free wheeling diodes with fast and soft reverse recovery
- ☐ Industry standard package with insulated copper base plate and soldering pins for PCB mounting
- ☐ Temperature sense included



APPLICATIONS

- ☐ AC motor control
- ☐ Motion/servo control
- ☐ Inverter and power supplies

IGBT-inverter

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

Symbol	Parameter/Test Conditions		Values	Unit
V_{CES}	Collector Emitter Voltage	$T_J=25^{\circ}\text{C}$	1200	V
V_{GES}	Gate Emitter Voltage		± 20	
I_C	DC Collector Current	$T_C=25^{\circ}\text{C}$	150	A
		$T_C=100^{\circ}\text{C}$	100	
I_{CM}	Repetitive Peak Collector Current	$t_p=1\text{ms}$	200	
P_{tot}	Power Dissipation Per IGBT		576	W

Diode-inverter

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

Symbol	Parameter/Test Conditions		Values	Unit
V_{RRM}	Repetitive Reverse Voltage	$T_J=25^{\circ}\text{C}$	1200	V
$I_{F(AV)}$	Average Forward Current	$T_C=25^{\circ}\text{C}$	100	A
I_{FRM}	Repetitive Peak Forward Current	$t_p=1\text{ms}$	200	
i^2t		$T_J=125^{\circ}\text{C}$, $t=10\text{ms}$, $V_R=0\text{V}$	3200	A^2S

MacMic Science & Technology Co., Ltd.

Add: #18, Hua Shan Zhong Lu, New District, Changzhou City, Jiangsu Province, P. R. of China
Tel.: +86-519-85163708 Fax: +86-519-85162291 Post Code: 213022 Website: www.macmicst.com

IGBT-inverter

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

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit	
V _{GE(th)}	Gate Emitter Threshold Voltage	V _{CE} =V _{GE} , I _C =4mA	5.0	5.8	6.5	V	
V _{CE(sat)}	Collector Emitter Saturation Voltage	I _C =100A, V _{GE} =15V, T _J =25℃		1.75	2.25		
		I _C =100A, V _{GE} =15V, T _J =125℃		2.05			
		I _C =100A, V _{GE} =15V, T _J =150℃		2.1			
I _{CES}	Collector Leakage Current	V _{CE} =1200V, V _{GE} =0V, T _J =25℃			100	μA	
		V _{CE} =1200V, V _{GE} =0V, T _J =150℃			10	mA	
I _{GES}	Gate Leakage Current	V _{CE} =0V, V _{GE} =±15V, T _J =25℃	-400		400	nA	
R _{gint}	Integrated Gate Resistor			7.5		Ω	
Q _g	Gate Charge	V _{CE} =600V, I _C =100A , V _{GE} =15V		0.5		μC	
C _{ies}	Input Capacitance	V _{CE} =25V, V _{GE} =0V, f =1MHz		14.5		nF	
C _{res}	Reverse Transfer Capacitance			140		pF	
t _{d(on)}	Turn on Delay Time	V _{CC} =600V, I _C =100A R _G =5Ω, V _{GE} =±15V, Inductive Load	T _J =25℃		300		ns
			T _J =125℃		310		ns
			T _J =150℃		310		ns
t _r	Rise Time		T _J =25℃		75		ns
			T _J =125℃		80		ns
			T _J =150℃		85		ns
t _{d(off)}	Turn off Delay Time		T _J =25℃		320		ns
			T _J =125℃		350		ns
			T _J =150℃		360		ns
t _f	Fall Time		T _J =25℃		80		ns
			T _J =125℃		150		ns
			T _J =150℃		160		ns
E _{on}	Turn on Energy	V _{CC} =600V, I _C =100A R _G =5Ω, V _{GE} =±15V, Inductive Load	T _J =125℃		12		mJ
		T _J =150℃		13		mJ	
E _{off}	Turn off Energy	V _{CC} =600V, I _C =100A R _G =5Ω, V _{GE} =±15V, Inductive Load	T _J =125℃		9		mJ
			T _J =150℃		9.5		mJ
I _{sc}	Short Circuit Current	tpsc≤10μS , V _{GE} =15V T _J =125℃, V _{CC} =600V		600		A	
R _{thJC}	Junction to Case Thermal Resistance （ Per IGBT）				0.26	K /W	

