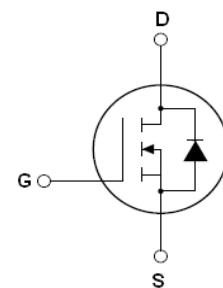


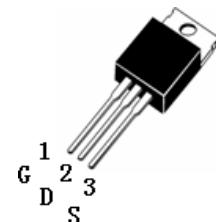
Features:

- Advanced trench process technology
- Special designed for Convertors and power controls
- High density cell design for ultra low R_{dson}
- Fully characterized Avalanche voltage and current
- Avalanche Energy 100% test

ID =15A
BV=100V
 $R_{dson}=0.06\Omega$ (Typ.)


Description:

The SSF1090 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. SSF1090 is assembled in high reliability and qualified assembly house.


Application:

- Power switching application

SSF1090 TOP View (TO-220)
Absolute Maximum Ratings

	Parameter	Max.	Units
$I_D@T_c=25\text{ }^\circ\text{C}$	Continuous drain current,VGS@10V	15	A
$I_D@T_c=100\text{ }^\circ\text{C}$	Continuous drain current,VGS@10V	10	
I_{DM}	Pulsed drain current ①	60	
$P_D@T_c=25\text{ }^\circ\text{C}$	Power dissipation	42	W
	Linear derating factor	0.4	W/ $^\circ\text{C}$
V_{GS}	Gate-to-Source voltage	± 20	V
E_{AS}	Single pulse avalanche energy ②	240	mJ
E_{AR}	Repetitive avalanche energy	TBD	mJ
dv/dt	Peak diode recovery voltage	28	v/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +175	$^\circ\text{C}$

Thermal Resistance

	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case	—	3.6	—	C/W
$R_{\theta JA}$	Junction-to-ambient	—	—	69	

*When mounted on the minimum pad 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	—	0.06	0.09	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		$V_{DS}=100\text{V}, V_{GS}=0\text{V}, T_J=150\text{ }^\circ\text{C}$
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS}=20\text{V}$

	Gate-to-Source reverse leakage	—	—	-100		V _{GS} =-20V
Q _g	Total gate charge	—	21.18		nC	I _D =9.2A, V _{GS} =10V V _{DD} =80V, R _L =8.6Ω
Q _{gs}	Gate-to-Source charge	—	4.7	—		
Q _{gd}	Gate-to-Drain("Miller") charge	—	8.5	—		
t _{d(on)}	Turn-on delay time	—	10		nS	V _{DD} =50V I _D =9.2A, R _L =5.4Ω R _G =18Ω V _{GS} =10V
t _r	Rise time	—	9.5			
t _{d(off)}	Turn-Off delay time	—	18.3			
t _f	Fall time	—	4.2			
C _{iss}	Input capacitance	—	697	750	pF	V _{GS} =0V V _{DS} =25V f=1.0MHZ
C _{oss}	Output capacitance	—	59	110		
C _{rss}	Reverse transfer capacitance	—	43	45		

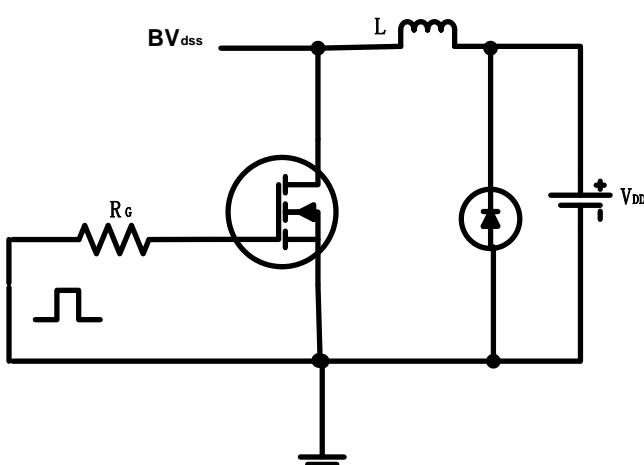
Source-Drain Ratings and Characteristics

