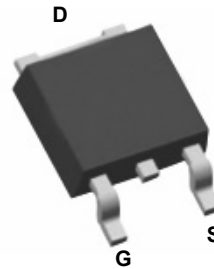
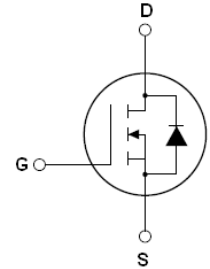


Main Product Characteristics

V_{DS}	650V
$R_{DS(ON)}$	460m Ω (Typ) @ $V_{GS}=10$ V
I_D	8A



TO-252 (DPAK)



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The SSFD6508 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0\text{V}$)	V_{DS}	650	V
Gate-Source Voltage ($V_{DS}=0\text{V}$), AC ($f>1$ Hz)	V_{GS}	± 30	V
Continuous Drain Current at $T_C=25^{\circ}\text{C}$	$I_{D(DC)}$	8	A
Continuous Drain Current at $T_C=100^{\circ}\text{C}$	$I_{D(DC)}$	5.2	A
Pulsed Drain Current ¹	$I_{DM(pluse)}$	32	A
Maximum Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	69	W
Power Dissipation-Derate Above 25°C		0.55	W/ $^{\circ}\text{C}$
Single Pulse Avalanche Energy ²	E_{AS}	156	mJ
Avalanche Current ¹	I_{AR}	1.7	A
Repetitive Avalanche Energy t_{AR} Limited by T_{jmax} ¹	E_{AR}	0.3	mJ
Drain Source Voltage Slope, $V_{DS} \leq 480$ V,	dv/dt	50	V/nS
Reverse Diode dv/dt , $V_{DS} \leq 480$ V, $I_{SD} < I_D$	dv/dt	15	V/nS
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case (Maximum)	$R_{\theta JC}$	1.81	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient (Maximum)	$R_{\theta JA}$	62	$^{\circ}C/W$

Electrical Characteristics ($T_A=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
On/off States						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	650	-	-	V
Zero Gate Voltage Drain Current($T_C=25^{\circ}C$)	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$	-	-	1	μA
Zero Gate Voltage Drain Current($T_C=125^{\circ}C$)	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$	-	-	100	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3	-	4	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=4A$	-	460	540	m Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V,$ $F=1.0MHz$	-	590	-	pF
Output Capacitance	C_{oss}		-	37	-	pF
Reverse Transfer Capacitance	C_{rss}		-	0.9	-	pF
Total Gate Charge	Q_g	$V_{DS}=480V, I_D=8A,$ $V_{GS}=10V$	-	14.6	22	nC
Gate-Source Charge	Q_{gs}		-	4	-	nC
Gate-Drain Charge	Q_{gd}		-	6.7	-	nC
Switching Times						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=380V, I_D=4A,$ $R_G=4.7\Omega, V_{GS}=10V$	-	8	-	nS
Turn-On Rise Time	t_r		-	6	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	59	75	nS
Turn-Off Fall Time	t_f		-	10	15	nS
Source- Drain Diode Characteristics						
Source-Drain Current(Body Diode)	I_{SD}	$T_C=25^{\circ}C$	-	-	8	A
Pulsed Source-Drain Current(Body Diode)	I_{SDM}		-	-	32	A
Forward On Voltage	V_{SD}	$T_J=25^{\circ}C, I_{SD}=8A, V_{GS}=0V$	-	0.9	1.2	V
Reverse Recovery Time	t_{rr}	$T_J=25^{\circ}C, I_F=4A,$ $di/dt=100A/\mu S$	-	230	-	nS
Reverse Recovery Charge	Q_{rr}		-	1.2	-	μC
Peak Reverse Recovery Current	I_{rrm}		-	10.5	-	A

