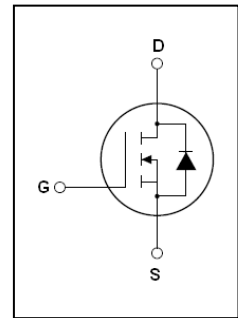
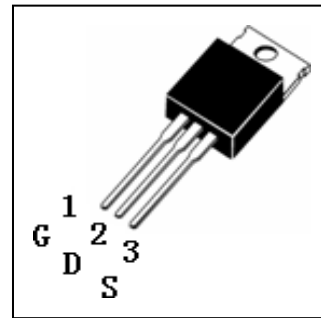


Main Product Characteristics:

V_{DSS}	100V
$R_{DS(on)}$	8.0 mohm
I_D	100A


SSF1009 TOP View (TO220)
Features and Benefits:

- Advanced trench MOSFET process technology
- Special designed for Convertors and power controls
- Ultra low on-resistance
- 175°C operating temperature
- High Avalanche capability and 100% tested

Description:

It utilizes the latest trench processing techniques to achieve extremely low on resistance, fast switching speed and high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in Automotive applications and a wide variety of other applications

Absolute max Rating:

	Parameter	Max.	Units
ID @ TC = 25°C	Continuous Drain Current, VGS @ 10V (Silicon Limited)	100	A
ID @ TC = 100°C	Continuous Drain Current, VGS @ 10V	72	
IDM	Pulsed Drain Current ^①	400	
PD @TC = 25°C	Power Dissipation	235	W
	Linear Derating Factor	1.5	W/°C
VGS	Gate-to-Source Voltage	± 20	V
EAS	Single Pulse Avalanche Energy ^②	540	mJ
IAR	Avalanche Current @ L=0.3mH	60	A
TJ TSTG	Operating Junction and Storage Temperature Range	-55 to + 175	°C

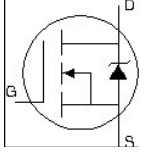
Thermal Resistance

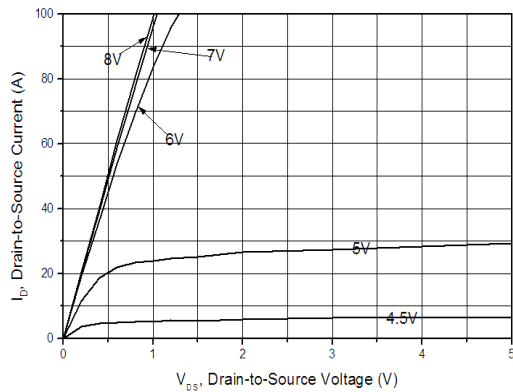
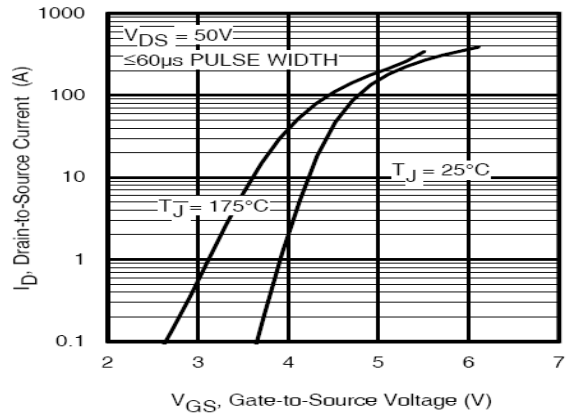
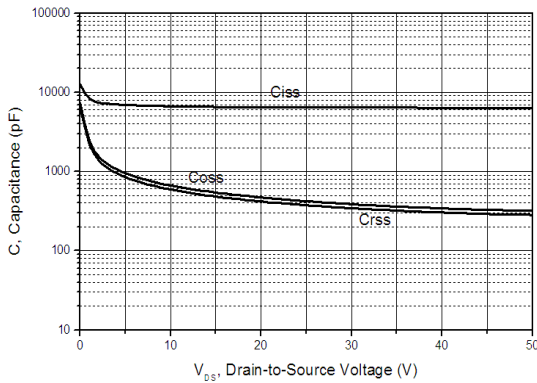
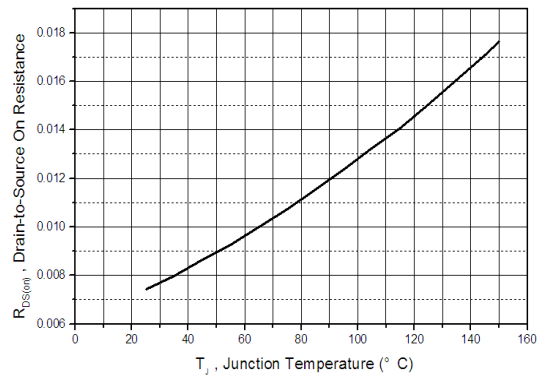
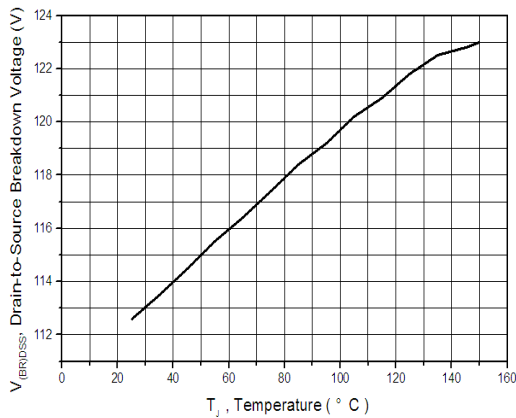
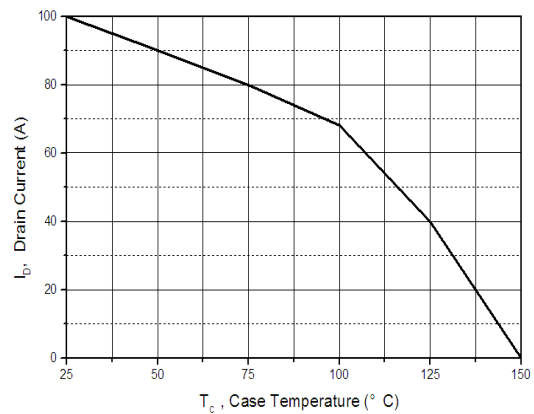
Symbol	Characterizes	Value	Unit
$R_{\theta JC}$	Junction-to-case	0.64	°C/W
$R_{\theta JA}$	Junction-to-ambient ^④	60	°C/W