	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°C, I _S =3A, V _{GS} =0V ③
t _{rr}	Reverse Recovery Time	—	35	—	nS	T _J =25°C, I _F =9.2A di/dt=100A/μs ③
Q _{rr}	Reverse Recovery Charge	—	67.2	—	μC	
t _{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible (turn-on is dominated by L _s + LD)				

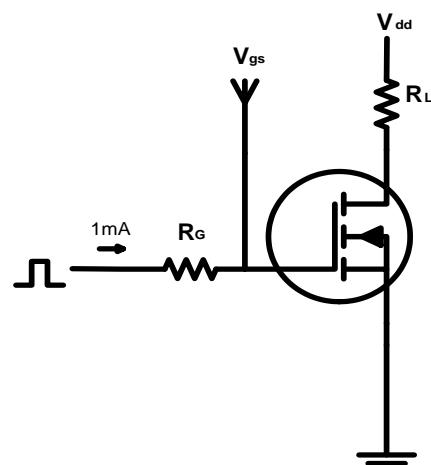
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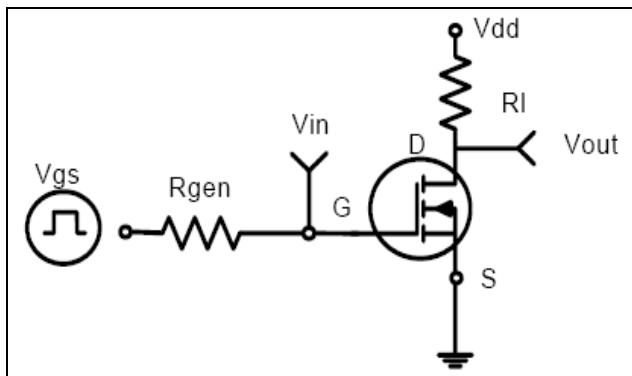