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

2. $T_J=25^{\circ}C, V_{DD}=50V, V_G=10V, R_G=25\Omega.$

Typical Electrical and Thermal Characteristic Curves

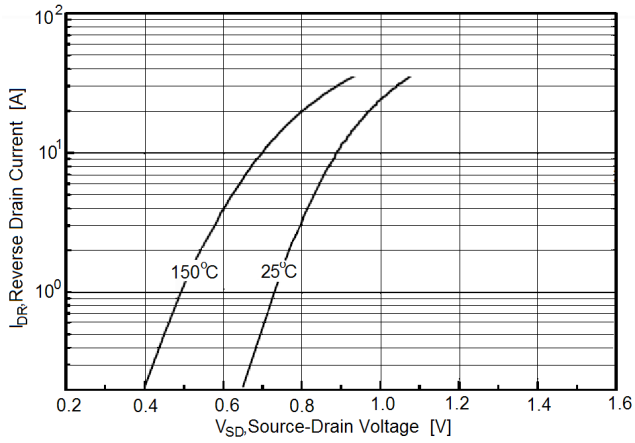


Figure 1. Source-Drain Diode Forward Voltage

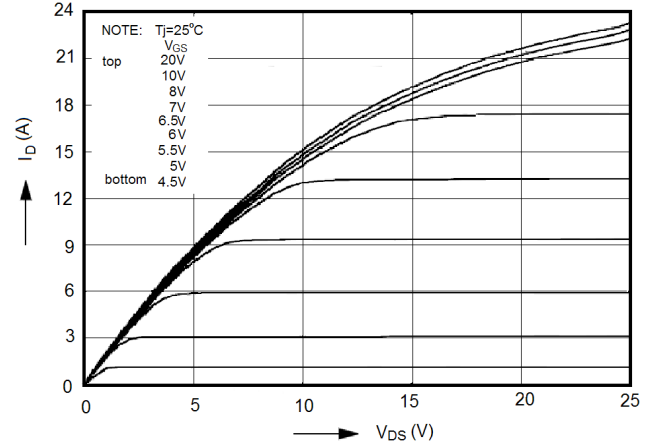


Figure 2. Output Characteristics

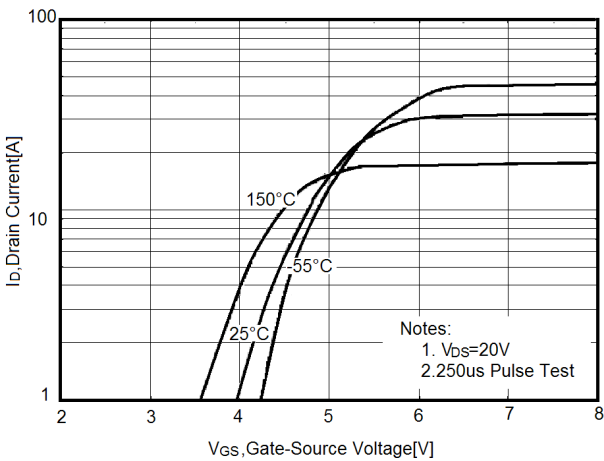


Figure 3. Transfer Characteristics

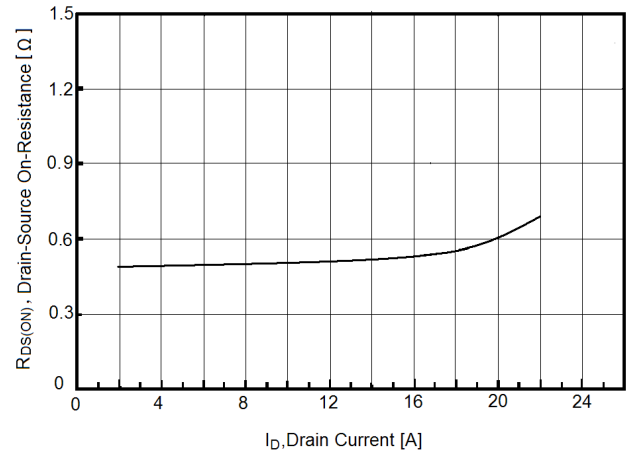


