

Features:

- Advanced trench process technology
- avalanche energy, 100% test
- Fully characterized avalanche voltage and current

Description:

The SSF0115 is a new generation of high voltage and low current N-Channel enhancement mode trench power MOSFET. This new technology increases the device reliability and electrical parameter repeatability. SSF0115 is assembled in high reliability and qualified assembly house.

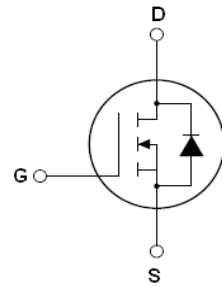
Application:

- IEEE802.3AF Compatible

ID =3A

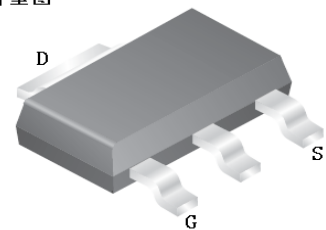
BV=100V

Rdson=0.15Ω



SSF0115 TOP View (SOT-223)

外型图



Absolute Maximum Ratings

	Parameter	Max.	Units
$I_D@T_c=25\text{ }^{\circ}\text{C}$	Continuous drain current, $V_{GS}@10\text{V}$	3	A
$I_D@T_c=100^{\circ}\text{C}$	Continuous drain current, $V_{GS}@10\text{V}$	2.3	
I_{DM}	Pulsed drain current ①	12	
$P_D@T_c=25^{\circ}\text{C}$	Power dissipation	1.8	W
	Linear derating factor	0.019	W/ $^{\circ}\text{C}$
V_{GS}	Gate-to-Source voltage	± 20	V
E_{AS}	Single pulse avalanche energy ②	79	mJ
E_{AR}	Repetitive avalanche energy	TBD	mJ
dv/dt	Peak diode recovery voltage		v/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$

Thermal Resistance

	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient	—	—	69	C/W

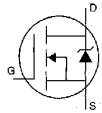
*When mounted on the minimum pas size recommended (PCB Mount) .

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	100	—	—	V	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	0.09	0.15	Ω	$V_{GS}=10\text{V}, I_D=2\text{A}$
$V_{GS(th)}$	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	—	—	1	μA	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$
		—	—	10		$V_{DS}=100\text{V}, V_{GS}=0\text{V}, T_J=150^{\circ}\text{C}$
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS}=20\text{V}$
	Gate-to-Source reverse leakage	—	—	-100		$V_{GS}=-20\text{V}$

Q_g	Total gate charge	—	18	22	nC	$I_D=9.2A, V_{GS}=10V$ $V_{DD}=80V, R_L=8.6\Omega$
Q_{gs}	Gate-to-Source charge	—	2.7	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	7.8	—		
$t_{d(on)}$	Turn-on delay time	—	12	40	nS	$V_{DD}=50V$ $I_D=9.2A, R_L=5.4\Omega$ $R_G=18\Omega$ $V_{GS}=10V$
t_r	Rise time	—	12	40		
$t_{d(off)}$	Turn-Off delay time	—	33	85		
t_f	Fall time	—	26	68		
C_{iss}	Input capacitance	—	350	480	pF	$V_{GS}=0V$ $V_{DS}=25V$ $f=1.0MHz$
C_{oss}	Output capacitance	—	90	110		
C_{rss}	Reverse transfer capacitance	—	35	45		

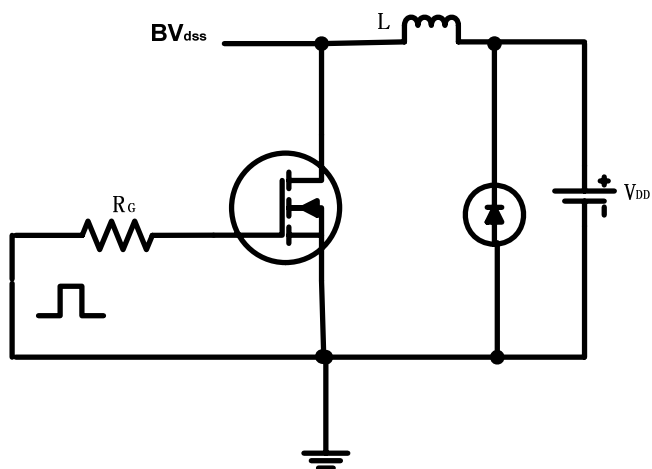
Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	3	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	18		
V_{SD}	Diode Forward Voltage	—	—	1.3	V	$T_J=25^\circ C, I_S=3A, V_{GS}=0V$ ③
t_{rr}	Reverse Recovery Time	—	98	—	nS	$T_J=25^\circ C, I_F=9.2A$
Q_{rr}	Reverse Recovery Charge	—	0.34	—	μC	$di/dt=100A/\mu s$ ③
t_{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible (turn-on is dominated by $L_s + L_D$)				

