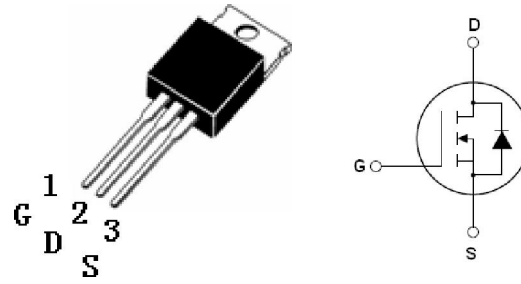


Main Product Characteristics

V_{DSS}	100V (Typ)
$R_{DS(on)}$	6mohm (Typ)
I_D	130A



Features and Benefits

SSF1007 Top View (TO-220)

- Advanced trench MOSFET process technology
- Special designed for convertors and power controls
- Ultra low on-resistance
- 150°C operating temperature
- High Avalanche capability and 100% tested
- Lead free product

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	130	A
$I_D @ TC = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ ①	91	
IDM	Pulsed Drain Current②	520	
ISM	Pulsed Source Current.(Body Diode)	258	
$PD @ TC = 25^\circ C$	Power Dissipation③	1.7	W
	Linear derating factor	± 20	W/C°
VDS	Drain-Source Voltage	735	V
VGS	Gate-to-Source Voltage	75	V
dv/dt	Peak diode recovery voltage	-55 to + 175	v/ns
EAS	Single Pulse Avalanche Energy @ $L=0.3mH$ ②	130	mJ
IAR	Avalanche Current @ $L=0.3mH$ ②	91	A
TJ TSTG	Operating Junction and Storage Temperature Range	520	°C

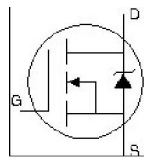
Thermal Resistance

Symbol	Characteristics	Value	Unit
$R_{\theta JC}$	Junction-to-case③	0.58	°C/W
$R_{\theta JA}$	Junction-to-ambient ($t \leq 10s$) ④	62	°C/W

Electrical Characteristics @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max	Units	Conditions
BVDSS	Drain-to-Source breakdown voltage	100	—	—	V	$V_{GS} = 0V$, $I_D = 250\mu A$
RDS(on)	Static Drain-to-Source on-resistance	—	5	6	m Ω	$V_{GS} = 10V$, $I_D = 75A$ ③
VGS(th)	Gate threshold voltage	2	—	4	V	$V_{DS} = V_{GS}$, $I_D = 250\mu A$
IDSS	Drain-to-Source leakage current	—	—	20	μA	$V_{DS} = 100V$, $V_{GS} = 0V$
		—	—	250		$V_{DS} = 80V$, $V_{GS} = 0V$, $T_J = 125^{\circ}\text{C}$
IGSS	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 20V$
	Gate-to-Source reverse leakage	—	—	-100		$V_{GS} = -20V$
Qg	Total gate charge	—	243	170	nC	$I_D = 75A$ $V_{DS} = 50V$ $V_{GS} = 10V$ ③
Qgs	Gate-to-Source charge	—	47	—		
Qgd	Gate-to-Drain("Miller") charge	—	92	—		
td(on)	Turn-on delay time	—	28	—	ns	$V_{DD} = 65V$ $I_D = 75A$ $R_G = 2.7\ \Omega$ $V_{GS} = 10V$ ③
tr	Rise time	—	108	—		
td(off)	Turn-Off delay time	—	123	—		
tf	Fall time	—	120	—		
Ciss	Input capacitance	—	8456	—	pF	$V_{GS} = 0V$ $V_{DS} = 50V$ $f = 500\text{KHz}$
Coss	Output capacitance	—	454	—		
Crss	Reverse transfer capacitance	—	417	—		

