

### Feathers:

- Advanced trench process technology
- Ultra low  $R_{ds(on)}$ , typical 5mohm
- High avalanche energy, 100% test
- Fully characterized avalanche voltage and current

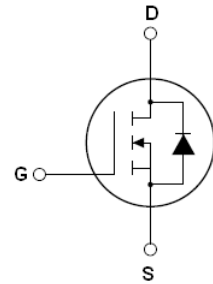
### Description:

The SSF6808A is a new generation of middle voltage and high current N-Channel enhancement mode trench power MOSFET. This new technology increases the device reliability and electrical parameter repeatability. SSF6808A is assembled in high reliability and qualified assembly house.

### Application:

- Power switching application

**ID =84A**  
**BV=68V**  
**Rdson=8mohm**



SSF6808A TOP View (TO-263)

### Absolute Maximum Ratings

	Parameter	Max.	Units
$I_D@T_c=25\text{ }^\circ\text{C}$	Continuous drain current, $V_{GS}@10\text{V}$	84	A
$I_D@T_c=100\text{ }^\circ\text{C}$	Continuous drain current, $V_{GS}@10\text{V}$	76	
$I_{DM}$	Pulsed drain current ①	310	
$P_D@T_c=25\text{ }^\circ\text{C}$	Power dissipation	180	W
	Linear derating factor	1.5	W/ $^\circ\text{C}$
$V_{GS}$	Gate-to-Source voltage	$\pm 20$	V
dv/dt	Peak diode recovery voltage	31	v/ns
$E_{AS}$	Single pulse avalanche energy ②	400	mJ
$E_{AR}$	Repetitive avalanche energy	TBD	
$T_J$ $T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +175	$^\circ\text{C}$

### Thermal Resistance

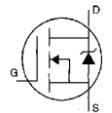
	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case	—	0.83	—	$^\circ\text{C/W}$
$R_{\theta JA}$	Junction-to-ambient	—	—	62	

### Electrical Characteristics @ $T_J=25\text{ }^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$BV_{DSS}$	Drain-to-Source breakdown voltage	68	—	—	V	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	5	8	m $\Omega$	$V_{GS}=10\text{V}, I_D=30\text{A}$
$V_{GS(th)}$	Gate threshold voltage	2.0	—	4.0	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
$I_{DSS}$	Drain-to-Source leakage current	—	—	2	$\mu\text{A}$	$V_{DS}=68\text{V}, V_{GS}=0\text{V}$
		—	—	10		$V_{DS}=68\text{V}, V_{GS}=0\text{V}, T_J=150\text{ }^\circ\text{C}$

$I_{GSS}$	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS}=20V$
	Gate-to-Source reverse leakage	—	—	-100		$V_{GS}=-20V$
$Q_g$	Total gate charge	—	90	—	nC	$I_D=30A$
$Q_{gs}$	Gate-to-Source charge	—	18	—		$V_{DD}=30V$
$Q_{gd}$	Gate-to-Drain("Miller") charge	—	28	—		$V_{GS}=10V$
$t_{d(on)}$	Turn-on delay time	—	18.2	—	nS	$V_{DD}=30V$
$t_r$	Rise time	—	15.6	—		$I_D=2A, R_L=15\Omega$
$t_{d(off)}$	Turn-Off delay time	—	70.5	—		$R_G=2.5\Omega$
$t_f$	Fall time	—	13.8	—		$V_{GS}=10V$
$C_{iss}$	Input capacitance	—	3150	—	pF	$V_{GS}=0V$
$C_{oss}$	Output capacitance	—	300	—		$V_{DS}=25V$
$C_{rss}$	Reverse transfer capacitance	—	240	—		$f=1.0MHz$

