SSC65T50GT6

Trench FSII Fast IGBT

➢ Features

V_{CES}	V_{GES}	I_C
650V	±20V	100A@25℃
		50A@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.

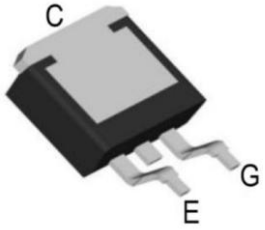
➢ Applications

- PFC Circuits
- UPS
- Solar Inverters

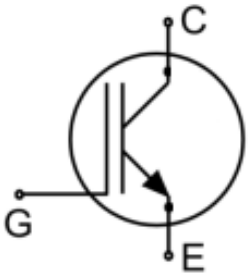
➢ Ordering Information

Device	Package	Shipping
SSC65T50GT6	TO-263-3L	Reel

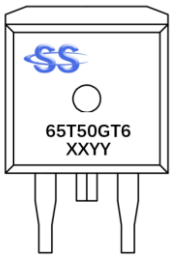
➢ Pin Configuration



TO-263-3L (Bottom 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℃	100	A
		T_C=100℃	50	
I_{Cpuls}	Pulsed Collector Current, t_p limited by T_{vJmax}		150	A
P_D	Power Dissipation	T_C=25℃	266	W
		T_C=100℃	170	
T_J	Operating Junction and Storage Temperature Range		-40~150	℃
T_{STG}	Operating Junction and Storage Temperature Range		-55~150	℃

➢ Thermal Resistance Ratings

Symbol	Parameter	Typ	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance	50	℃/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case for IGBT	0.47	

➢ 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, T_{vj}=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=50A, V_{GE}=15V, T_{vj}=25℃		1.76		V
		I_C=50A, V_{GE}=15V, T_{vj}=150℃		2.34		V
$V_{GE(th)}$	Gate Threshold Voltage	I_C = 1mA, V_{CE} = V_{GE}		4.75		V
C_{ies}	Input Capacitance	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz		2926		pF
C_{oes}	Output Capacitance			105		
C_{res}	Reverse Transfer Capacitance			58		
$T_{D(ON)}$	Turn-on delay time	T_{vj}=25℃, V_{CC}=400V, I_C=32A, V_{GE}=0/15V, R_g=15Ω, Inductive Load		29		ns
T_r	Rise time			29		
$T_{D(OFF)}$	Turn-off delay time			217		
T_f	Fall time			13		
E_{on}	Turn-On Switching Loss			0.90		mJ
E_{off}	Turn-Off Switching Loss			0.35		
E_{ts}	Total Switching Loss			1.25		
$T_{D(ON)}$	Turn-on delay time	T_{vj}=150℃, V_{CC}=400V, I_C=32A, V_{GE}=0/15V, R_g=15Ω, Inductive Load		27		ns
T_r	Rise time			29		
$T_{D(OFF)}$	Turn-off delay time			236		
T_f	Fall time			23		
E_{on}	Turn-On Switching Loss			0.94		mJ
E_{off}	Turn-Off Switching Loss			0.46		
E_{ts}	Total Switching Loss			1.40		
Q_G	Total Gate Charge	V_{CC} = 300V, I_C = 50A, V_{GE} = 0/15V		118		nC

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

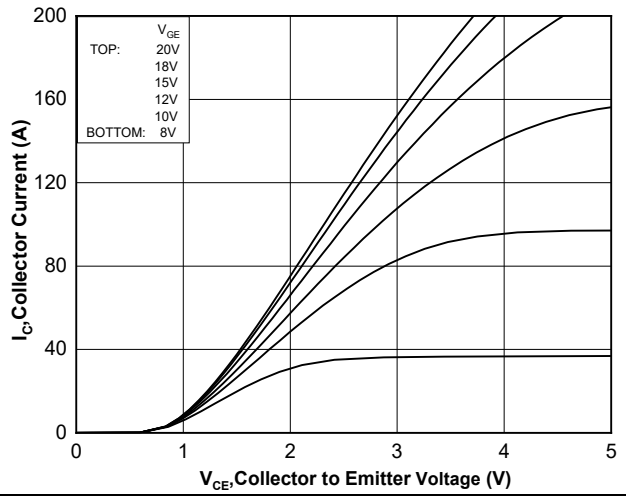


Fig 1. Typical output characteristic (T_{vj}=25℃)

