

Key performance:

- $V_{CE}=1200V$
- $I_C=100A@T_C=100^{\circ}C$
- $V_{CE(sat)}=1.6V$

Features:

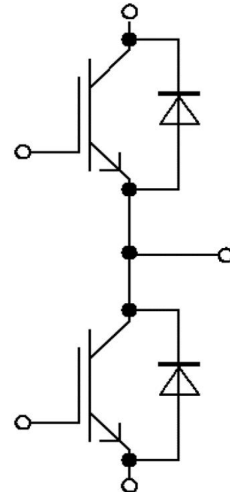
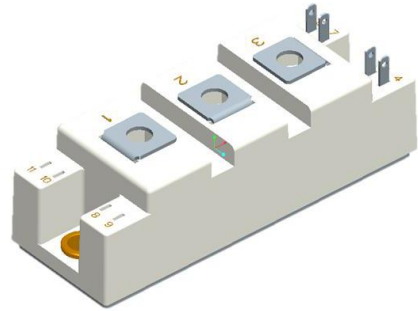
- Low V_{CEsat} .
- Low switching losses.
- Low stray inductance design.
- Positive V_{CEsat} temperature coefficient.

Benefits:

- High efficiency for application.
- Excellent current sharing in parallel operation.
- RoHS compliant.

Applications:

- Welding machine
- Induction cooking
- UPS system



Maximum rated values , IGBT

Parameter	Conditions	Symbol	Values	Unit
Collector-emitter voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{CES}	1200	V
Continuous collector current	$T_C = 100^{\circ}\text{C}$, $T_{vj \text{ max}} = 175^{\circ}\text{C}$	I_C	100	A
Repetitive peak collector current	$t_p = 1 \text{ ms}$	I_{CRM}	200	A
Total power dissipation	$T_C = 25^{\circ}\text{C}$, $T_{vj \text{ max}} = 175^{\circ}\text{C}$	P_{tot}	577	W
Gate-emitter peak voltage		V_{GES}	± 20	V

Characteristic values , IGBT

Parameter	Conditions	Symbol	Values			Unit
			Min.	Typ.	Max	
Collector-emitter saturation voltage	$I_C = 100\text{A}$, $V_{GE} = 15 \text{ V}$ $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	V_{CEsat}	-	1.60 1.80 1.85	-	V
Gate threshold voltage	$I_C = 1 \text{ mA}$, $V_{CE} = V_{GE}$, $T_{vj} = 25^{\circ}\text{C}$	V_{GEth}	-	5.9	-	V
Gate charge	$V_{GE} = -15 / 15 \text{ V}$	Q_G	-	0.90	-	μC
Input capacitance	$f = 100\text{KHz}$, $T_{vj} = 25^{\circ}\text{C}$, $V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$	C_{ies}	-	9.51	-	nF
Reverse transfer capacitance		C_{res}	-	88.0	-	pF
Collector-emitter leakage current	$V_{CE} = 1200 \text{ V}$, $V_{GE} = 0 \text{ V}$, $T_{vj} = 25^{\circ}\text{C}$	I_{CES}	-	-	1.0	mA
Gate-emitter leakage current	$V_{CE} = 0 \text{ V}$, $V_{GE} = 20 \text{ V}$, $T_{vj} = 25^{\circ}\text{C}$	I_{GES}	-	-	500	nA
Turn-on delay time, inductive load	$I_C = 100\text{A}$ $V_{CE} = 600\text{V}$ $V_{GE} = -15 / 15 \text{ V}$ $R_G = 10\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ $t_{d(on)}$	-	156 170 180	-	ns
Rise time, inductive load		$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ t_r	-	104 114 133	-	ns
Turn-off delay time, inductive load		$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ $t_{d(off)}$	-	452 530 549	-	ns
Fall time, inductive load		$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ t_f	-	83 122 131	-	ns