Figure 4. Static Drain-Source On Resistance

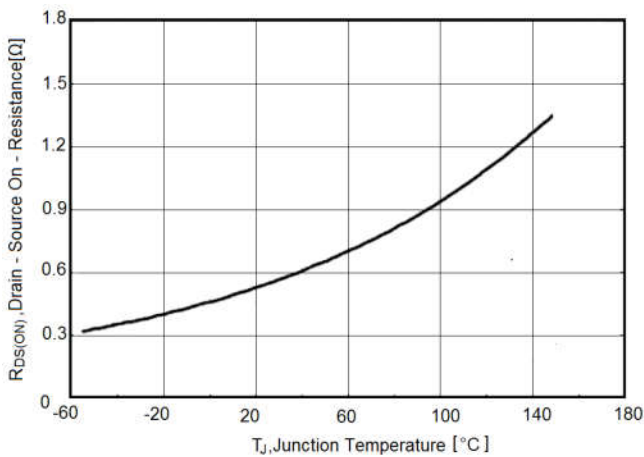


Figure 5. R_{DS(ON)} vs Junction Temperature

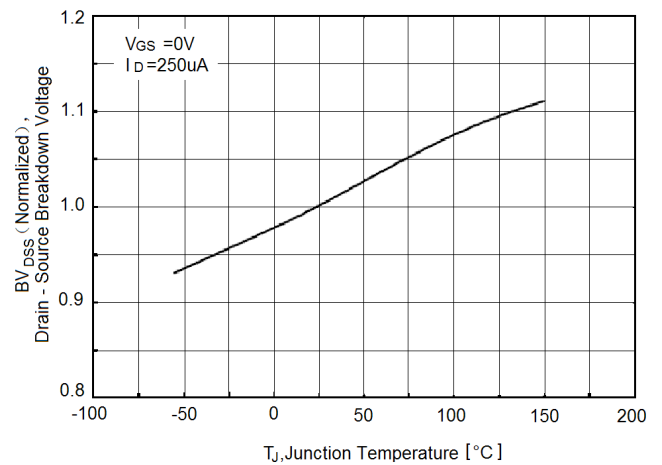


Figure 6. BV_{DS(s)} vs Junction Temperature

Typical Electrical and Thermal Characteristic Curves

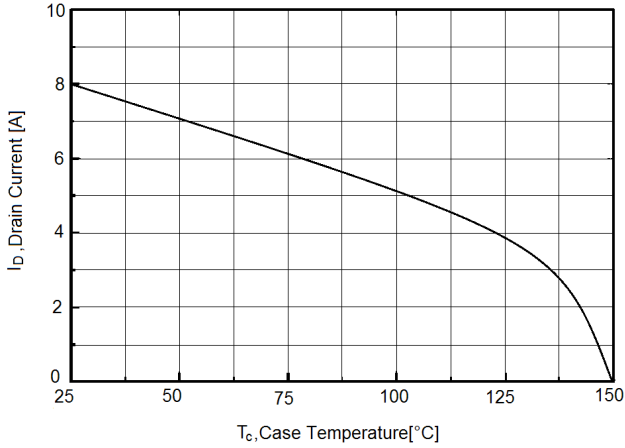


Figure 7. Maximum ID vs Junction Temperature

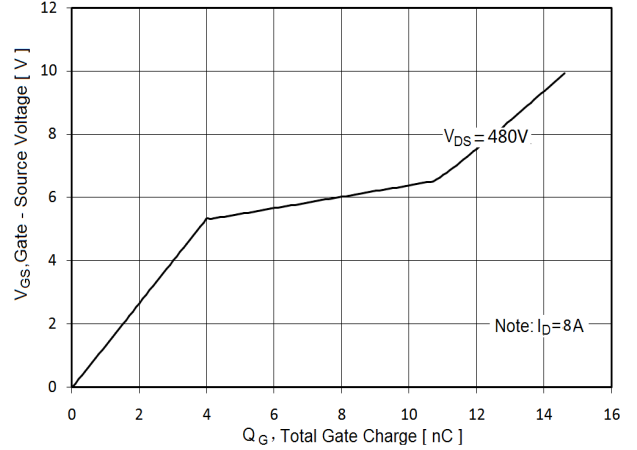


Figure 8. Gate Charge Waveforms

