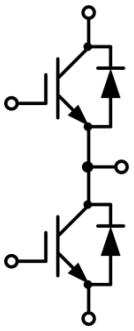
62mm Half Bridge IGBT Module

V_{CES}= 1200V, I_C= 450A, $V_{CE(sat)}$= 2.15V

Features

- 1200V Trench/Field Stop Technology
- Low switching losses
- Vcesat has a positive temperature coefficient



Applications

- Power Converters
- Uninterruptible power supplies
- Servo Drives
- Inverter

IGBT, Inverter

Maximum Ratings

Parameter	Symbol	Test Condition	Value	Unit
Collector-Emitter voltage	V_{CES}	T_{vj}=25℃	1200	V
Continuous DC collector current	$I_{C\ nom}$	T_C=100℃, $T_{vj\ max}$=175℃	450	A
Repetitive peak collector current	I_{CRM}	t_P=1 ms	900	A
Total power dissipation	P_{tot}	T_C=25℃, $T_{vj\ max}$ = 175℃	2400	W
Gate emitter voltage	V_{GE}		±20	V

Characteristics Values

Parameter	Symbol	Test Condition		Value			Unit
				Min.	Typ.	Max.	
Collector-Emitter saturation voltage	V_{CEsat}	V_{GE}=15V, I_C=450A V_{GE}=15V, I_C=450A V_{GE}=15V, I_C=450A	T_{vj}=25℃ T_{vj}=125℃ T_{vj}=150℃		2.15 2.72 2.86	2.55	V
Gate-Emitter threshold voltage	$V_{GE(th)}$	I_C=17mA, V_{GE}=V_{CE}	T_{vj}=25℃	5.20	5.80	6.40	
Gate charge	Q_G	V_{GE}=-15V…+15V			2.20		μC
Internal gate resistor	R_{Gint}				2.10		Ω
Input capacitance	C_{ies}	f=1MHz,V_{CE}=25V,V_{GE}=0V	T_{vj}=25℃		31.10		nF
Reverse transfer capacitance	C_{res}				1.10		nF
Collector-emitter cut-off current	I_{CES}	V_{CE}=1200V , V_{GE}=0V	T_{vj}=25℃			2	mA
Gate-emitter leakage current	I_{GES}	V_{CE}=0V, V_{GE}=20V	T_{vj}=25℃			200	nA
Turn-on delay time	$t_{d\ on}$	I_C=450A,V_{CE}=600V V_{GE}=±15V, R_G=1Ω (inductive load)	T_{vj}=25℃ T_{vj}=125℃ T_{vj}=150℃		160 180 185		ns

Rise time	t_r	I_C=450A,V_{CE}=600V V_{GE}=±15V, R_G=1Ω (inductive load)	T_{vj}=25℃ T_{vj}=125℃ T_{vj}=150℃		60 65 70		ns
Turn-off delay time	$t_{d\ off}$	I_C=450A,V_{CE}=600V V_{GE}=±15V, R_G=1Ω (inductive load)	T_{vj}=25℃ T_{vj}=125℃ T_{vj}=150℃		270 300 310		
Fall time	t_f	I_C=450A,V_{CE}=600V V_{GE}=±15V, R_G=1Ω (inductive load)	T_{vj}=25℃ T_{vj}=125℃ T_{vj}=150℃		200 210 250		
Turn-on energy loss per pulse	E_{on}	I_C=450A,V_{CE}=600V V_{GE}=±15V, R_G=1Ω (inductive load)	T_{vj}=25℃ T_{vj}=125℃ T_{vj}=150℃		16.70 28.60 35.90		mJ
Turn-off energy loss per pulse	E_{off}	I_C=450A,V_{CE}=600V V_{GE}=±15V, R_G=1Ω (inductive load)	T_{vj}=25℃ T_{vj}=125℃ T_{vj}=150℃		40.90 44.70 48.30		
SC data	I_{SC}	V_{GE}≤15V, V_{cc}=800V V_{CEmax}=V_{CES}-L_{sCE}·di/dt t_P≤10us	T_{vj}=150℃		1600		A
Thermal resistance, junction to case	R_{thJC}	per IGBT				0.062	K/W
Temperature under switching conditions	$T_{vj\ op}$			-40		150	℃

Diode, Inverter

Maximum Ratings

Parameter	Symbol	Test Condition	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	T_{vj}=25℃	1200	V
Continuous DC forward current	I_F		450	A
Repetitive peak forward current	I_{FRM}	t_p=1ms	900	A
I^2t-value	I^2t	t_p=10ms，sin180°，T_{vj}=125℃	6000	A^2s