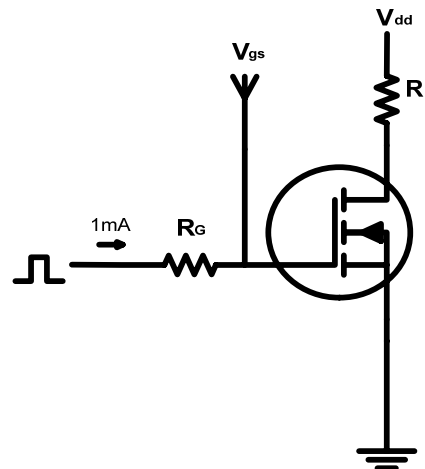
Notes:

- ① Repetitive rating; pulse width limited by max junction temperature.
- ② Test condition: $L = 30mH, V_{DD} = 50V, I_D=2.3A$
- ③ Pulse width $\leq 300\mu s$, duty cycle $\leq 1.5\%$; $R_G = 25\Omega$ Starting $T_J = 25^\circ C$

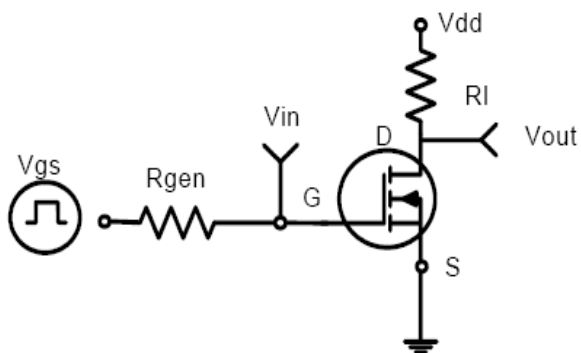
EAS Test Circuit:



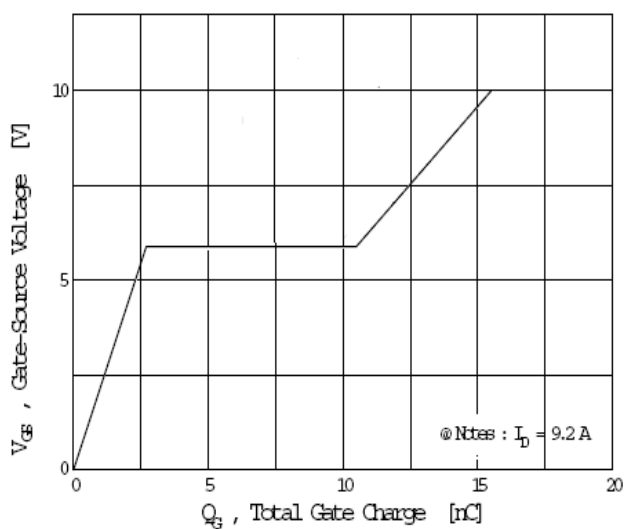
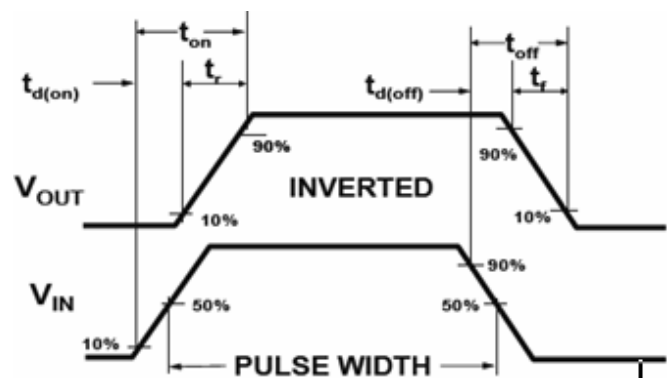
Gate Charge Test Circuit:



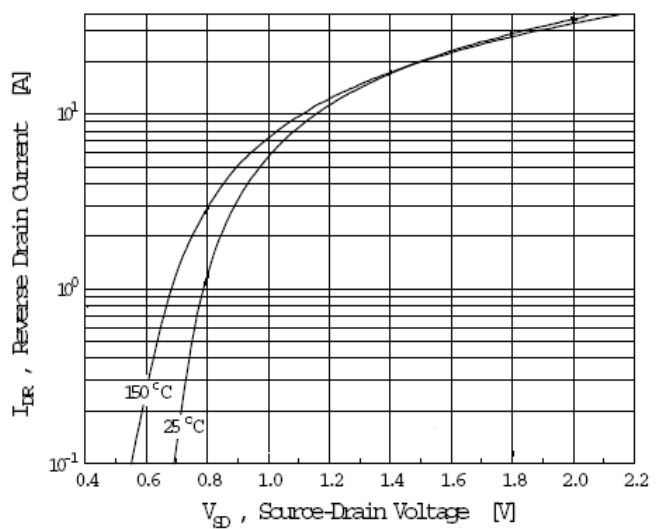
Switch Time Test Circuit:



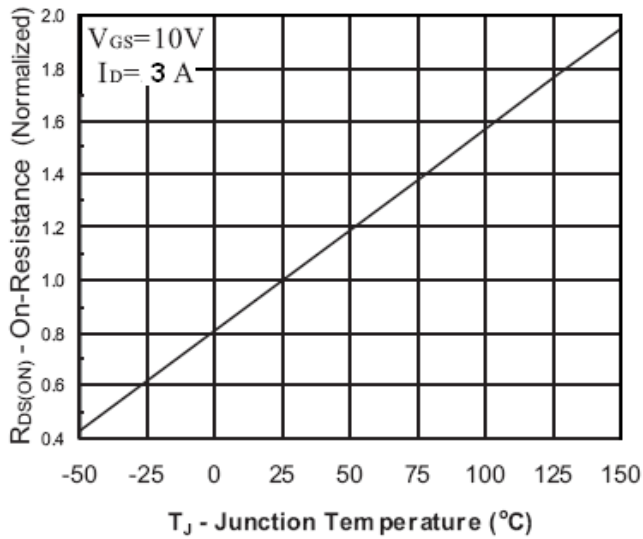
Switch Waveform:



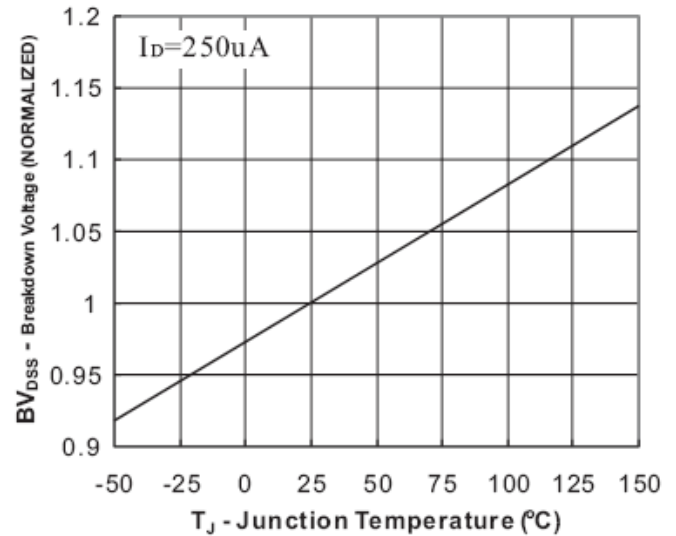
Gate Charge



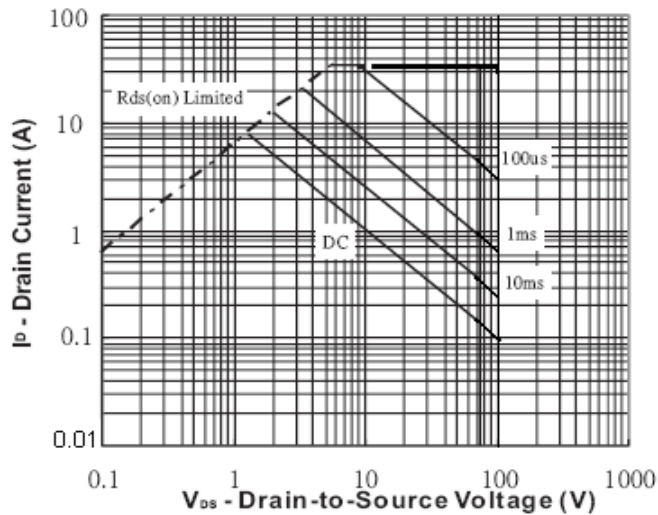
Source-Drain Diode Forward Voltage



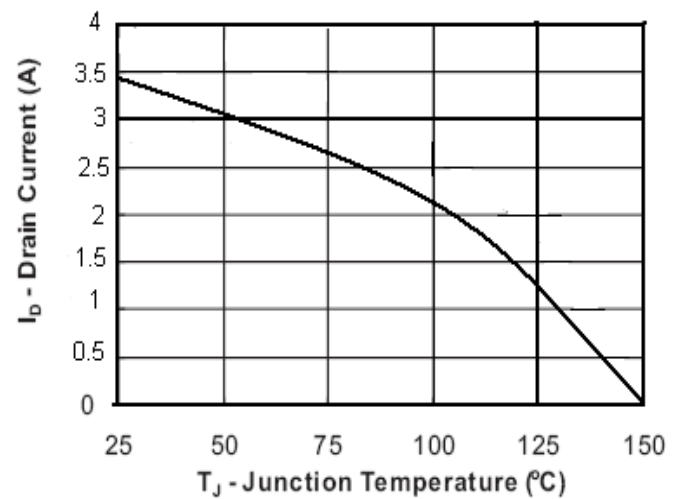
On Resistance vs Junction Temperature



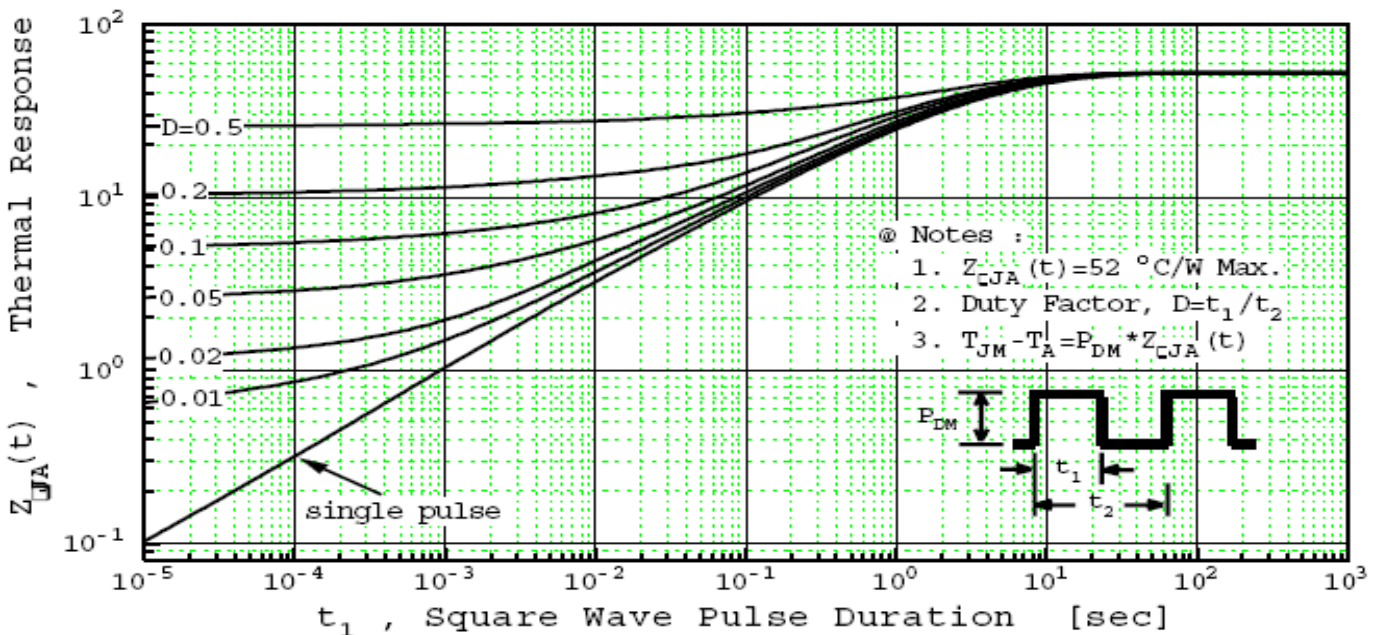
Breakdown Voltage vs Junction Temperature