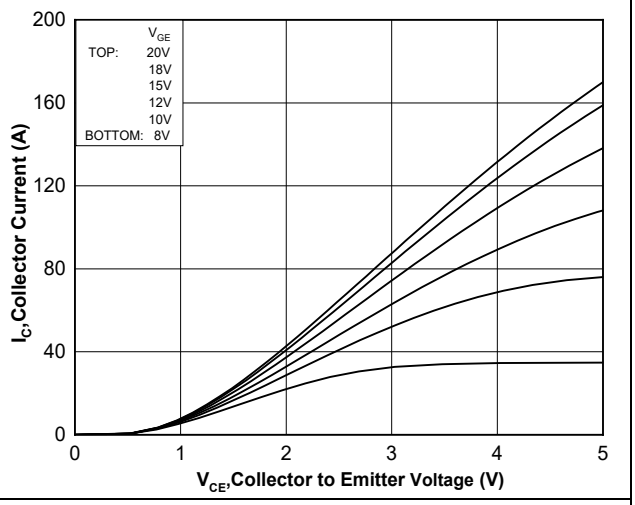


Fig 2. Typical output characteristic(T_{vj}=150℃)

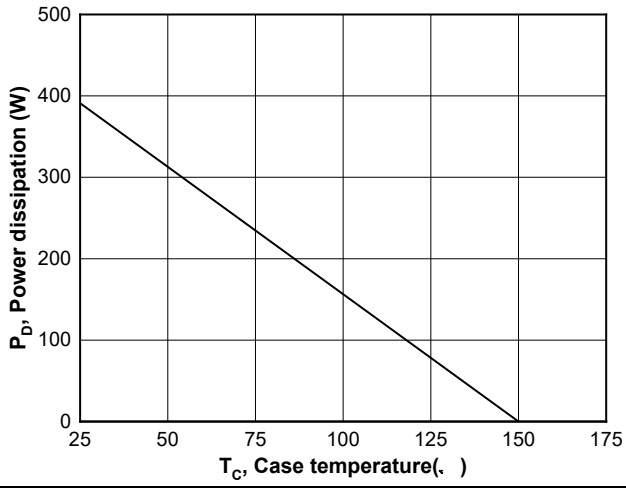


Fig 3. Power dissipation as a function of T_C

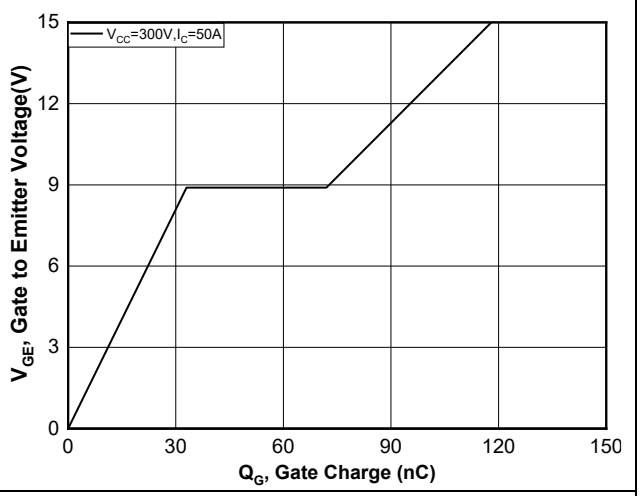


Fig 4. Typical Gate charge

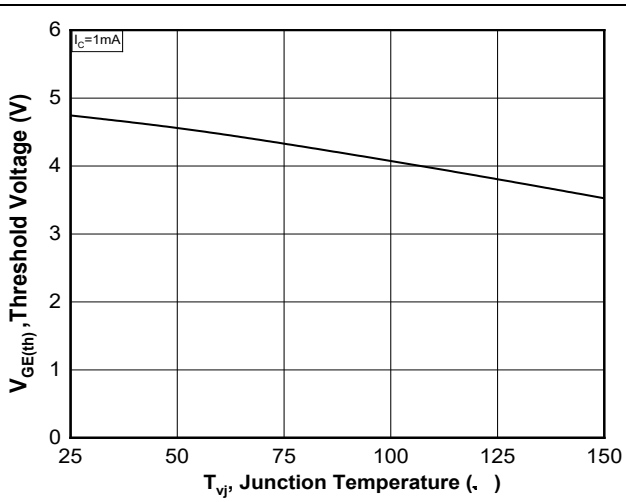


Fig 5. Typical $V_{GE(th)}$ as a function of T_{vj} (I_C=1mA)