Diode-inverter

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

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
V _F	Forward Voltage	I _F =100A , V _{GE} =0V, T _J =25℃		1.9	2.4	V
		I _F =100A , V _{GE} =0V, T _J =125℃		1.65		
		I _F =100A , V _{GE} =0V, T _J =150℃		1.6		
t _{rr}	Reverse Recovery Time	I _F =100A , V _R =600V dI _F /dt=-1400A/μs T _J =150℃		300		ns
I _{RRM}	Max. Reverse Recovery Current			120		A
Q _{RR}	Reverse Recovery Charge			15.6		μC
E _{rec}	Reverse Recovery Energy			6.2		mJ
R _{thJCD}	Junction to Case Thermal Resistance （ Per Diode ）				0.4	K /W

NTC CHARACTERISTICS ($T_C=25^\circ\text{C}$ unless otherwise specified)

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

MODULE CHARACTERISTICS ($T_C=25^\circ\text{C}$ 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	3000	V
CTI	Comparative Tracking Index		>200	
Md	Mounting Torque	Recommended（M5）	2.5~5	Nm
Weight			300	g

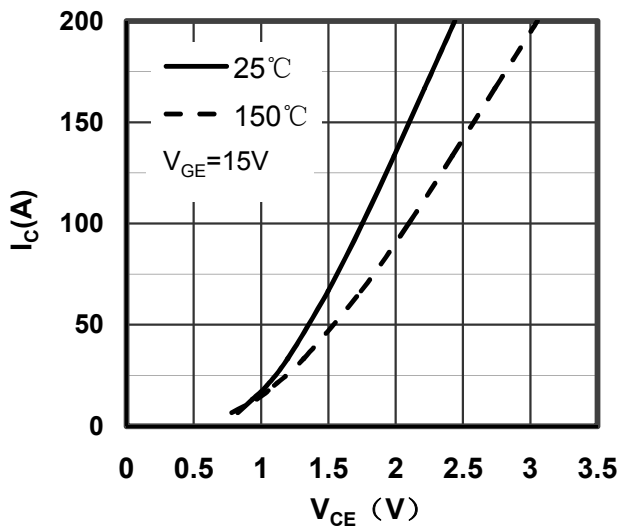


Figure 1. Typical Output Characteristics IGBT-inverter

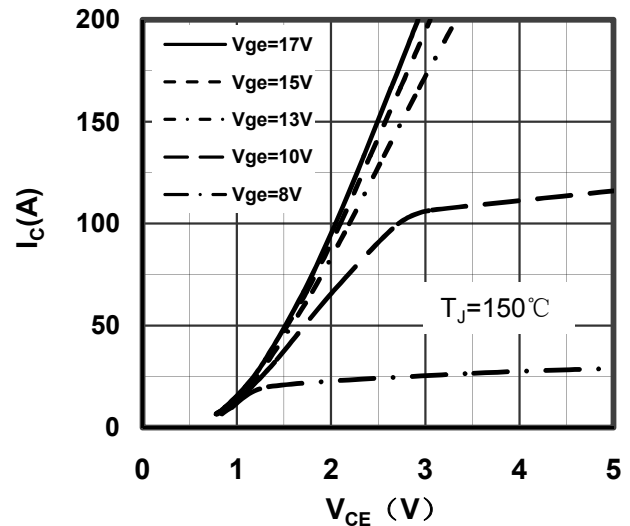


Figure 2. Typical Output Characteristics IGBT-inverter

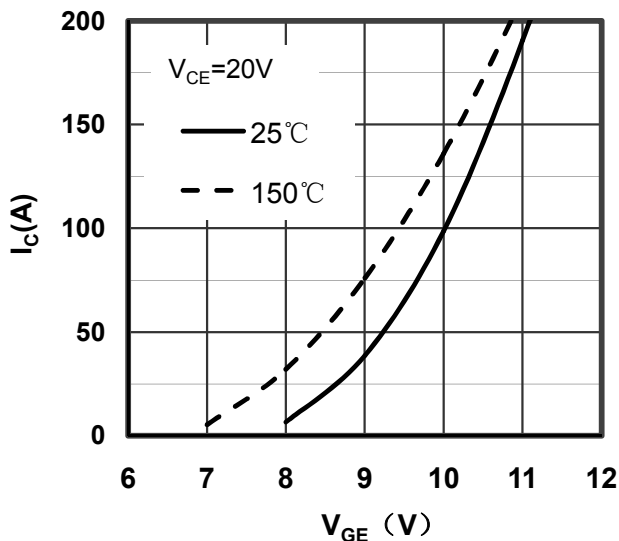


Figure 3. Typical Transfer Characteristics IGBT-inverter

