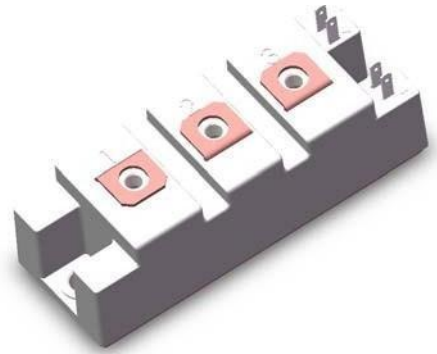


Electrical Features

- Trench/Fieldstop IGBT
- Fast switching speed, saturation voltage drop, saturation voltage drop to positive temperature coefficient
- Short circuit withstand time 10 μ s
- Including anti-parallel FWD
- High reliability and thermal stability, good Item consistency



Typical Applications

- Induction heating
- Inverter welding machine

IGBT, Inverter ($T_{vj}=25^{\circ}\text{C}$)

Maximum Rated Values

Item	Conditions	Symbol	Rating	Unit
Collector-emitter voltage	$T_{vj}=25^{\circ}\text{C}$	V_{CES}	1200	V
Collector current,DC	$T_C=100^{\circ}\text{C}$, $T_{vjmax}=175^{\circ}\text{C}$	I_{Cnom}	75	A
Repetitive peak collector current	$t_p=1\text{ms}$	I_{CRM}	150	
Gate-emitter voltage		V_{GES}	± 20	V
Short circuit withstand time	$V_{GE}=15\text{V}$, $V_{CC}=600\text{V}$, $T_{vj}\leq 150^{\circ}\text{C}$	t_{SC}	10	μs
Total power dissipation	$T_C=25^{\circ}\text{C}$, $T_{vjmax}=175^{\circ}\text{C}$	P_{tot}	394	W

Characteristics Values

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter saturation voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=75A$ $T_{vj}=25^{\circ}C$	-	2.0	2.4	V
Gate-emitter threshold voltage	$V_{GE(th)}$	$I_C=2.4mA, V_{CE}=V_{GE}$	5.0	6.0	7.0	
Collector-emitter cut-off current	I_{CES}	$V_{CE}=1200V, V_{GE}=0V$ $T_{vj}=25^{\circ}C$	-	-	1	mA
Gate leakage current	I_{GES}	$V_{CE}=0V, V_{GE}=20V$	-	-	250	nA
Input capacitance	C_{iss}	$V_{CE}=25V,$ $f=1MHz$	-	5.24	-	nF
Revers transfer capacitance	C_{rss}		-	0.19	-	
Gate charge	Q_G	$V_{CC}=600V,$ $I_C=75A,$ $V_{GE}=15V$	-	622	-	nC
Turn-on delay time	$t_{d(on)}$	$T_{vj}=25^{\circ}C,$ $V_{CC}=600V,$ $I_C=75A,$ $V_{GE}=0/15V,$ $R_G=7.5\Omega,$ Inductive load	-	90	-	ns
Rise time	t_r		-	39	-	
Turn-off delay time	$t_{d(off)}$		-	303	-	
Fall time	t_f		-	172	-	
Turn-on energy (per pulse)	E_{on}		-	5.4	-	
Turn-off energy (per pulse)	E_{off}	-	4.1	-		
Total switching energy	E_{ts}	-	9.5	-		
Thermal resistance, junction to case	R_{thJC}	per IGBT	-	-	0.38	K/W
Temperature under switching conditions	$T_{vj op}$		-40	-	150	$^{\circ}C$

**Diode, Inverter (T_{vj}=25°C)
Characteristic Values**

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous forward voltage	V_F	$V_{GE}=0V, I_F=37.5A$ $T_{vj}=25^\circ C$	-	2.3	2.7	V
Reverse recovery time	t_{rr}	$T_{vj}=25^\circ C,$ $V_R=600V,$ $I_F=37.5,$ $di_F/dt=-2100A/\mu s$	-	65	-	ns
Reverse recovery charge	Q_{rr}		-	1.93	-	μC
Diode peak reverse recovery current	I_{rrm}		-	58.4	-	A
Temperature under switching conditions	$T_{vj\ op}$		-40	-	150	$^\circ C$

