SSF6808A

68V N-Channel MOSFET

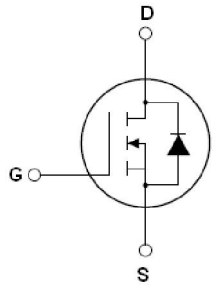
FEATURES

- Advanced trench process technology
- Ultra low Rdson, typical 5mohm
- High avalanche energy, 100% test
- Fully characterized avalanche voltage and current
- Lead free product

ID =84A

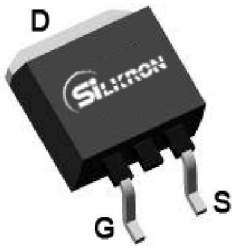
BV=68V

$R_{DS\ (ON)}$=8mohm



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.



SSF6808A Top View (TO-263)

APPLICATIONS

- Power switching application

Absolute Maximum Ratings

	Parameter	Max.	Units
I_D@T_c=25℃	Continuous drain current,VGS@10V	84	A
I_D@T_c=100℃	Continuous drain current,VGS@10V	76	
I_{DM}	Pulsed drain current ①	310	
P_D@T_C=25℃	Power dissipation	180	W
	Linear derating factor	1.5	W/℃
V_{GS}	Gate-to-Source voltage	±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	℃

Thermal Resistance

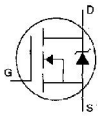
	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case	—	0.83	—	℃/W
$R_{\theta JA}$	Junction-to-ambient	—	—	62	

Electrical Characteristics @T_J=25℃ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-to-Source breakdown voltage	68	—	—	V	V_{GS}=0V,I_D=250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	5	8	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	—	—	2	μA	V_{DS}=68V,V_{GS}=0V
		—	—	10		V_{DS}=68V, V_{GS}=0V,T_J=150℃
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=15Ω
$t_{d(off)}$	Turn-Off delay time	—	70.5	—		R_G=2.5Ω
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℃,I_S=68A,V_{GS}=0V ③
t_{rr}	Reverse Recovery Time	—	57	—	nS	T_J=25℃,I_F=68A
Q_{rr}	Reverse Recovery Charge	—	107	—	nC	di/dt=100A/μs ③
t_{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible (turn-on is dominated by Ls + LD)				

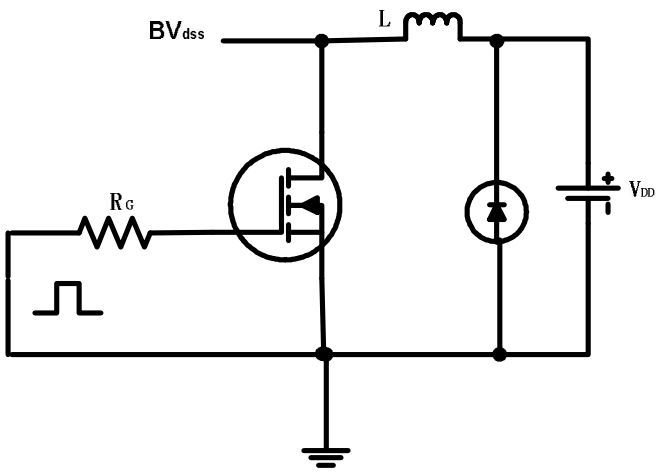
Notes:

① Repetitive rating; pulse width limited by max junction temperature.

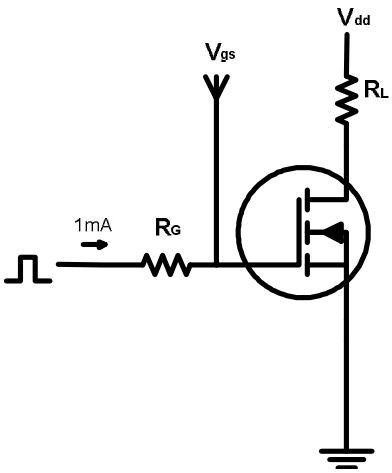
② Test condition: L =0.3mH, ID = 37A, VDD = 30V.

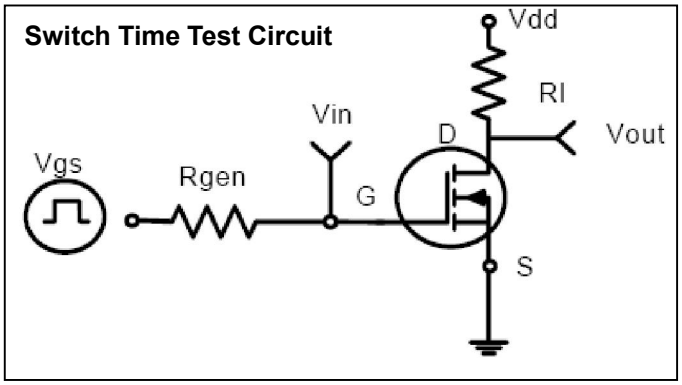
③ Pulse width≤300μS, duty cycle≤1.5% ; RG = 25Ω Starting T_J = 25°C.

