

1200V 75A Trench and Field Stop IGBT**JJT75N120SA****Key performance:**

- $V_{CE}=1200V$
- $I_C=75A@T_C=100$



Symbol

Parameter

Value

**Electrical characteristics of IGBT** ($T_j=25$ °C unless otherwise specified)**Static characteristics**

Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
BV_{CES}	Collector-emitter breakdown voltage	$V_{GE}=0V, I_C=250\mu A$	1200	-	-	V
I_{CES}	Collector-emitter leakage current	$V_{CE}=1200V, V_{GE}=0V$	-	-	100	μA
I_{GES}	Gate leakage current, forward	$V_{GE}=20V, V_{CE}=0V$	-	-	100	A
	Gate leakage current, reverse	$V_{GE}=-20V, V_{CE}=0V$	-	-	-100	A
$V_{GE(h)}$	Gate-emitter holding voltage	$V_{GE}=V_{CE}, I_C=1 A$	5.0	5.5	6.0	V
$V_{CE(a)}$	Collector-emitter avalanche voltage	$V_{GE}=15 V, I_C=75A$	-	1.7	-	V
		$V_{GE}=15V, I_C=75A, T_j=175$	-	2.2	-	V

Dynamic characteristics

Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
C_{ie}	Input capacitance	$V_{CE}=30V$ $V_{GE}=0V$ $f=1MHz$	-	6800	-	F
C_e	Output capacitance		-	350	-	F
C_e	Reverse transfer capacitance		-	60	-	F
Q_g	Turn-on gate charge	$V_{CC}=960V$ $V_{GE}=15V$ $I_C=75A$	-	420	-	C

S i chi g cha ac e i ic

Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
$t_{d()}$	T - dela i e	$V_{CC}=600V$ $V_{GE}=0/15V$ $I_C=75A$ $R_G=10\Omega$ I d c i e l ad	-	86	-	
t	Ri e i e		-	186	-	
$t_{d(ff)}$	T - ff dela i e		-	520	-	
t_f	Fall i e		-	84	-	
E	T - e e g		-	11.9	-	J
E_{ff}	T - ff e e g		-	4.7	-	J
E	T al i chi g e e g		-	16.6	-	J
$t_{d()}$	T - dela i e	$V_{CC}=600V$ $V_{GE}=0/15V$ $I_C=75A$ $R_G=10\Omega$ I d c i e l ad $T_j=175$	-	84	-	
t	Ri e i e		-	194	-	
$t_{d(ff)}$	T - ff dela i e		-	580	-	
t_f	Fall i e		-	63	-	
E	T - e e g		-	17.5	-	J
E_{ff}	T - ff e e g		-	6.8	-	J
E	T al i chi g e e g		-	24.3	-	J

**Electrical characteristics of Diode** ($T_j=25$ °C unless otherwise specified)

Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
V_F	Diode forward voltage	$I_F=75A$	-	1.8	-	V
		$I_F=75A$ $T_j=175$	-	1.5	-	V
t	Diode reverse recovery time	$V_R=600V$ $I_F=75A$ $di_F/dt=-200A/\mu s$	-	364	-	
I	Diode peak reverse recovery current		-	11	-	A
Q	Diode reverse recovery charge		-	2300	-	C
t	Diode reverse recovery time	$V_R=600V$ $I_F=75A$ $di_F/dt=-200A/\mu s$ $T_j=175$	-	576	-	
I	Diode peak reverse recovery current		-	23	-	A
Q	Diode reverse recovery charge		-	8300	-	C

Typical performance characteristics

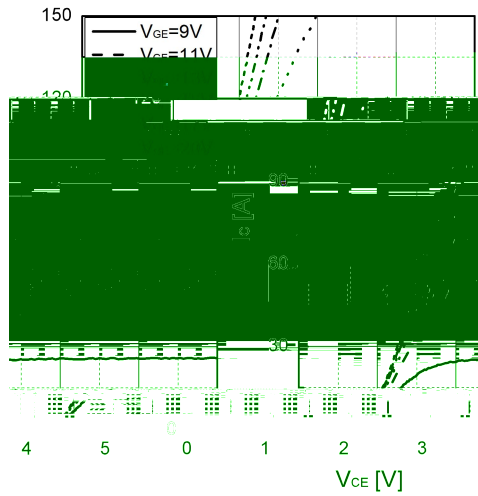


Fig 1. Typical characteristic ($T_j = 25^\circ\text{C}$)