Maximum Rated Values

Item	Conditions	Symbol	Rating	Unit
Repetitive peak reverse voltage	$T_{vj}=25^\circ C$	V_{RRM}	1200	V
Forward current,DC		I_F	37.5	A
Repetitive peak forward current	$t_p=1ms$	I_{FRM}	75	

Module

Item	Conditions	Symbol	Rating			Unit
Isolation voltage	RMS, f = 50 Hz, t = 1 min	V_{ISOL}	2500			V
Material of module baseplate			Cu			
Internal isolation	Basic insulation(class 1, IEC 61140)		Al_2O_3			
Creepage distance	Terminals to heat sinks		17.0			mm
	Terminal-to-terminal		20.0			
Clearance	Terminals to heat sinks		17.0			mm
	Terminal-to-terminal		9.5			
			Min.	Typ.	Max.	
Storage temperature		T_{stg}	-40	-	125	$^\circ C$
Module mounting torque	Screw M6	M	3.0	-	5.0	Nm
Terminal connection torque	Screw M5	M	2.5	-	5.0	Nm
Weight		G	-	150	-	g

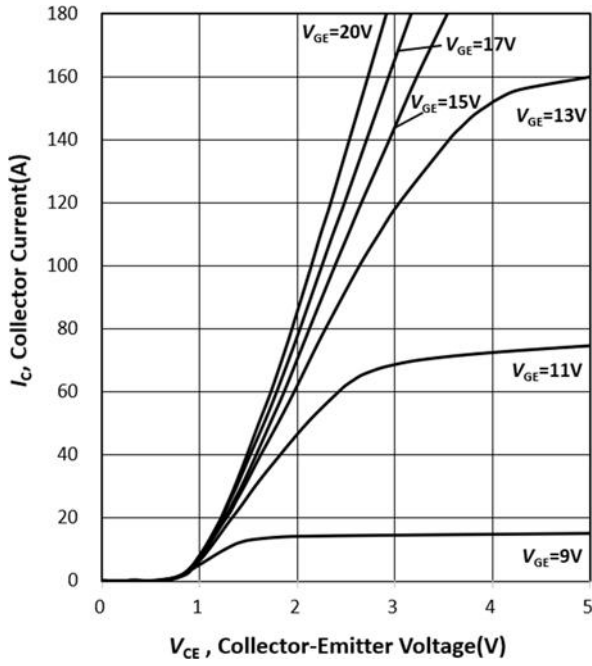


Figure 1 IGBT output characteristics ($T_{vj}=25^{\circ}\text{C}$)

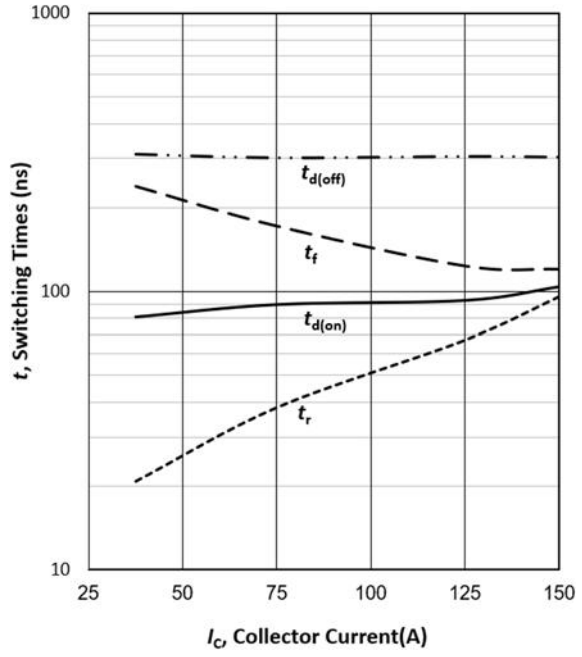


Figure 2 Switching time vs. collector current

(Inductive load, $T_{vj}=25^{\circ}\text{C}$,
 $V_{CE}=600\text{V}$, $V_{GE}=0/15\text{V}$, $R_G=7.5\ \Omega$)

