SSF1030B

100V N-Channel MOSFET

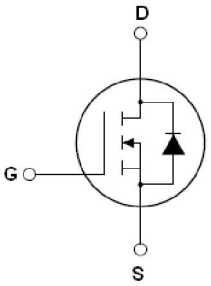
FEATURES

- Advanced trench process technology
- Ultra low Rdson, typical 25mohm
- High avalanche energy, 100% test
- Fully characterized avalanche voltage and current
- Lead free product

ID =7A

BV=100V

$R_{DS(ON)}$ =25mΩ（typ.）

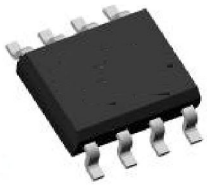


DESCRIPTION

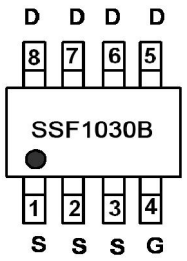
The SSF1030B is a new generation of middle voltage and high current N–Channel enhancement mode trench power MOSFET. This new technology increases the device reliability and electrical parameter repeatability. SSF1030B is assembled in high reliability and qualified assembly house.

APPLICATIONS

- Power switching application



SOP-8 Top View



Marking and Pin Assignment

Absolute Maximum Ratings

	Parameter	Max.	Units
I_D@T_c=25℃	Continuous drain current,VGS@10V	7	A
I_D@T_c=100℃	Continuous drain current,VGS@10V	5.0	
I_{DM}	Pulsed drain current ①	30	
P_D@T_C=25℃	Power dissipation	8.8	W
V_{GS}	Gate-to-Source voltage	±20	V
E_{AS}	Single pulse avalanche energy ②	33	mJ
E_{AR}	Repetitive avalanche energy	TBD	
T_J T_{STG}	Operating Junction and Storage Temperature Range	–55 to +175	℃

Thermal Resistance

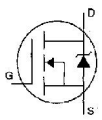
	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case	—	17	—	℃/W
$R_{\theta JA}$	Junction-to-ambient	—	—	85	

Electrical Characteristics @T_J=25℃(unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-to-Source breakdown voltage	100	—	—	V	V_{GS}=0V,I_D=250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	25	30	mΩ	V_{GS}=10V,I_D=10A
$V_{GS(th)}$	Gate threshold voltage	2.0	3.1	4.0	V	V_{DS}=V_{GS},I_D=250μA
g_{fs}	Forward transconductance	—	25	—	S	V_{DS}=15V,I_D=6.9A
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS}=100V,V_{GS}=0V
		—	—	10		V_{DS}=100V, V_{GS}=0V,T_J=150℃
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	—	42	—	nC	I_D=6.9A
Q_{gs}	Gate-to-Source charge	—	15	—		V_{DD}=30V
Q_{gd}	Gate-to-Drain("Miller") charge	—	14.6	—		V_{GS}=10V
$t_{d(on)}$	Turn-on delay time	—	14.2	—	nS	V_{DD}=30V
t_r	Rise time	—	40	—		I_D=2A ,R_L=15Ω
$t_{d(off)}$	Turn-Off delay time	—	7.3	—		R_G=2.5Ω
t_f	Fall time	—	14.8	—		V_{GS}=10V
C_{iss}	Input capacitance	—	190	—	pF	V_{GS}=0V
C_{oss}	Output capacitance	—	135	—		V_{DS}=25V
C_{rss}	Reverse transfer capacitance	—	4.2	—		f=1.0MHZ

Source-Drain Ratings and Characteristics

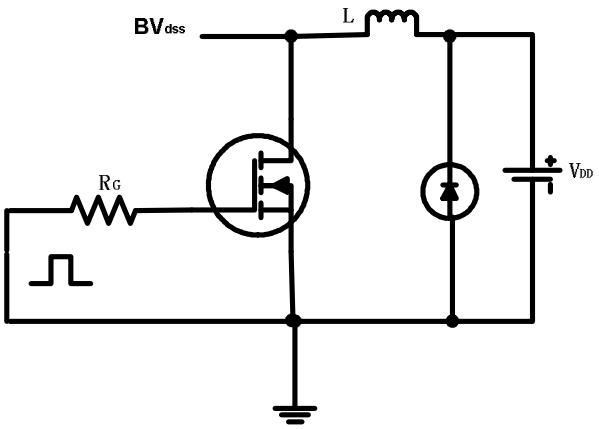
	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	7	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	30		
V_{SD}	Diode Forward Voltage	—	—	1.3	V	T_J=25℃,I_S=30A,V_{GS}=0V ③
t_{rr}	Reverse Recovery Time	—	57	—	nS	T_J=25℃,I_F=3.1A
Q_{rr}	Reverse Recovery Charge	—	107	—	nC	di/dt=100A/μs ③
t_{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible (turn-on is dominated by Ls + LD)				