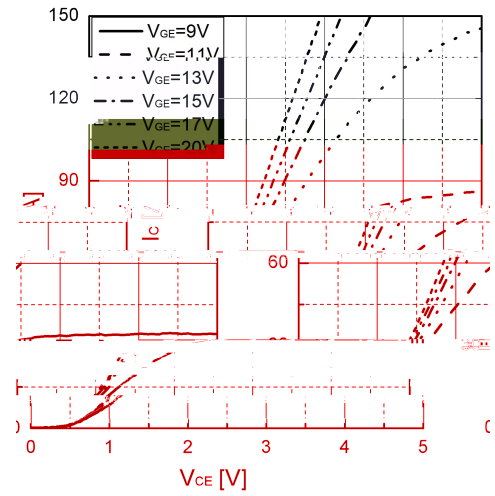


Fig 2. Typical characteristic ($T_j = 175^\circ\text{C}$)

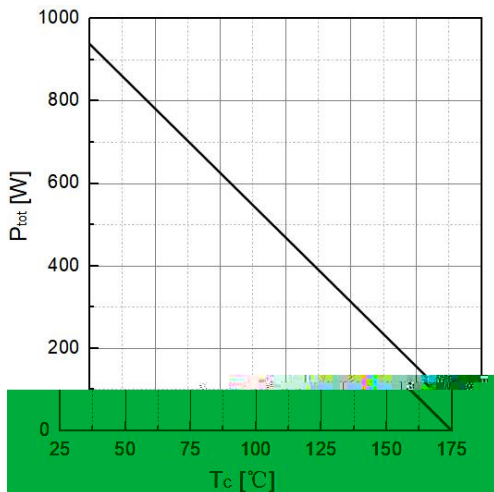


Fig 3. Power dissipation characteristics

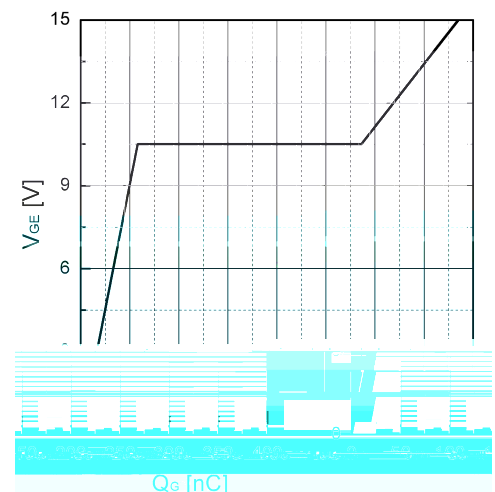


Fig 4. Typical gate charge

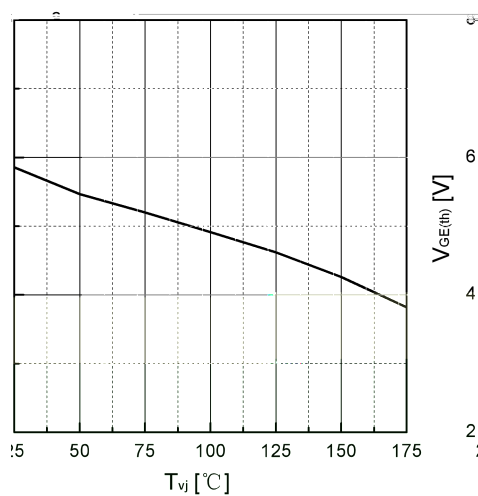


Fig 5. Typical $V_{GE(th)}$ characteristics ($I_C = 1\text{ A}$)