Turn-on energy loss per pulse	$I_C = 100A$ $V_{CE} = 600V$ $V_{GE} = -15 / 15 V$ $R_G = 10\Omega$	$T_{vj} = 25^\circ C$ $T_{vj} = 125^\circ C$ $T_{vj} = 150^\circ C$	E_{on}	-	15.0 20.0 21.0	-	mJ
Turn-off energy loss per pulse		$T_{vj} = 25^\circ C$ $T_{vj} = 125^\circ C$ $T_{vj} = 150^\circ C$	E_{off}	-	5.60 8.05 9.35	-	mJ
Thermal resistance, junction to case			R_{thJC}	-	-	0.26	K/W
Thermal resistance, case to heatsink	per IGBT		R_{thCH}	-	0.08	-	K/W
Temperature under switching conditions			$T_{vj op}$	-40	-	150	$^\circ C$

Maximum rated values , Diode

Parameter	Conditions	Symbol	Values	Unit
Repetitive peak reverse voltage	$T_{vj} = 25^\circ C$	V_{RRM}	1200	V
Continuous DC forward current		I_F	100	A
Repetitive peak forward current	$t_p = 1 ms$	I_{FRM}	200	A

Characteristic values , Diode

Parameter	Conditions	Symbol	Values			Unit
			Min.	Typ.	Max.	
Forward voltage	$I_F = 100A, V_{GE} = 0 V$	$T_{vj} = 25^\circ C$ $T_{vj} = 125^\circ C$ $T_{vj} = 150^\circ C$	-	2.00 1.80 1.75	-	V
Peak reverse recovery current		$T_{vj} = 25^\circ C$ $T_{vj} = 125^\circ C$ $T_{vj} = 150^\circ C$		30 46 50		
Recovered charge		$T_{vj} = 25^\circ C$ $T_{vj} = 125^\circ C$ $T_{vj} = 150^\circ C$		3.6 8.6 10.7		
Reverse recovery energy	$I_F = 100 A$ $V_R = 600V$ $V_{GE} = -15V$ $R_G = 10\Omega$ $- di_f/dt = 750 A/\mu s$	$T_{vj} = 25^\circ C$ $T_{vj} = 125^\circ C$ $T_{vj} = 150^\circ C$	-	1.08 2.50 3.20	-	mJ
Thermal resistance, junction to case	per diode	R_{thJC}		-		
Thermal resistance, case to heatsink	per diode	R_{thCH}		-		
Temperature under switching conditions		$T_{vj op}$	-40	-	150	$^\circ C$

Module characteristic values

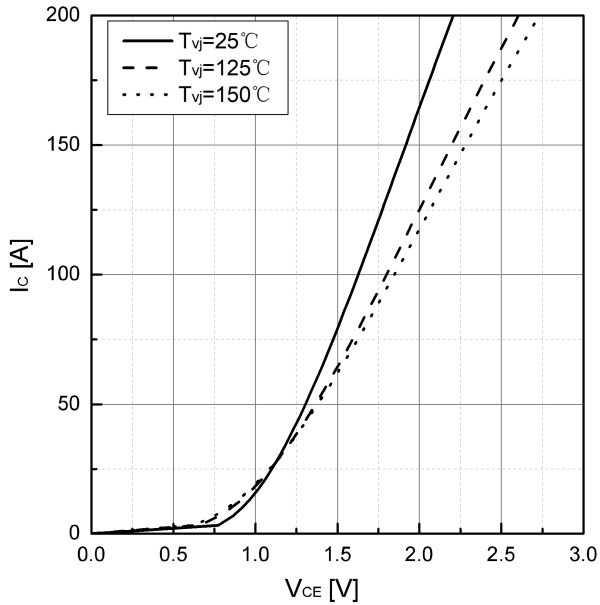
Parameter	Conditions	Symbol	Values	Unit
Isolation test voltage	RMS, f = 50 Hz, t = 1 min.	V _{ISOL}	2.5	kV
Internal isolation	basic insulation (class 1, IEC 61140)		Al ₂ O ₃	
Creepage distance	terminal to heatsink terminal to terminal		17 20	mm
Clearance	terminal to heatsink terminal to terminal		17 9.5	mm
Comperative tracking index		CTI	> 200	

