



JLSW450B120R62E7DN

62 mm module with TRENCHSTOP IGBT7 and emitter controlled 7 diode



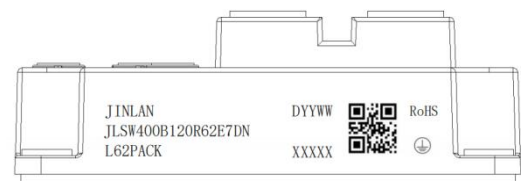
Features

- VCE(sat) with positive temperature coefficient
- Low inductance case
- Fast & soft reverse recovery anti-parallel FWD
- 10 μ s short circuit capability
- Low switching losses
- Isolated copper baseplate using DBC technology
- Standard housing



62 Pack

MARKING DIAGRAM



Typical Applications

- Switching mode power supply
- Inductive heating
- Electronic welder

JINLAN

= Company Name

JLSW450B120R62E7DN

= Specific Device Code

YYWW

= Year and Work Week Code

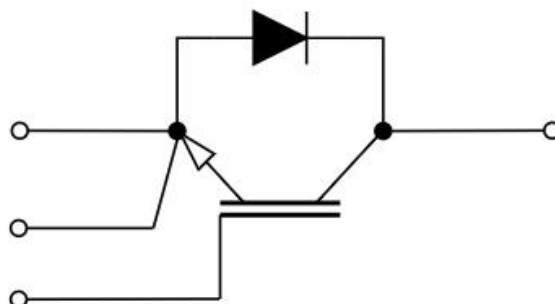
XXXXX

= Serial Number

QR code

= Custom Assembly Information

Description





Package Insulation coordination

Parameter	Symbol	Note or test condition	Values	Unit
Isolation test voltage	V_{ISOL}	RMS,f=50Hz,t=60s	2.5	kV
Internal isolation		basic insulation(class 1,IEC 61140)	Al_2O_3	
Creepage distance	d_{creep}	terminal to heatsink	20	mm
Clearance	d_{clear}	terminal to heatsink	11	mm
Comparative tracking index (electrical)	CTI		≥ 200	
RTI Elec.	RTI	housing	≥ 175	$^{\circ}C$

Package Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Storage Temperature Range	T_{STG}		-40		150	$^{\circ}C$
Module lead resistance, terminals - chip	R_{CC*EE}	$T_c=25^{\circ}C$,per switch	--	0.50	--	m Ω
Mounting torque for module mounting	M	Terminal Connection Torque, Screw M4	1.1	--	2.0	Nm
		Terminal Connection Torque, Screw M6	2.5	--	5.0	
		Mounting Torque, Screw M6	3.0	--	5.0	
Weight	G		--	300	--	g



IGBT

Absolute Maximum Ratings (T_c = 25°C unless otherwise noted)

Symbol	Description	Value	Unit
V _{CES}	Collector-Emitter Voltage	1200	V
V _{GES}	Gate-Emitter Voltage	±30	V
I _{CDC}	Continuous Collector Current @ T _c = 80°C (T _{JMAX} = 175°C)	450	A
I _{CM}	Pulsed Collector Current, t _p limited by T _{vj max}	900	A
T _{Jmax}	Maximum Junction Temperature	175	°C