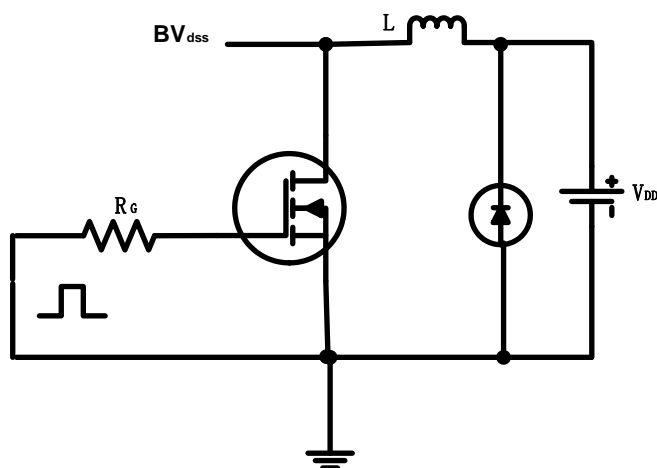
### Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$I_S$	Continuous Source Current (Body Diode)	—	—	84	A	MOSFET symbol showing the integral reverse p-n junction diode. 
$I_{SM}$	Pulsed Source Current (Body Diode) ①	—	—	310		
$V_{SD}$	Diode Forward Voltage	—	—	1.3	V	$T_J=25^\circ C, I_S=68A, V_{GS}=0V$ ③
$t_{rr}$	Reverse Recovery Time	—	57	—	nS	$T_J=25^\circ C, I_F=68A$ $di/dt=100A/\mu s$ ③
$Q_{rr}$	Reverse Recovery Charge	—	107	—	nC	
$t_{on}$	Forward Turn-on Time	Intrinsic turn-on time is negligible (turn-on is dominated by $L_S + L_D$ )				

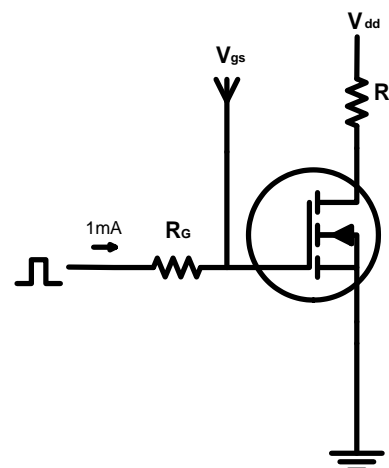
#### Notes:

- ① Repetitive rating; pulse width limited by max junction temperature.
- ② Test condition:  $L = 0.3mH, I_D = 37A, V_{DD} = 30V$
- ③ Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 1.5\%$ ;  $R_G = 25\Omega$  Starting  $T_J = 25^\circ C$

EAS test circuit:



Gate charge test circuit:



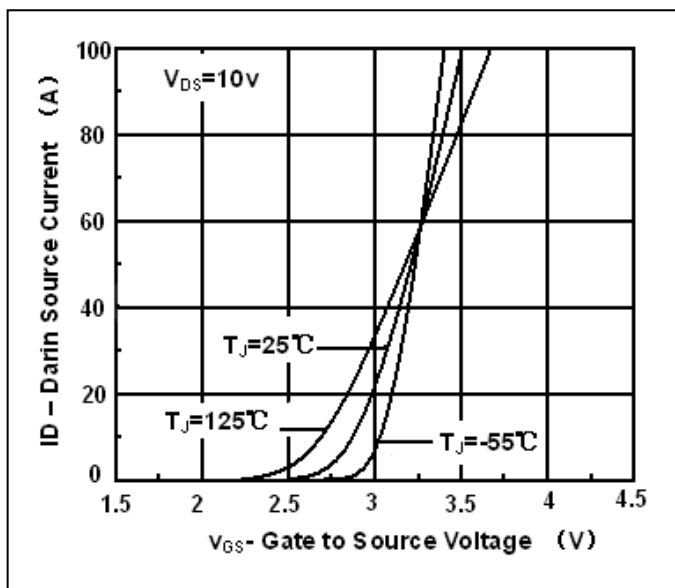
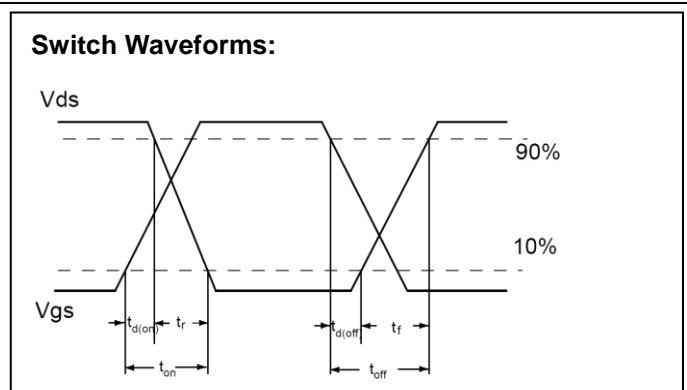
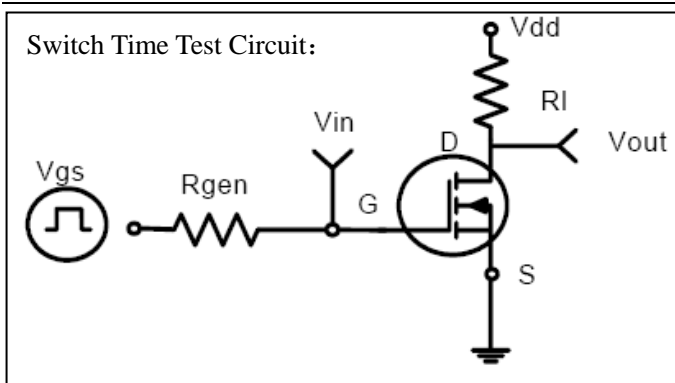