Parameter	Conditions	Symbol	Values			Unit
			Min.	Typ.	Max.	
Stray inductance module		L _{sCE}	-	35	-	nH
Module lead resistance, terminals - chip	T _C = 25°C, per switch	R _{CC'+EE'}	-	0.7	-	mΩ
Storage temperature		T _{stg}	-40	-	125	°C
Mounting torque	Screw:M6	M	3	-	5	Nm
Terminal connection torque	Screw:M5	M	2.5	-	5	Nm
Weight		G	-	164	-	g

Output characteristic, IGBT

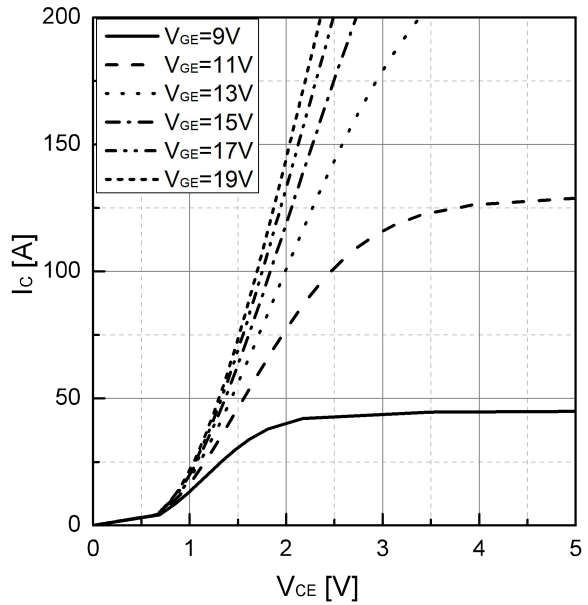
$$I_C = f(V_{CE})$$

