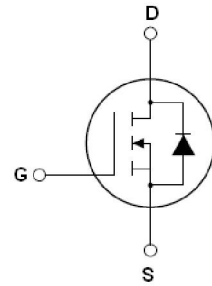


FEATURES

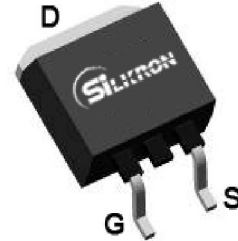
- Advanced trench process technology
- Ultra low R_{DS(on)}, typical 5mohm
- High avalanche energy, 100% test
- Fully characterized avalanche voltage and current
- Lead free product

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°C	Continuous drain current, V _{GS} @10V	84	A
I _D @T _c =100C	Continuous drain current, V _{GS} @10V	76	
I _{DM}	Pulsed drain current ①	310	
P _D @T _c =25C	Power dissipation	180	W
	Linear derating factor	1.5	W/C
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	°C

Thermal Resistance

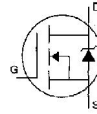
	Parameter	Min.	Typ.	Max.	Units
R _{θJC}	Junction-to-case	—	0.83	—	°C/W
R _{θJA}	Junction-to-ambient	—	—	62	

Electrical Characteristics @T_J=25 °C (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°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	—		$f=1.0MHz$

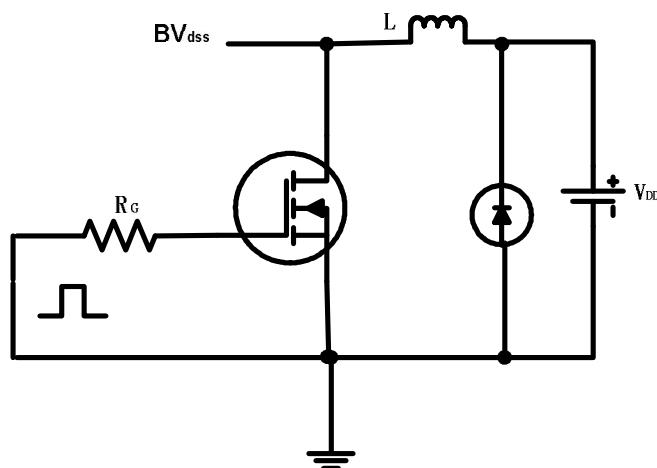
Source-Drain Ratings and Characteristics

	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	$T_J=25^\circ C, I_F=68A$
Q_{rr}	Reverse Recovery Charge	—	107	—	nC	$di/dt=100A/\mu s$ ③
t_{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible (turn-on is dominated by $L_S + L_D$)				

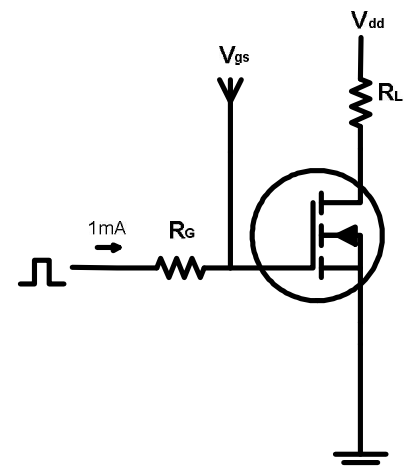
Notes:

- 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



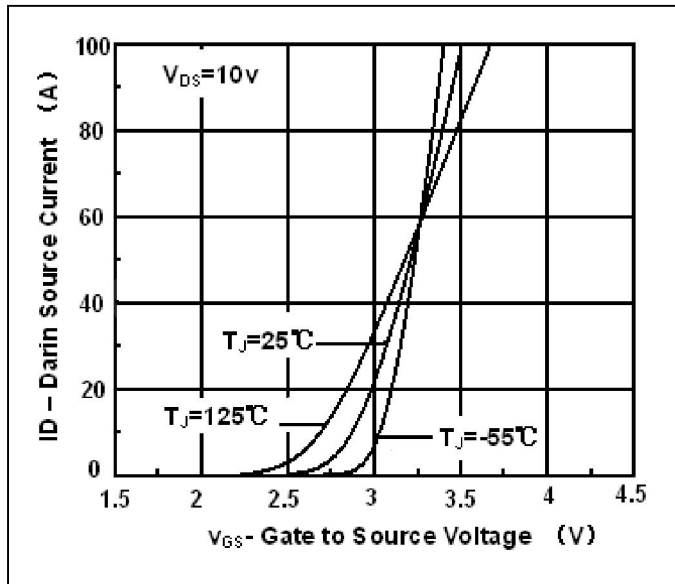
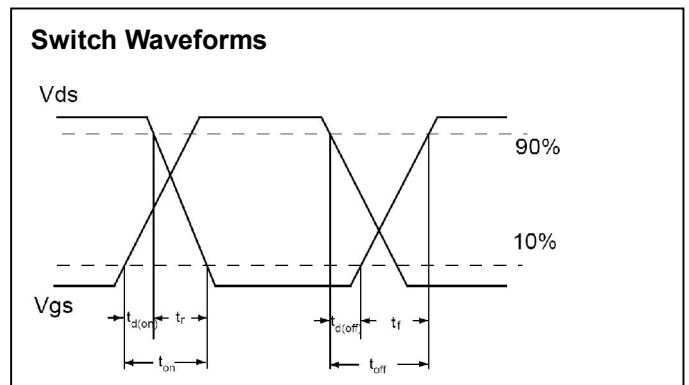
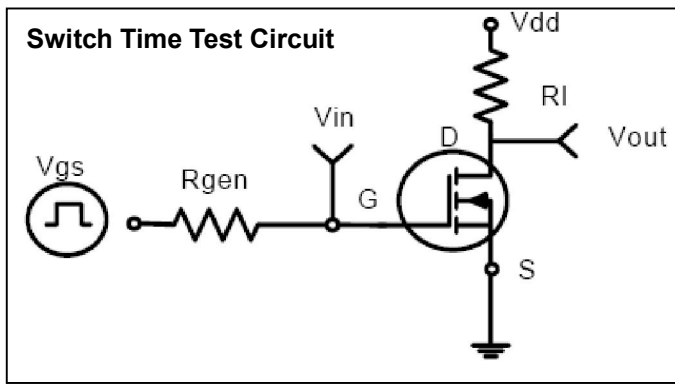