Figure1: Transfer Characteristic

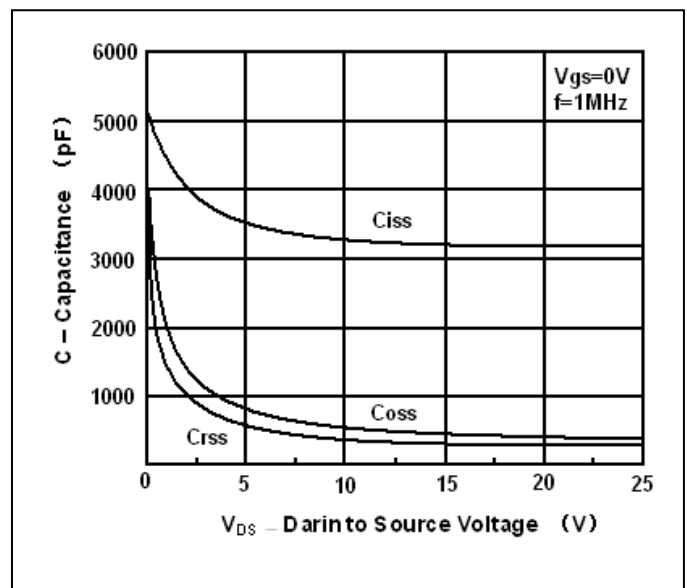


Figure2: Capacitance

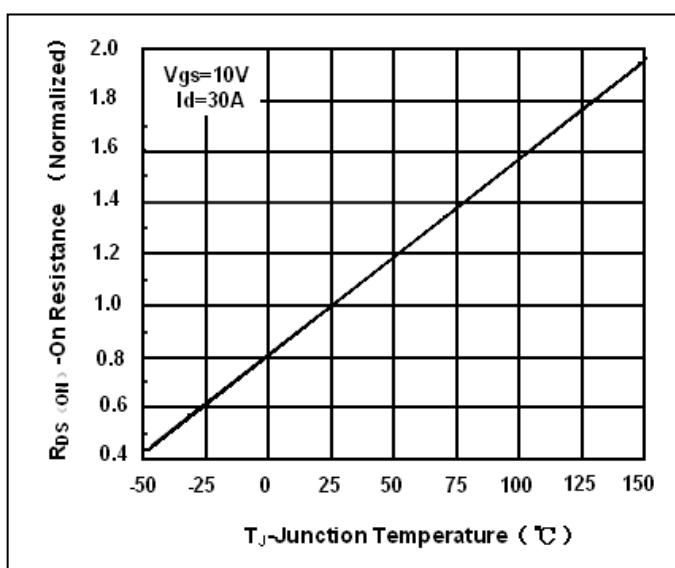


Figure3: On Resistance vs. Junction Temperature

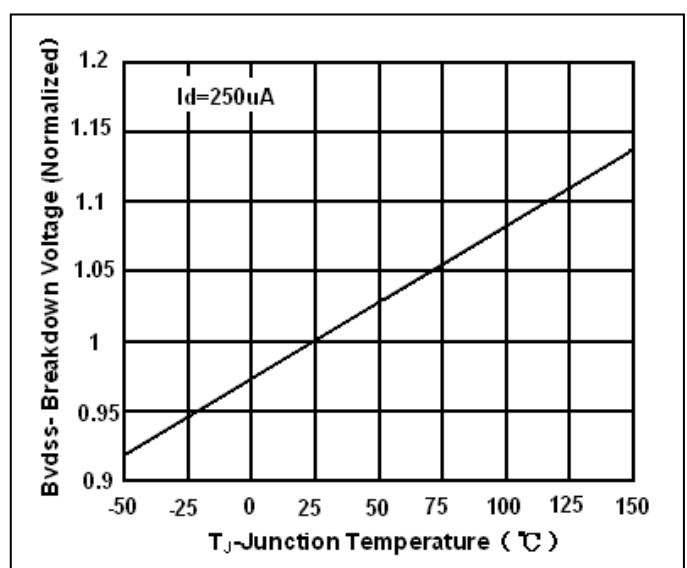


Figure4: Breakdown Voltage vs. Junction Temperature

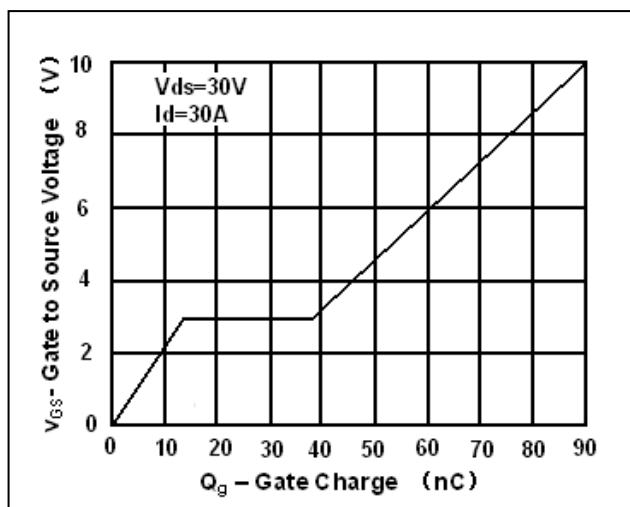


Figure5:Gate Charge

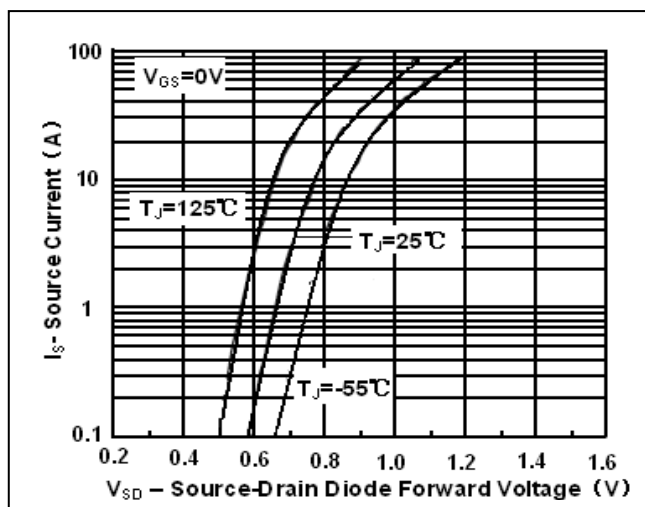