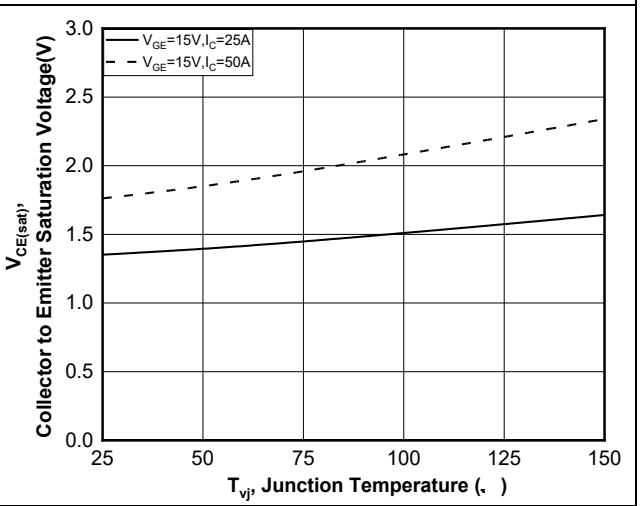


Fig 6. Typical V_{CEsat} as a function of Tvj

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

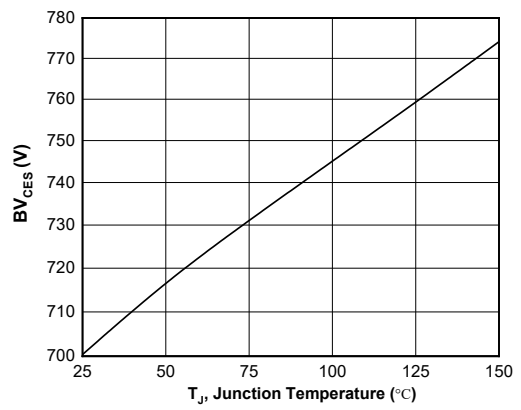


Figure 7. BV_{CES} as a function of junction temperature (I_{CE}=250μA)