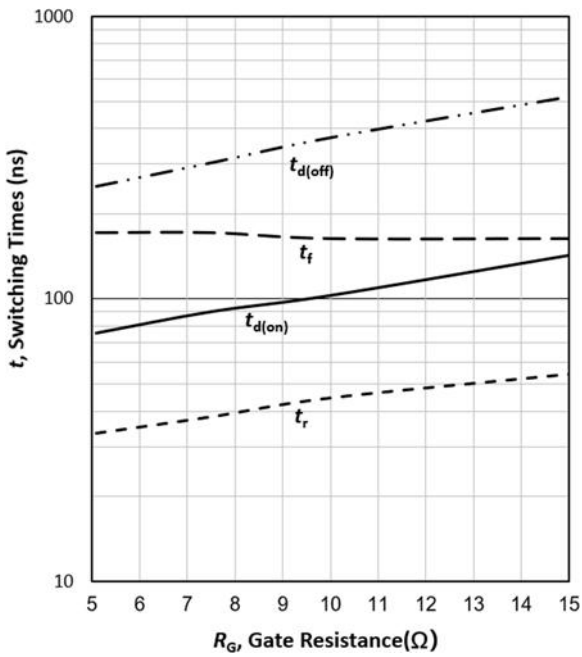


Figure 3 Switching time vs. gate resistance (Inductive load, $T_{vj}=25^{\circ}\text{C}$,
 $V_{CE}=600\text{V}$, $V_{GE}=0/15\text{V}$, $I_C=75\text{A}$)

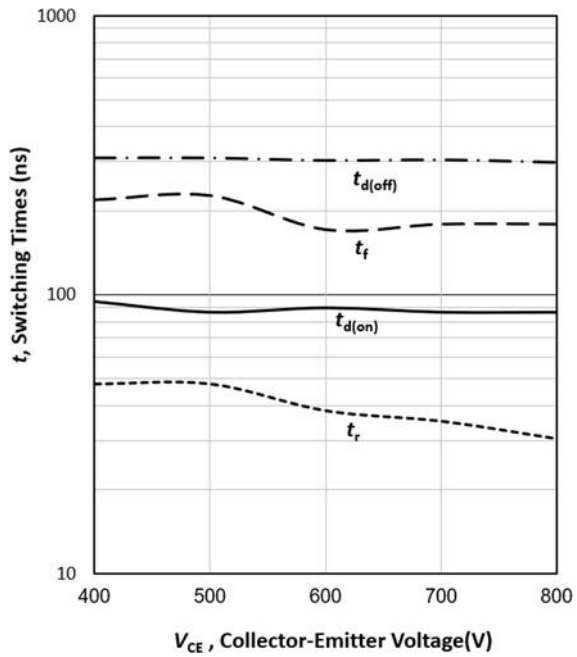


Figure 4 Switching time vs. collector-emitter voltage
 (Inductive load, $T_{vj}=25^{\circ}\text{C}$,
 $V_{GE}=0/15\text{V}$, $I_C=75\text{A}$, $R_G=7.5\ \Omega$)

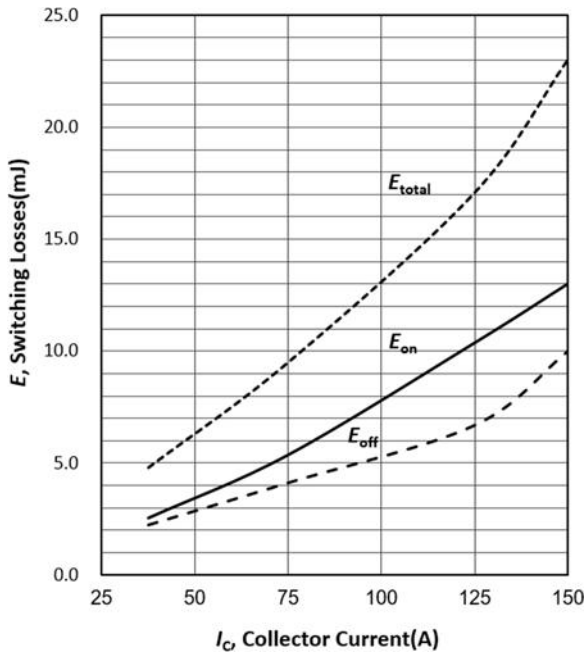


Figure 5 Switching loss vs. collector current
 (Inductive load, $T_{vj}=25^{\circ}\text{C}$,
 $V_{CE}=600\text{V}$, $V_{GE}=0/15\text{V}$, $R_G=7.5\ \Omega$)

