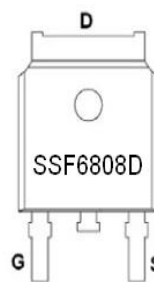
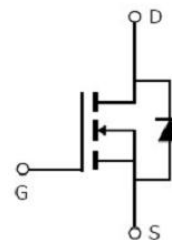


Main Product Characteristics:

V_{DSS}	68V
$R_{DS(on)}$	6.1mohm(typ.)
I_D	79A


DPAK

Marking and pin Assignment

Schematic diagram
Features and Benefits:

- Advanced trench MOSFET 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
- 175°C operating temperature


Description:

It utilizes the latest trench 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
$I_D @ TC = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ ①	79	A
$I_D @ TC = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ ①	56	
I_{DM}	Pulsed Drain Current②	316	
$P_D @ TC = 25^\circ C$	Power Dissipation③	114	W
	Linear Derating Factor	0.76	W/°C
V_{DS}	Drain-Source Voltage	68	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.3mH	252	mJ
I_{AS}	Avalanche Current @ L=0.3mH	41	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 175	°C

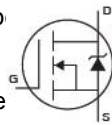
Thermal Resistance

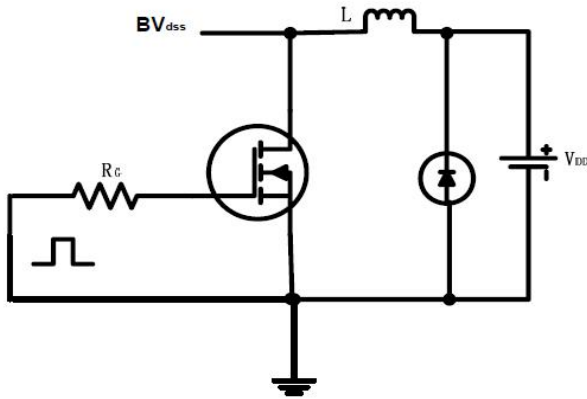
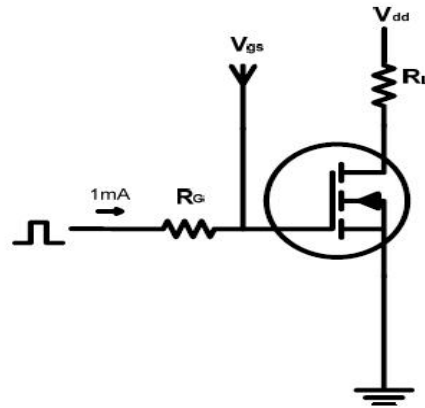
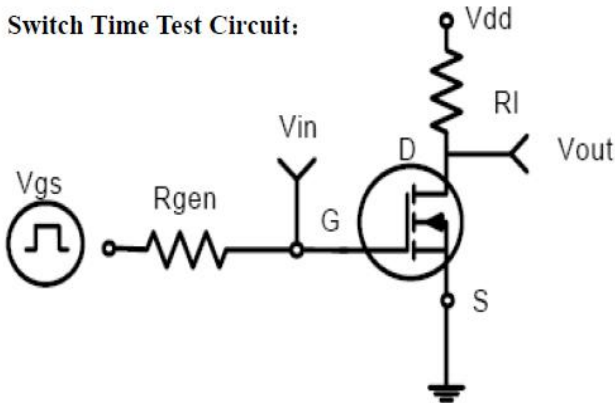
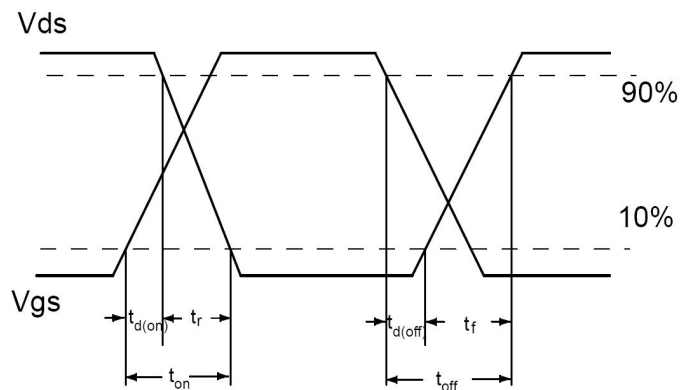
Symbol	Characterizes	Typ.	Max.	Units
R _{θJC}	Junction-to-case ^③	—	1.32	°C/W
R _{θJA}	Junction-to-ambient (t ≤ 10s) ^④	—	62	°C/W
	Junction-to-Ambient (PCB mounted, steady-state) ^④	—	40	°C/W