Characteristics (T_c = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition		Min	Typ	Max	Unit
V _{CE(sat)}	Collector–Emitter Saturation Voltage	I _C =450A, V _{GE} = 15 V	T _{vj} = 25 °C	--	1.50	2.3	V
			T _{vj} = 150 °C	--	1.70	--	
V _{GE(TH)}	Gate–Emitter Threshold Voltage	V _{GE} = V _{CE} , I _C = 5 mA, T _{vj} = 25°C		5.0	6.0	7.0	V
I _{CES}	Collector–Emitter Cutoff Current	V _{GE} = 0 V, V _{CE} =1200V, T _{vj} = 25°C		--	--	2	mA
I _{GES}	Gate-Emitter Leakage Current	V _{GE} = ±30 V, V _{CE} = 0 V, T _{vj} = 25°C		--	--	±200	nA
R _{Gint}	Internal Gate Resistance	T _{vj} = 25 °C		--	0.67	--	Ω
C _{ies}	Input Capacitance	f = 100 kHz, T _{vj} = 25 °C, V _{CE} = 25 V, V _{GE} = 0 V		--	51	--	nF
C _{oes}	Out Capacitance			--	1.87	--	nF
C _{res}	Reverse Transfer			--	0.22	--	nF
Q _G	Gate Charge	V _{GE} = ±15 V, V _{CC} = 960 V		--	2.2	--	μC
t _{d(on)}	Turn–On Delay Time	I _C = 450A, V _{CC} = 600 V, V _{GE} = 15 /-5V, R _G = 1.0 Ω	T _{vj} = 25 °C	--	0.137	--	μS
			T _{vj} = 150 °C	--	0.156	--	
			T _{vj} = 175 °C	--	0.158	--	
t _r	Rise Time	I _C =450A, V _{CC} = 600 V, V _{GE} = 15 /-5V, R _G = 1.0 Ω	T _{vj} = 25 °C	--	0.044	--	μS
			T _{vj} = 150 °C	--	0.053	--	
			T _{vj} = 175 °C	--	0.055	--	
t _{d(off)}	Turn–off Delay Time	I _C = 450A, V _{CC} = 600 V, V _{GE} = 15 /-5V, R _{Goff} = 1.0 Ω	T _{vj} = 25 °C	--	0.254	--	μS
			T _{vj} = 150 °C	--	0.290	--	
			T _{vj} = 175 °C	--	0.296	--	
t _f	Fall Time	I _C = 450A, V _{CC} = 600 V, V _{GE} = 15 /-5V, R _G = 1.0 Ω	T _{vj} = 25 °C	--	0.028	--	μS
			T _{vj} = 150 °C	--	0.063	--	
			T _{vj} = 175 °C	--	0.064	--	
E _{on}	Turn–On Switching Loss per Pulse	I _C =450A, V _{CC} = 600 V, V _{GE} = 15 /-5V, R _G = 1.0 Ω (T _{vj max} = 175 °C)	T _{vj} = 25 °C	--	19.32	--	mJ
			T _{vj} = 150 °C	--	38.52	--	
			T _{vj} = 175 °C	--	42.87	--	
E _{off}	Turn Off Switching Loss per Pulse	I _C = 450A, V _{CC} = 600 V, V _{GE} = 15 /-5V, R _G = 1.0 Ω (T _{vj max} = 175 °C)	T _{vj} = 25 °C	--	58.40	--	mJ
			T _{vj} = 150 °C	--	77.78	--	
			T _{vj} = 175 °C	--	80.59	--	



I_{SC}	SC Data	$V_{GE} \leq 15\text{ V}$, $V_{CC} = 600\text{ V}$, $V_{CEmax}=V_{CES}-L_{sCE} \cdot di/dt$	$t_P \leq 10\text{ }\mu\text{s}$, $T_{vj}=150\text{ }^{\circ}\text{C}$	--	1800	--	A
R_{thJC}	Thermal resistance	Junction-to-Case (per IGBT)		--	0.079		K/W
$T_{vj\text{ op}}$		Temperature under switching conditions		-40		175 ¹⁾	$^{\circ}\text{C}$

¹⁾ $T_{vj\text{ op}} > 150^{\circ}\text{C}$ is only allowed for operation at overload conditions.