Safe Operation Area

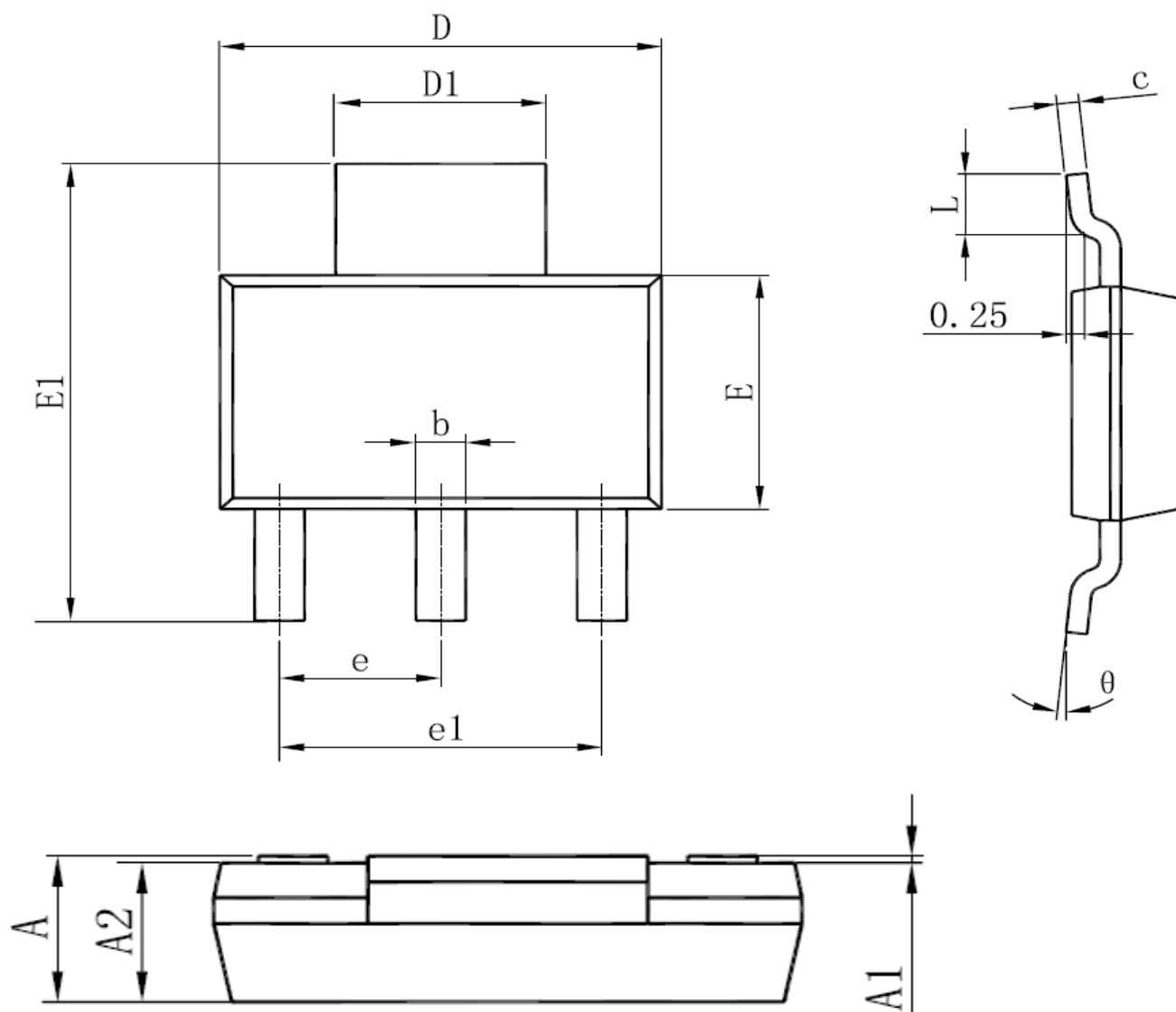


Max Drain Current vs Junction Temperature



Transient Thermal Impedance Curve

SOT-223 MECHANICAL DATA:



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°