Figure6:Source-Drain Diode Forward Voltage

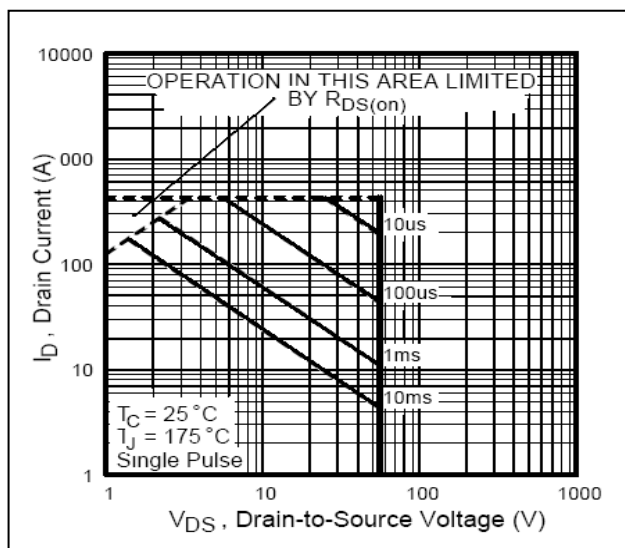


Figure7:Safe Operation

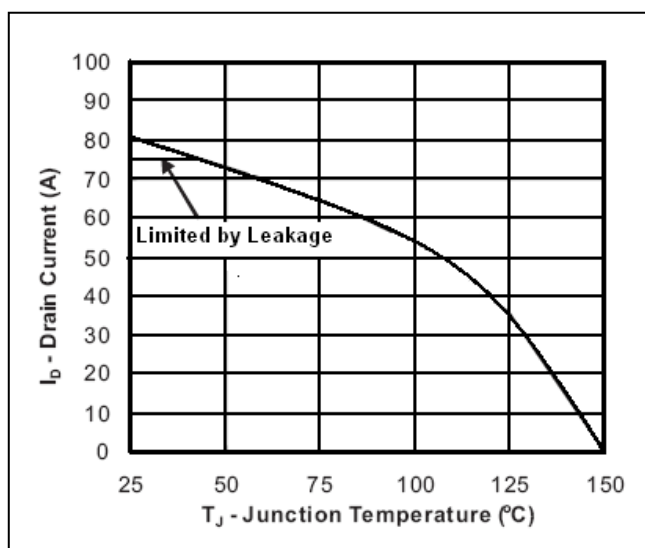


Figure8:Max Drain Current vs. Junction Temperature

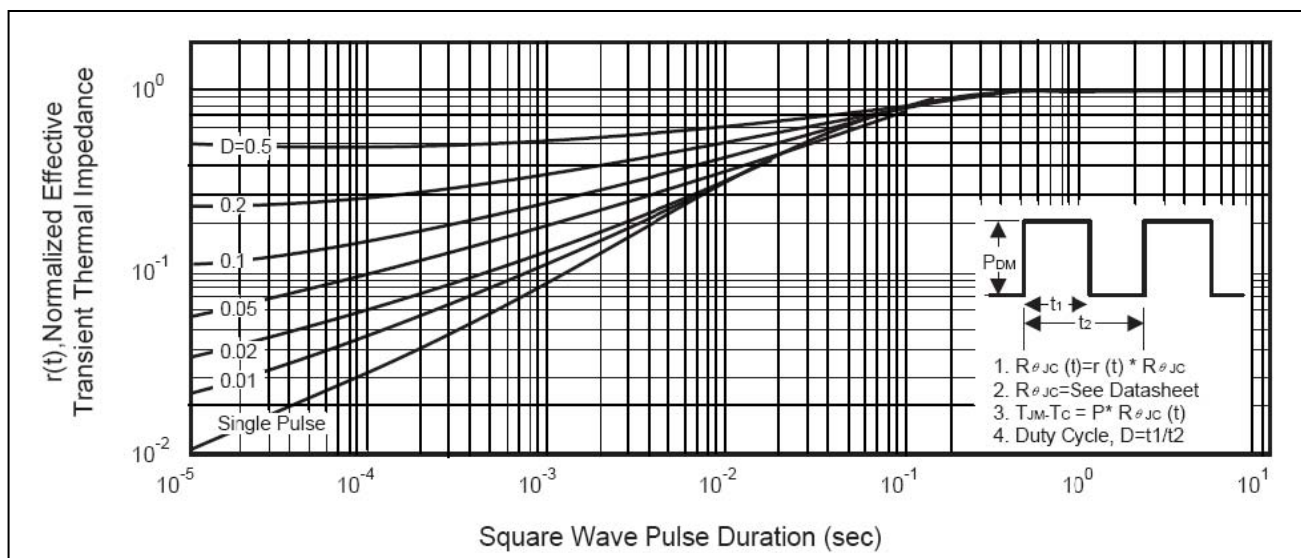


Figure9:Transient Thermal Impedance Curve

## TO-263 MECHANICAL DATA:

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.4		4.6	0.173		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.7		0.93	0.027		0.036
B2	1.14		1.7	0.044		0.067
C	0.45		0.6	0.017		0.023
C2	1.23		1.36	0.048		0.053
D	8.95		9.35	0.352		0.368
D1		8			0.315	
E	10		10.4	0.393		
E1		8.5			0.334	
G	4.88		5.28	0.192		0.208
L	15		15.85	0.590		0.625
L2	1.27		1.4	0.050		0.055
L3	1.4		1.75	0.055		0.068
M	2.4		3.2	0.094		0.126
R		0.4			0.015	
V2	0°		4°			