Diodes

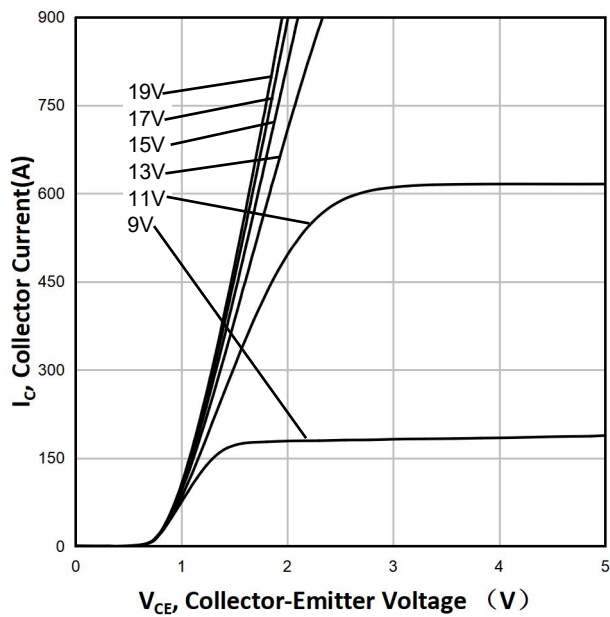
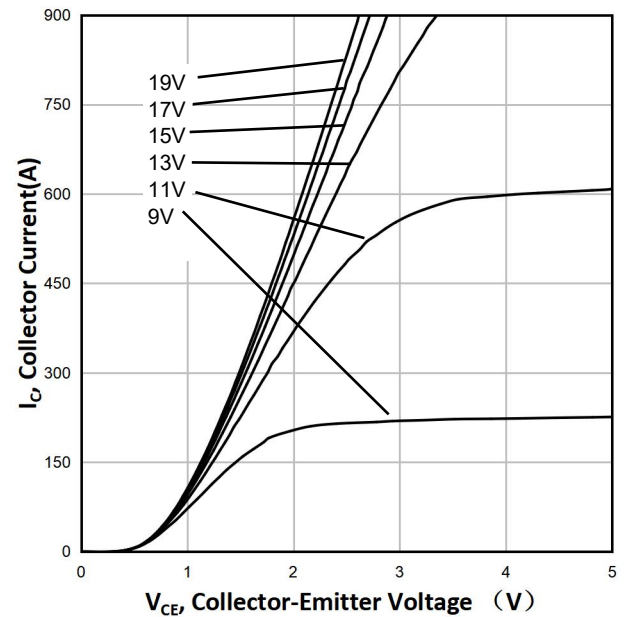
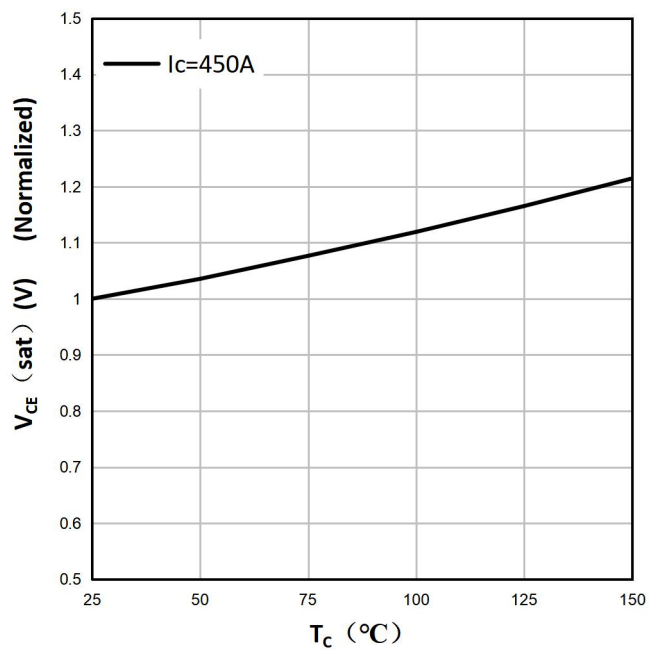
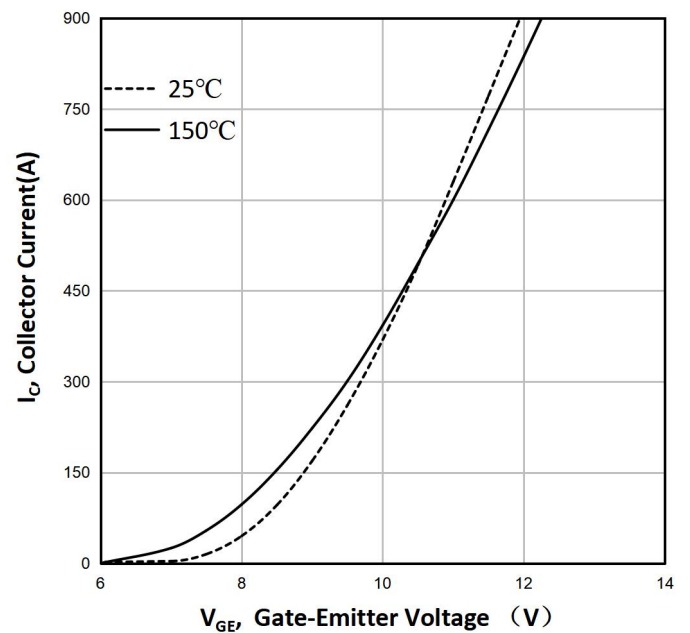
Absolute Maximum Ratings (Tc = 25°C unless otherwise noted)