Electrical Characterizes @T_A=25°C unless otherwise specified

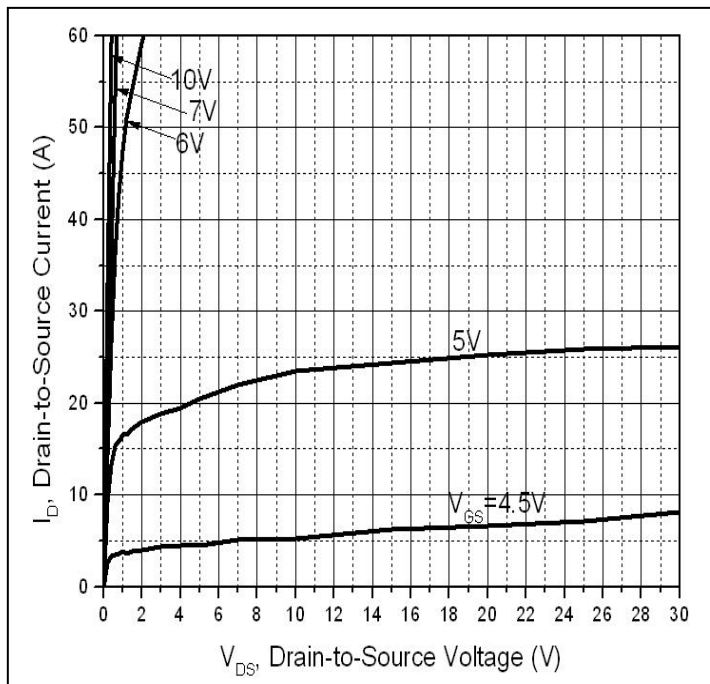
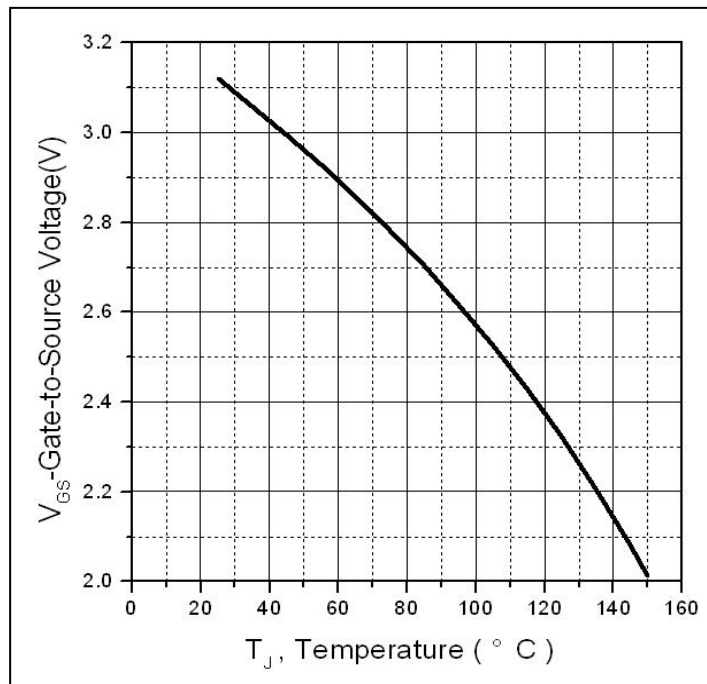
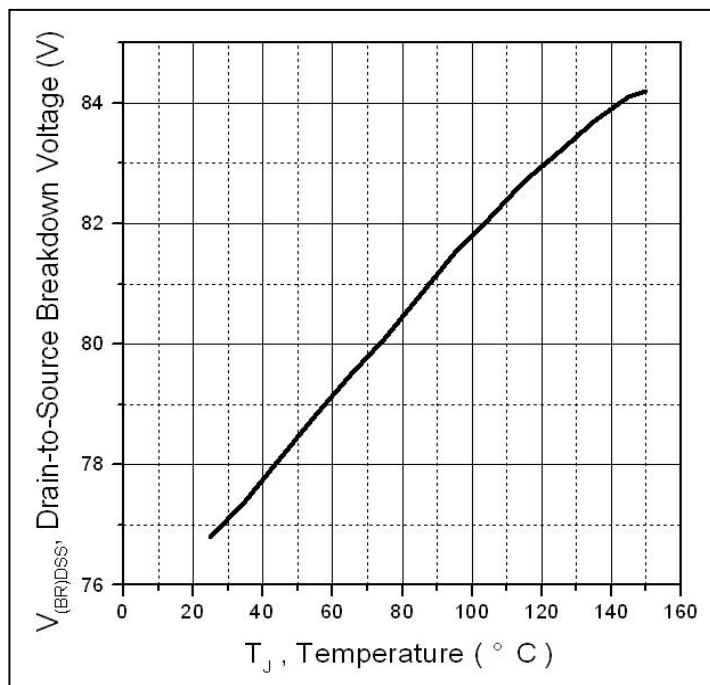
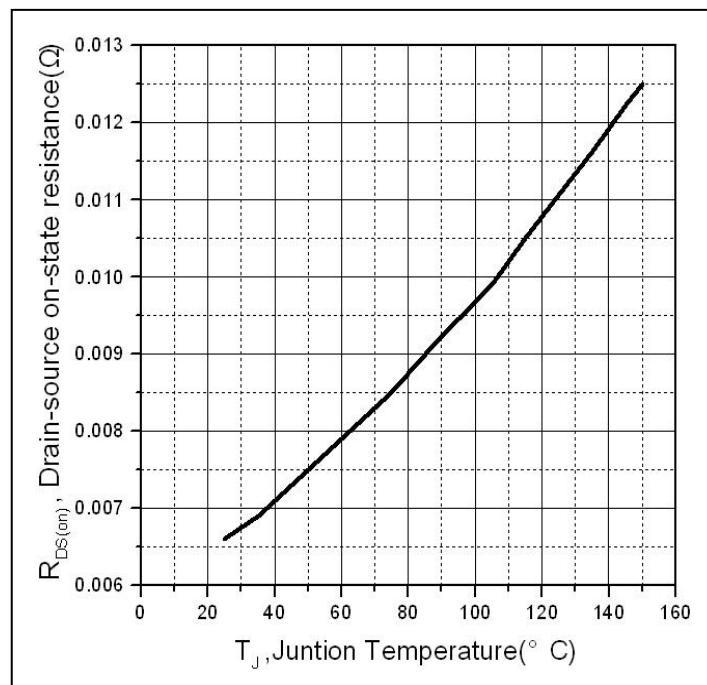
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source breakdown voltage	68	—	—	V	V _{GS} = 0V, I _D = 250μA
R _{DS(on)}	Static Drain-to-Source on-resistance	—	6.5	8	mΩ	V _{GS} =10V, I _D = 30A T _J = 125°C
		—	11.1	—		
V _{GS(th)}	Gate threshold voltage	2	—	4	V	V _{DS} = V _{GS} , I _D = 250μA T _J = 125°C
		—	2.3	—		
I _{DSS}	Drain-to-Source leakage current	—	—	1	μA	V _{DS} = 68V, V _{GS} = 0V T _J = 125°C
		—	—	50		
I _{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V _{GS} = 20V V _{GS} = -20V
		-100	—	—		
Q _g	Total gate charge	—	74.6	—	nC	I _D = 50A, V _{DS} =48V, V _{GS} = 10V
Q _{gs}	Gate-to-Source charge	—	19.2	—		
Q _{gd}	Gate-to-Drain("Miller") charge	—	27.9	—		
t _{d(on)}	Turn-on delay time	—	16.0	—	ns	V _{GS} =10V, V _{DS} =60V, R _L =1Ω, R _{GEN} =2.55Ω I _D =60A
t _r	Rise time	—	96.4	—		
t _{d(off)}	Turn-Off delay time	—	38.4	—		
t _f	Fall time	—	95.9	—		
C _{iss}	Input capacitance	—	3627	—	pF	V _{GS} = 0V V _{DS} = 25V f = 1MHz
C _{oss}	Output capacitance	—	391	—		
C _{rss}	Reverse transfer capacitance	—	275	—		

