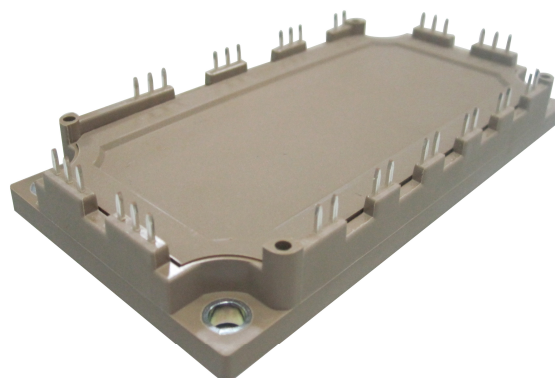


PRODUCT FEATURES

- ☐ 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	$T_C=25^{\circ}\text{C}$	75	A
		$T_C=100^{\circ}\text{C}$	50	
I_{CM}	Repetitive Peak Collector Current	$t_p=1\text{ms}$	100	
P_{tot}	Power Dissipation Per IGBT		340	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	$T_C=25^{\circ}\text{C}$	50	A
I_{FRM}	Repetitive Peak Forward Current	$t_p=1\text{ms}$	100	
I^2t		$T_J=125^{\circ}\text{C}$, $t=10\text{ms}$, $V_R=0\text{V}$	800	A^2S

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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 =2mA	5.0	5.8	6.5	V
V _{CE(sat)}	Collector Emitter Saturation Voltage	I _C =50A, V _{GE} =15V, T _J =25℃		1.85	2.3	
		I _C =50A, V _{GE} =15V, T _J =125℃		2.15		
		I _C =50A, V _{GE} =15V, T _J =150℃		2.25		
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			4		Ω
Q _g	Gate Charge	V _{CE} =600V, I _C =50A , V _{GE} =15V		0.27		μC
C _{ies}	Input Capacitance	V _{CE} =25V, V _{GE} =0V, f =1MHz		7.5		nF
C _{res}	Reverse Transfer Capacitance			66		pF
t _{d(on)}	Turn on Delay Time	V _{CC} =600V, I _C =50A R _G =10Ω, V _{GE} =±15V, Inductive Load	T _J =25℃		95	ns
			T _J =125℃		100	ns
			T _J =150℃		100	ns
t _r	Rise Time		T _J =25℃		50	ns
			T _J =125℃		54	ns
			T _J =150℃		58	ns
t _{d(off)}	Turn off Delay Time		T _J =25℃		250	ns
			T _J =125℃		280	ns
			T _J =150℃		290	ns
t _f	Fall Time		T _J =25℃		80	ns
			T _J =125℃		150	ns
			T _J =150℃		170	ns
E _{on}	Turn on Energy	V _{CC} =600V, I _C =50A R _G =10Ω, V _{GE} =±15V, Inductive Load	T _J =125℃		5.6	mJ
			T _J =150℃		6.5	mJ
E _{off}	Turn off Energy		T _J =125℃		4.5	mJ
			T _J =150℃		4.8	mJ
I _{sc}	Short Circuit Current	tpsc≤10μS , V _{GE} =15V T _J =125℃, V _{CC} =600V		300		A
R _{thJC}	Junction to Case Thermal Resistance （ Per IGBT ）				0.44	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 =50A , V _{GE} =0V, T _J =25℃		1.9	2.4	V
		I _F =50A , V _{GE} =0V, T _J =125℃		1.65		
		I _F =50A , V _{GE} =0V, T _J =150℃		1.6		
t _{rr}	Reverse Recovery Time	I _F =50A , V _R =600V di _F /dt=-1200A/μs T _J =150℃		270		ns
I _{RRM}	Max. Reverse Recovery Current			70		A
Q _{RR}	Reverse Recovery Charge			9.6		μC
E _{rec}	Reverse Recovery Energy			3.6		mJ
R _{thJCD}	Junction to Case Thermal Resistance （ Per Diode）				0.72	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