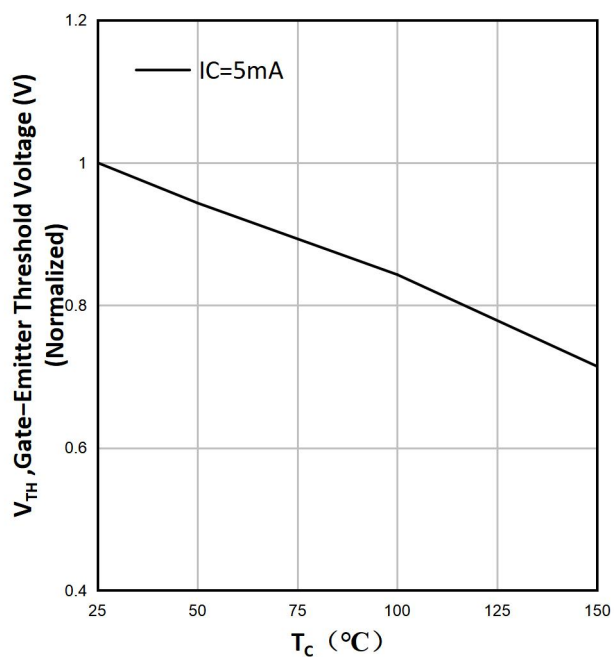
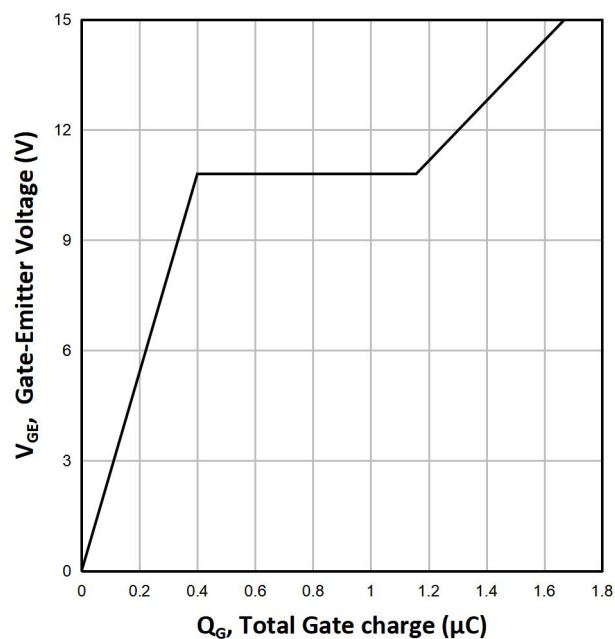
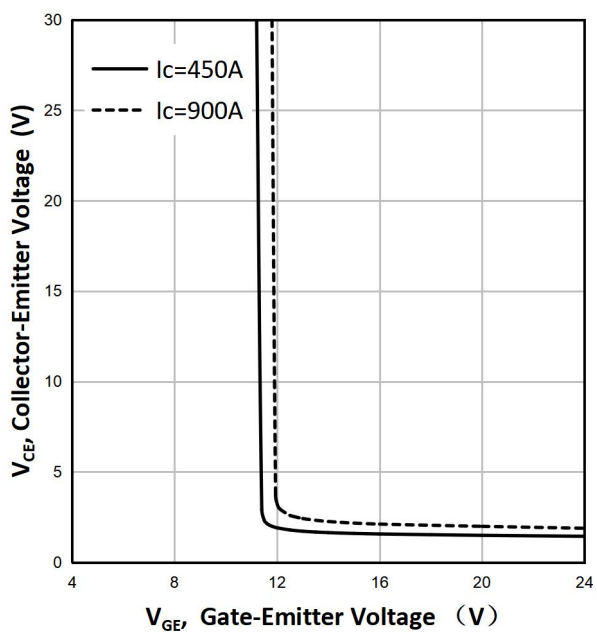
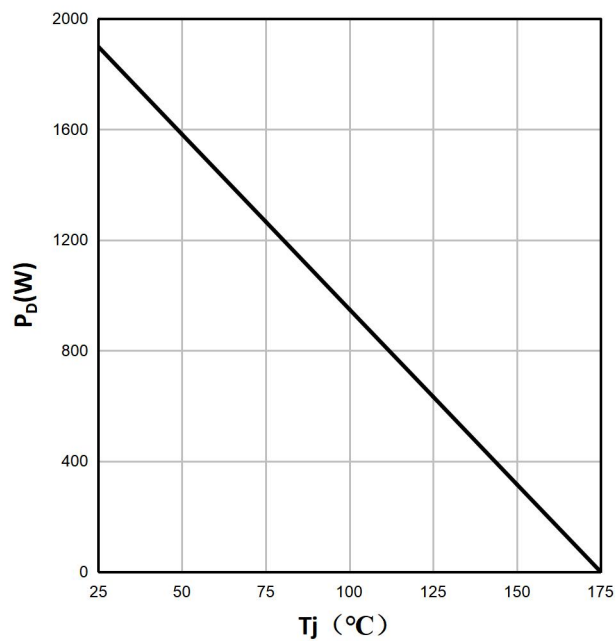
Symbol	Description	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
I_F	Diode Continuous Forward Current @ Tc=80°C	450	A
I_{FRM}	Diode Maximum Forward Current t _p =1ms	900	A

