SSCJ650N65GT8

N-Channel 650V Super Junction Power MOSFET

➢ Features

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
650V	±20V	0.65Ω@10V	7A

➢ Description

- Rdson max=800mΩ@VGS=10V
- Low FOM Ron,spss
- Extremely low losses due to very low Eon and Eoff
- Qualified for industrial grade applications according to JEDEC
- Excellent stability and uniformity

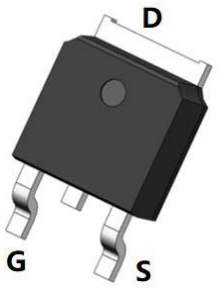
➢ Applications

- SMPS
- Adapter
- LED Lightingssss
- EV Charger
- Telecom Power
- Solar Inverter

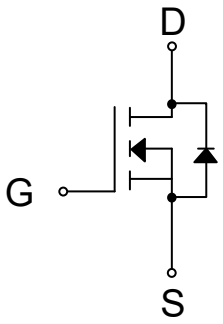
➢ Ordering Information

Device	Package	Shipping
SSCJ650N65GT8	TO-252	2500/Reel

➢ Pin Configuration



TO-252 (Top View)



Pin Configuration

Marking

(XXYY: Internal Traceability Code)

➢ Absolute Maximum Ratings (T_J=25℃ unless otherwise noted)

Symbol	Parameter		Ratings	Unit
V_{DSS}	Drain-to-Source Voltage		650	V
V_{GSS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_J=25℃	7	A
		T_J=100℃	4	
I_{DM}	Pulsed Drain Current [a]		12	A
E_{AS}	Single Pulsed Avalanche Energy [b]		42	mJ
I_{AS}	Avalanche current, single pulse [b]		2.9	A
dv/dt	MOSFET dv/dt ruggedness		50	V/ns
dv/dt	Reverse diode dv/dt		15	V/ns
P_D	Power Dissipation, T_J=25℃		34	W
T_{STG} /T_J	Junction & Storage Temperature Range		-55 to 150	℃

➢ Thermal Resistance Ratings (T_J=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Unit
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient[c]	62	℃/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	3.3	

Note:

a. Repetitive Rating: Pulsed width limited by maximum junction temperature.

b. VDD=50V; L=10mH

c. $R_{\theta JA}$ is measured with the device mounted on a minimum recommended pad of 2oz copper FR4 PCB.

➢ Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 1mA	650			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 650V, V_{GS} = 0V			1.0	μA
Gate-Source Leak Current	I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250uA	3	3.5	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 2.5A		0.65	0.8	Ω
Input Capacitance	C_{ISS}	V_{DS} = 50V, V_{GS} = 0V, f = 100kHz		265		pF
Output Capacitance	C_{OSS}			42		
Reverse Transfer Capacitance	C_{RSS}			2.3		
Total Gate Charge	Q_G	V_{GS} = 0 to 10V, V_{DS} = 400V, I_D = 2.5A		8		nC
Gate to Source Charge	Q_{GS}			2.2		
Gate to Drain Charge	Q_{GD}			1.8		
Turn-on Delay Time	$T_{D(ON)}$	V_{GS} = 15V, V_{DS} = 400V, I_D = 2.5A, R_G = 10Ω		13.2		ns
Rise Time	T_r			7.2		
Turn-off Delay Time	$T_{D(OFF)}$			26		
Fall Time	T_f			10		
Drain to Source Diode Forward Voltage	V_{SD}	VGS = 0V, IS = 2.5A			1.4	V
Body Diode Reverse Recovery Time	Trr	IF = 2.5A, di/dt = 100A/us		175		ns
Body Diode Reverse Recovery Charge	Qrr			1.2		μC

➢ Typical Performance Characteristics (T_J=25℃ unless otherwise noted)