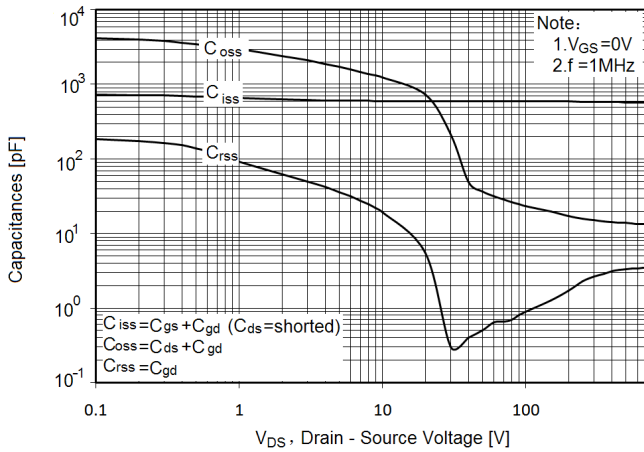


Figure 9. Capacitance

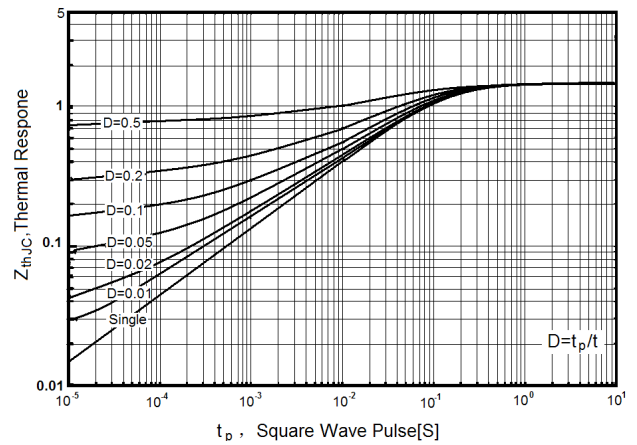


Figure 10. Transient Thermal Impedance

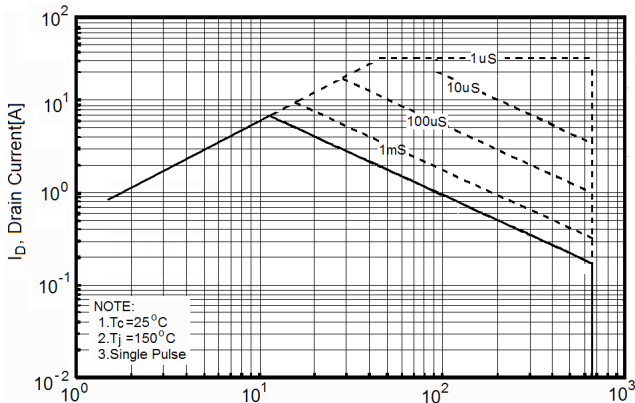


Figure 11. Safe Operating Area

Test Circuit & Waveform

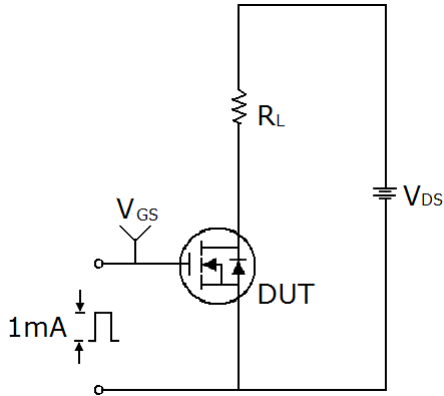


Figure 12. Gate Charge Test Circuit & Waveform

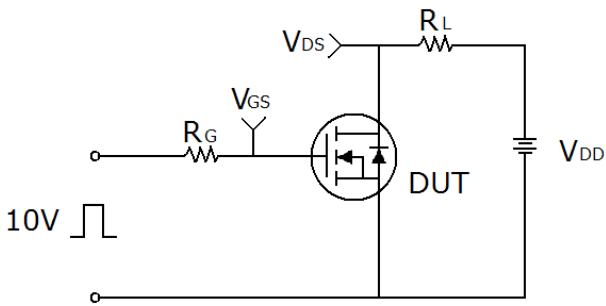
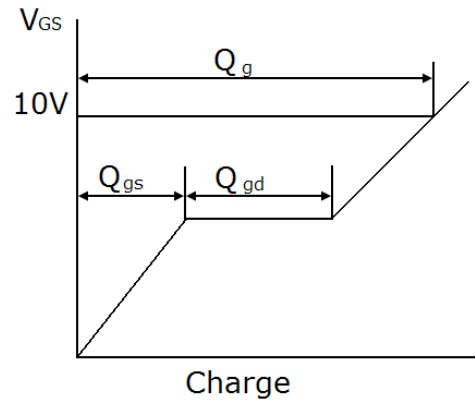