Notes:

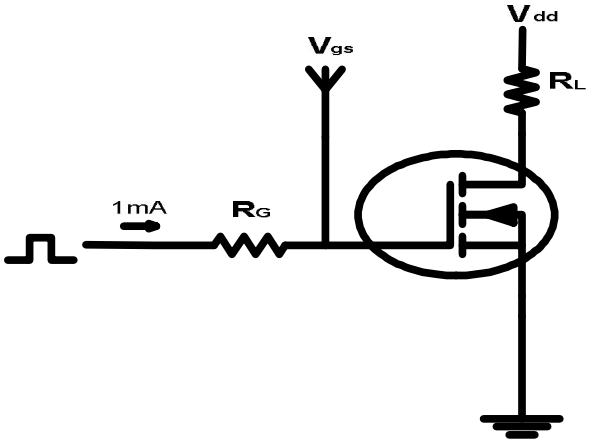
① Repetitive rating; pulse width limited by max junction temperature.

② Test condition: L =0.3mH, ID = 15A, VDD = 50V.

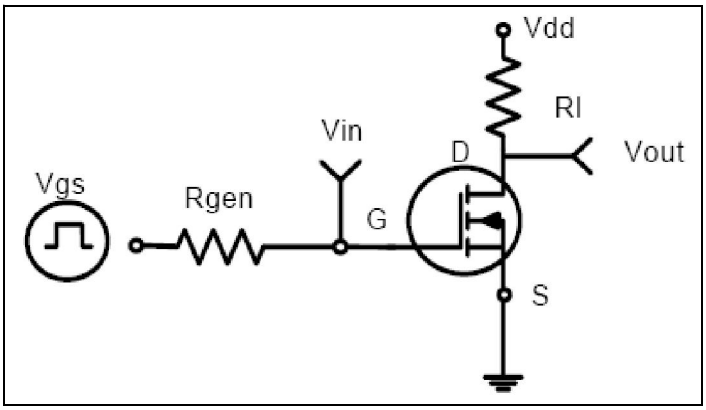
③ Pulse width≤300μS, duty cycle≤1.5% ; RG = 25Ω Starting T_J = 25°C.