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

	Parameter	Min.	Typ.	Max	Units	Conditions
BVDSS	Drain-to-Source breakdown voltage	100	—	—	V	VGS = 0V, ID = 250 μ A
RDS(on)	Static Drain-to-Source on-resistance	—	7.1	8	m Ω	VGS = 10V, ID = 58A ^③
VGS(th)	Gate threshold voltage	2	—	4	V	VDS = VGS, ID = 250 μ A
IDSS	Drain-to-Source leakage current	—	—	20	μ A	VDS = 100V, VGS = 0V
		—	—	250		VDS = 80V, VGS = 0V, TJ = 125 $^{\circ}$ C
IGSS	Gate-to-Source forward leakage	—	—	100	nA	VGS = 20V
	Gate-to-Source reverse leakage	—	—	-100		VGS = -20V
Qg	Total gate charge	—	177	170	nC	ID = 58A VDS = 50V VGS = 10V ^③
Qgs	Gate-to-Source charge	—	37	—		
Qgd	Gate-to-Drain("Miller") charge	—	73	—		
td(on)	Turn-on delay time	—	24	—	ns	VDD = 65V ID = 58A RG = 2.7 Ω VGS = 10V ^③
tr	Rise time	—	99	—		
td(off)	Turn-Off delay time	—	82	—		
tf	Fall time	—	105	—		
Ciss	Input capacitance	—	6370	—	pF	VGS = 0V VDS = 25V f = 1.0MHz
Coss	Output capacitance	—	320	—		
Crss	Reverse transfer capacitance	—	281	—		

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max	Units	Conditions
IS	Continuous Source Current (Body Diode)	—	—	100	A	MOSFET symbol showing the integral reverse p-n junction diode. 
ISM	Pulsed Source Current (Body Diode) ①	—	—	400		
VSD	Diode Forward Voltage	—	—	1.3	V	TJ = 25 $^{\circ}$ C, IF = 58A, VDD = 20V di/dt = 100A/ μ s ^③
trr	Reverse Recovery Time	—	53	70	ns	TJ = 25 $^{\circ}$ C, IF = 58A, Vgs=0V di/dt = 100A/ μ s ^③
Qrr	Reverse Recovery Charge	—	136	159	nC	
ton	Forward Turn-on Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS:

Fig 1. Typical Output Characteristics

Fig 2. Typical Transfer Characteristics

Fig3. Typical Capacitance Vs. Drain-to-Source

Fig4. Normalized On-Resistance Vs.