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max	Units	Conditions
IS	Continuous Source Current (Body Diode)	—	—	130	A	MOSFET symbol showing the integral reverse p-n junction diode. 
ISM	Pulsed Source Current (Body Diode) ①	—	—	520		$T_J = 25^{\circ}\text{C}$, $I_S = 75A$, $V_{GS} = 0V$ ③
VSD	Diode Forward Voltage	—	—	1.3	V	$T_J = 25^{\circ}\text{C}$, $I_F = 75A$, $V_{DD} = 20V$ $di/dt = 100A/\mu s$ ③
trr	Reverse Recovery Time	—	57	70	ns	$T_J = 25^{\circ}\text{C}$, $I_F = 75A$, $V_{GS} = 0V$ $di/dt = 100A/\mu s$ ③
Qrr	Reverse Recovery Charge	—	156	170	nC	
ton	Forward Turn-on Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Typical Electrical and Thermal Characteristics

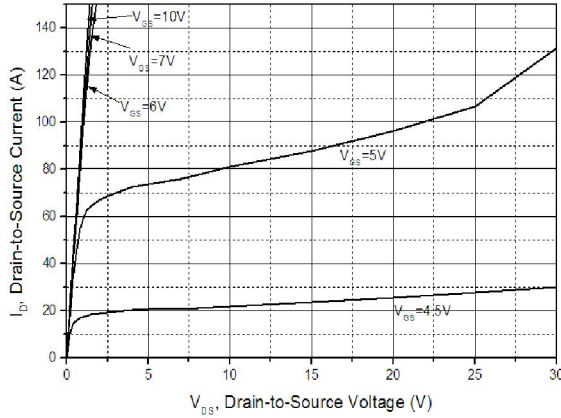


