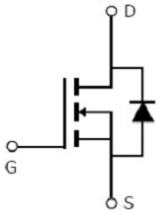
SSF6808UA

Main Product Characteristics

V_{DSS}	68V
R_{DS}(on)	6.5mΩ (typ.)
I_D	95A ①

TO-263

Marking and Pin Assignment



Schematic Diagram

Features and Benefits

- Advanced Process Technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150℃ operating temperature

Description

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Absolute max Rating

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	95	A
I_{DM}	Pulsed Drain Current ②	380	
P_D @TC = 25°C	Power Dissipation ③	130	W
V_{DS}	Drain-Source Voltage	68	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy	380	mJ
I_{AS}	Single Pulse Avalanche Current	37	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

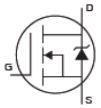
Thermal Resistance

Symbol	Characterizes	Value	Units
$R_{\theta JC}$	Junction-to-case ③	1.15	°C/W
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	65	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

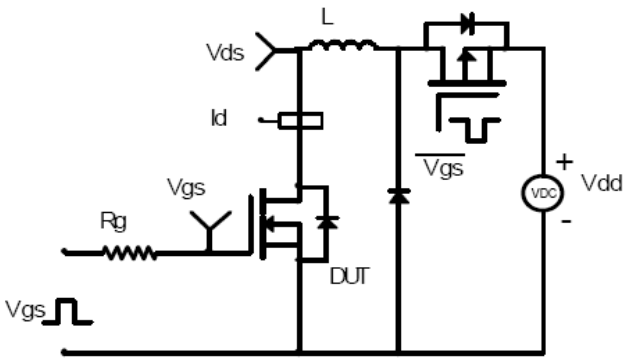
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	68	—	—	V	V_{GS} = 0V, I_D= 250uA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	6.5	7.5	mΩ	V_{GS}=10V,I_D =30A
$V_{GS(th)}$	Gate threshold voltage	2.0	—	4.0	V	V_{DS} = V_{GS}, I_D =250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =68V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	68	—	nC	I_D = 20A,
Q_{gs}	Gate-to-Source charge	—	18	—		V_{DS}=30V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	16	—		V_{GS} = 10V
$t_{d(on)}$	Turn-on delay time	—	15	—	ns	V_{GS}=10V, V_{DD} =30V,
t_r	Rise time	—	95	—		R_{GEN}=2.5Ω
$t_{d(off)}$	Turn-Off delay time	—	45	—		I_D =30A
t_f	Fall time	—	30	—		
C_{iss}	Input capacitance	—	4100	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	270	—		V_{DS} = 30V
C_{rss}	Reverse transfer capacitance	—	220	—		f = 1MHz

Source-Drain Ratings and Characteristics

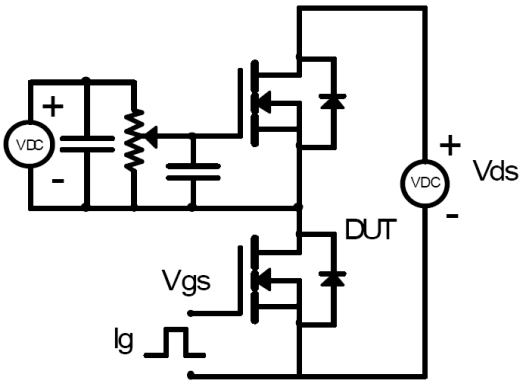
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	95	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Maximum Body-Diode Pulse Current	—	—	380	A	
V_{sd}	Diode Forward Voltage	—	—	1.2	V	I_S=20A, V_{GS}=0V, T_J = 25°C
trr	Reverse Recovery Time	—	75	—	ns	I_S=20A,di/dt=100A/us
Qrr	Reverse Recovery Charge	—	50	—	nC	

Test circuits and Waveforms

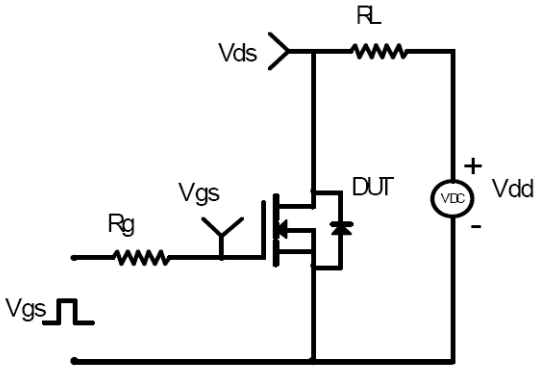
EAS Test Circuit:



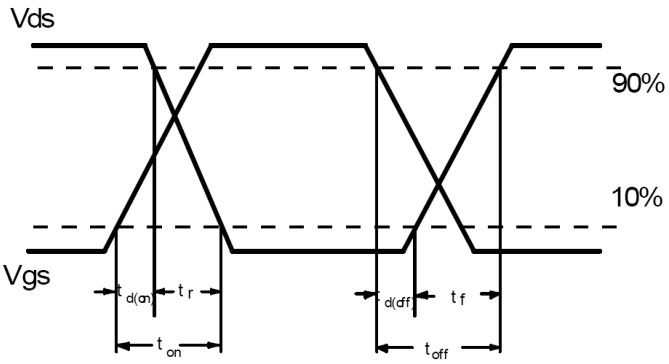
Gate charge test circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.

②Repetitive rating; pulse width limited by max. junction temperature.

③The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.

④The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C

Typical electrical and thermal characteristics

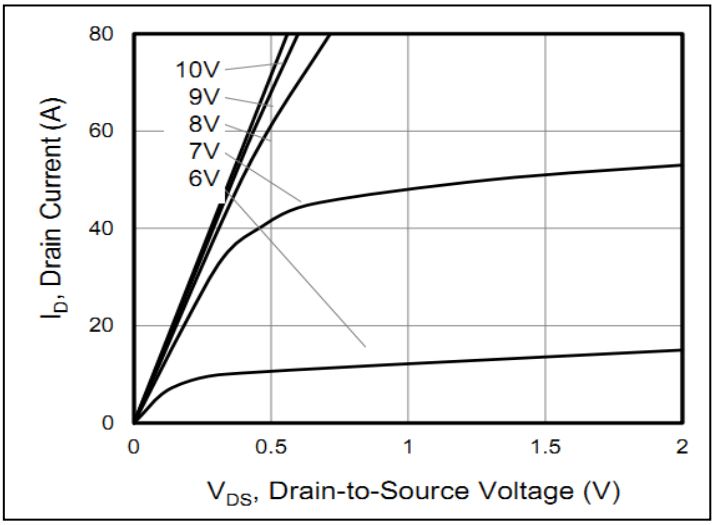