$$V_{GE} = 15V$$


Output characteristic, IGBT

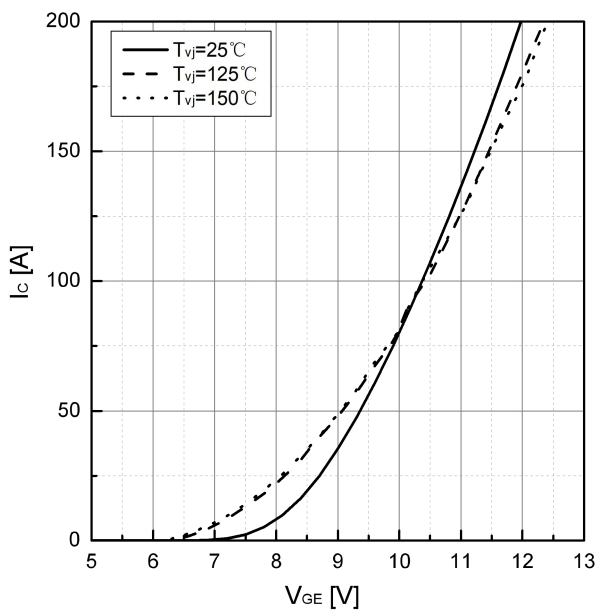
$$I_C = f(V_{CE})$$

$$T_{vj} = 150^\circ C$$


Transfer characteristic, IGBT

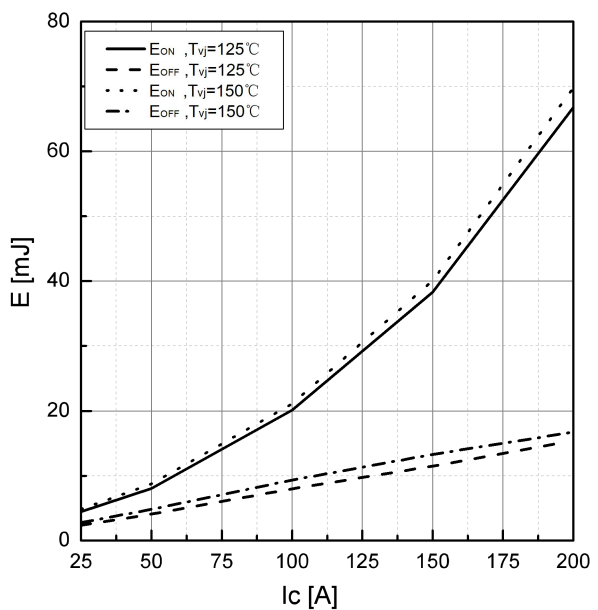
$$I_C = f(V_{GE})$$

$$V_{CE} = 20V$$


Switching losses vs. I_C, IGBT

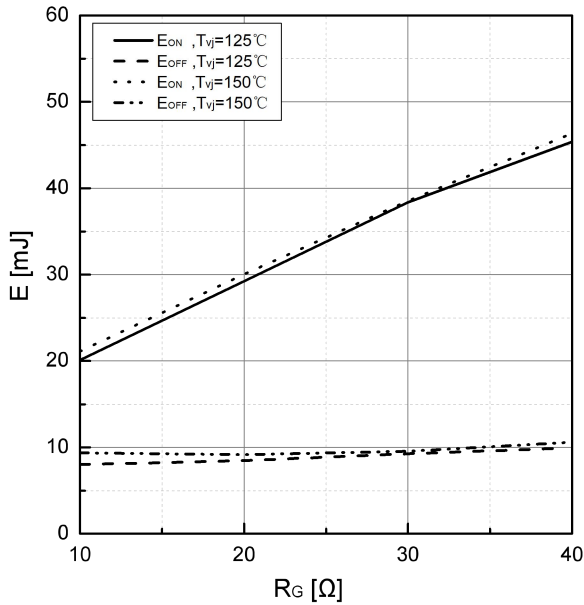
$$E_{on} = f(I_C), E_{off} = f(I_C)$$

$$V_{CE} = 600V, V_{GE} = 15/-15V, R_G = 10 \Omega$$

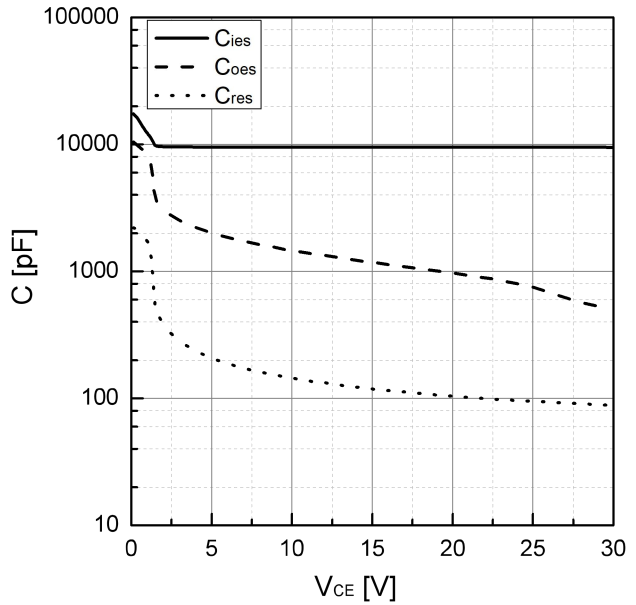