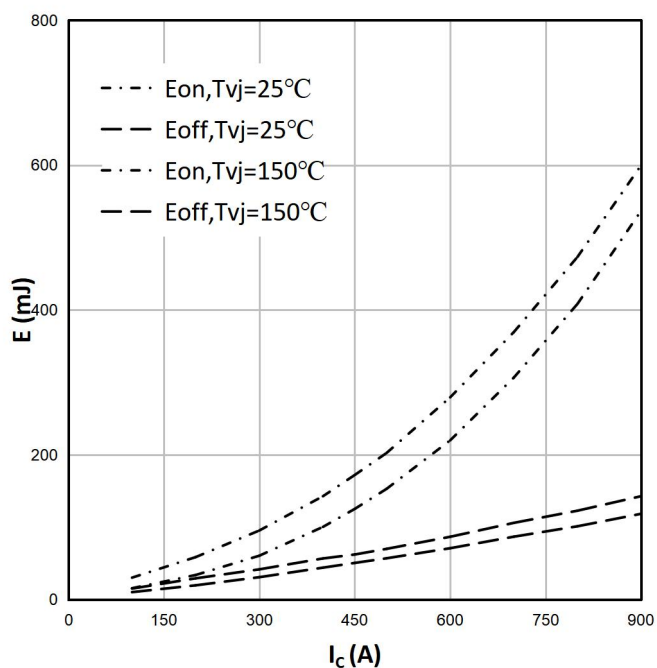
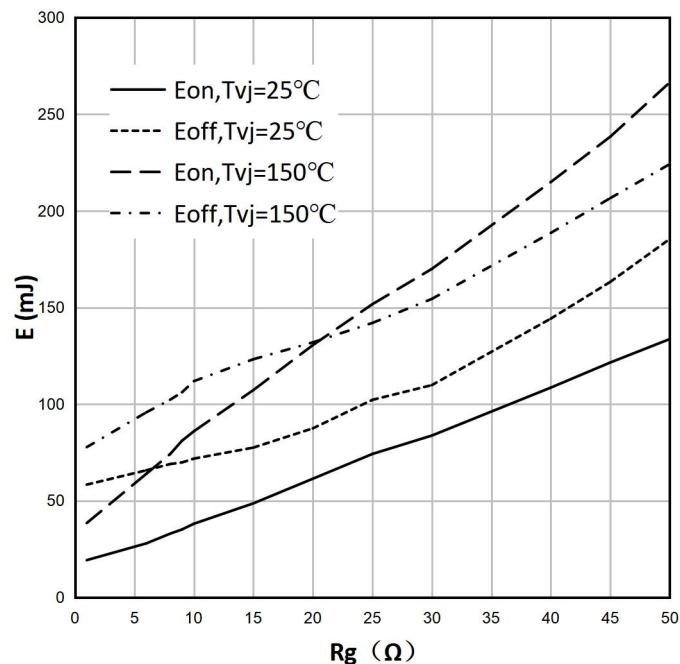
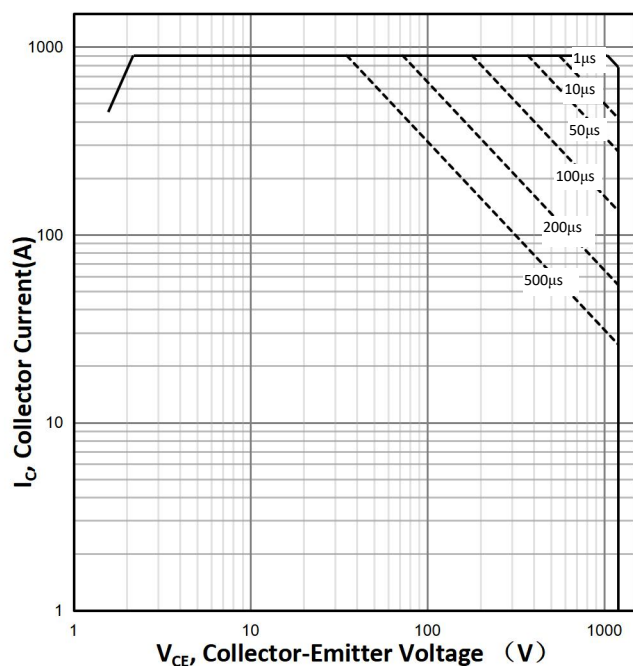
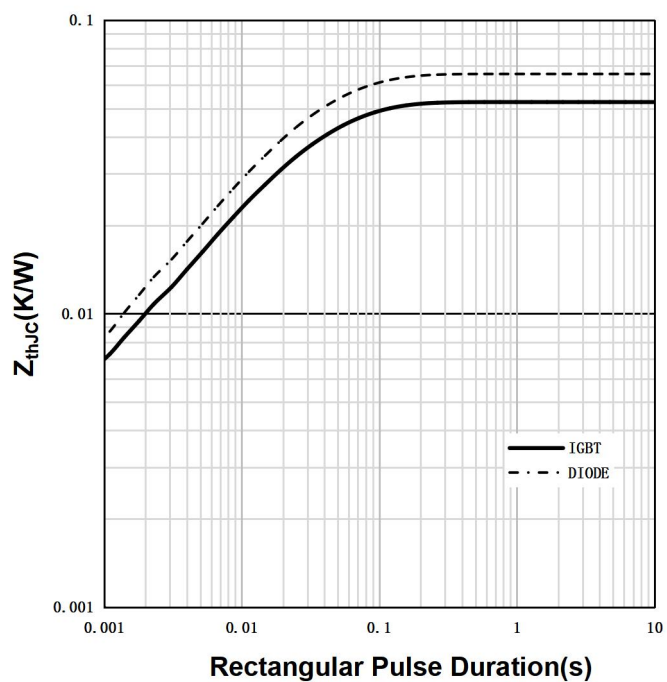
Characteristics (Tc=25°C unless otherwise noted)