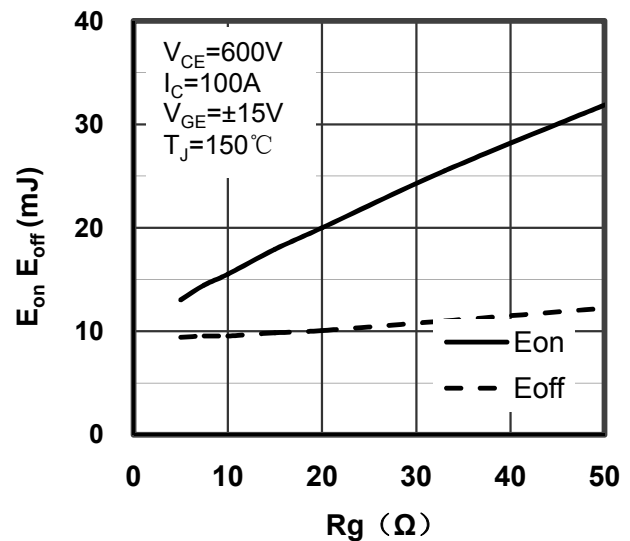


Figure 4. Switching Energy vs Gate Resistor IGBT-inverter

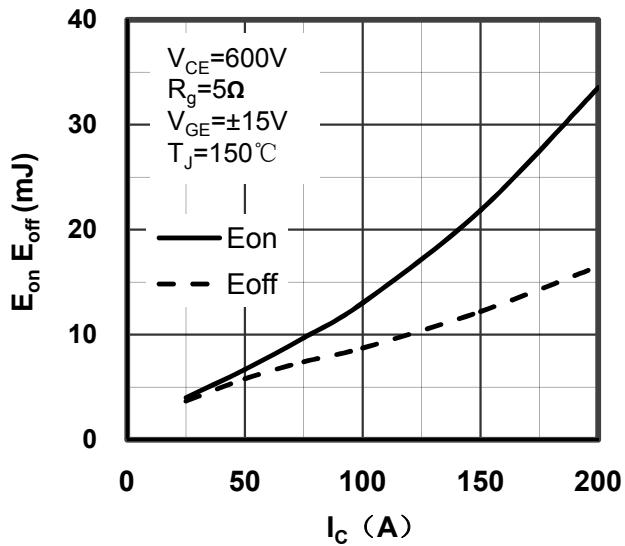


Figure 5. Switching Energy vs Collector Current IGBT-inverter

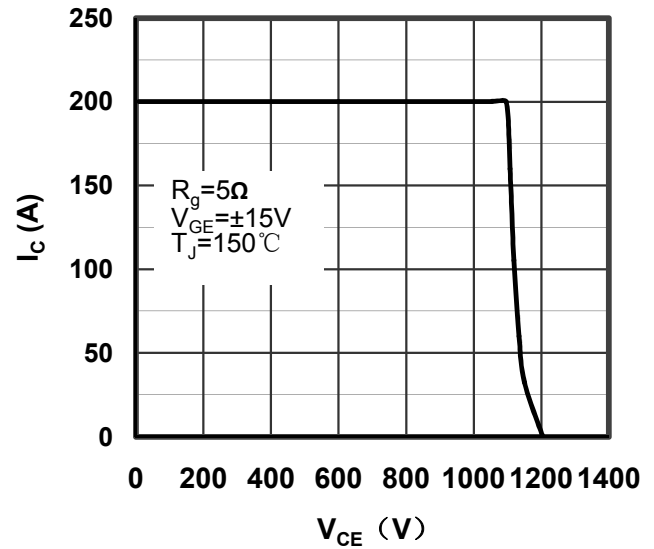


Figure 6. Reverse Biased Safe Operating Area IGBT-inverter

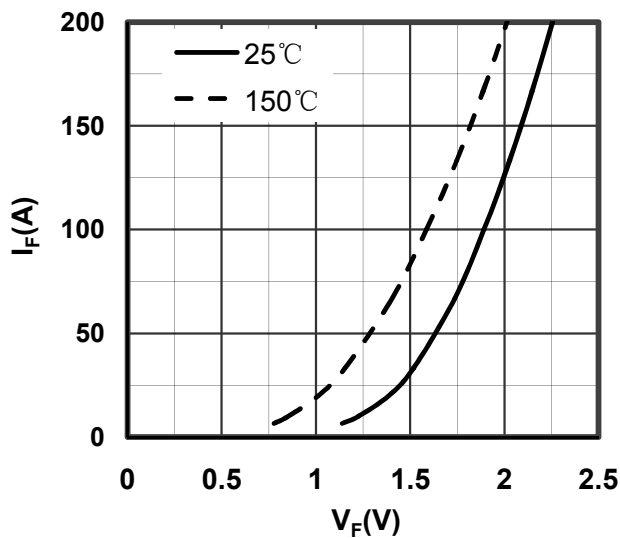


Figure 7. Diode Forward Characteristics Diode -inverter