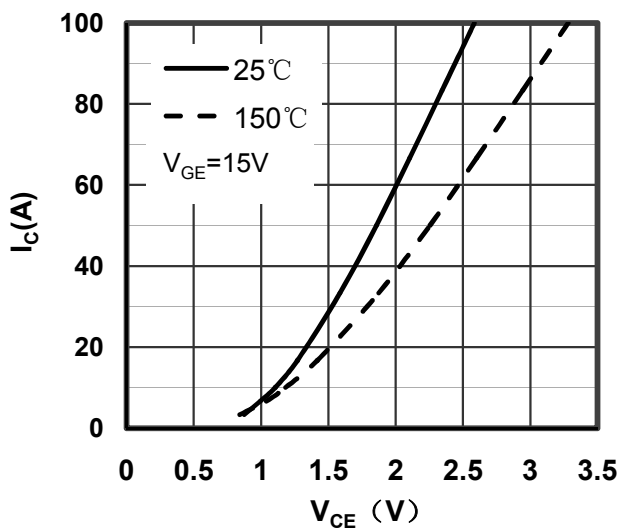


Figure 1. Typical Output Characteristics IGBT-inverter

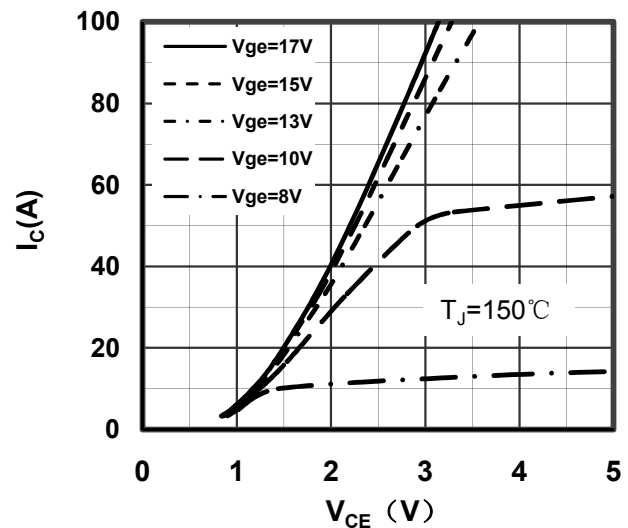


Figure 2. Typical Output Characteristics IGBT-inverter

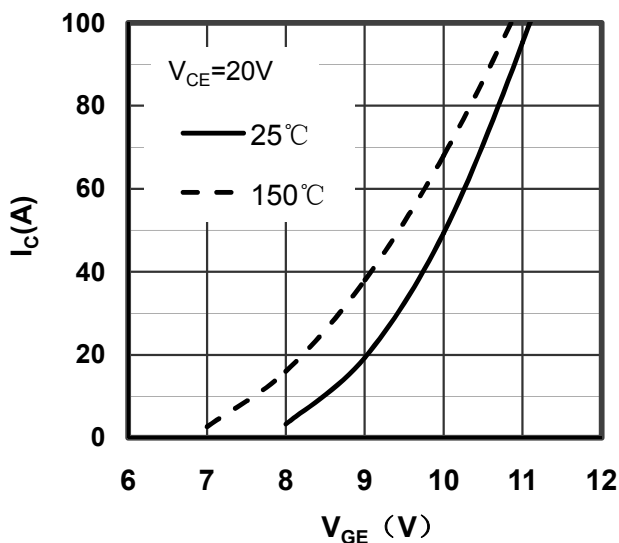


Figure 3. Typical Transfer Characteristics IGBT-inverter

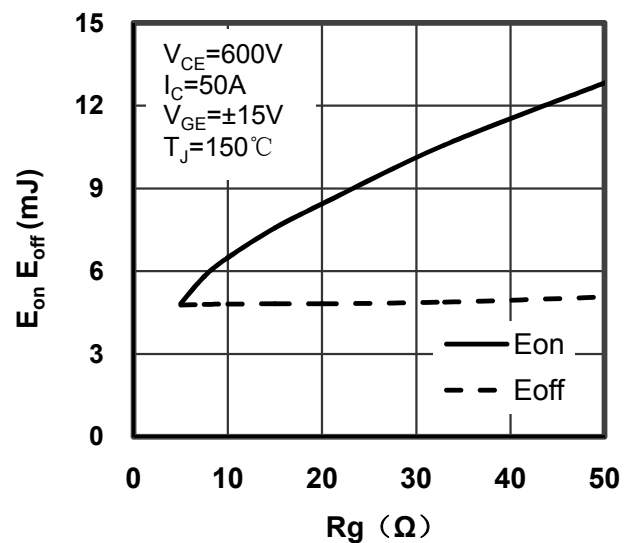


