SSC65TR20GT6

Trench FSII Fast IGBT

➢ Features

V_{CES}	V_{GES}	I_C
650V	±20V	125A@25℃
		75A@100℃

➢ Description

Using trench design and advanced FS (Field Stop) second generation technology, the 650V Trench FSII IGBT offers superior conduction and switching performances, and easy parallel operation.

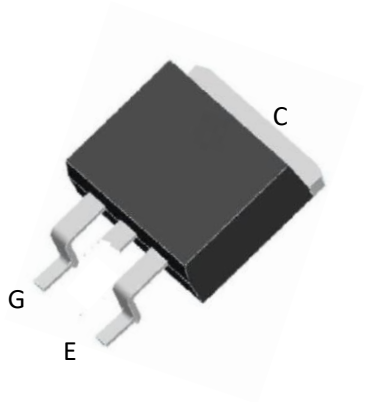
➢ Applications

- Hair removal device
- Flash light

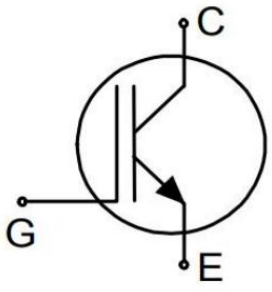
➢ Ordering Information

Device	Package	Shipping
SSCG75N65GT6	TO263-3L	800/Reel

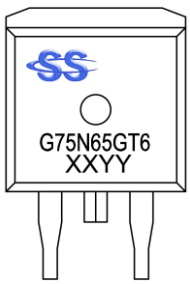
➢ Pin Configuration



TO263-3L (Top View)



Pin Configuration



Marking

(XXYY: Internal Traceability Code)

➢ Absolute Maximum Ratings (T_{vj}=25℃ unless otherwise noted)

Symbol	Parameter		Ratings	Unit
V_{CES}	Collector-Emitter Voltage		650	V
V_{GES}	Gate-Emitter Voltage		±20	V
I_C	Collector Current	T_C=25℃	125	A
		T_C=100℃	75	
I_{Cpuls}	Pulsed Collector Current, t_p limited by T_{vJmax}		300	A
P_D	Power Dissipation [a]	T_C=25℃	535	W
		T_C=100℃	267	
T_J	Operating Junction and Storage Temperature Range		-40~175	℃
T_{STG}	Operating Junction and Storage Temperature Range		-55~150	℃

➢ Thermal Resistance Ratings

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance		40	℃/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case for IGBT		0.28	

➢ Electrical Characteristics of IGBT (T_{vj}=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	V_{GE} = 0V, I_C = 0.25mA	650			V
I_{CES}	Collector-Emitter Leakage Current	V_{GE}=0V, V_{CE}=650V, Tvj=25℃			50	uA
$I_{GES(F)}$	Gate to Emitter Forward Leakage	V_{GE} = +20V, V_{CE} = 0V			100	nA
$I_{GES(R)}$	Gate to Emitter Reverse Leakage	V_{GE} = -20V, V_{CE} = 0V			-100	nA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=75A, V_{GE}=15V, T_{vj}=25℃		1.7		V
		I_C=75A, V_{GE}=15V, T_{vj}=175℃		2.2		V
$V_{GE(th)}$	Gate Threshold Voltage	I_C = 1mA, V_{CE} = V_{GE}	5.0	5.3	5.7	V
C_{ies}	Input Capacitance	V_{CE} = 30V, V_{GE} = 0V, f = 1MHz		4250		pF
C_{oes}	Output Capacitance			200		
C_{res}	Reverse Transfer Capacitance			30		
$T_{D(ON)}$	Turn-on delay time	T_{vj}=25℃, V_{CC}=400V, I_C=75A, V_{GE}=0/15V, R_g=10Ω, Inductive Load		54		ns
T_r	Rise time			130		
$T_{D(OFF)}$	Turn-off delay time			163		
T_f	Fall time			94		
E_{on}	Turn-On Switching Loss			3.2		mJ
E_{off}	Turn-Off Switching Loss			2.1		
E_{ts}	Total Switching Loss			5.3		
$T_{D(ON)}$	Turn-on delay time	T_{vj}=175℃, V_{CC}=400V, I_C=75A, V_{GE}=0/15V, R_g=10Ω, Inductive Load		52		ns
T_r	Rise time			126		
$T_{D(OFF)}$	Turn-off delay time			183		
T_f	Fall time			106		
E_{on}	Turn-On Switching Loss			4.7		mJ
E_{off}	Turn-Off Switching Loss			2.7		
E_{ts}	Total Switching Loss			7.4		
Q_G	Total Gate Charge	V_{CC} = 520V, I_C = 75A, V_{GE} = 0/15V		130		nC