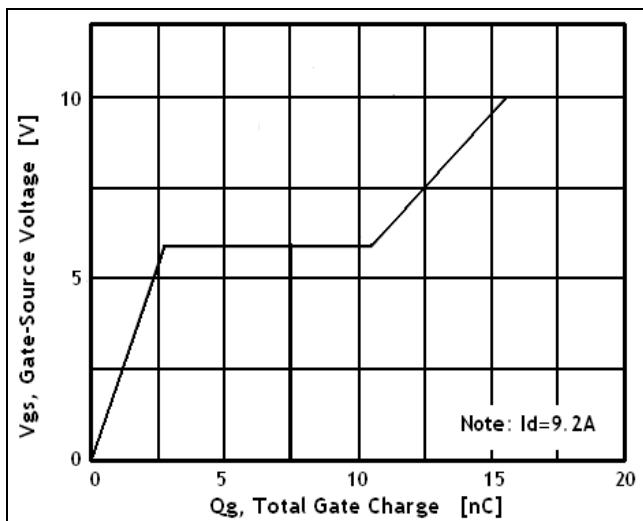
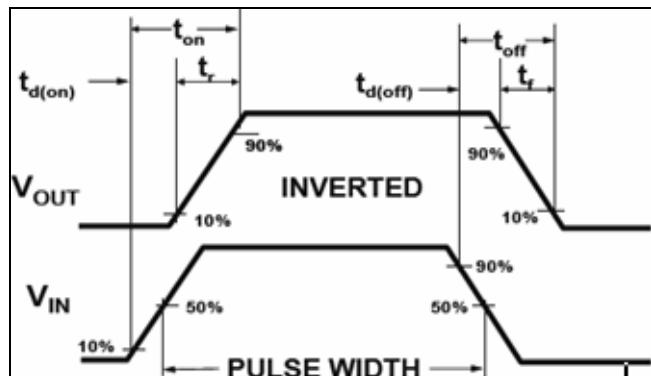
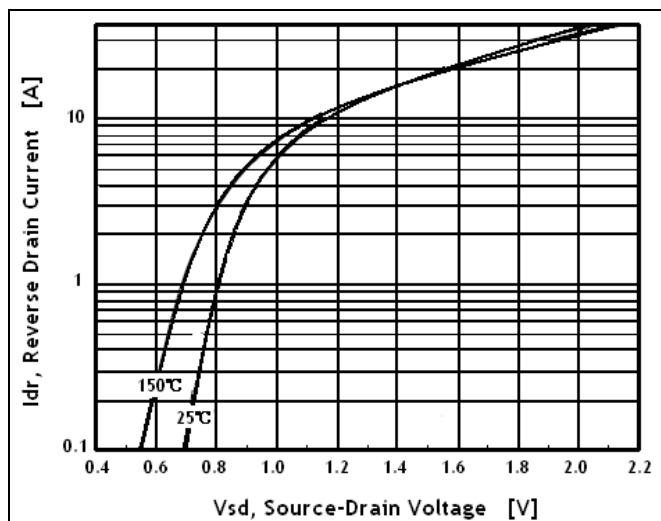
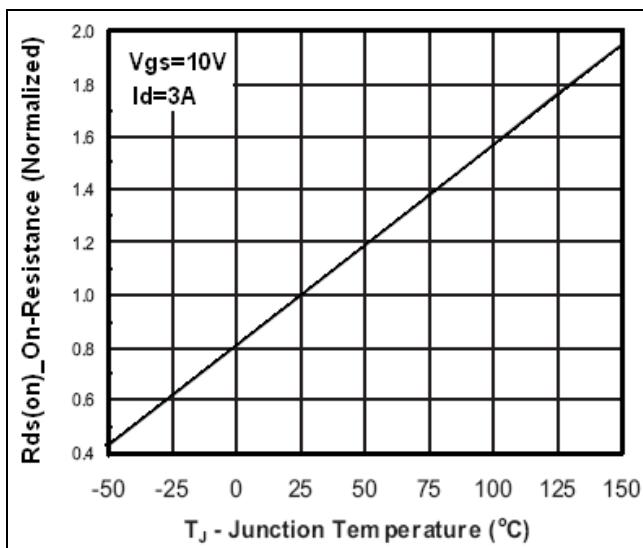
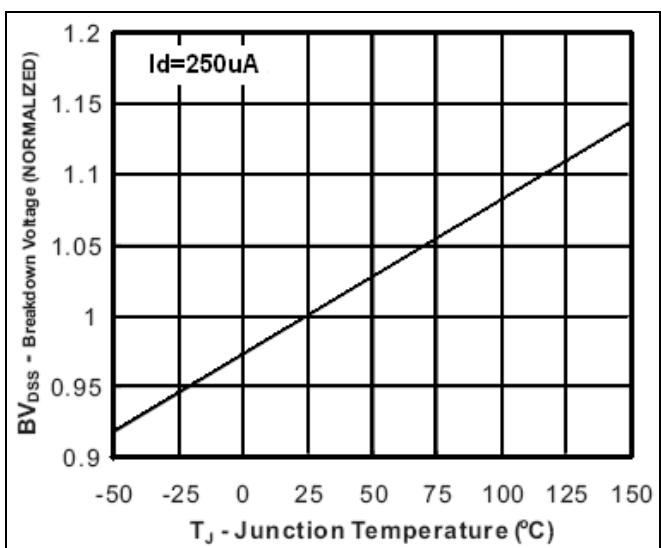
- ① Repetitive rating; pulse width limited by max junction temperature
- ② Test condition: L =30mH, V_{DD} = 50V, I_d=4A
- ③ Pulse width≤300μS, duty cycle≤1.5% ; R_G = 25Ω Starting T_J = 25°C