Switching losses vs. R_G , IGBT

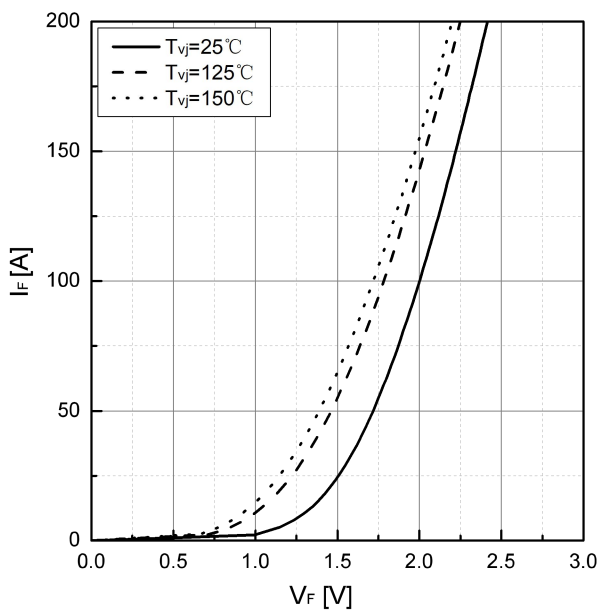
$$E_{on}=f(R_G), E_{off}=f(R_G)$$

 $V_{CE}=600V, V_{GE}=15/-15V, I_C=100A$

Capacity characteristic, IGBT

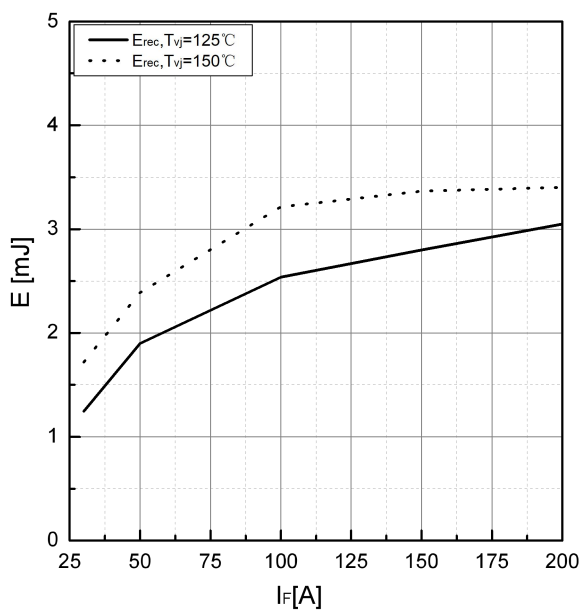
$$C=f(V_{CE})$$

 $f=100KHz, V_{GE}=0V, T_{vj}=25^{\circ}C$

Forward characteristic, Diode

$$I_F=f(V_F)$$

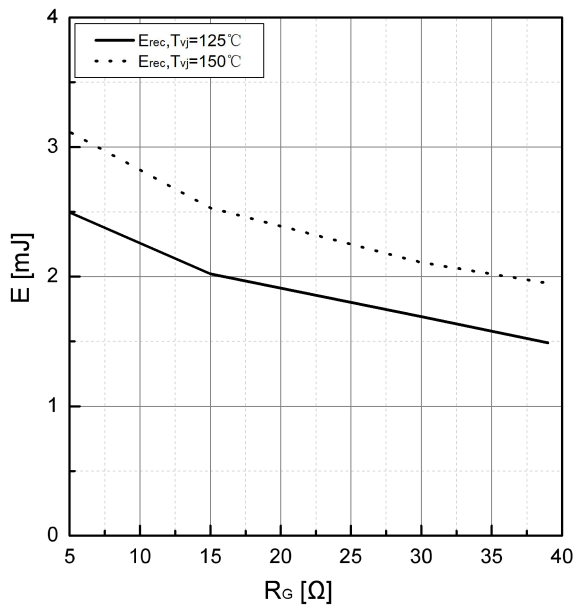
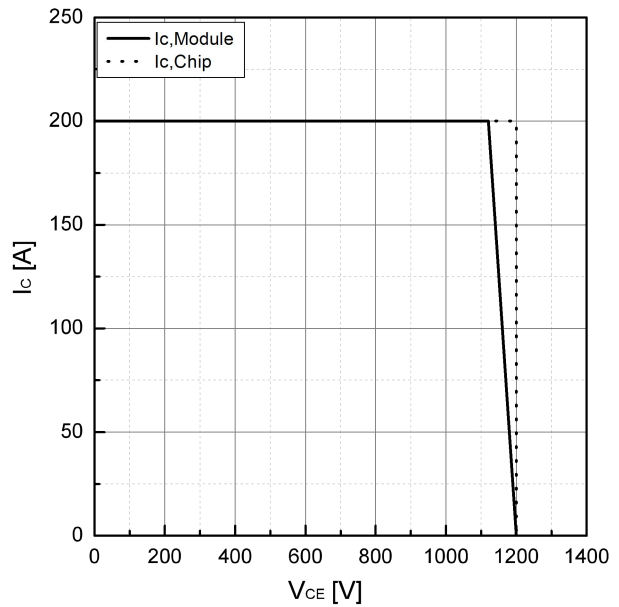