➢ Typical Performance Characteristics (T_{vj}=25℃ unless otherwise noted)

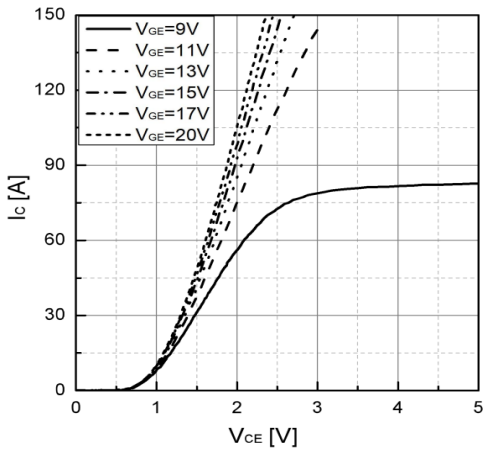


Fig 1. Typical output characteristic (T_{vj}=25℃)

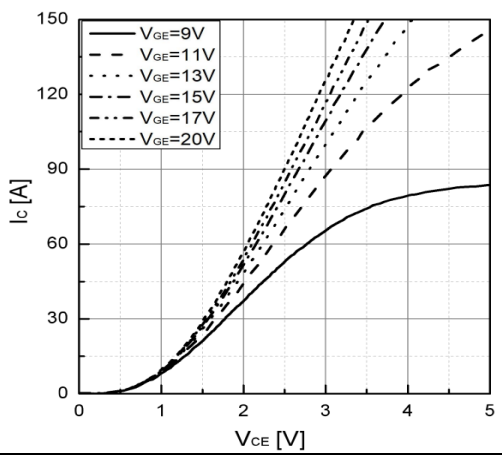


Fig 2. Typical output characteristic(T_{vj}=175℃)

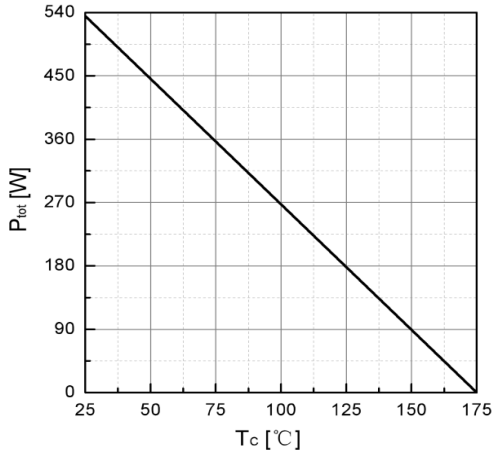


Fig 3. Power dissipation as a function of TC

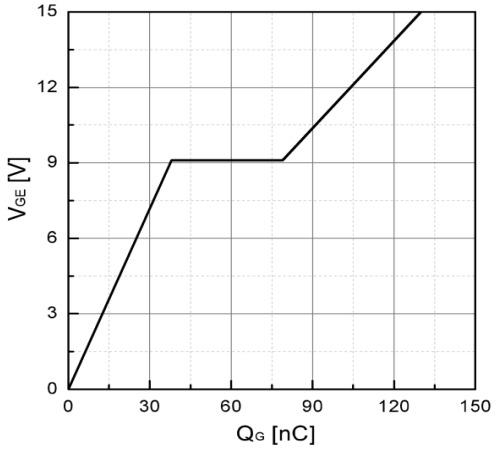


Fig 4. Typical Gate charge

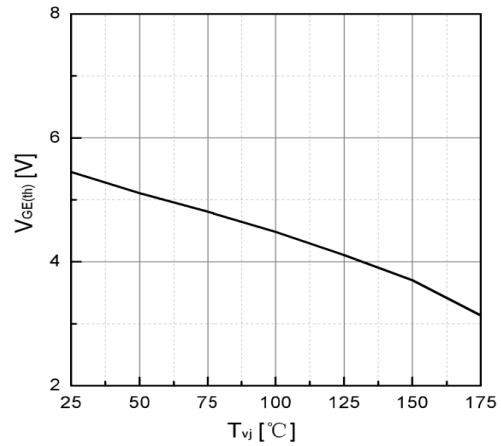


Fig 5. Typical VGE(th) as a function of T_{vj} (IC=1mA)