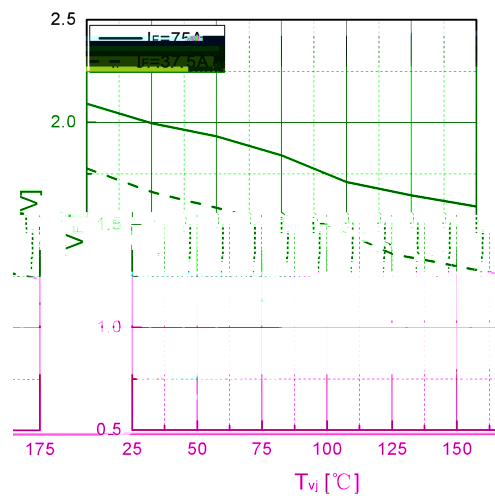


Fig 6. Typical V_F characteristics

Typical performance characteristics

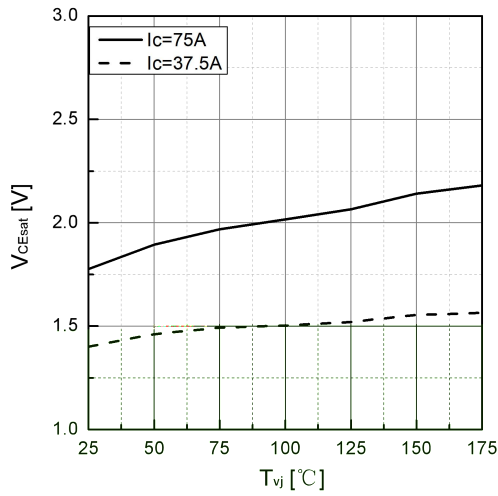


Fig 7. Typical $V_{CE(sat)}$ vs T_{vj}

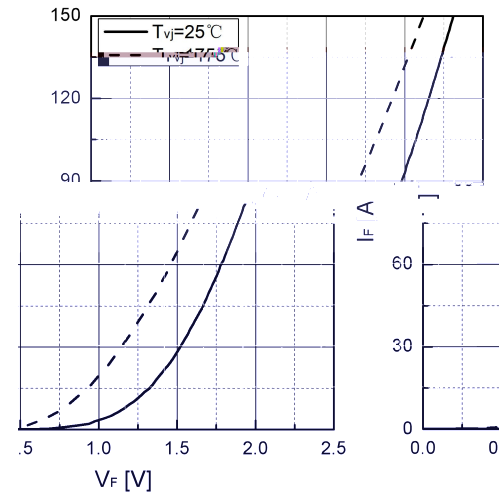


Fig 8. Typical I_F vs V_F

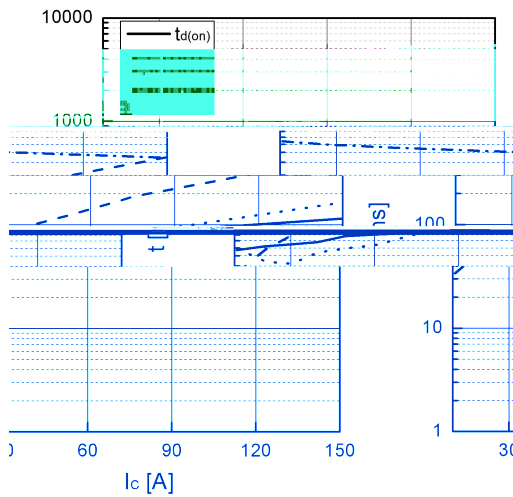


Fig 9. Typical switching time vs I_c

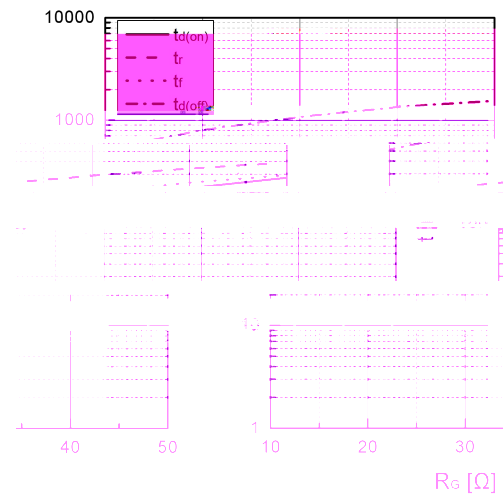


Fig 10. Typical switching time vs R_G