Figure 4. Switching Energy vs Gate Resistor IGBT-inverter

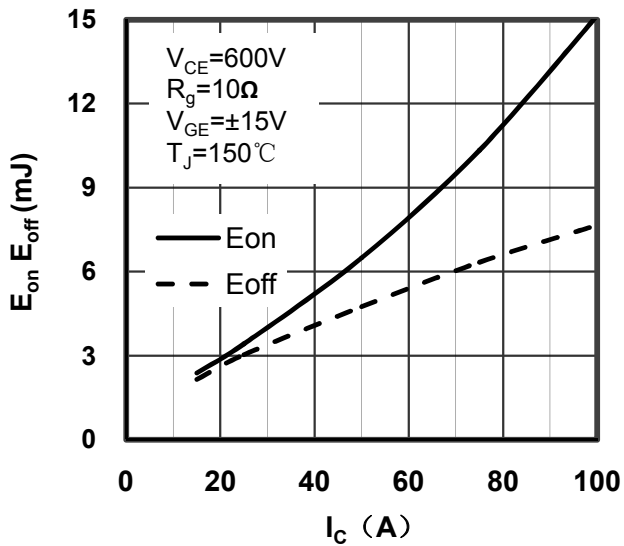


Figure 5. Switching Energy vs Collector Current IGBT-inverter

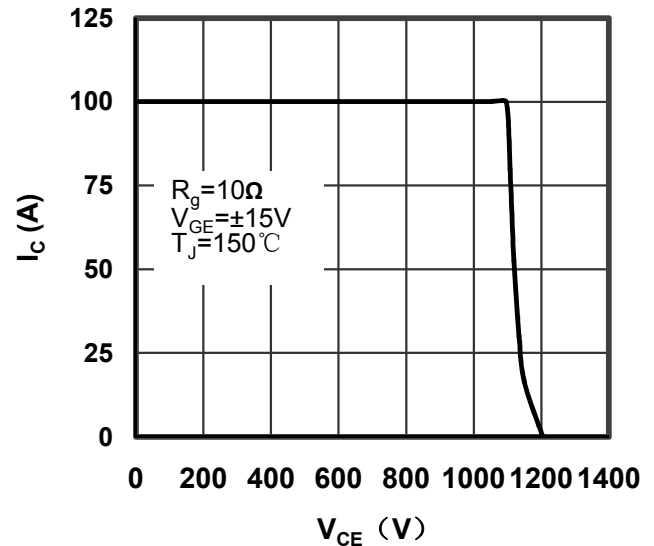


Figure 6. Reverse Biased Safe Operating Area IGBT-inverter

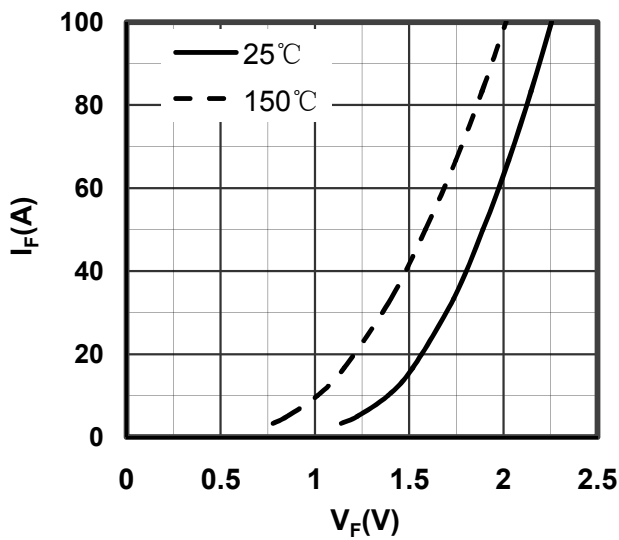


Figure 7. Diode Forward Characteristics Diode -inverter