Characteristics Values

Parameter	Symbol	Test Condition		Value			Unit
				Min.	Typ.	Max.	
Forward voltage	V_F	I_F=450A,V_{GE}=0V I_F=450A,V_{GE}=0V I_F=450A,V_{GE}=0V	T_{vj}=25℃ T_{vj}=125℃ T_{vj}=150℃		2.38 2.55 2.47	2.80	V
Peak reverse recovery current	I_{RM}	I_F=450A -di$_F$/dt=5300A/us(T_{vj}=150℃) V_R=600V, V_{GE}=-15V	T_{vj}=25℃ T_{vj}=125℃ T_{vj}=150℃		285 315 325		A
Recovered charge	Q_r	I_F=450A -di$_F$/dt=5300A/us(T_{vj}=150℃) V_R=600V, V_{GE}=-15V	T_{vj}=25℃ T_{vj}=125℃ T_{vj}=150℃		29.0 42.0 60.0		μC
Reverse recovered energy	E_{rec}	I_F=450A -di$_F$/dt=5300A/us(T_{vj}=150℃) V_R=600V, V_{GE}=-15V	T_{vj}=25℃ T_{vj}=125℃ T_{vj}=150℃		15.0 20.0 27.0		mJ
Thermal resistance, junction to case	Rt_{hJC}	per diode				0.11	K/W
Temperature under switching conditions	$T_{vj\ op}$			-40		150	℃

Characteristics Values(Module)

Parameter	Symbol	Test Condition	Value			Unit
Isolation test voltage	V_{ISOL}	RMS, f=50Hz, t=1min	4000			V
Internal isolation			Al_2O_3			
Storage temperature	T_{stg}		-40		125	℃
Mounting torque for module mounting	M		3.0		6.0	Nm
Weight	W			317		g

Typical Characteristics

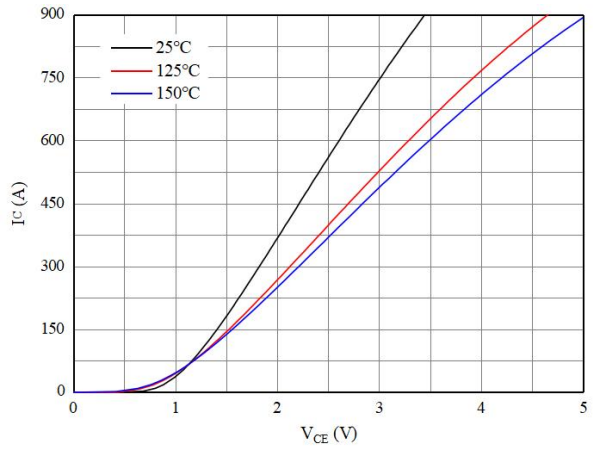


Fig 1. Typical output characteristics (V_{GE}=15V)

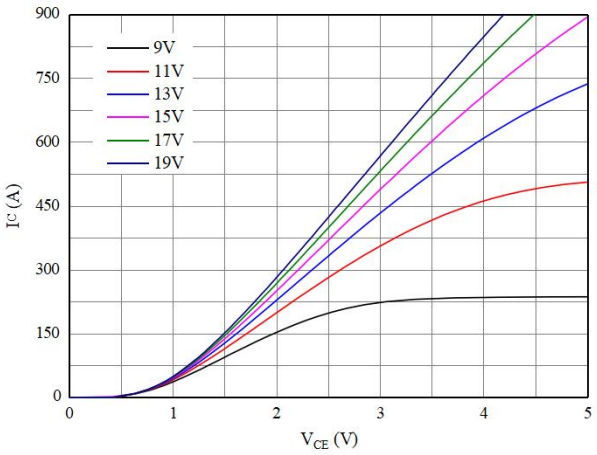


Fig 2. Typical output characteristics (T_{vj}=150℃)

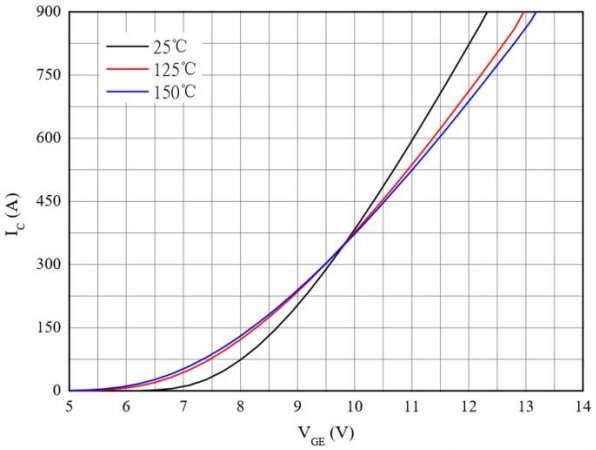


Fig 3. Typical transfer characteristic(V_{CE}=20V)