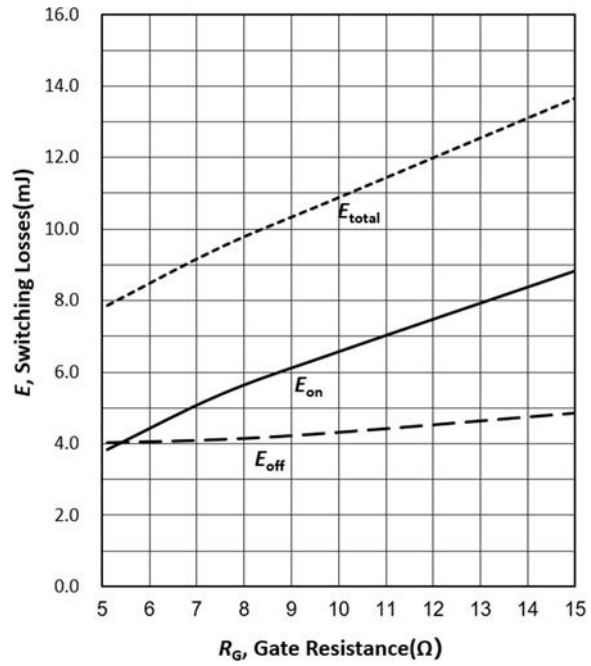


Figure 6 Switching loss vs. gate resistance(Inductive load, $T_{vj}=25^{\circ}\text{C}$,
 $V_{CE}=600\text{V}$, $V_{GE}=0/15\text{V}$, $I_C=75\text{A}$)

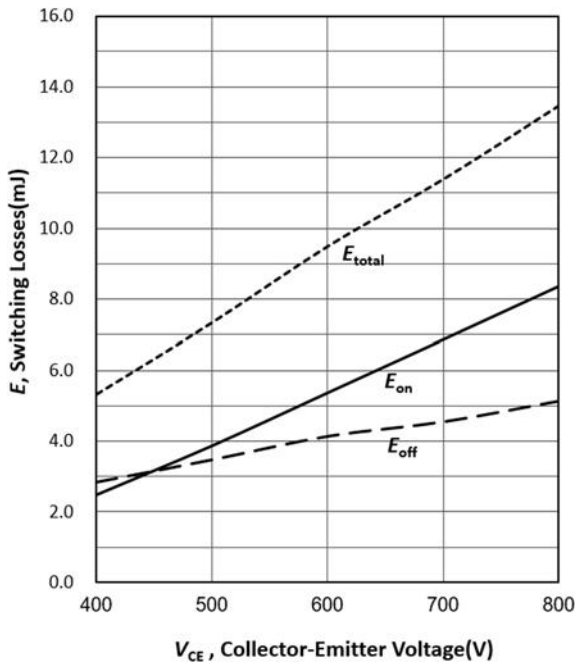


Figure 7 Switching loss vs. collector-emitter voltage
 (Inductive load, $T_{vj}=25^{\circ}\text{C}$,
 $V_{GE}=0/15\text{V}$, $I_C=75\text{A}$, $R_G=7.5\ \Omega$)