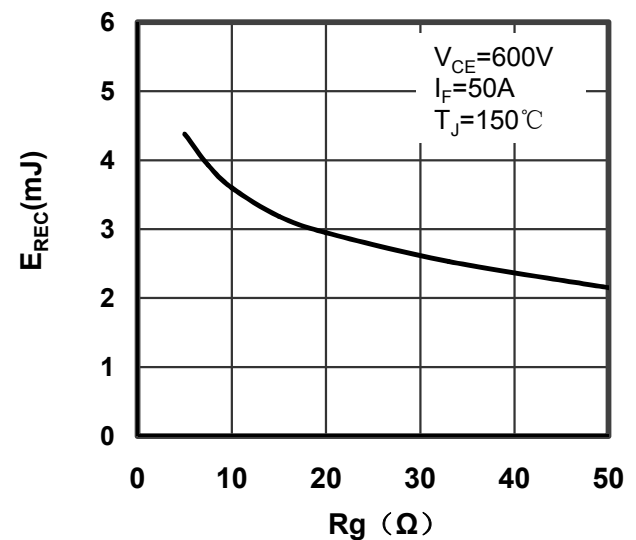


Figure 8. Switching Energy vs Gate Resistor Diode -inverter

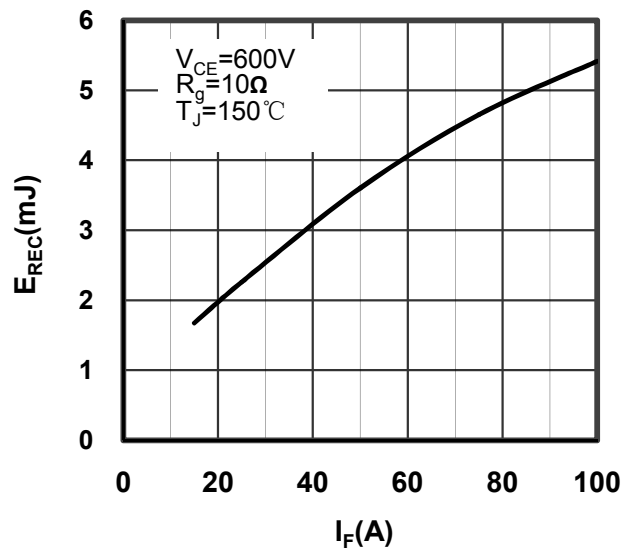


Figure 9. Switching Energy vs Forward Current Diode-inverter

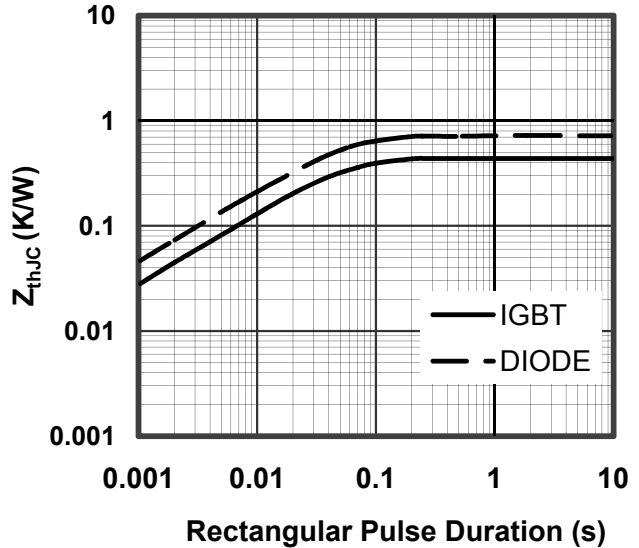


Figure 10. Transient Thermal Impedance of Diode and IGBT-inverter