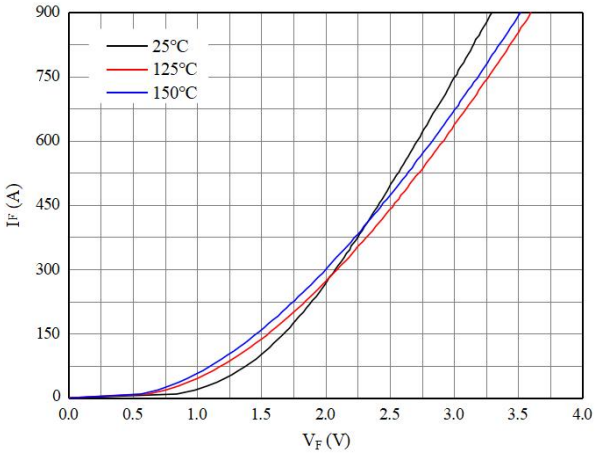


Fig 4. Forward characteristic of Diode

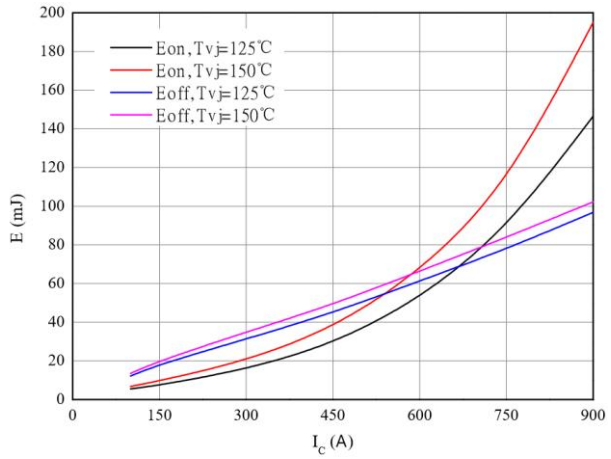


Fig 5. Switching losses of IGBT
V_{GE}=±15V, R_{Gon}=1Ω, R_{Goff}=1Ω, V_{CE}=600V