Figure 1. Typical Output Characteristics

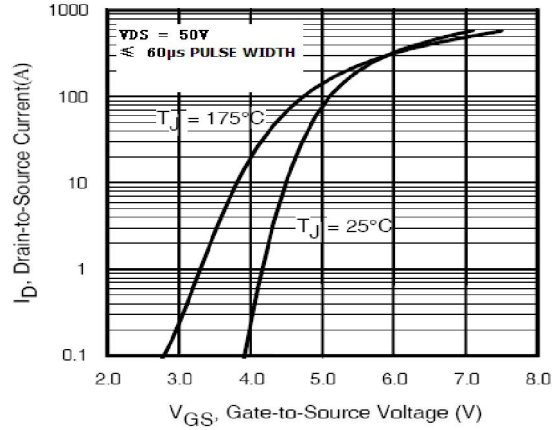


Figure 2. Typical Transfer Characteristics

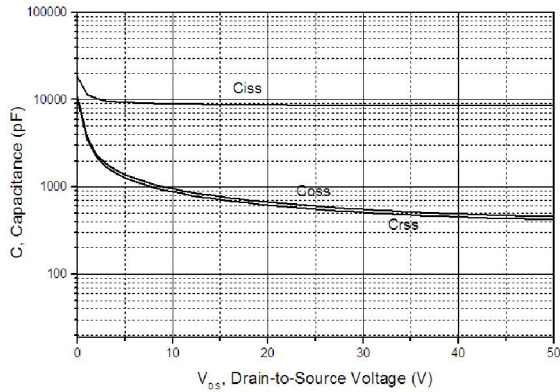


Figure 3. Typical Capacitance Vs. Drain-to-Source Voltage

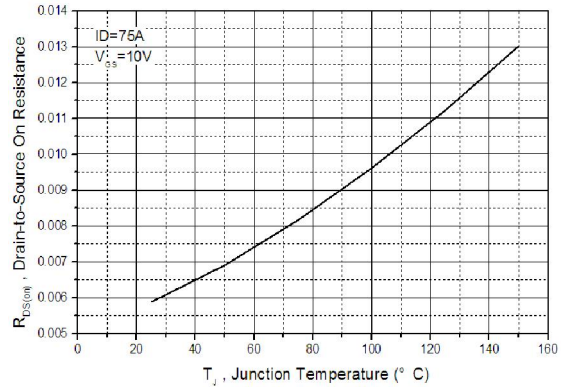


Figure 4. Normalized On-Resistance Vs. Case Temperature

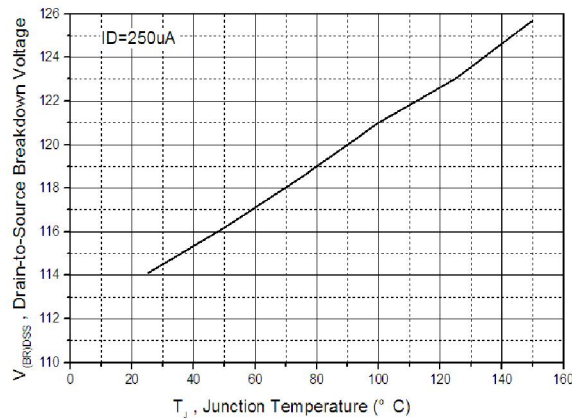


Figure 5. Drain-to-Source Breakdown Voltage vs. Temperature

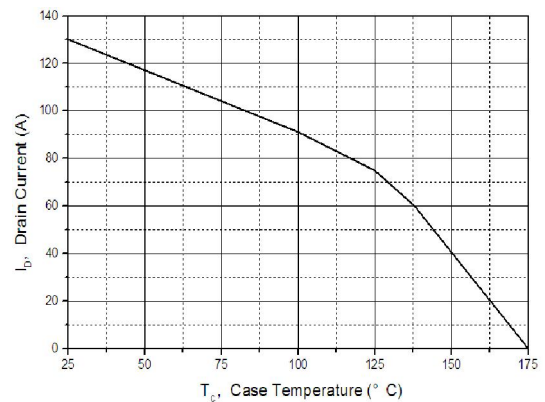


Figure 6. Maximum Drain Current Vs. Case Temperature

Typical Electrical and Thermal Characteristics

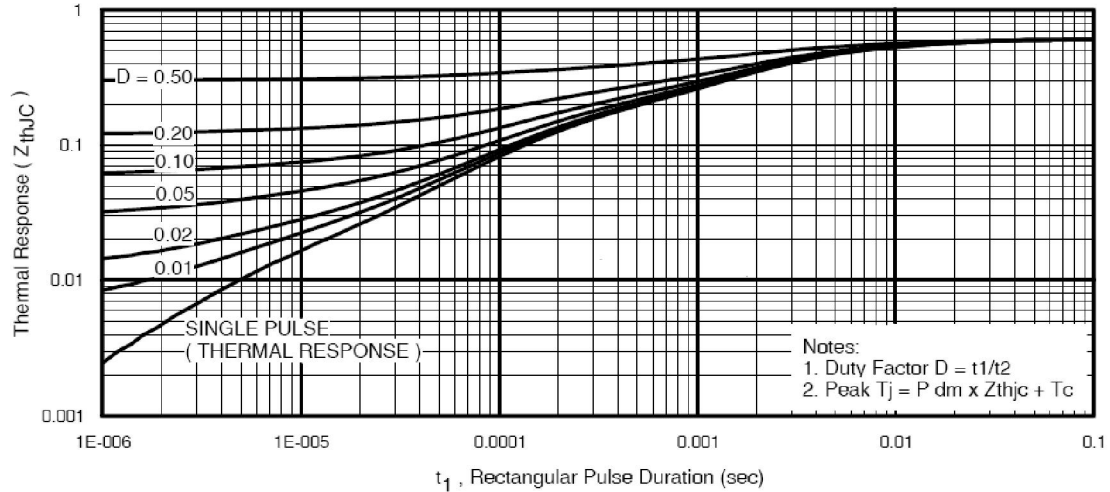
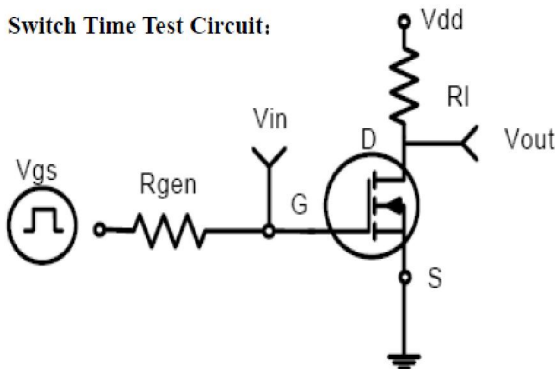
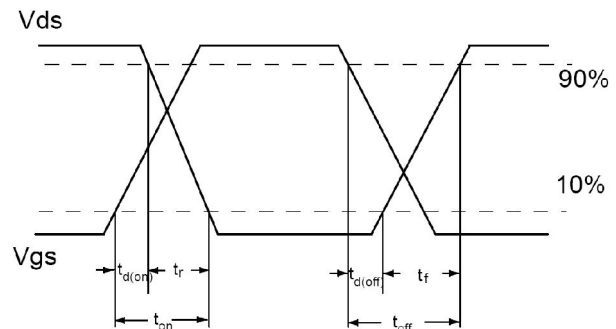