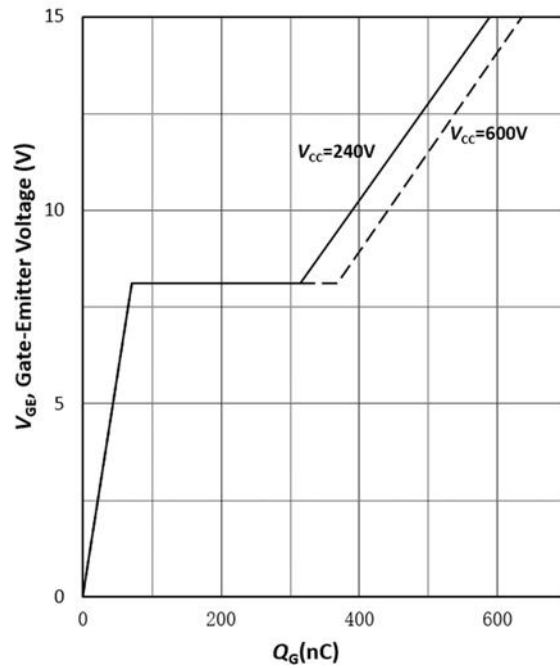
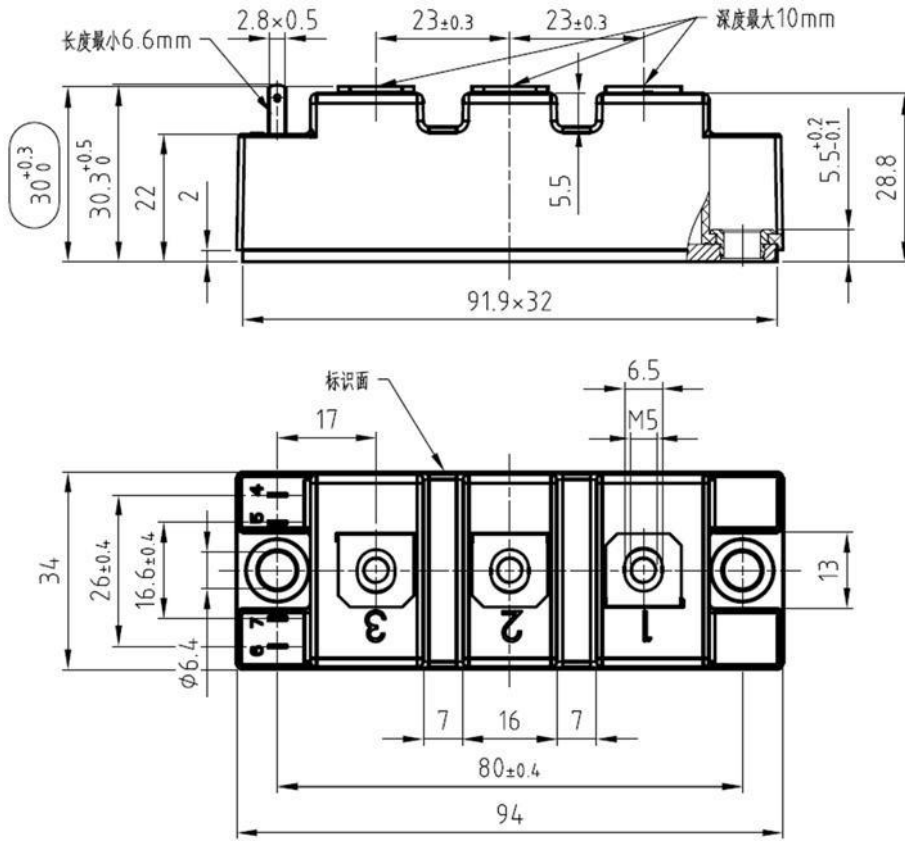
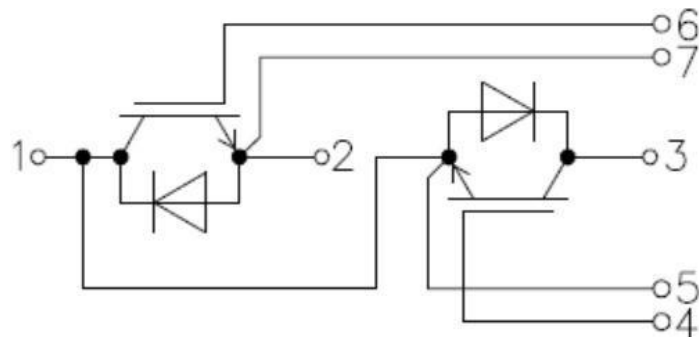


Figure 8 Gate charge characteristics

Package outlines (Unit: mm)



Circuit diagram headline



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