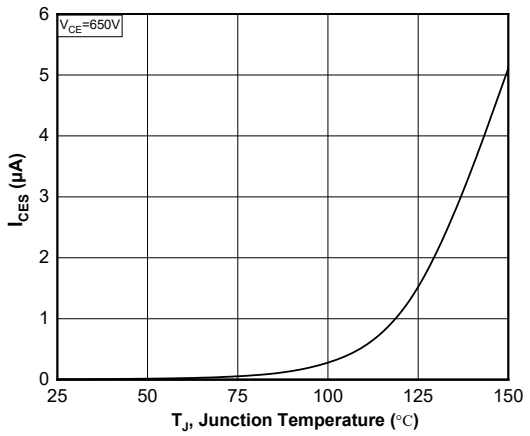


Figure 8. I_{CES} leakage current as a function of junction temperature

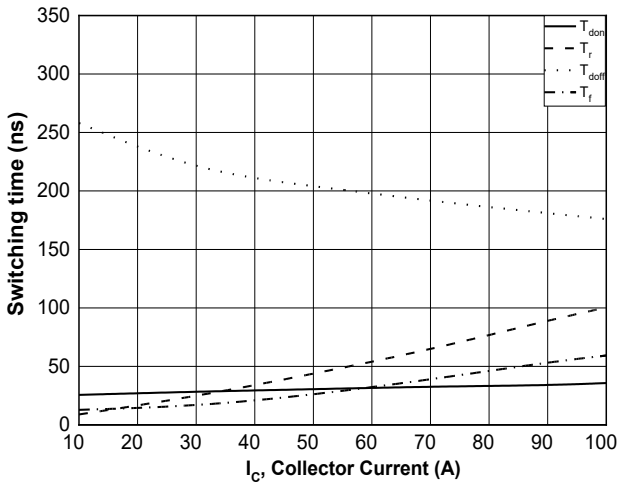


Fig 9. Typical switching time as a function of I_C

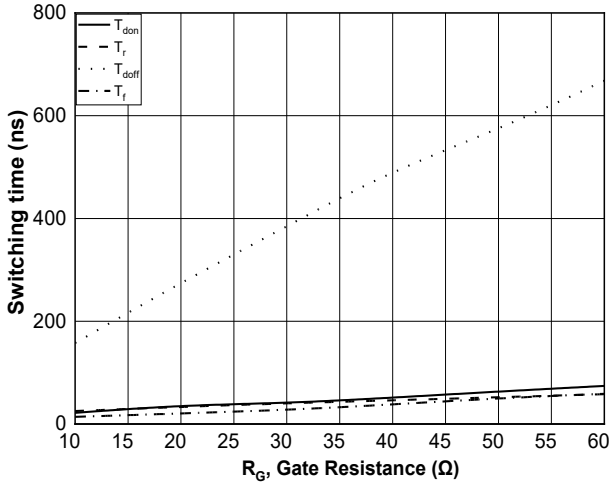


Fig 10. Typical switching times as a function of R_G

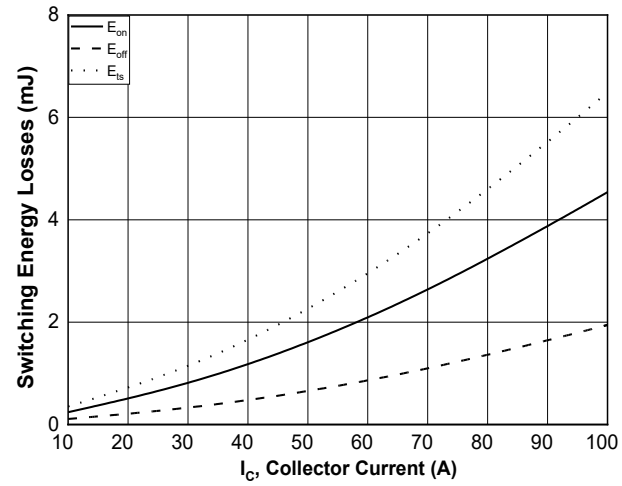


Fig 11. Typical switching energy losses as a function of I_C

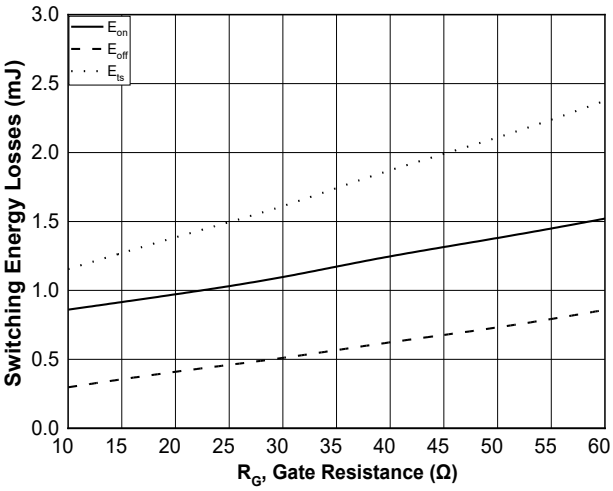


Fig 12. Typical switching times as a function of R_G

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

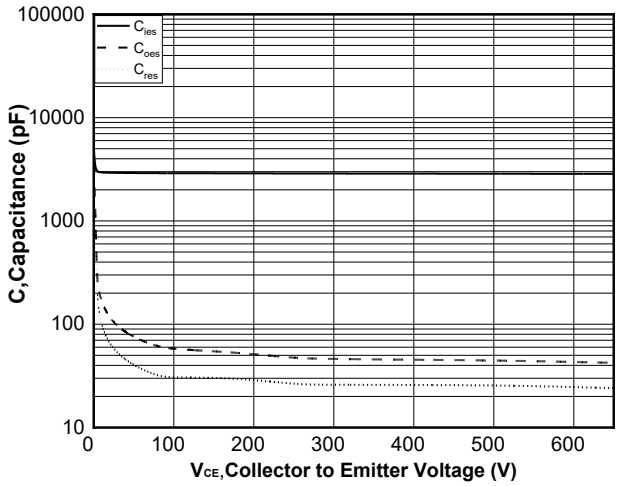


Fig 13. Typical capacitance as a function of V_{CE} (f=1MHz, V_{GE}=0V)