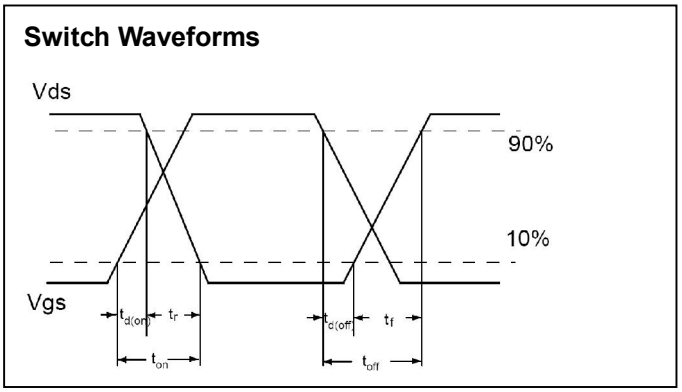
EAS test circuit



Gate charge test circuit







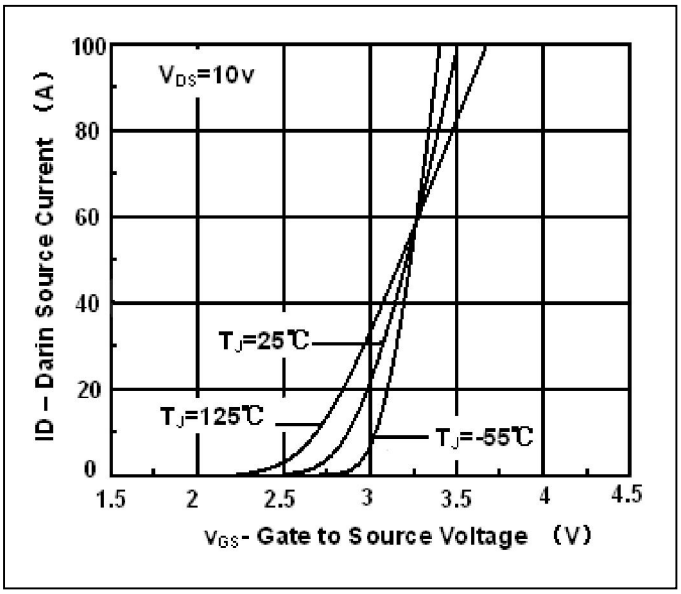


Figure1: Transfer Characteristic

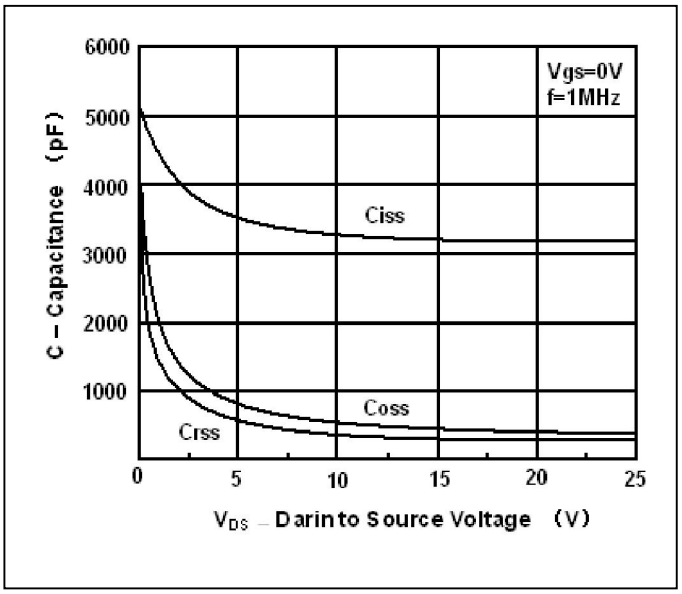


Figure2:Capacitance

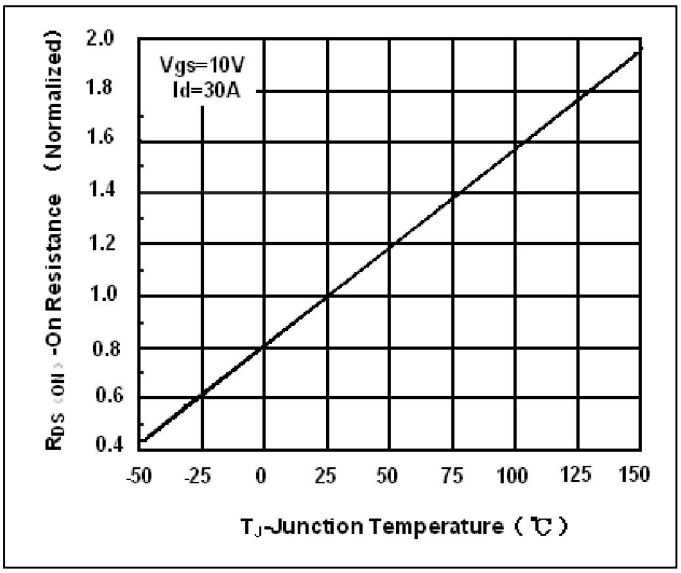