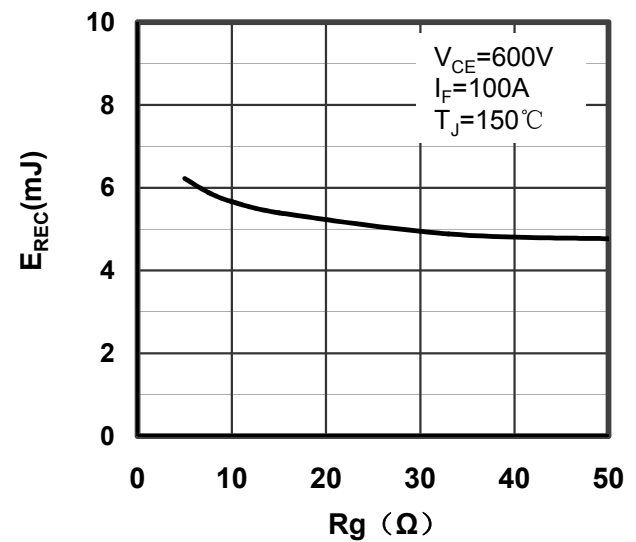


Figure 8. Switching Energy vs Gate Resistor Diode -inverter

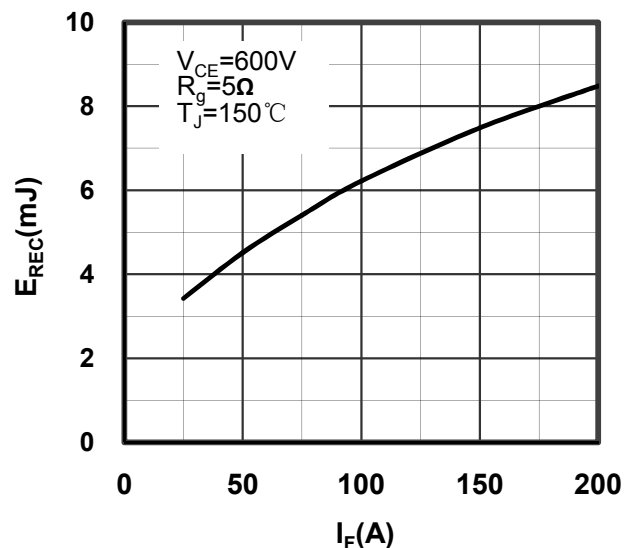


Figure 9. Switching Energy vs Forward Current Diode-inverter

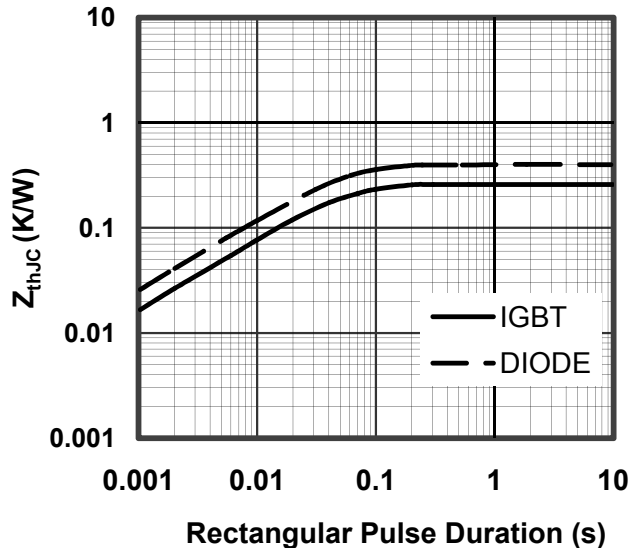


Figure 10. Transient Thermal Impedance of Diode and IGBT-inverter

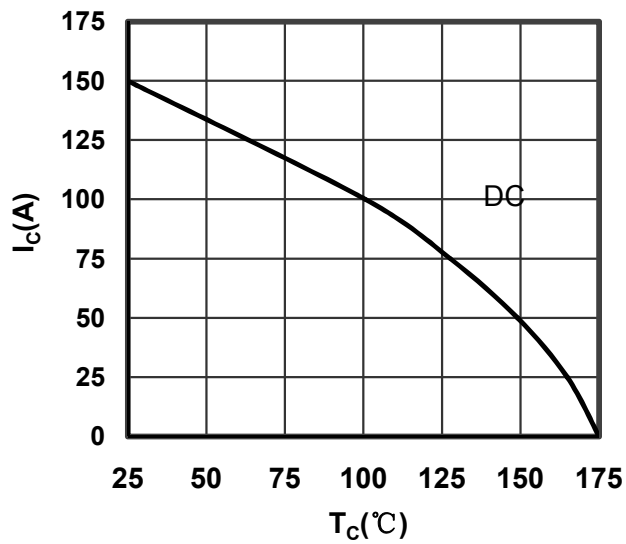


Figure 11. Collector Current vs Case temperature