Figure1: Transfer Characteristic

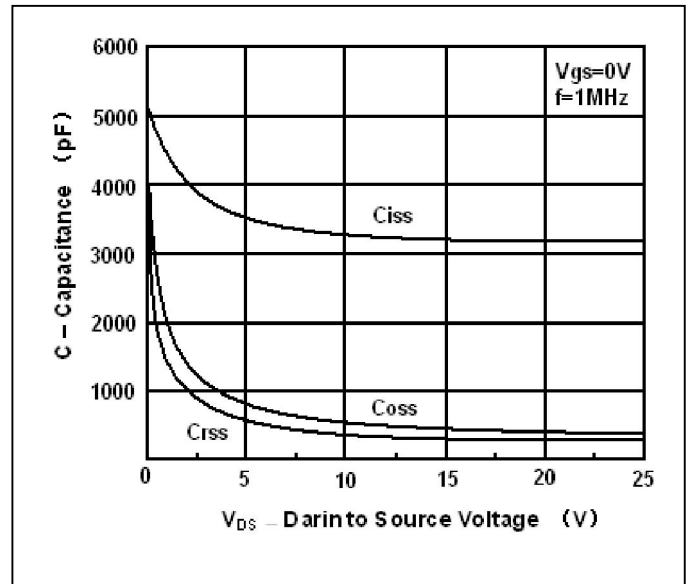


Figure2: Capacitance

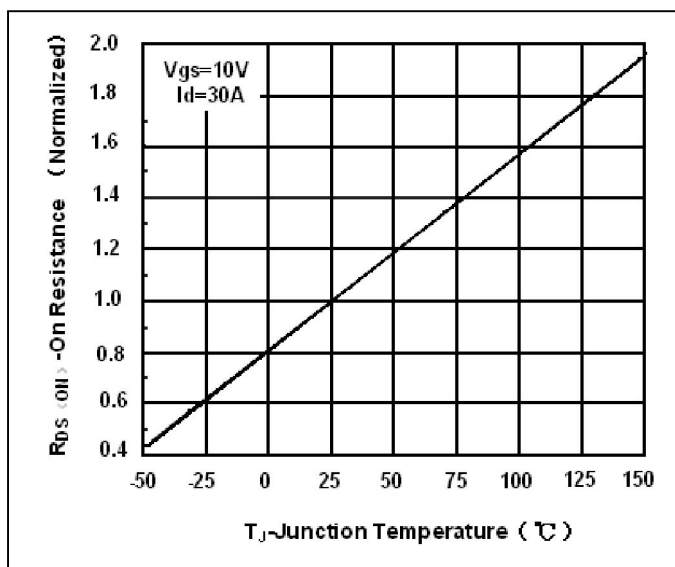


Figure3: On Resistance vs. Junction Temperature

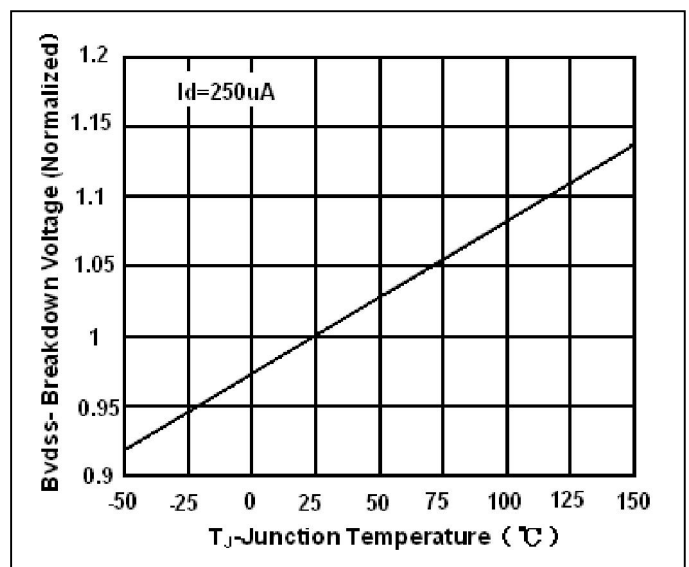


Figure4: Breakdown Voltage vs. Junction Temperature

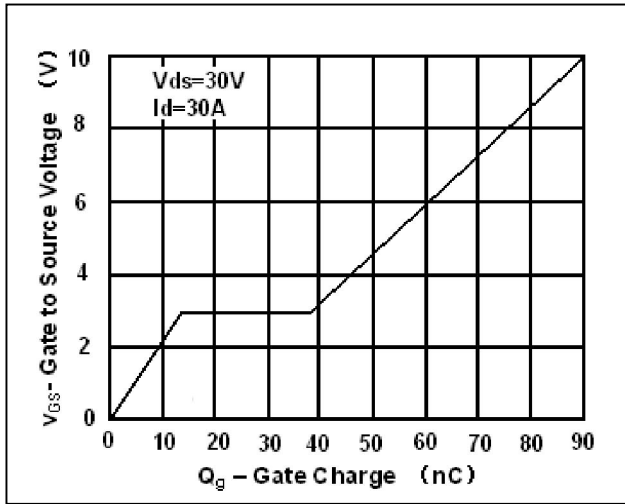


Figure5:Gate Charge