Figure3:On Resistance vs. Junction Temperature

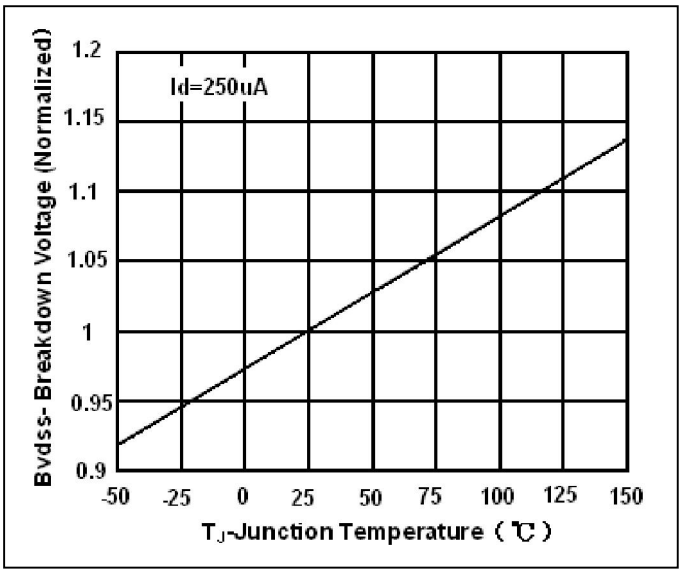


Figure4:Breakdown Voltage vs. Junction Temperature

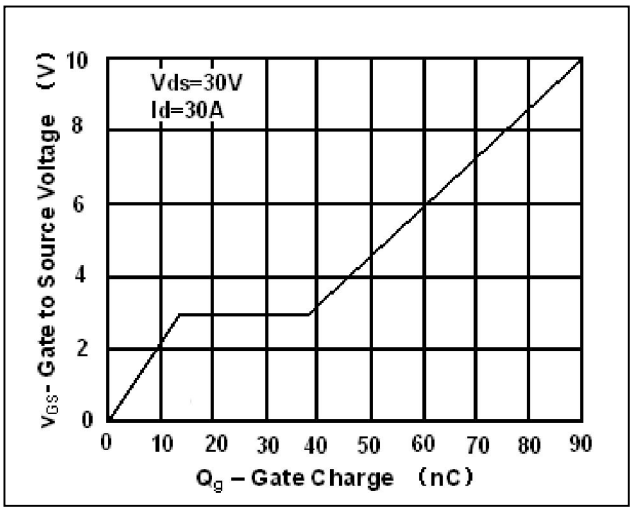


Figure5:Gate Charge

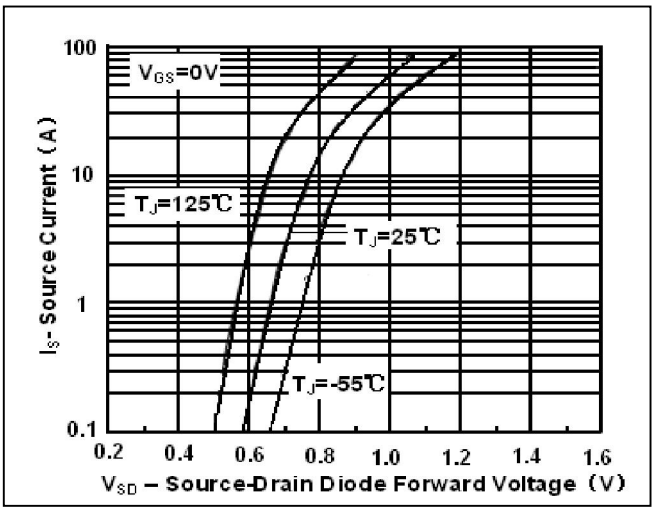


Figure6:Source-Drain Diode Forward Voltage