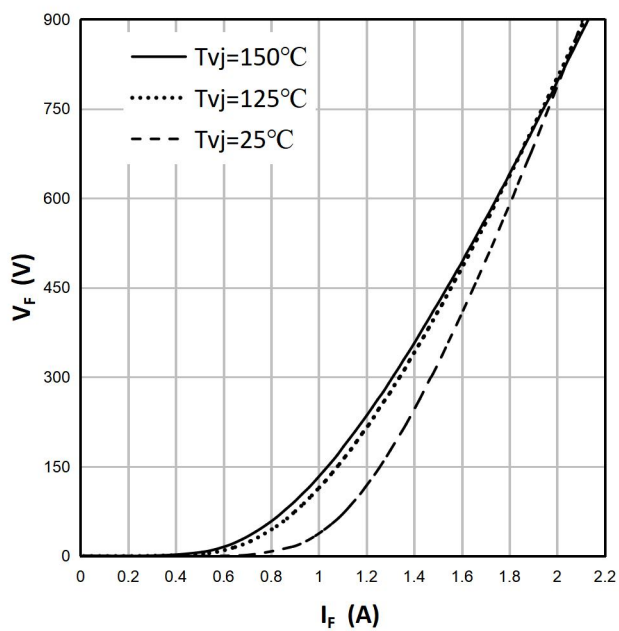
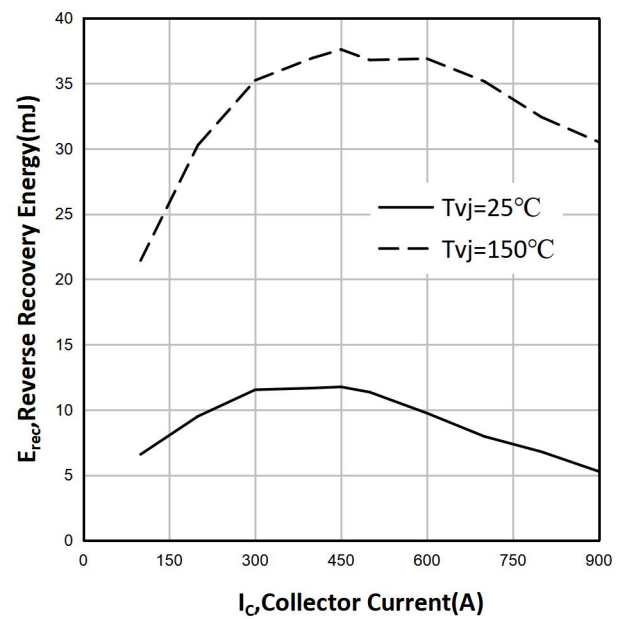
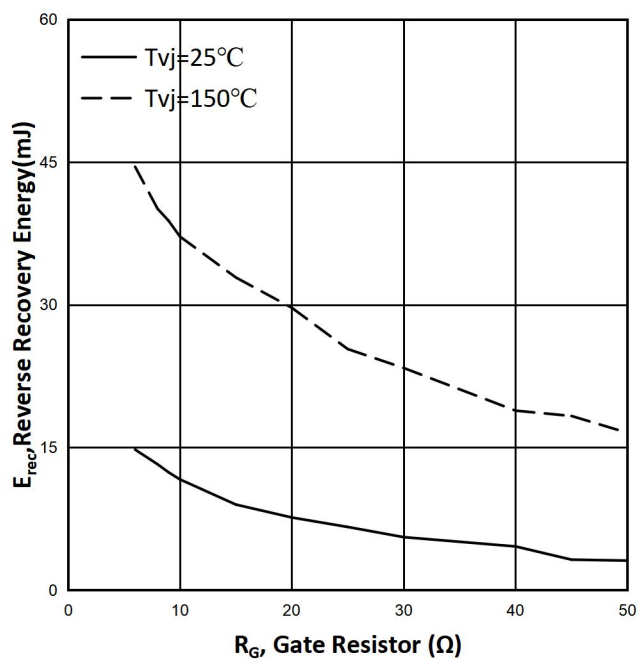
Symbol	Parameter	Note or Test Condition		Min	Typ	Max	Unit
V _F	Diode Forward Voltage	I _F = 450 A	T _{vj} = 25 °C	--	1.60	2.60	V
			T _{vj} = 150 °C	--	1.50	--	
Q _r	Recovered Charge	I _F = 450 A, V _R = 600 V, R _G = 1.0 Ω (T _{vj max} = 175 °C)	T _{vj} = 25 °C	--	7.58	--	μC
			T _{vj} = 150 °C	--	24.97	--	
I _{RM}	Peak Reverse Recovery Current	I _F = 450 A, V _R = 600 V, R _G = 1.0 Ω (T _{vj max} = 175 °C)	T _{vj} = 25 °C	--	259	--	A
			T _{vj} = 150 °C	--	325	--	
E _{rec}	Reverse recovery energy	I _F = 450 A, V _R = 600 V, R _G = 1.0 Ω (T _{vj max} = 175 °C)	T _{vj} = 25 °C	--	8.14	--	mJ
			T _{vj} = 150 °C	--	22.22	--	
R _{thJC}	Thermal resistance, junction to case	per diode		--	0.098	--	K/W
T _{vj op}		Temperature under switching conditions		-40		175 ²⁾	°C