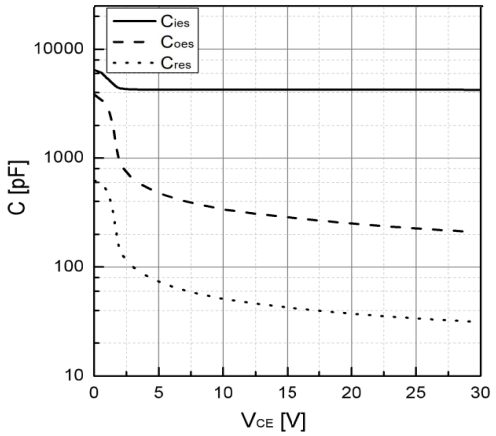


Fig 6. Typical VF as a function of T_{vj}

➢ Typical Performance Characteristics (T_{vj}=25℃ unless otherwise noted)

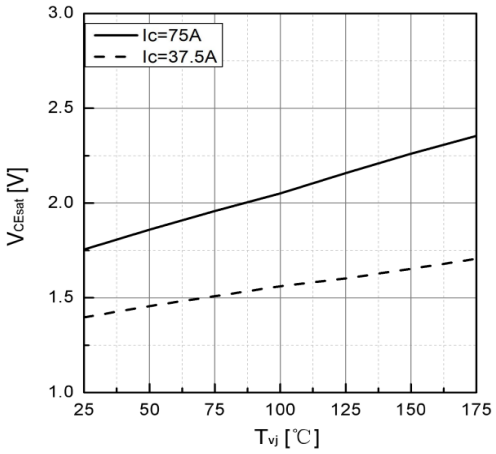


Fig 7. Typical VCEsat as a function of Tvj

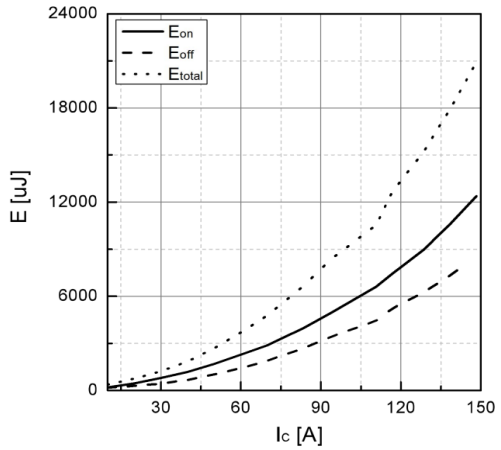


Fig 8. Typical switching energy losses as a function of IC

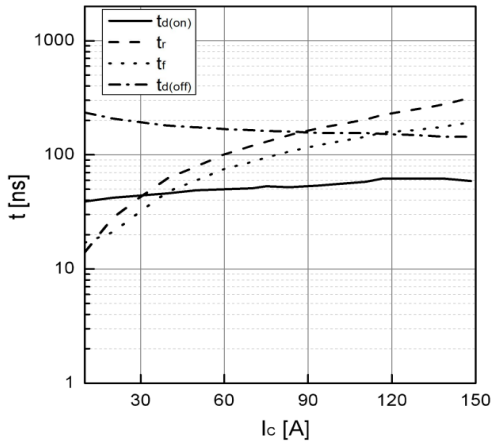


Fig 9. Typical switching time as a function of IC

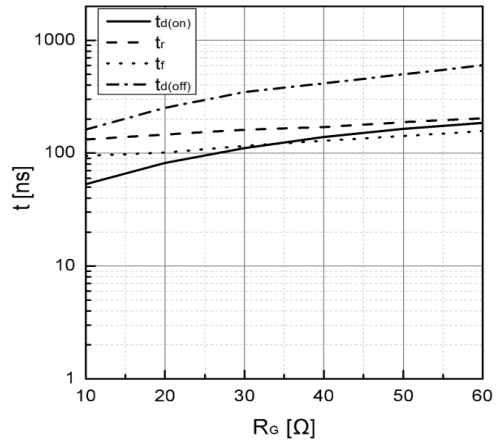


Fig 10. Typical switching times as a function of RG

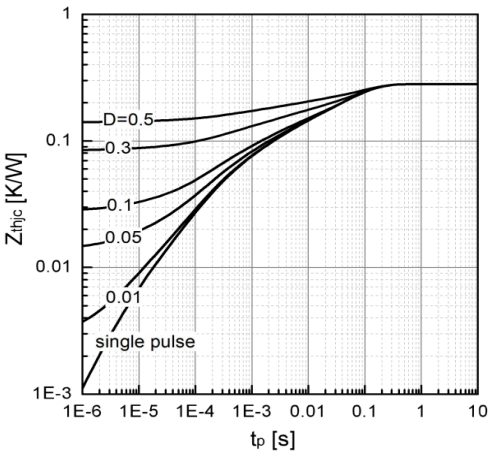