IGBT -inverter

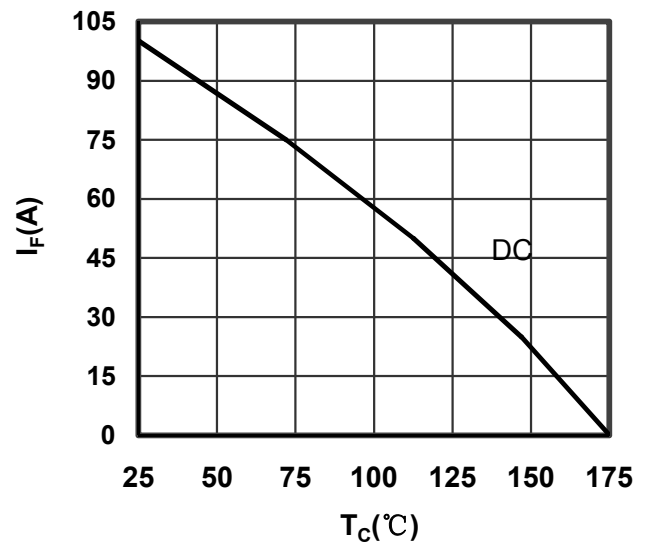


Figure 12. Forward current vs Case temperature
Diode -inverter

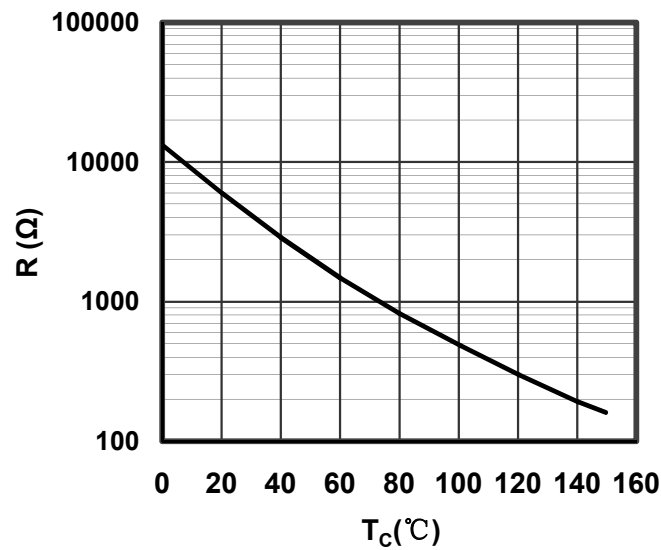


Figure 13. NTC Characteristics

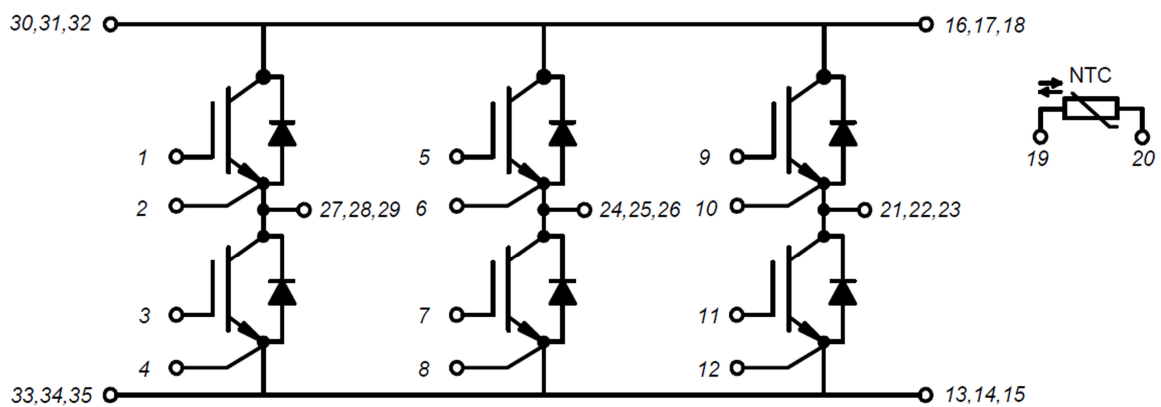
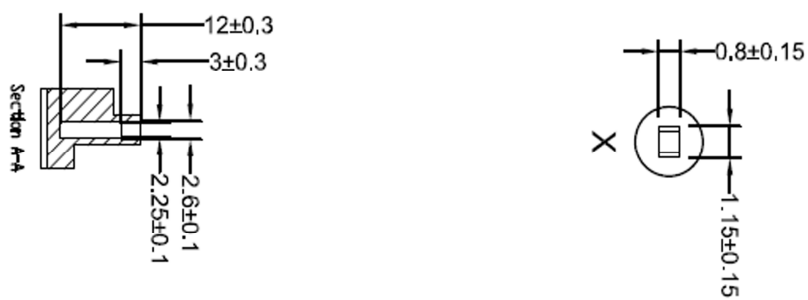
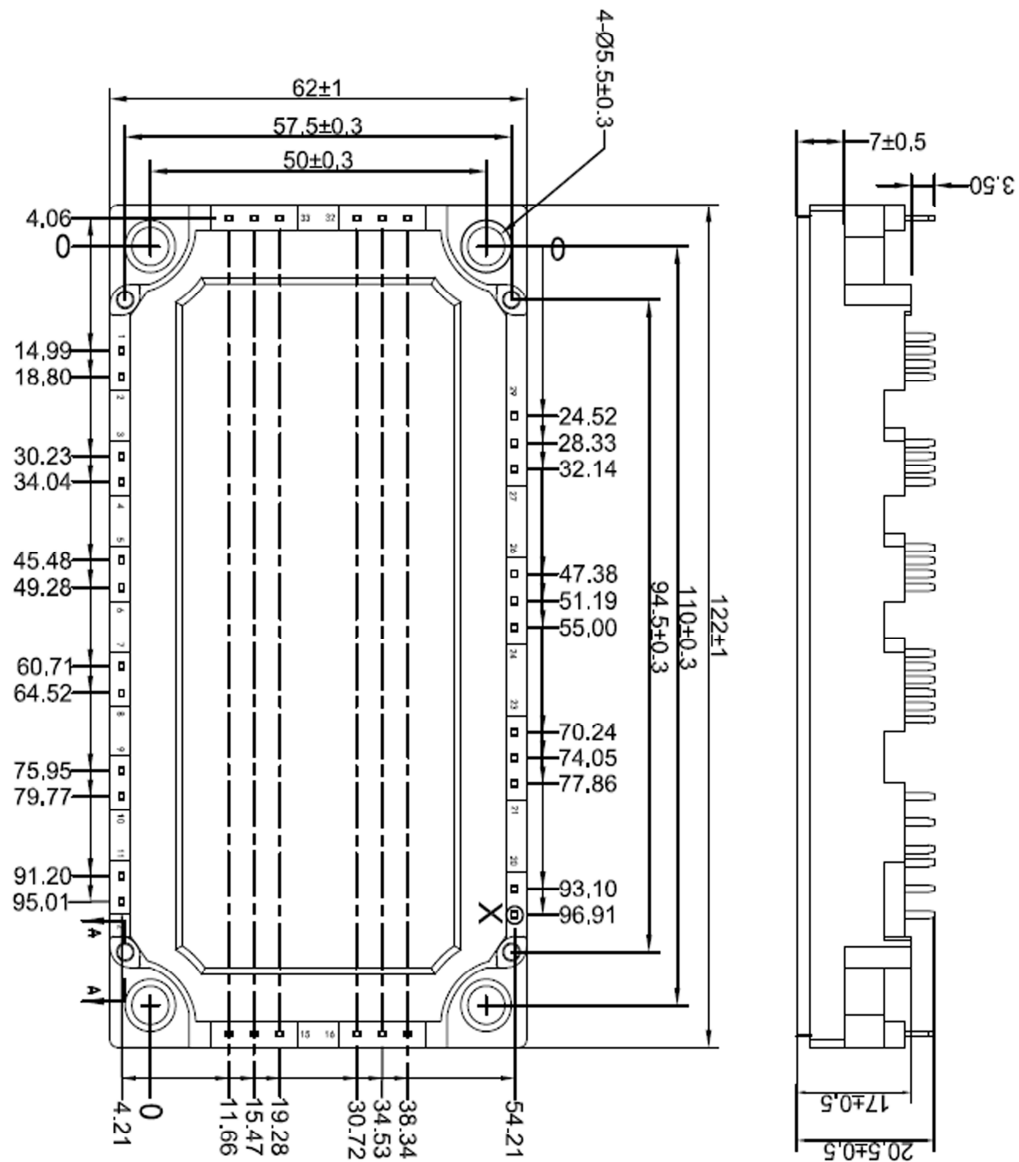


Figure 14. Circuit Diagram



Dimensions in (mm)
Figure 15. Package Outline