²⁾ $T_{vj\text{ op}} > 150^{\circ}\text{C}$ is only allowed for operation at overload conditions.

**Figure1.output characteristic IGBT** $T_{vj}=25^{\circ}\text{C}$ **Figure2.output characteristic IGBT** $T_{vj}=150^{\circ}\text{C}$ **Figure3. $V_{CE(sat)}$ vs. Temperature****Figure4.transfer characteristic IGBT** $V_{CE}=20\text{V}$ 

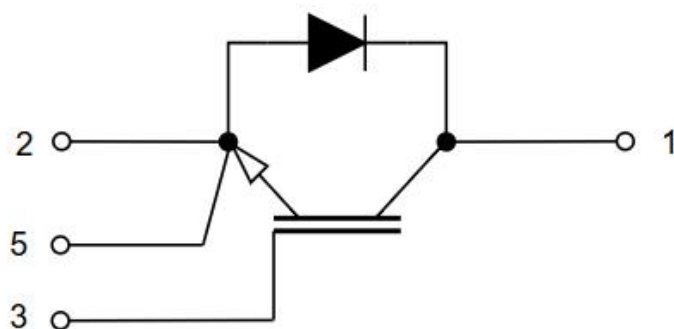
**Figure5. V_{TH} vs. Temperature****Figure6. Gate Charge Waveform** $V_{CC} = 960V, I_C = 450A, T_{vj} = 25^\circ C$ **Figure7. Saturation Voltage vs. V_{GE}** **Figure8. P_{tot} vs. Case Temperature**