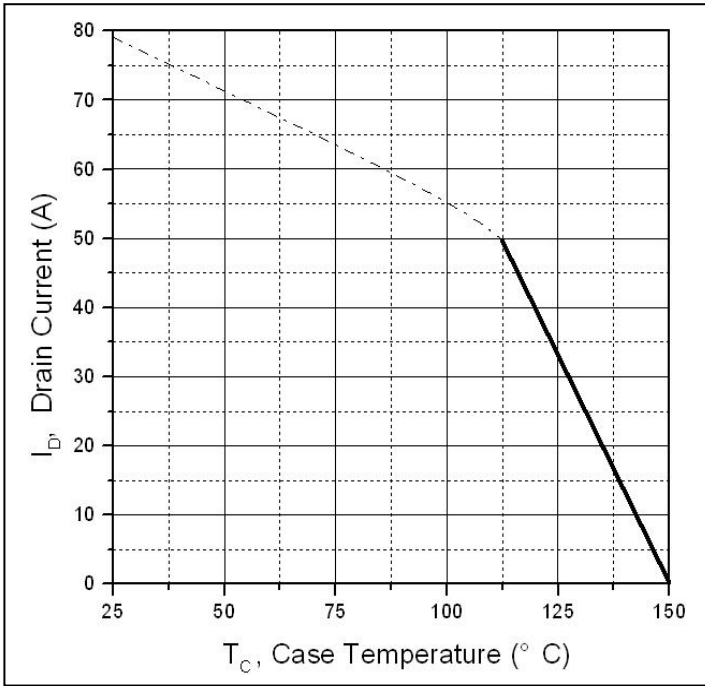
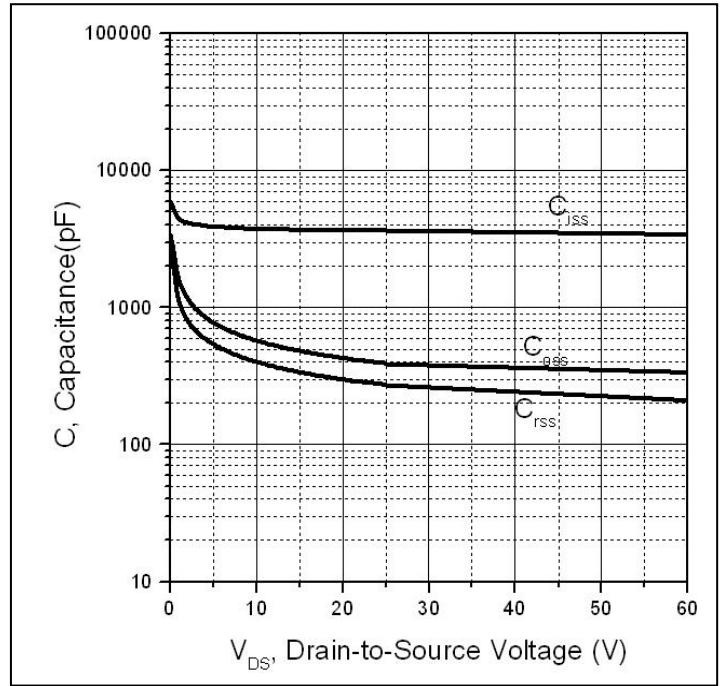
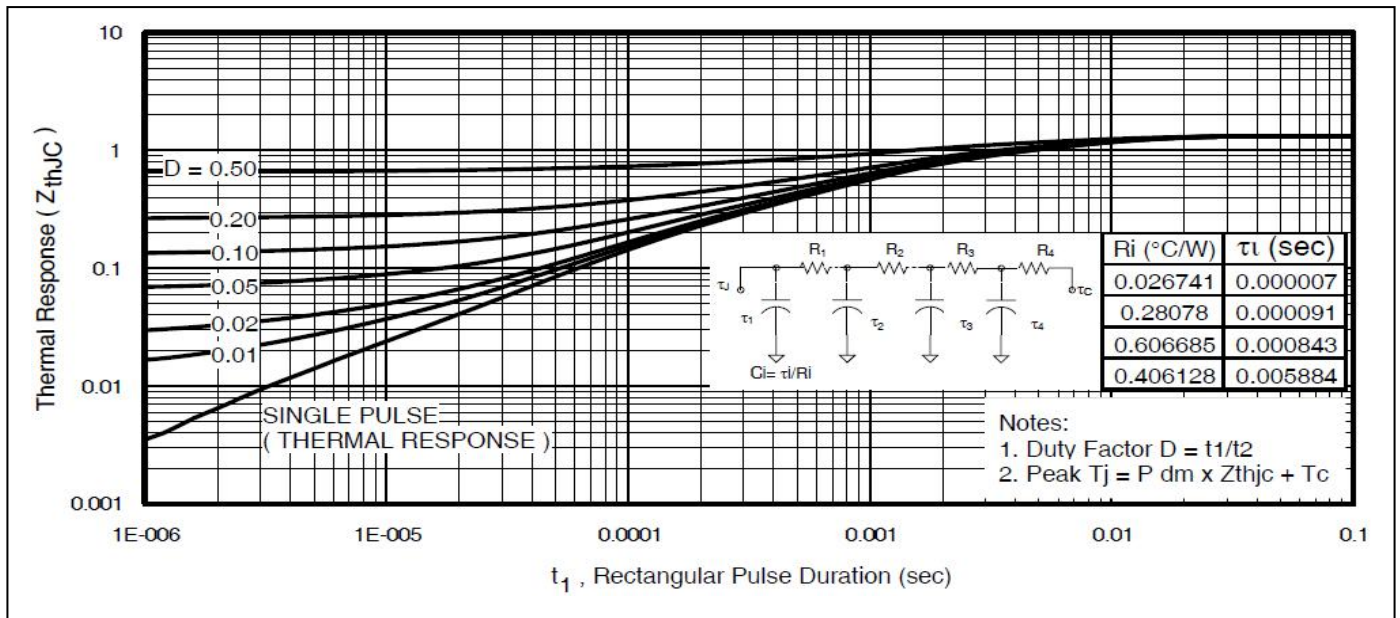
Source-Drain Ratings and Characteristics