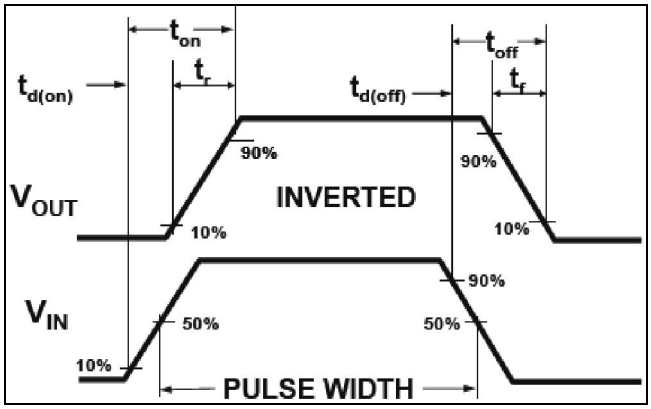
EAS test circuit



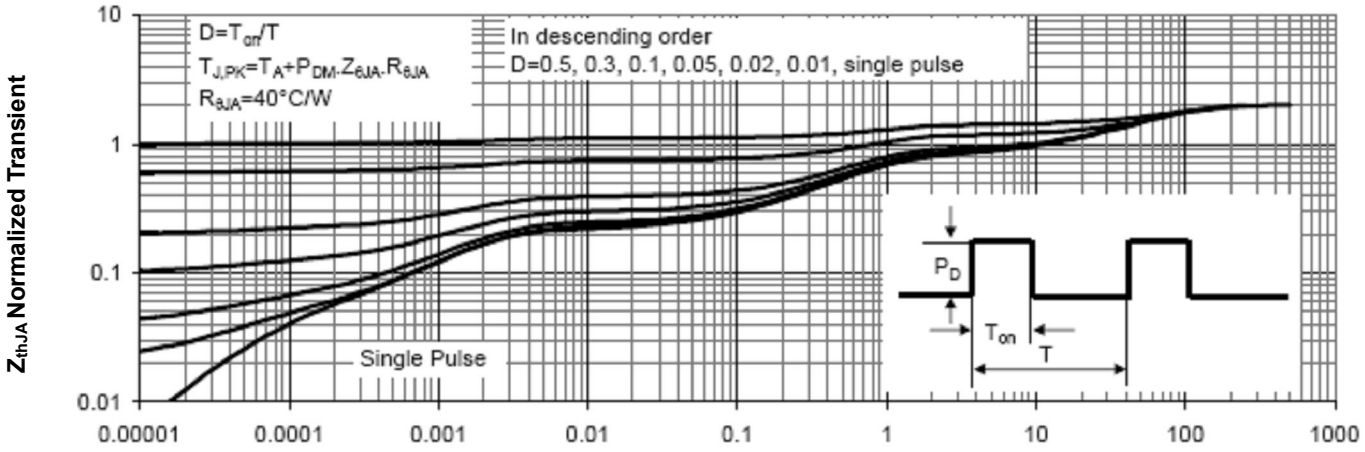
Gate charge test circuit



Switch Time Test Circuit

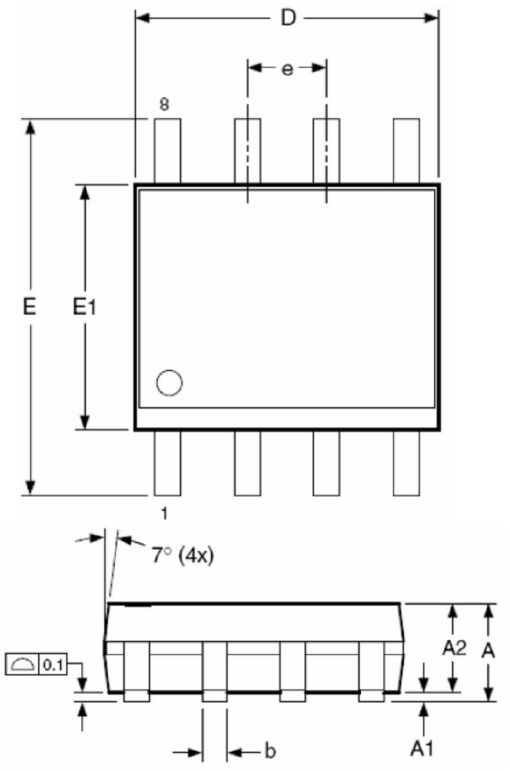


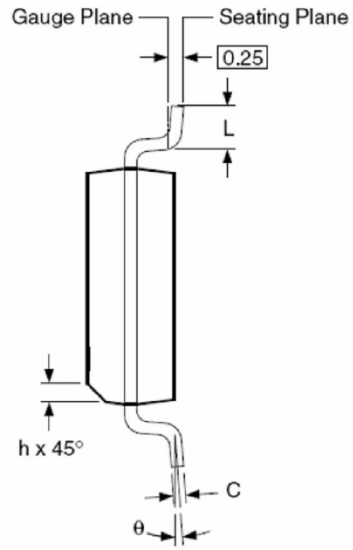
Switch Waveforms



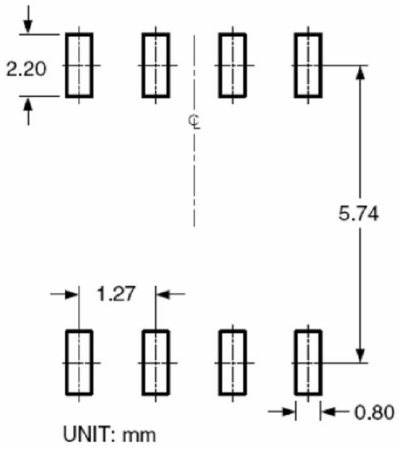
Transient Thermal Impedance Curve

SOP-8 PACKAGE INFORMATION





RECOMMENDED LAND PATTERN



Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	1.35	1.65	1.75
A1	0.10	—	0.25
A2	1.25	1.50	1.65
b	0.31	—	0.51
c	0.17	—	0.25
D	4.80	4.90	5.00
E1	3.80	3.90	4.00
e	1.27 BSC		
E	5.80	6.00	6.20
h	0.25	—	0.50
L	0.40	—	1.27
θ	0°	—	8°

Dimensions in inches

Symbols	Min.	Nom.	Max.
A	0.053	0.065	0.069
A1	0.004	—	0.010
A2	0.049	0.059	0.065
b	0.012	—	0.020
c	0.007	—	0.010
D	0.189	0.193	0.197
E1	0.150	0.154	0.157
e	0.050 BSC		
E	0.228	0.236	0.244
h	0.010	—	0.020
L	0.016	—	0.050
θ	0°	—	8°

NOTES:

1. Dimensions are inclusive of plating
2. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
3. Dimension L is measured in gauge plane.
4. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.