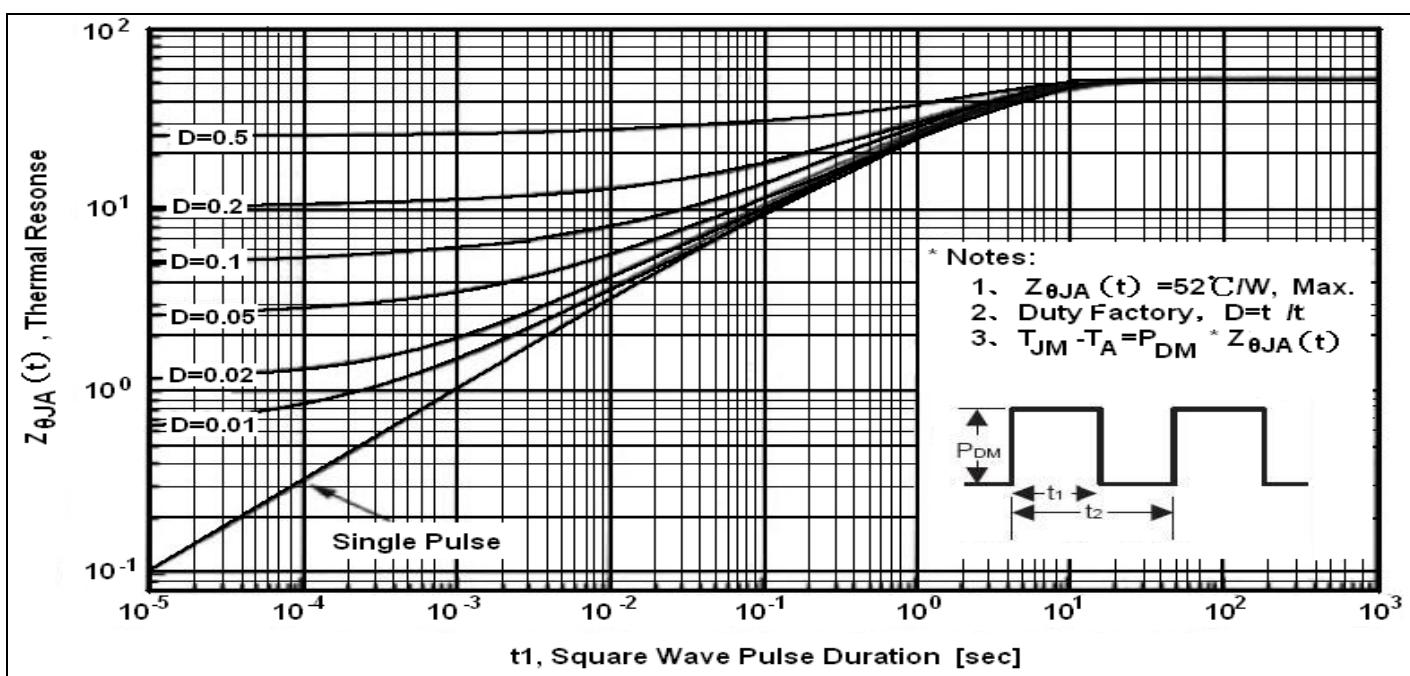
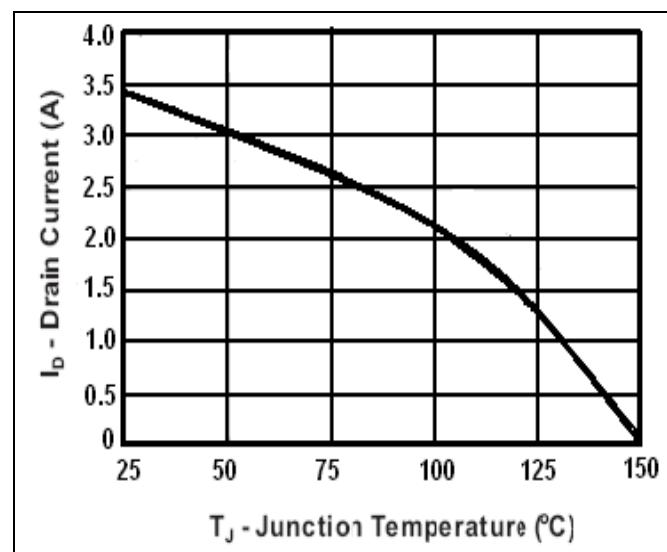
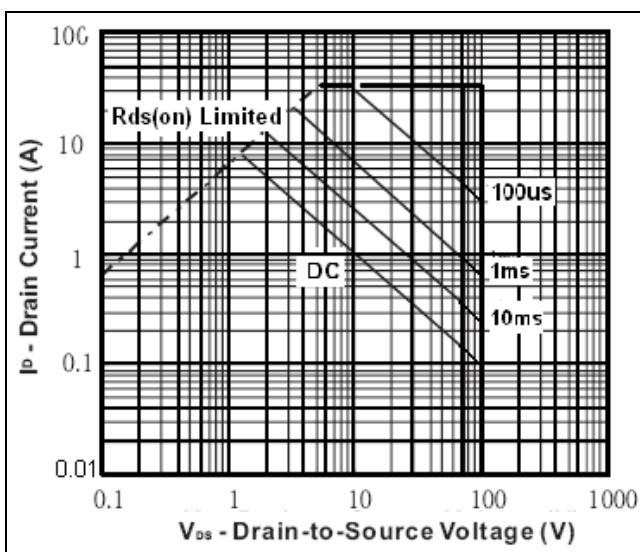
EAS Test Circuit:

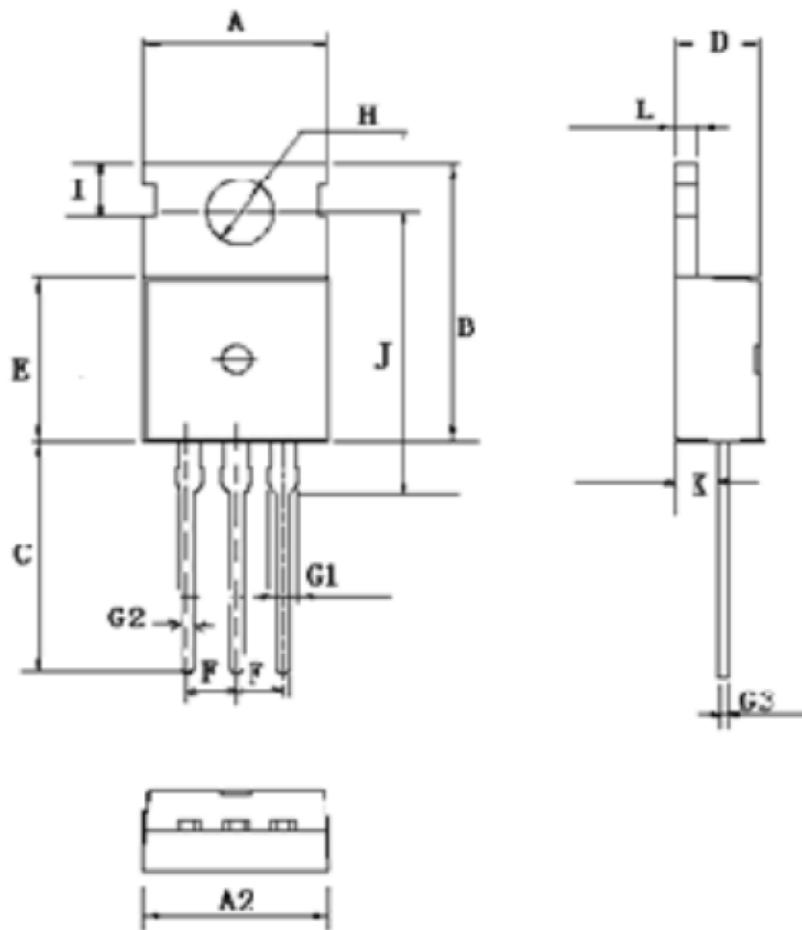


Gate Charge Test Circuit:



Switch Time Test Circuit:

Switch Waveform:

Gate Charge

Source-Drain Diode Forward Voltage

On Resistance vs. Junction Temperature

Breakdown Voltage vs. Junction Temperature



TO220 MECHANICAL DATA:

TO-220 3L

图形对应符号	产品外形尺寸
A(mm)	9.66~10.28
A2(mm)	9.80~10.20
B(mm)	15.6~15.8
C(mm)	12.70~14.27
D(mm)	4.30~4.70
E(mm)	8.59~9.40
F(mm)	2.54 (nom)
G1(mm)	1.42~1.62
G2(mm)	0.70~0.95
G3(mm)	0.45~0.60
H(mm) dia.	3.50~3.70
I(mm)	2.7~2.9
J(mm)	15.70~16.25
K(mm)	2.20~2.90
L(mm)	1.15~1.40
M(mm)	0.5