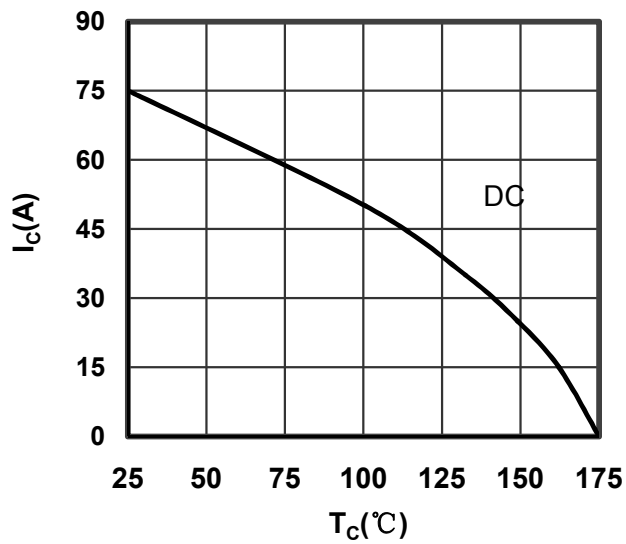


Figure 11. Collector Current vs Case temperature
IGBT -inverter

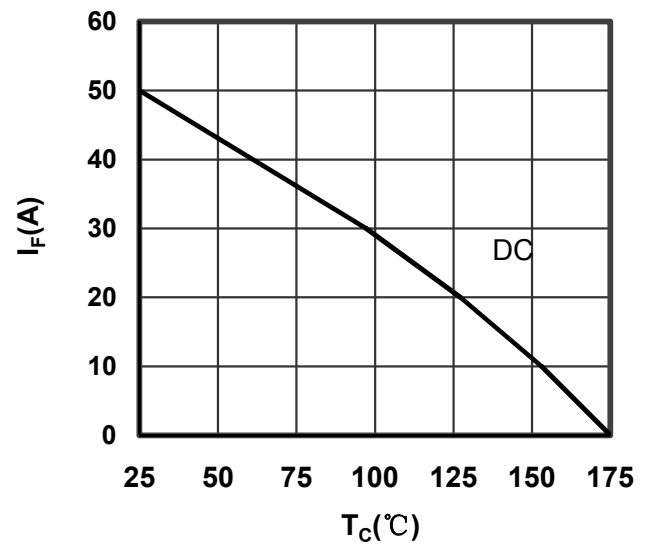


Figure 12. Forward current vs Case temperature
Diode -inverter

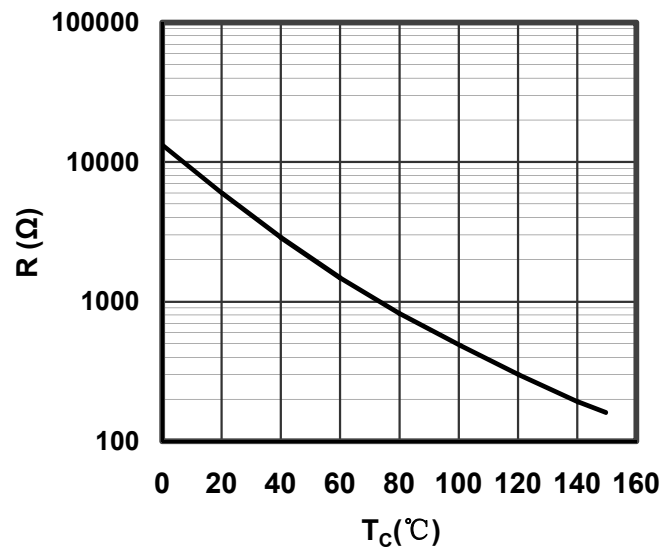


Figure 13. NTC Characteristics

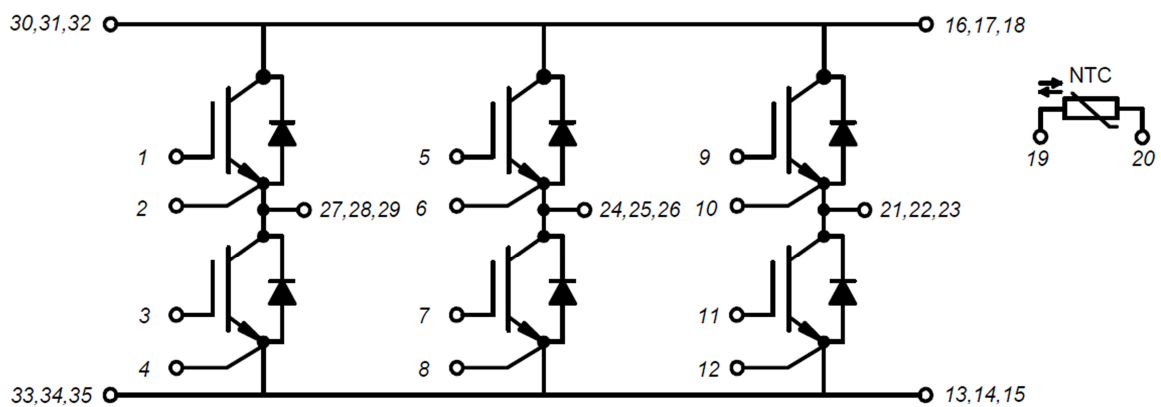


Figure 14. Circuit Diagram