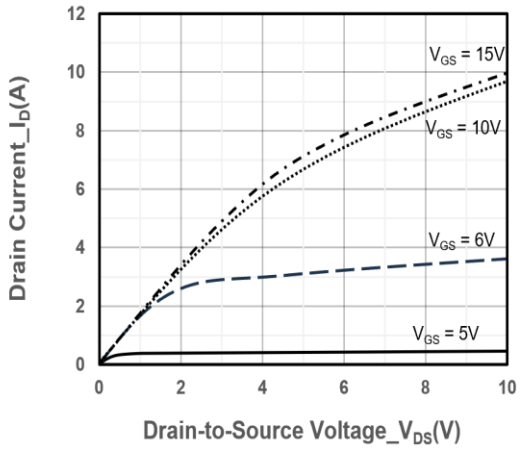


Figure 1: Output Characteristics

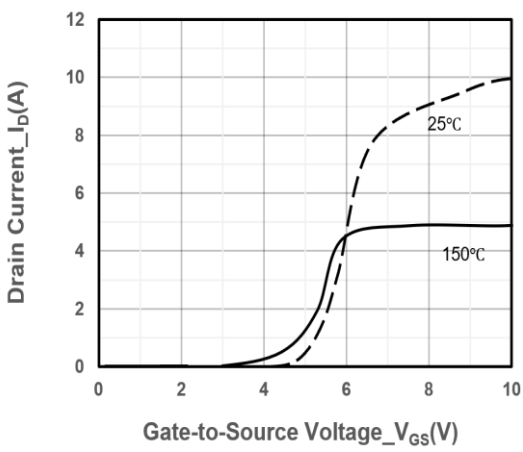


Figure 2: Typical Transfer Characteristics

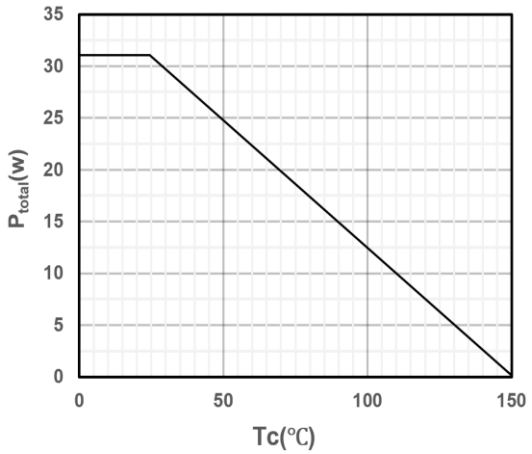


Figure 3: Power Dissipation

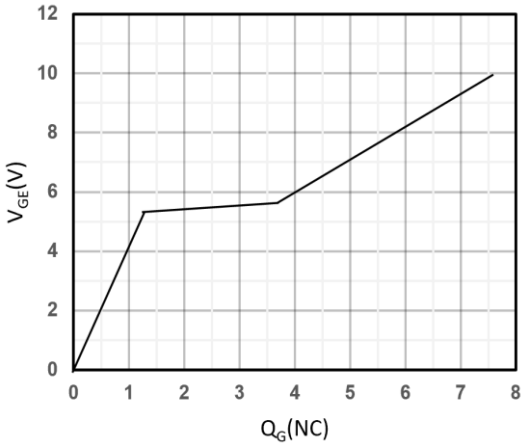


Figure 4: Gate Charge Characteristics

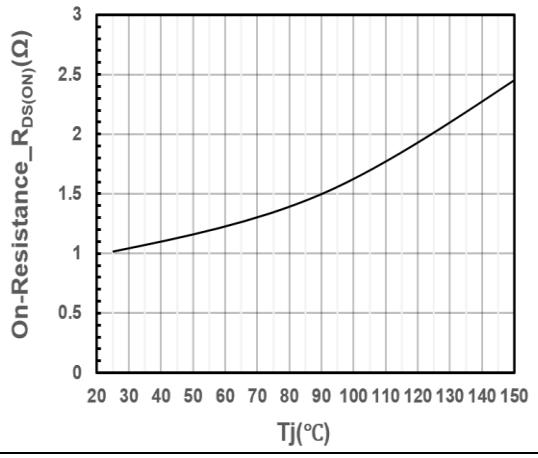


Figure 5: Normalized on Resistance vs. Junction Temperature

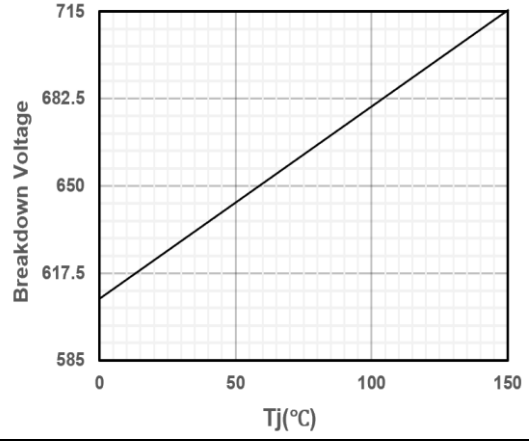


Figure 6: Normalized Breakdown voltage vs. Junction Temperature

➢ Typical Performance Characteristics (T_J=25℃ unless otherwise noted)