Fig 5. Drain-to-Source Breakdown Voltage

Fig 6. Maximum Drain Current Vs. Case

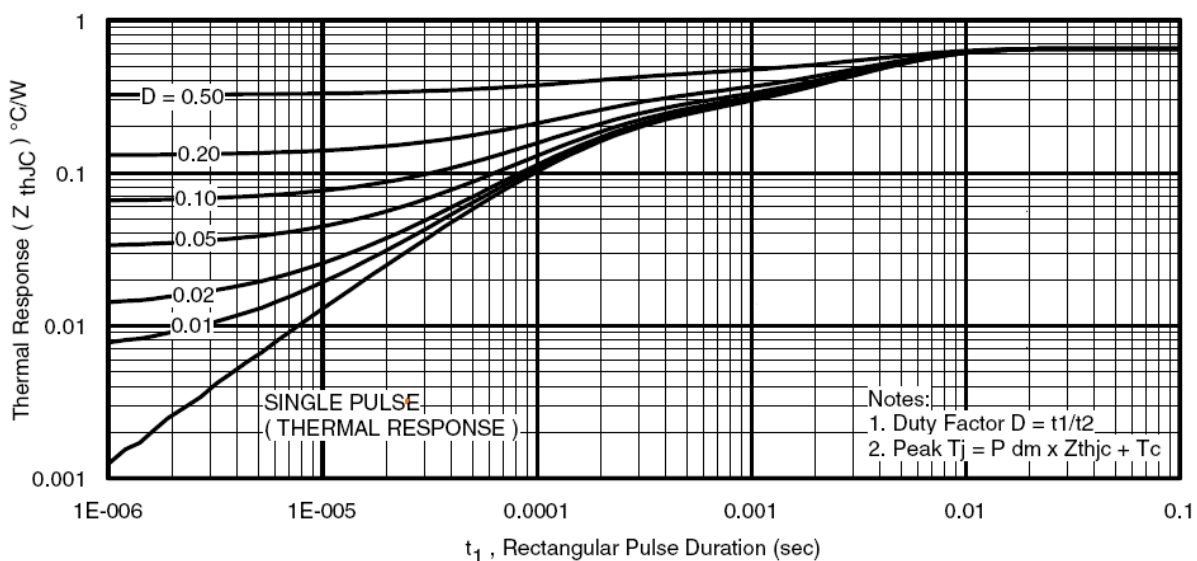
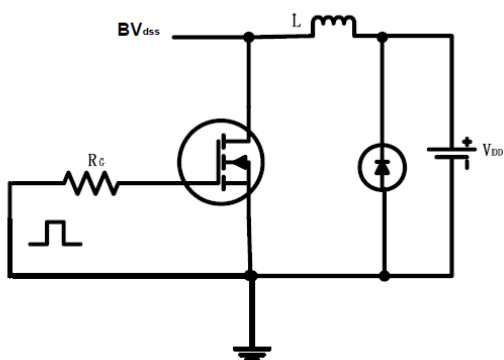
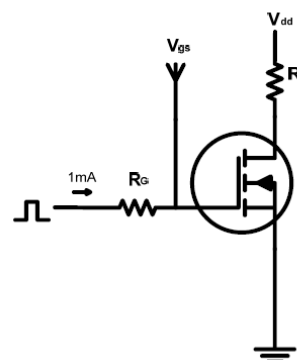


Fig 7. Maximum Effective Transient Thermal Impedance, Junction-to-Case

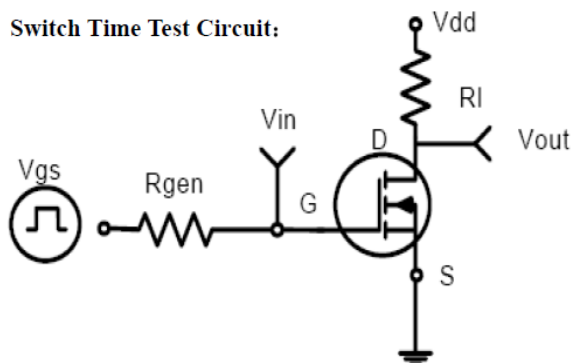
EAS test circuits:



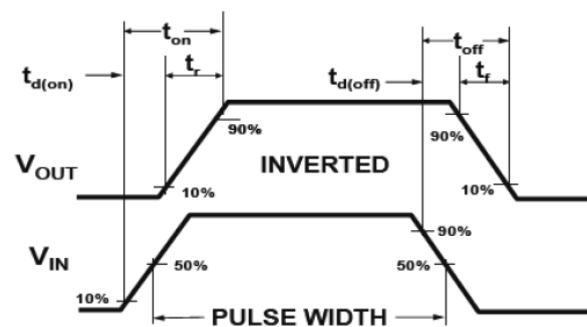
Gate charge test circuit:



Switch Time Test Circuit:

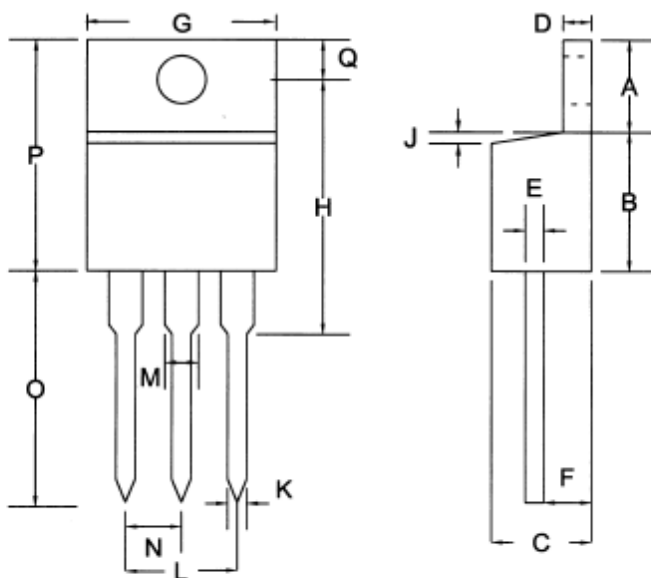


Switch Waveforms:



Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Limited by T_{Jmax} , starting $T_J = 25^{\circ}C$, $L = 0.3mH$ $R_G = 50\Omega$, $I_{AS} = 60A$, $V_{GS} = 10V$. 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:
TO220


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