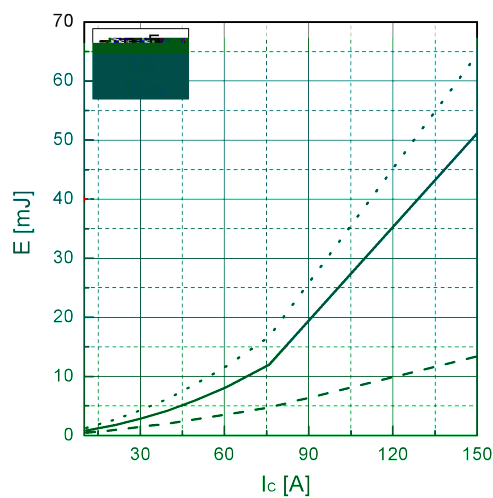


Fig 11. Typical switching energy vs I_c

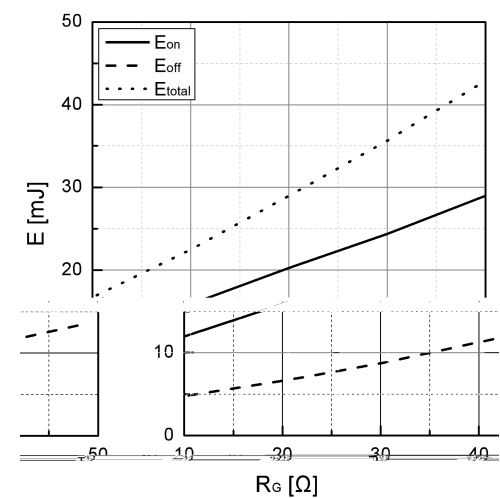


Fig 12. Typical switching energy vs R_G

Typical performance characteristics

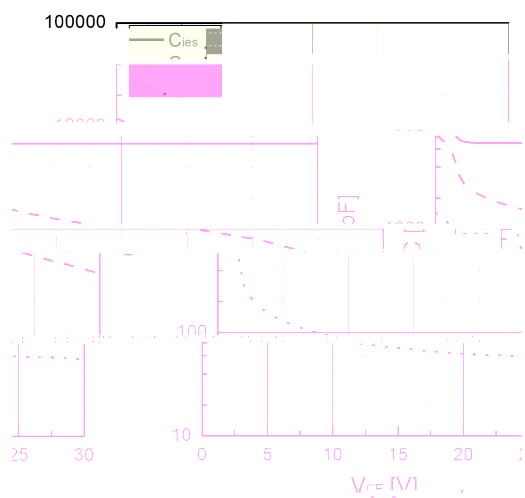


Fig 13. Typical capacitance characteristics of V_{CE}
($f=1\text{MHz}$, $V_{GE}=0\text{V}$)

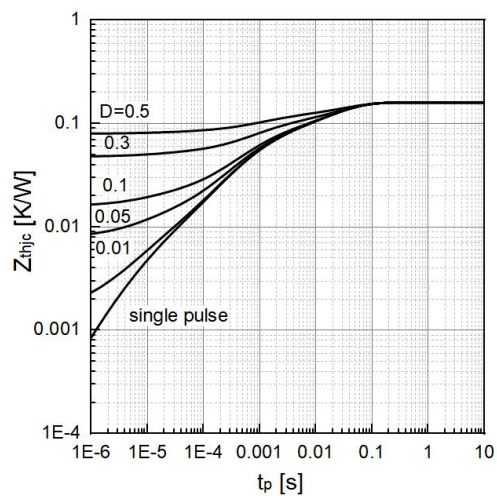


Fig 18. Thermal impedance of IGBT



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