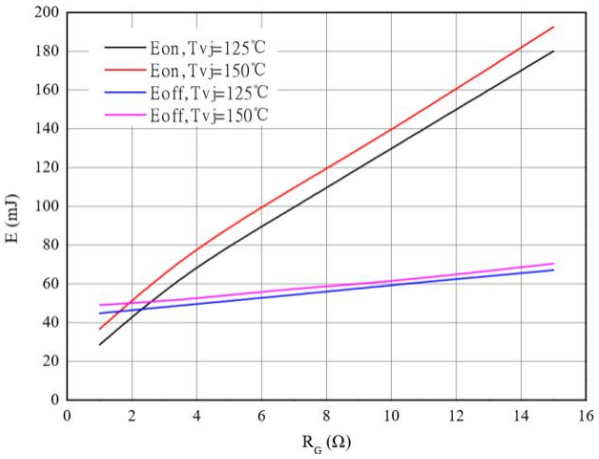


Fig 6. Switching losses of IGBT
V_{GE}=±15V, I_C=450A, V_{CE}=600V

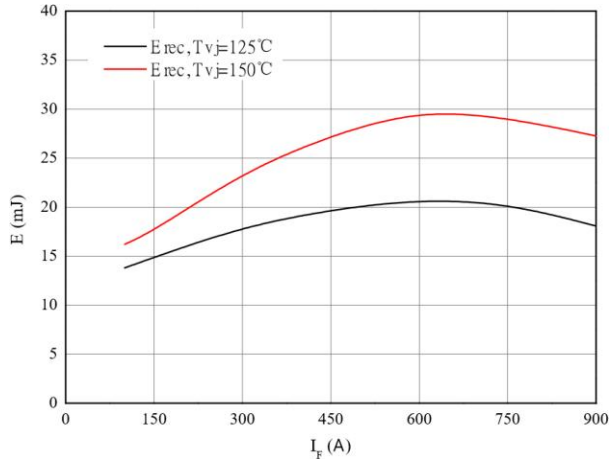


Fig 7. Switching losses of Diode
R_{Gon}=1Ω, V_{CE}=600V

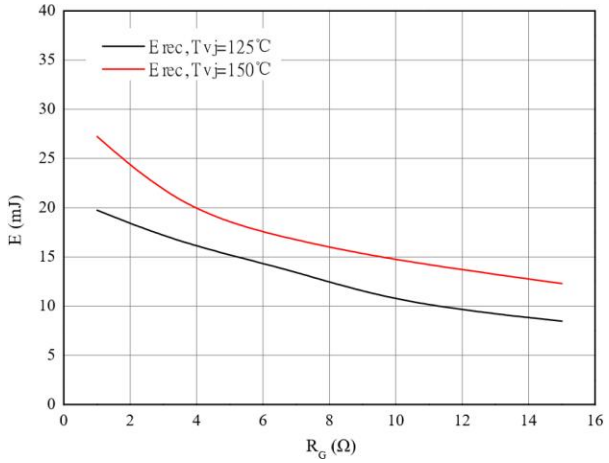


Fig 8. Switching losses of Diode
I_F=450A, V_{CE}=600V

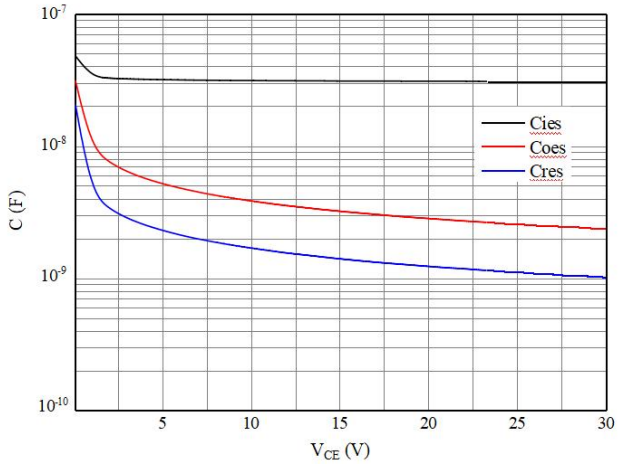
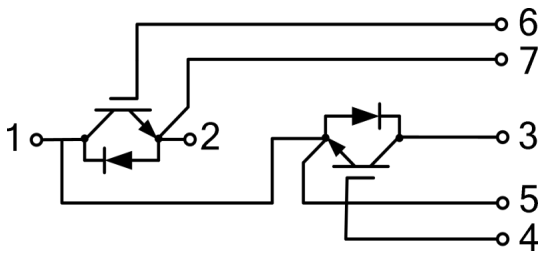
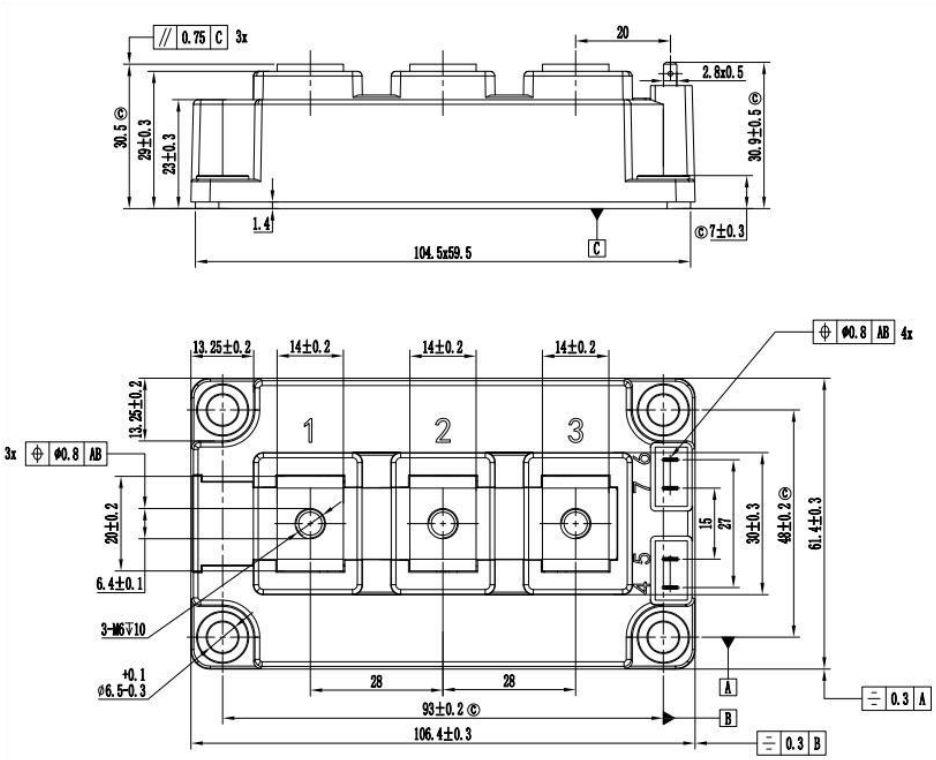


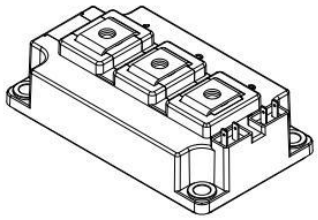
Fig 9. Capacitance characteristic

Circuit Diagram



Package Outlines(Unit： mm)





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