Figure 13. Switch Time Test Circuit & Waveforms

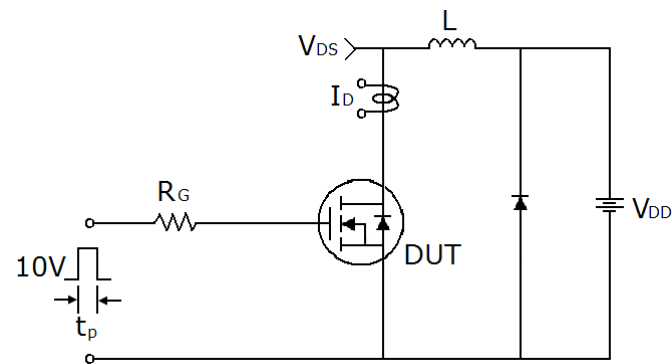
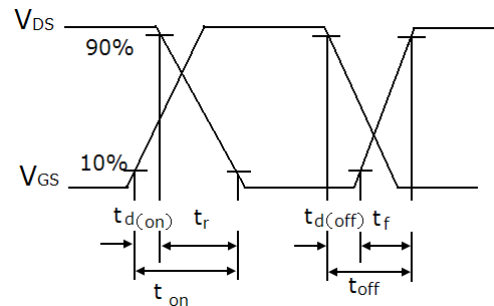
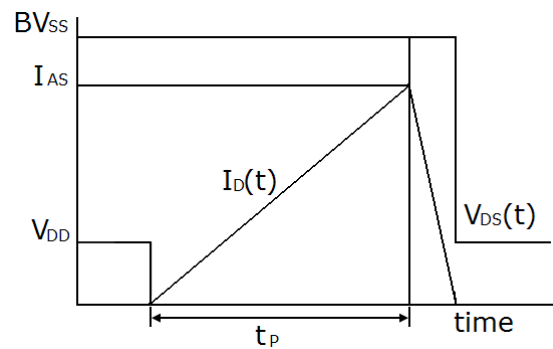
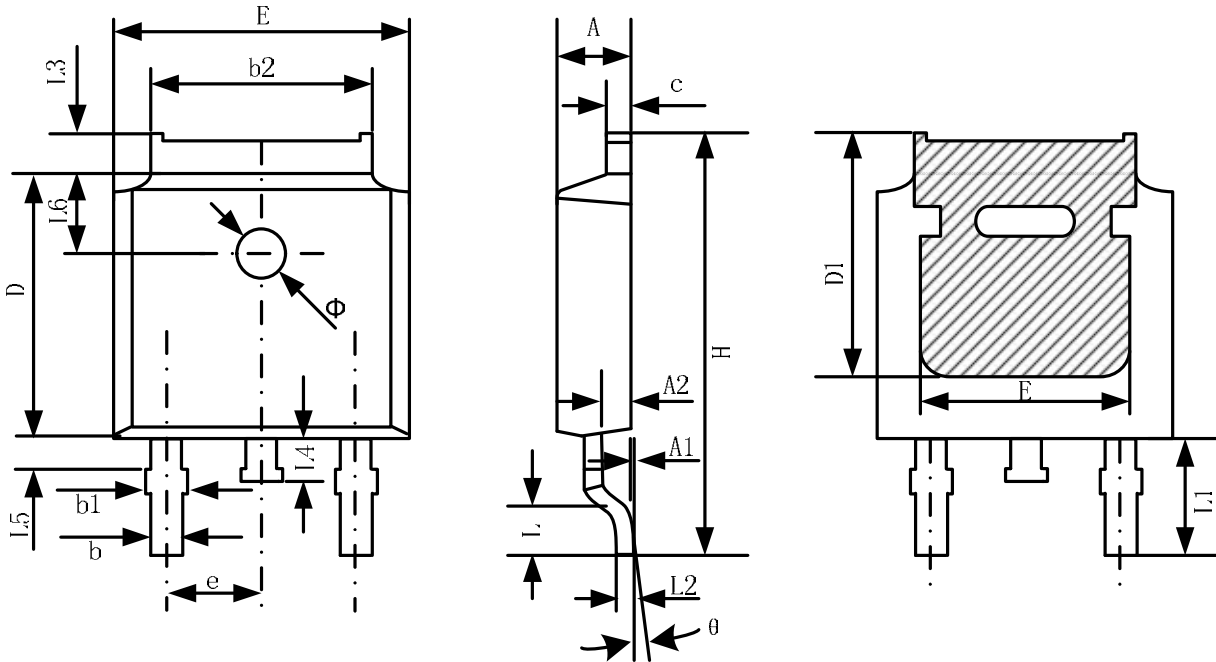


Figure 14. Unclamped Inductive Switching Test Circuit & Waveforms



Package Outline Dimensions

TO-252 (DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.38	0.087	0.094
A1	0.00	0.10	0.000	0.004
A2	0.90	1.10	0.035	0.043
b	0.72	0.85	0.028	0.033
b1	0.72	0.90	0.028	0.035
b2	5.13	5.46	0.202	0.215
c	0.47	0.60	0.019	0.024
D	6.00	6.20	0.236	0.244
D1	5.25	--	0.207	--
E	6.50	6.70	0.256	0.264
E1	4.70	--	0.185	--
e	2.19	2.39	0.086	0.094
H	9.80	10.40	0.386	0.409
L	1.40	1.70	0.055	0.067
L1	2.90 REF		0.114 REF	
L2	0.508 BSC		0.020 BSC	
L3	0.90	1.25	0.035	0.049
L4	0.60	1.00	0.024	0.039
L5	0.15	0.75	0.006	0.030
L6	1.80 REF		0.071 REF	
Φ	1.20	1.40	0.047	0.055
θ	0°	8°	0°	8°