Figure 7. Maximum Effective Transient Thermal Impedance, Junction-to-Case

Switch Time Test Circuit:



Switch Waveforms

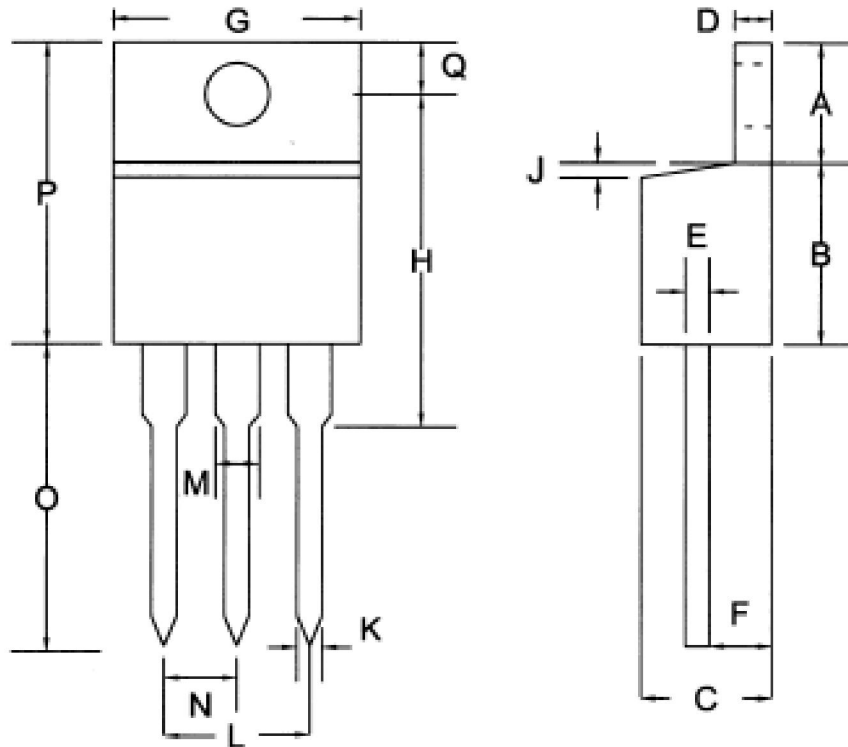


Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Limited by T_{jmax} , starting $T_J = 25^\circ C$, $L = 0.3mH$, $R_G = 50\Omega$, $I_{AS} = 70A$, $V_{GS} = 10V$. Part not recommended for use above this value.
- ③ Pulse width $< 1.0ms$; duty cycle $< 2\%$.
- ④ This is only applied to TO-220 package.

Mechanical Data

TO-220



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min	Nom	Max	Min	Nom	Max
A	5.58	6.54	7.49	0.220	0.257	0.295
B	8.38	8.64	8.90	0.330	0.340	0.350
C	4.07	4.45	4.82	0.160	0.175	0.190
D	1.15	1.27	1.39	0.045	0.050	0.055
E	0.35	0.45	0.60	0.014	0.018	0.024
F	2.04	2.42	2.79	0.080	0.095	0.110
G	9.66	9.97	10.28	0.380	0.393	0.405
H	—	16.25	—	—	0.640	—
I	3.68	3.83	3.98	0.145	0.151	0.157
J	—	—	1.27	—	—	0.050
K	0.75	0.85	0.95	0.030	0.033	0.037
L	4.83	5.08	5.33	0.190	0.200	0.210
M	1.15	1.33	1.52	0.045	0.052	0.060
N	2.42	2.54	2.66	0.095	0.100	0.105
O	12.70	13.48	14.27	0.500	0.531	0.562
P	14.48	15.17	15.87	0.570	0.597	0.625
Q	2.54	2.79	3.04	0.100	0.110	0.120