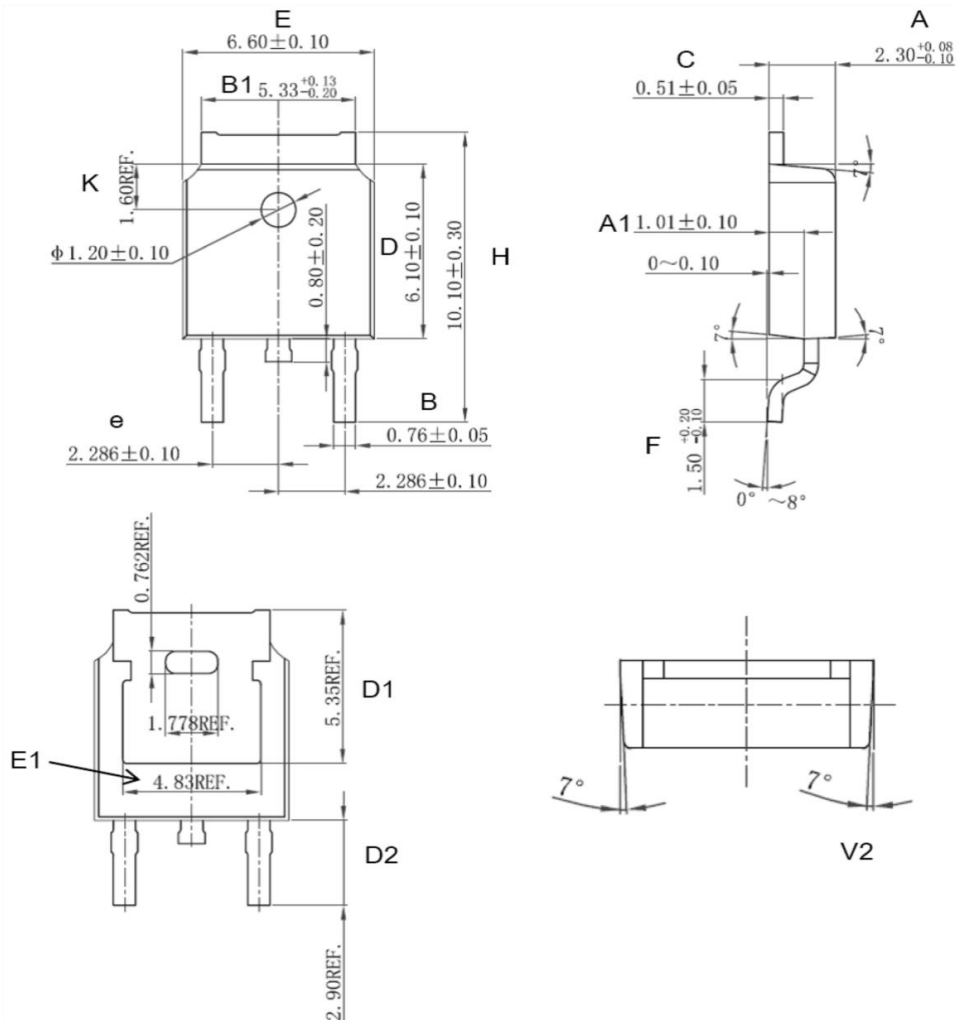
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	79	A	MOSFET symb showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode)	—	—	316	A	
V _{SD}	Diode Forward Voltage	—	0.80	1.3	V	I _S =30A, V _{GS} =0V
t _{rr}	Reverse Recovery Time	—	29.4	—	ns	T _J = 25°C, I _F = 68A, di/dt = 100A/μs
Q _{rr}	Reverse Recovery Charge	—	30.2	—	nC	