Figure 1: Typical Output Characteristics

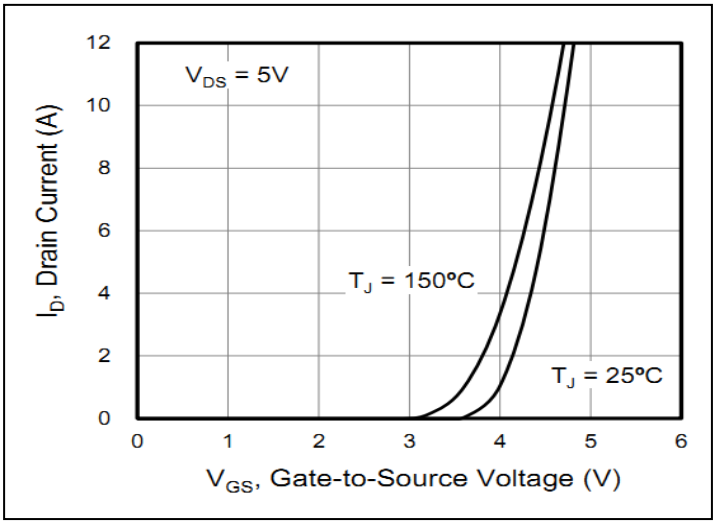


Figure 2:Typical Transfer Characteristics

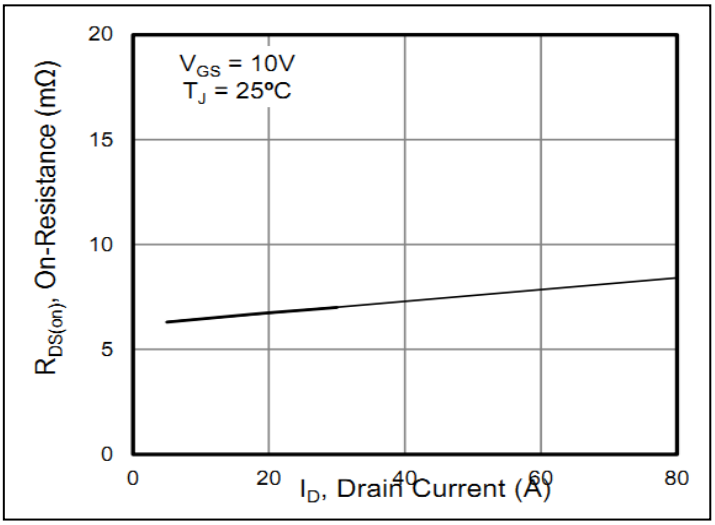


Figure 3: Rdson-Drain Current

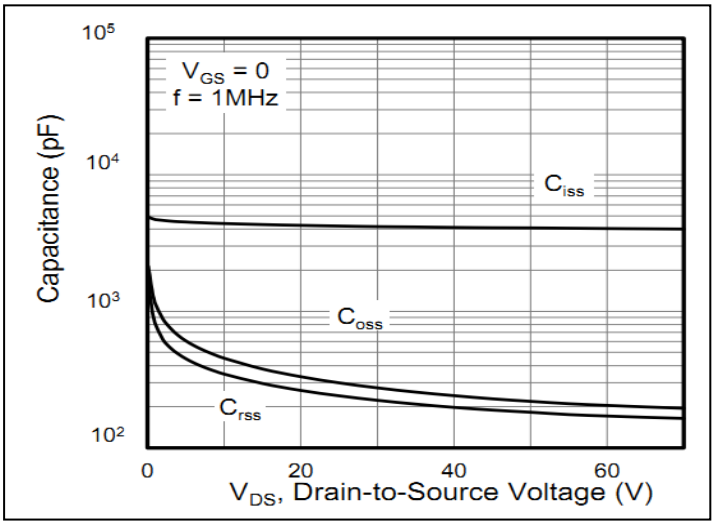


Figure 4: Capacitance

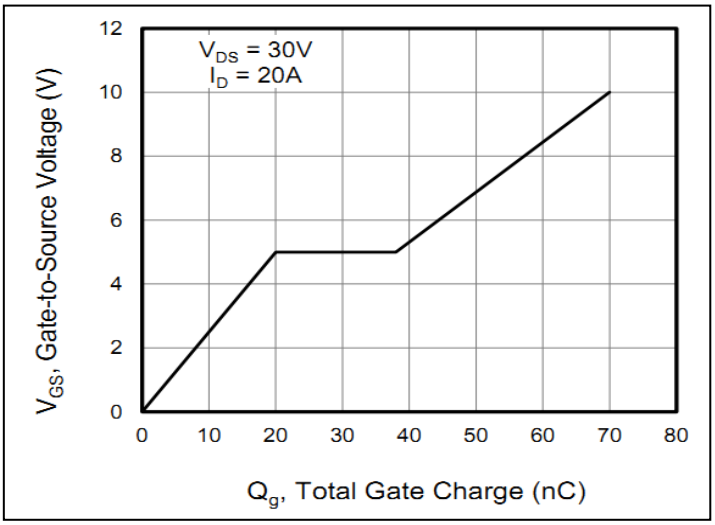


Figure 5: Gate Charge

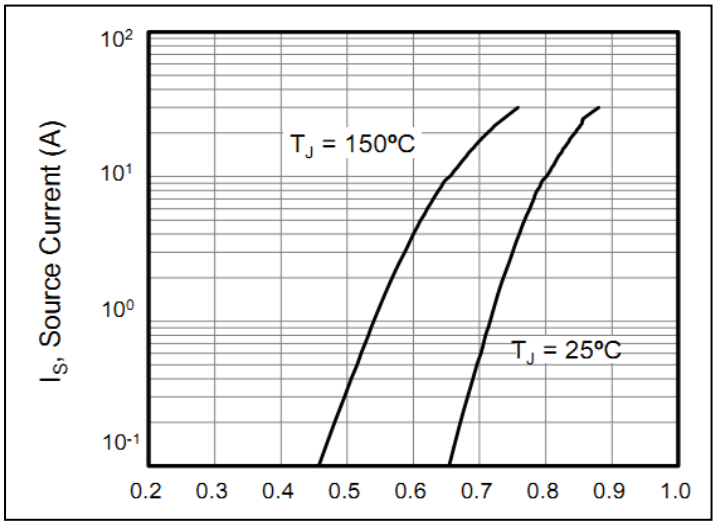


Figure 6: Body Diode Forward Voltage