Fig 11. Transient thermal impedance of IGBT

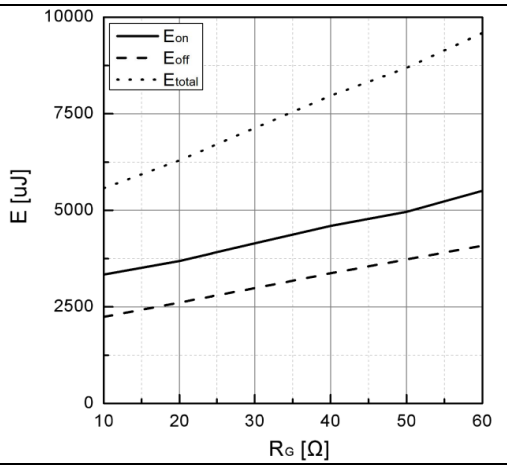
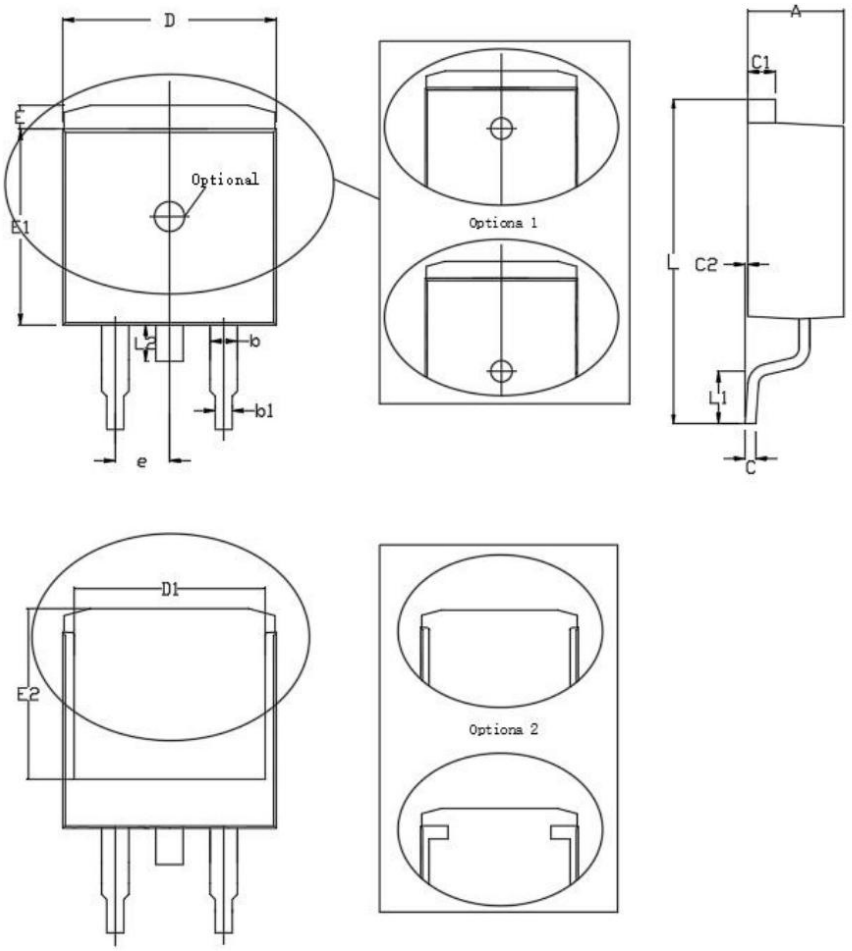


Fig 12. Typical switching energy losses as a function of RG

➢ Package Information

TO263-3L



Symbol	MILL IMETER			Symbol	MILL IMETER		
	Min	Nom	Max		Min	Nom	Max
A	4.40	4.55	4.70	E	1.02	1.27	1.67
b	1.17	1.28	1.37	E1	8.38	9.15	9.65
b1	0.51	0.80	0.91	E2	6.85	8.00	8.40
C	0.38	0.47	0.74	e	2.54BSC		
C1	1.14	1.30	1.65	L	14.61	15.24	15.88
C2	0.02	0.10	0.20	L1	1.50	/	2.60
D	9.65	10.00	10.70	L2	1.30	1.50	1.75
D1	6.25	7.40	8.37				

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