Test circuits and Waveforms
EAS test circuits:

Gate charge test circuit:

Switch Time Test Circuit:

Switch Waveforms:

Notes:

- ① The maximum current rating is limited by bond-wires.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of $R_{\theta JA}$ is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$
- ⑤ These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_{J(MAX)} = 175^\circ C$.
- ⑥ The maximum current rating is limited by bond-wires.

Typical electrical and thermal characteristics

Figure 1: Typical Output Characteristics

Figure 2. Gate to source cut-off voltage

Figure 3. Drain-to-Source Breakdown Voltage vs. Temperature

Figure 4: Normalized On-Resistance Vs. Case Temperature

Typical electrical and thermal characteristics

Figure 5. Maximum Drain Current Vs. Case Temperature

Figure 6. Typical Capacitance Vs. Drain-to-Source Voltage

Figure 7. Maximum Effective Transient Thermal Impedance, Junction-to-Case

Mechanical Data:
DPAK PACKAGE OUTLINE DIMENSION


Symbol	Dimension In Millimeters			Dimension In Inches		
	Min	Nom	Max	Min	Nom	Max
A	2.200	2.300	2.380	0.087	0.091	0.094
A1	0.910	1.010	1.110	0.036	0.040	0.044
B	0.710	0.760	0.810	0.028	0.030	0.032
B1	5.130	5.330	5.460	0.202	0.210	0.215
C	0.460	0.510	0.560	0.018	0.020	0.022
D	6.000	6.100	6.200	0.236	0.240	0.244
D1	5.350 (REF)			0.211 (REF)		
D2	2.900 (REF)			0.114 (REF)		
E	6.500	6.600	6.700	0.256	0.260	0.264
E1	4.83 (REF)			0.190 (REF)		
e	2.186	2.286	2.386	0.086	0.090	0.094
H	9.800	10.100	10.400	0.386	0.398	0.409
F	1.400	1.500	1.700	0.055	0.059	0.067
K	1.600 (REF)			0.063 (REF)		
V2	8° (REF)			8° (REF)		

Ordering and Marking Information
Device Marking: SSF6808D

Package (Available)
DPAK
Operating Temperature Range
C : -55 to 175 °C

Devices per Unit
Option1:

Package Type	Units/ Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
DPAK	80	50	4000	10	40000

Option2:

Package Type	Units/ Tape	Tapes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
DPAK	2500	1	2500	10	25000

Reliability Test Program

Test Item	Conditions	Duration	Sample Size
High Temperature Reverse Bias(HTRB)	T _j =125°C to 175°C @ 80% of Max V _{DSS} /V _{CES} /VR	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	T _j =150°C or 175°C @ 100% of Max V _{GSS}	168 hours 500 hours 1000 hours	3 lots x 77 devices

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