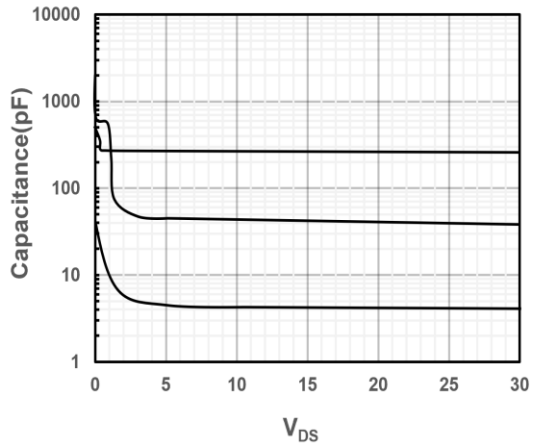


Figure 7: Capacitance Characteristics

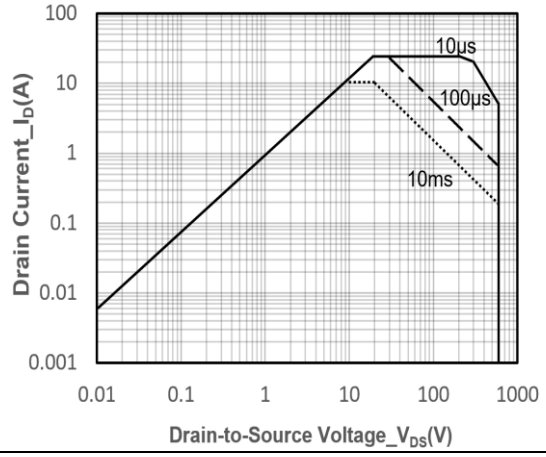
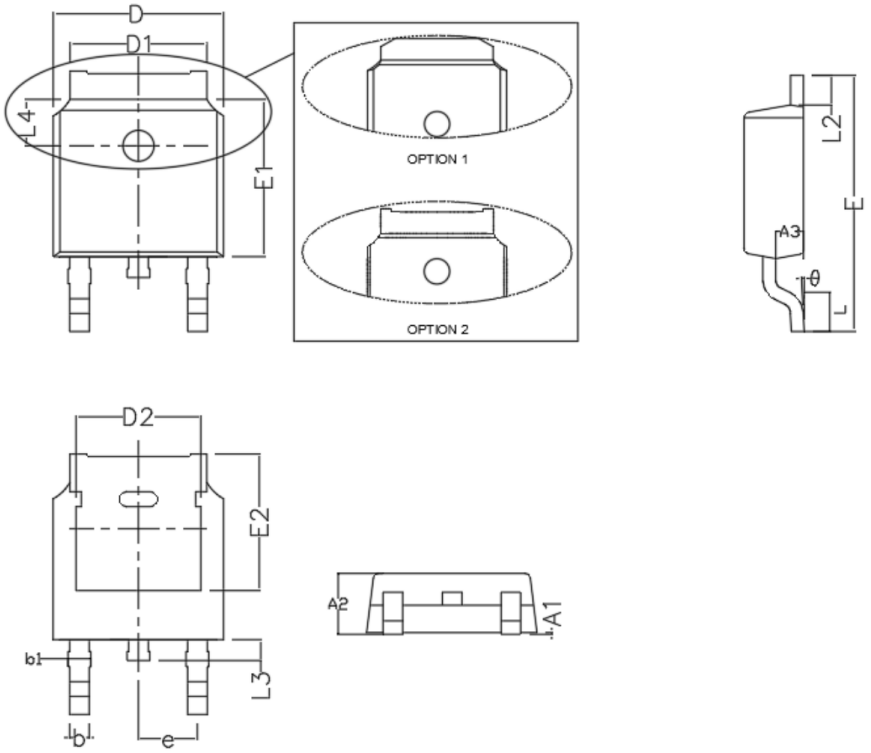


Figure 8: Maximum Safe Operating Area

➢ Package Information

TO252



Symbol	MILL IMETER			Symbol	MILL IMETER		
	Min	Nom	Max		Min	Nom	Max
A1	0.000	/	0.200	E1	5.900	6.100	6.300
A2	2.100	2.300	2.400	E2	5.100	5.450	5.600
A3	0.900	1.040	1.170	e	2.286TYP		
b	0.635	0.762	0.910	L	1.270	1.500	2.032
b1	0.680	0.840	1.145	L2	0.900	1.100	1.270
D	6.350	6.600	6.800	L3	0.600	0.800	1.000
D1	4.950	5.330	5.500	L4	1.600	1.800	2.000
D2	4.315	4.830	5.230	θ	0°	/	10°
E	9.395	10.100	10.500				

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