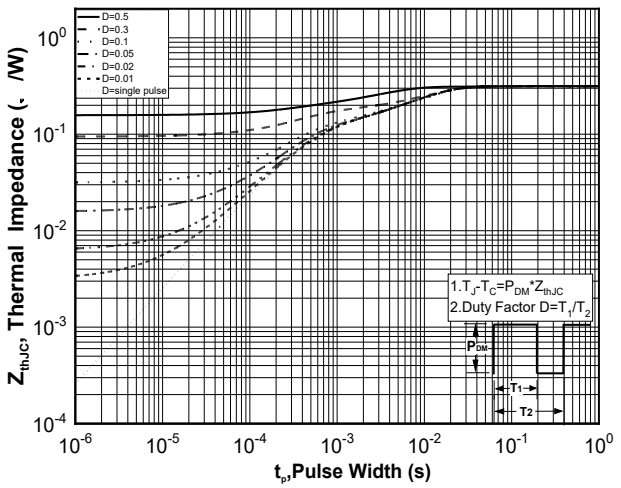
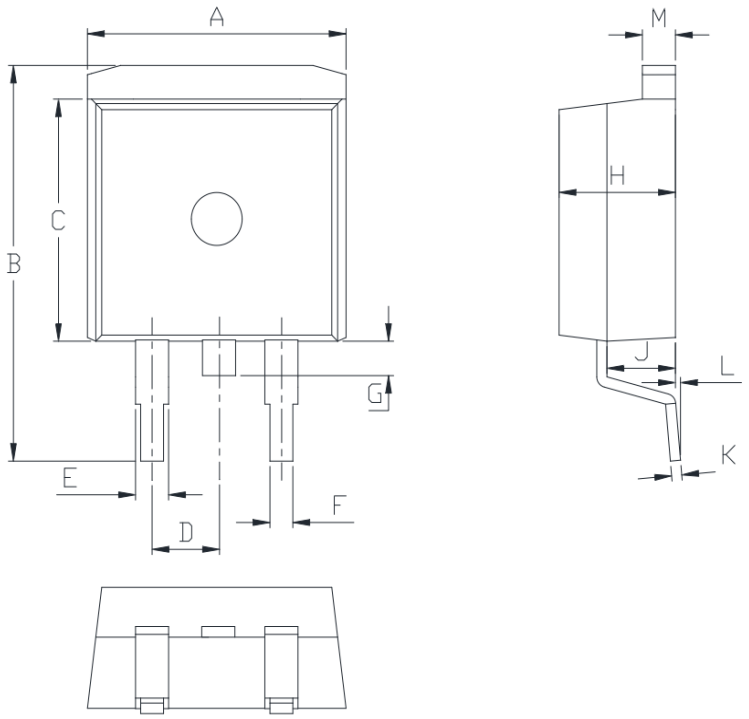


Fig 14. Transient thermal impedance of IGBT

➢ Package Information

TO-263



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.90	-	10.20	0.390	-	0.402
B	14.70	-	15.80	0.579	-	0.622
C	9.4	-	9.6	0.37	-	0.378
D	-	2.54	-	-	0.100	-
E	1.20	-	1.40	0.047	-	0.055
F	0.75	-	0.85	0.029	-	0.033
G	-	-	1.75	-	-	0.069
H	4.40	-	4.70	0.173	-	0.185
J	2.30	-	2.70	0.091	-	0.106
K	0.38	-	0.55	0.015	-	0.022
L	0	0.10	0.25	0	0.004	0.010
M	1.25	-	1.35	0.049	-	0.053

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