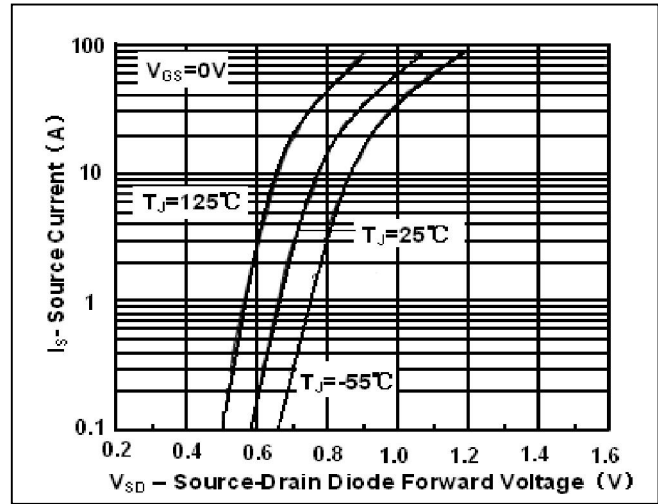


Figure6:Source-Drain Diode Forward Voltage

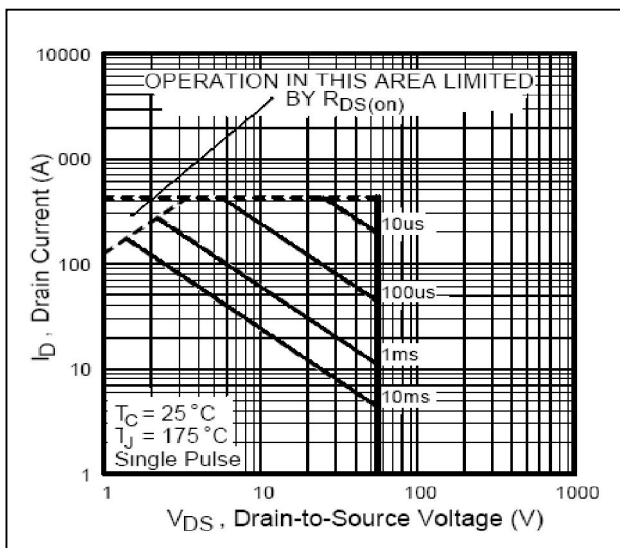


Figure7:Safe Operation

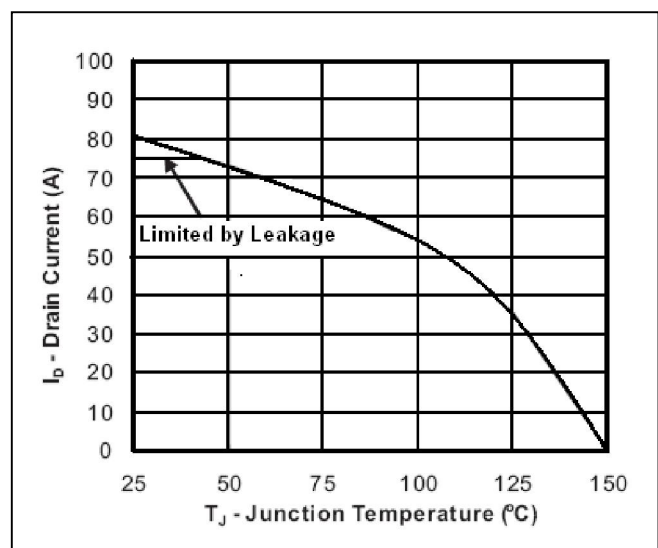


Figure8:Max Drain Current vs. Junction Temperature

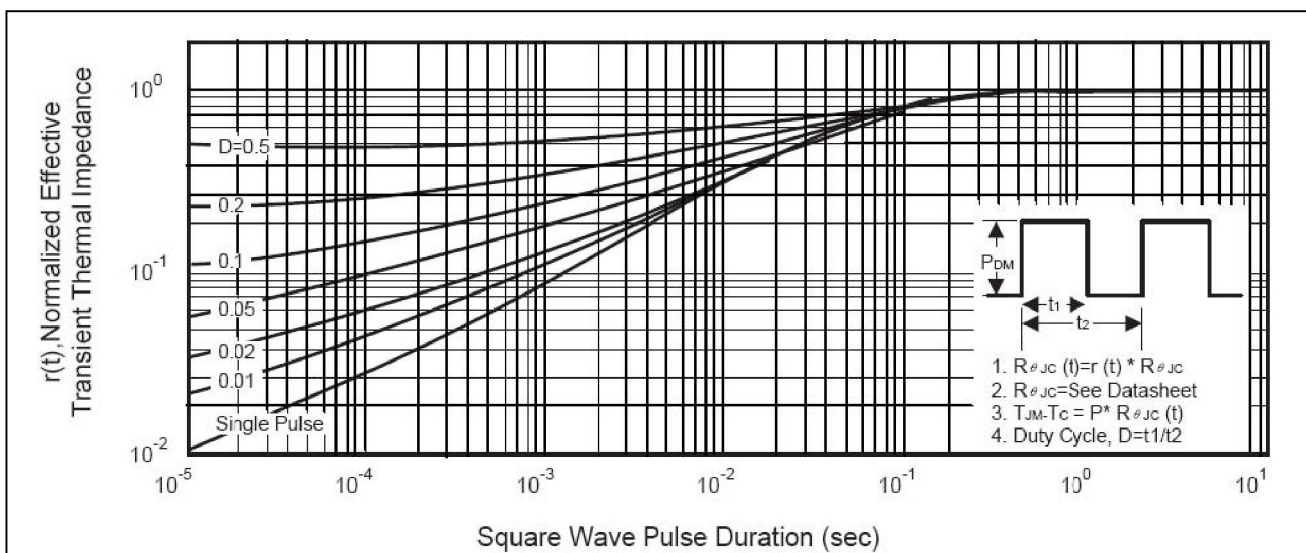


Figure9:Transient Thermal Impedance Curve

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°			