**Figure9.switching losses IGBT** $V_{cc}=600V, R_{gon}=10\Omega, R_{goff}=10\Omega, V_{ge}=15V/-5V$ **Figure10.switching losses IGBT** $V_{cc}=600V, I_c=450A, V_{ge}=15V/-5V$ **Figure11.FBSOA IGBT** $D=0, T_c=25^\circ C, T_j \leq 175^\circ C, V_{ge}=15V$ **Figure12.transient thermal impedance**

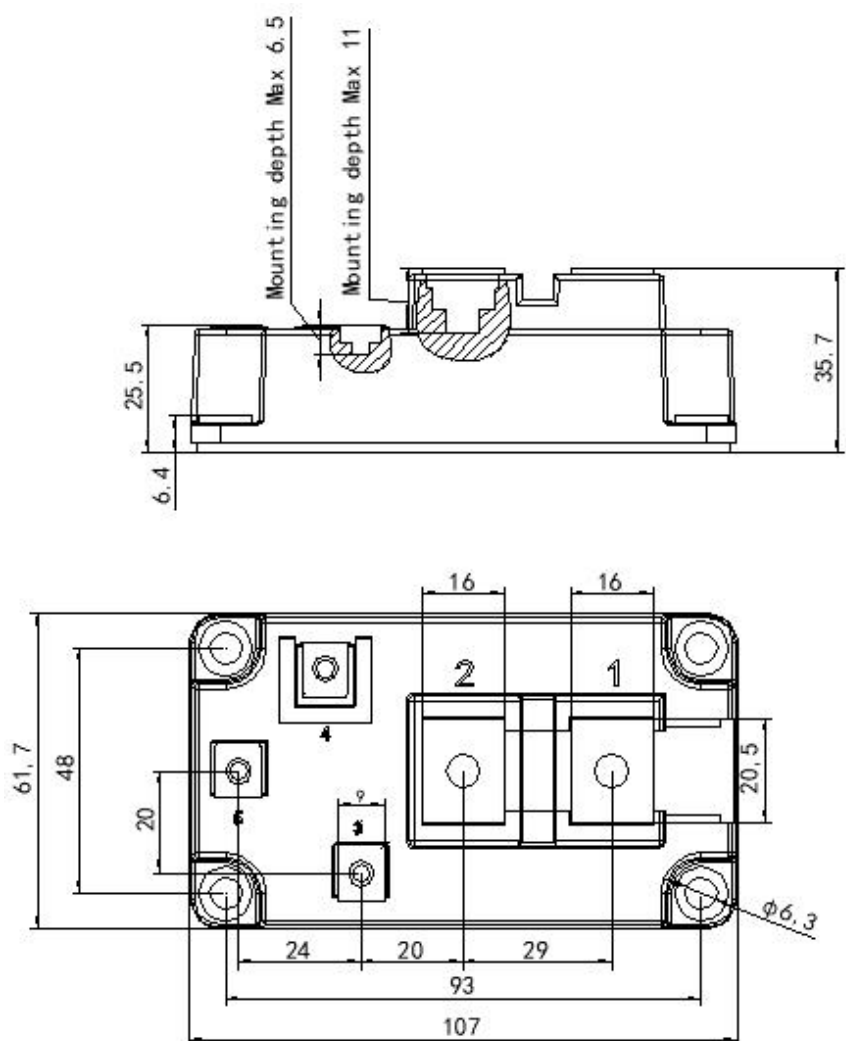
**Figure13. forward characteristic of Diode** $V_{GE}=0V$ **Figure 14.Reverse Recovery Energy Loss vs. I_C** $V_{cc}=600V, R_{gon}=10\Omega, R_{goff}=10\Omega, V_{ge}=15V/-5V$ **Figure 15.Reverse Recovery Energy Loss vs. R_G** $V_{cc}=600V, I_C=450A, V_{ge}=15V/-5V$ 



CIRCUIT DIAGRAM



PACKAGE DIMENSION





REVISION HISTORY

Document version	Date of release	Description of changes
Rev.00	2025-05-29	Preview



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