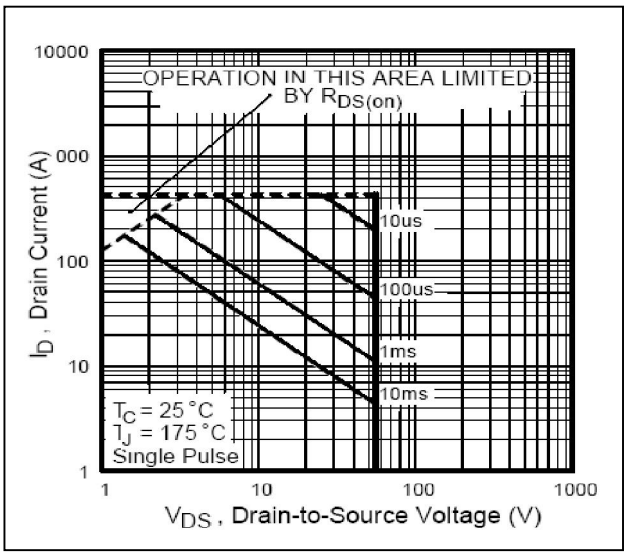


Figure7:Safe Operation

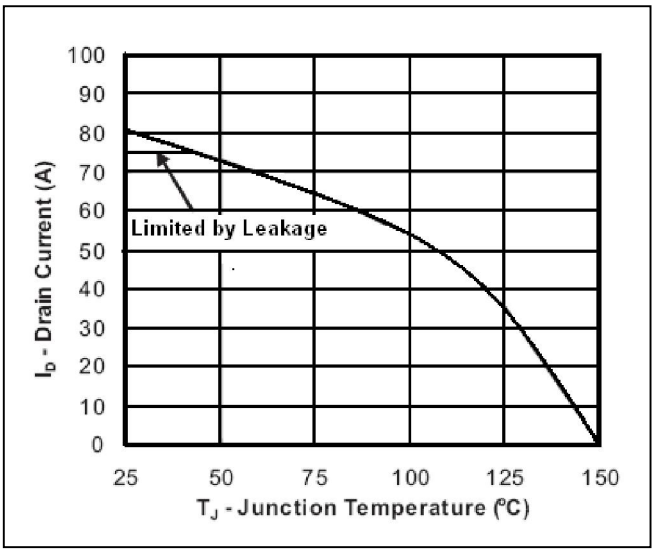


Figure8:Max Drain Current vs. Junction Temperature

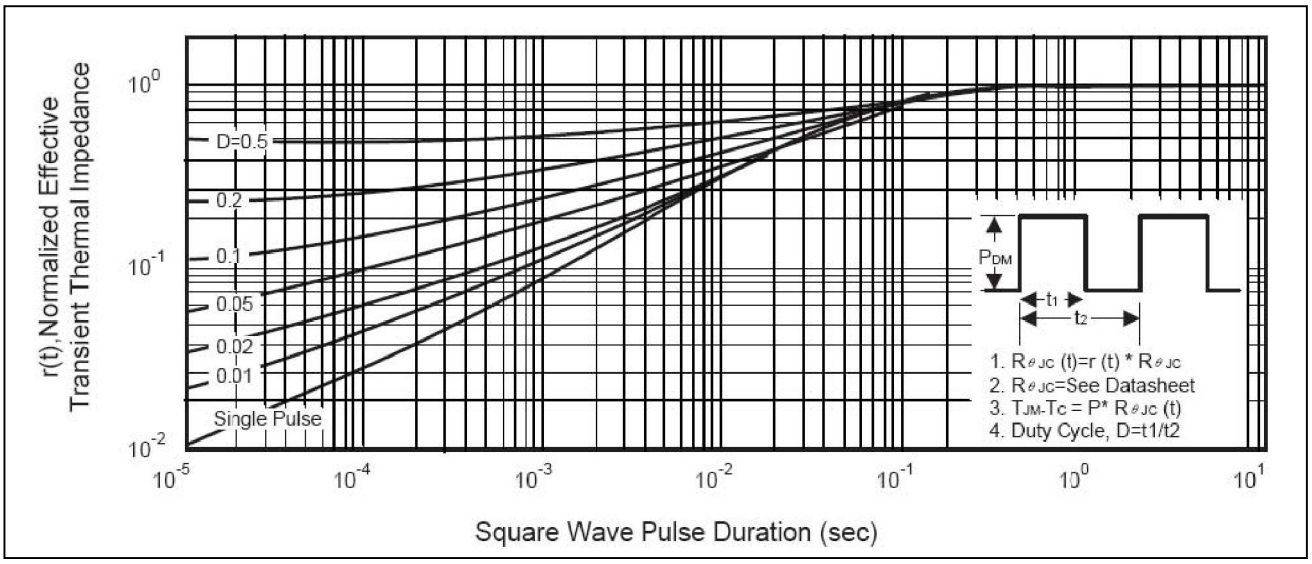


Figure9:Transient Thermal Impedance Curve

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	0º		4º			