Switching losses vs. I_F , Diode

$$E_{rec}=f(I_F)$$

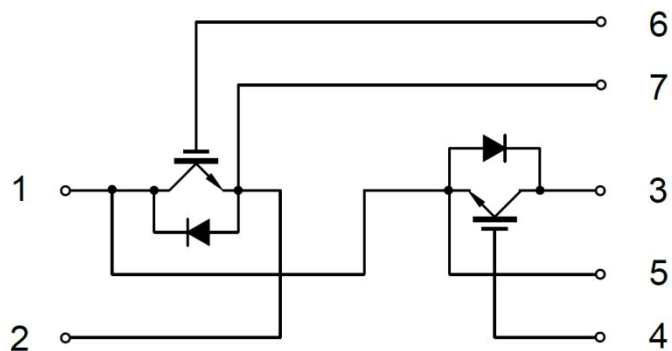
 $V_R=600V, R_G=10\ \Omega$


Switching losses vs. R_G , Diode

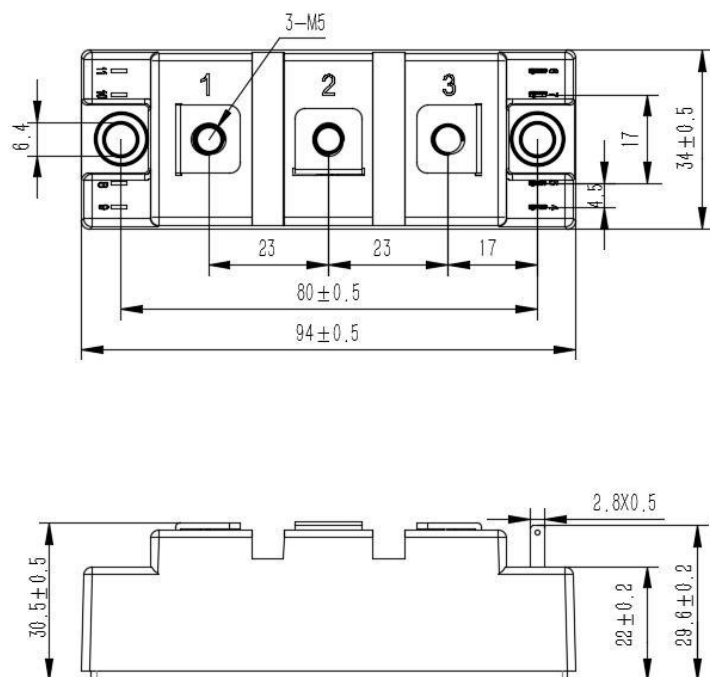
$$E_{rec} = f(R_G)$$

 $V_R = 600V, I_F = 100A$

Reverse bias safe operating area (RBSOA)
 $V_{CE} = 600V, V_{GE} = 15/-15V, R_G = 10\ \Omega$


Circuit diagram



Package outlines (mm)



Revision history

Date	Revision	Changes
Sep 26, 2024	Rev 1.0	Release of the final datasheet.
Apr 30, 2025	Rev 1.1	Character Update

Disclaimer

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