Typical electrical and thermal characteristics

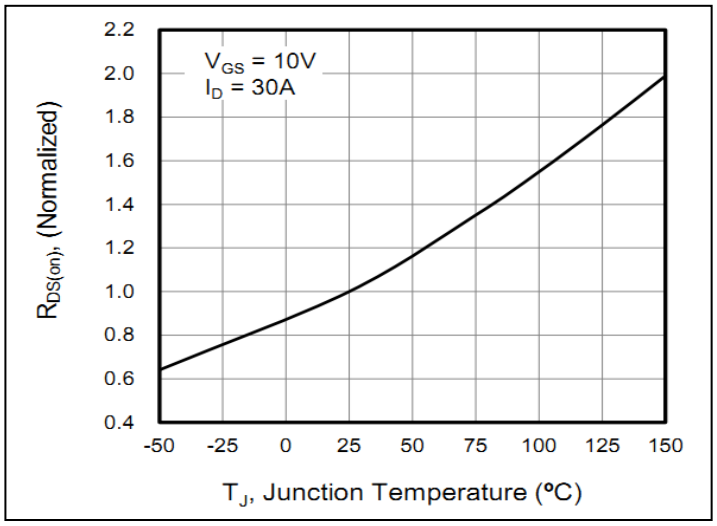


Figure 7: On-Resistance vs. Temperature

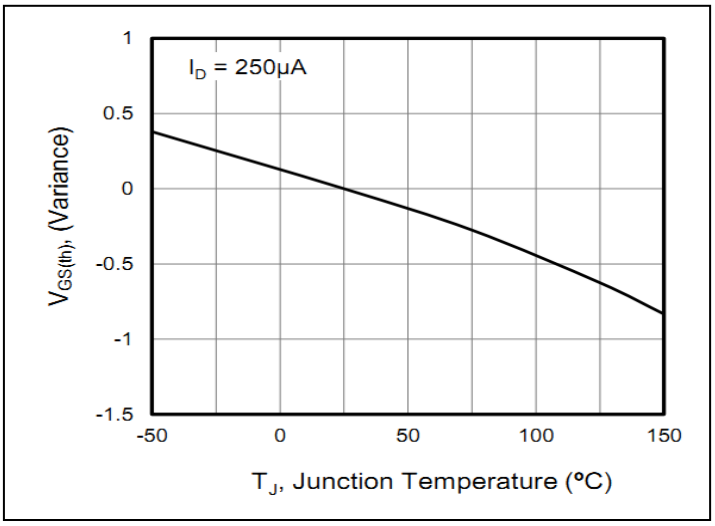


Figure 8: Threshold Voltage vs. Temperature

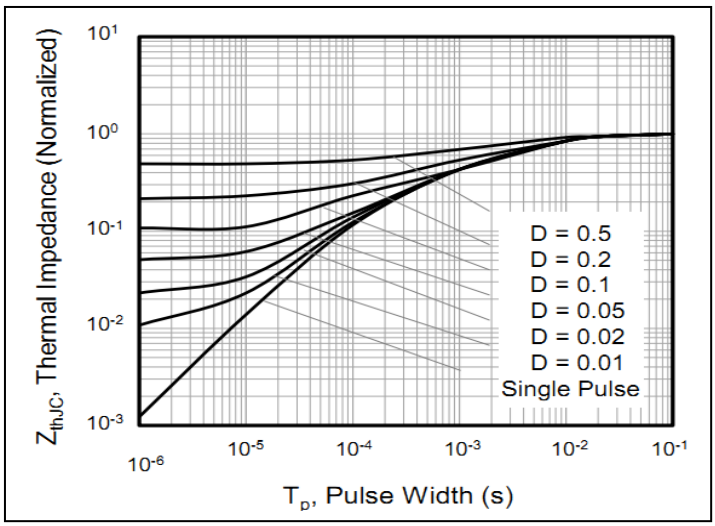


Figure 9: Normalized Maximum Transient Thermal Impedance

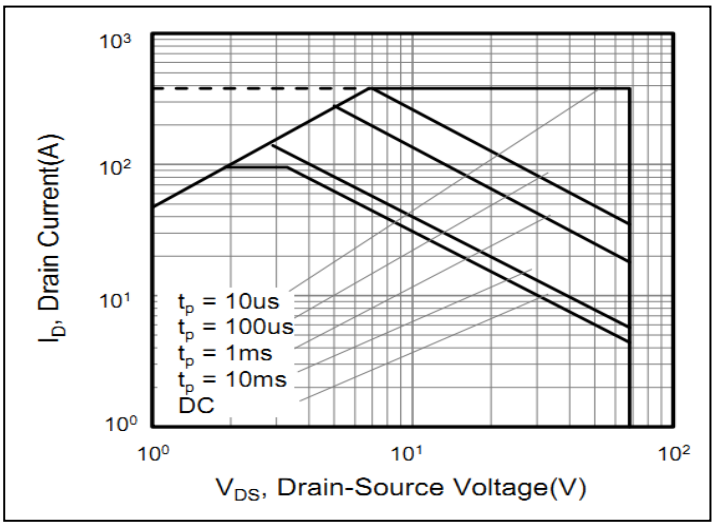
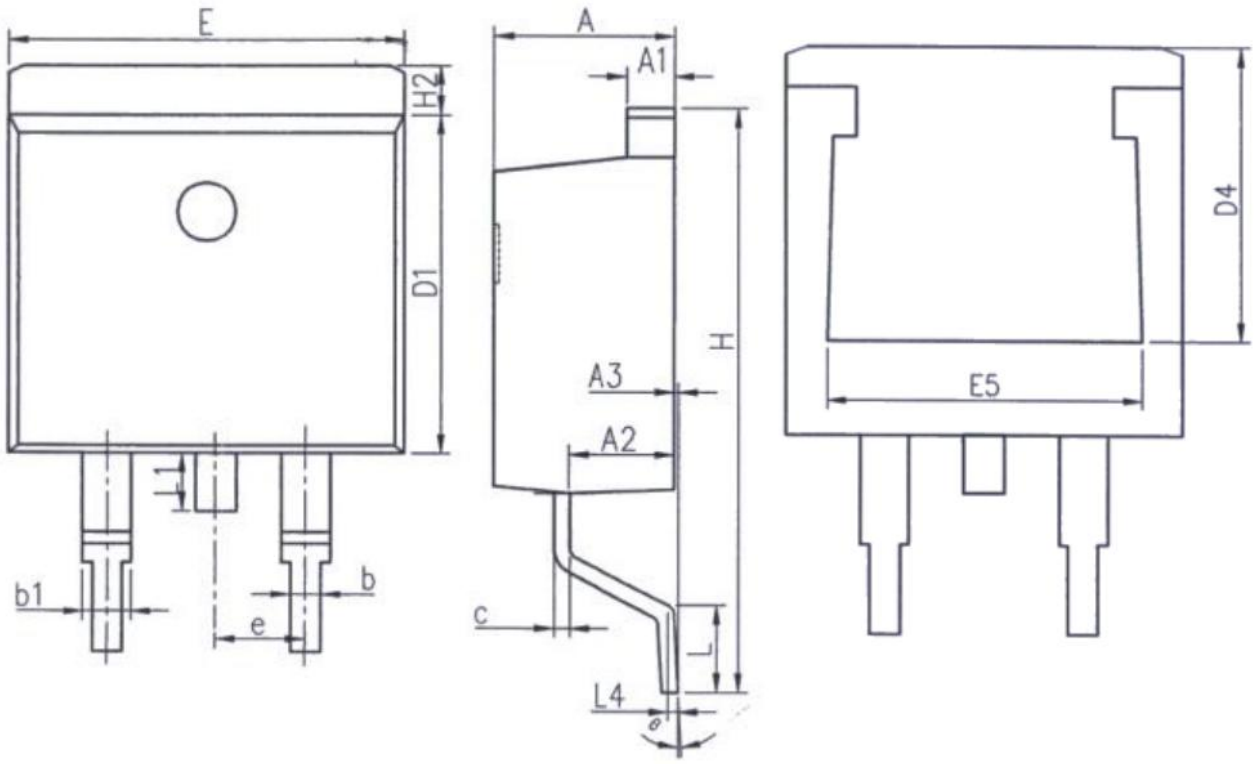


Figure10: Safe Operation Area

Mechanical Data：

TO263 Package Outline Dimension



Unit: mm		
Symbol	Min.	Max.
A	4.37	4.77
A1	1.22	1.42
A2	2.49	2.89
A3	0.00	0.25
b	0.70	0.96
b1	1.17	1.47
c	0.30	0.53
D1	8.50	8.90
D4	6.60	-

Unit: mm		
Symbol	Min.	Max.
E	9.86	10.36
E5	7.06	-
e	2.54BSC	
H	14.70	15.50
H2	1.07	1.47
L	2.00	2.60
L1	1.40	1.70
L4	0.25BSC	
θ	0°	9°

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