

Features:

- Advanced trench process technology
- Ultra low $R_{ds(on)}$, typical 25mohm
- High avalanche energy, 100% test
- Fully characterized avalanche voltage and current

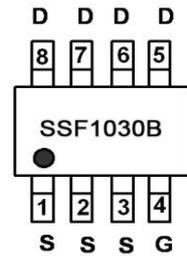
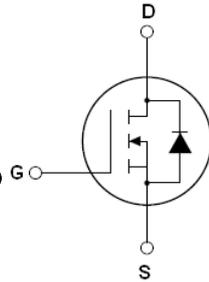
Description:

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.

Application:

- Power switching application

$I_D = 7A$
 $BV = 100V$
 $R_{ds(on)} = 25m\Omega$ (typ.)



SOP-8 TOP View Marking and pin Assignment

Absolute Maximum Ratings

	Parameter	Max.	Units
$I_D @ T_c = 25^\circ C$	Continuous drain current, $V_{GS} @ 10V$	7	A
$I_D @ T_c = 100^\circ C$	Continuous drain current, $V_{GS} @ 10V$	5.0	
I_{DM}	Pulsed drain current ①	30	
$P_D @ T_c = 25^\circ C$	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	$^\circ C$

Thermal Resistance

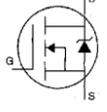
	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case	—	17	—	$^\circ C/W$
$R_{\theta JA}$	Junction-to-ambient	—	—	85	

Electrical Characteristics @ $T_J = 25^\circ C$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-to-Source breakdown voltage	100	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	25	30	m Ω	$V_{GS} = 10V, I_D = 10A$
$V_{GS(th)}$	Gate threshold voltage	2.0	3.1	4.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
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		$V_{DS} = 100V, V_{GS} = 0V, T_J = 150^\circ C$

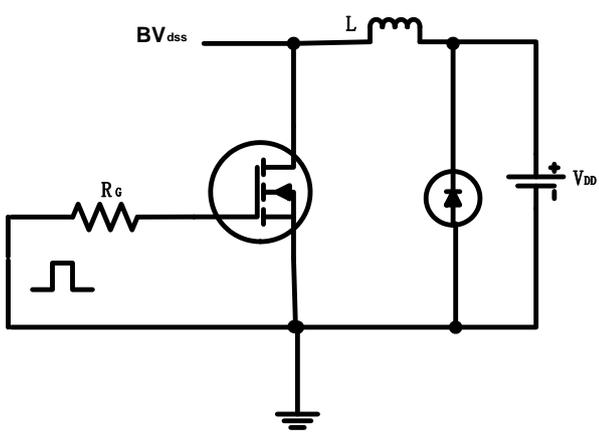
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS}=20V$
	Gate-to-Source reverse leakage	—	—	-100		$V_{GS}=-20V$
Q_g	Total gate charge	—	42	—	nC	$I_D=6.9A$
Q_{gs}	Gate-to-Source charge	—	15	—		$V_{DD}=30V$
Q_{gd}	Gate-to-Drain("Miller") charge	—	14.6	—		$V_{GS}=10V$
$t_{d(on)}$	Turn-on delay time	—	14.2	—	nS	$V_{DD}=30V$
t_r	Rise time	—	40	—		$I_D=2A, R_L=15\Omega$
$t_{d(off)}$	Turn-Off delay time	—	7.3	—		$R_G=2.5\Omega$
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

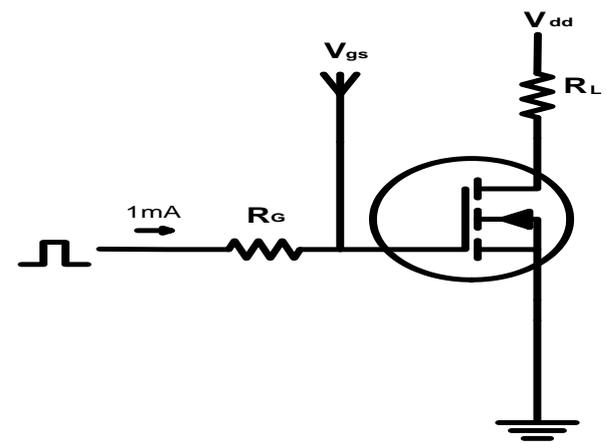
	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	7	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	30		
V_{SD}	Diode Forward Voltage	—	—	1.3	V	$T_J=25^\circ C, I_S=30A, V_{GS}=0V$ ③
t_{rr}	Reverse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

Notes:

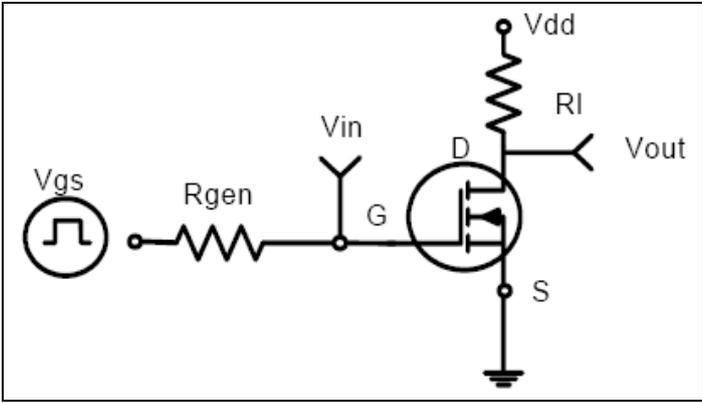
- ① Repetitive rating; pulse width limited by max junction temperature.
- ② Test condition: $L = 0.3mH, I_D = 15A, V_{DD} = 50V$
- ③ Pulse width $\leq 300\mu s$, duty cycle $\leq 1.5\%$; $R_G = 25\Omega$ Starting $T_J = 25^\circ C$



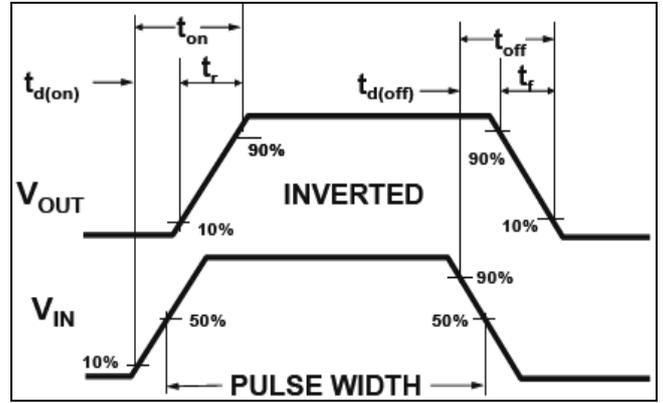
EAS test circuit



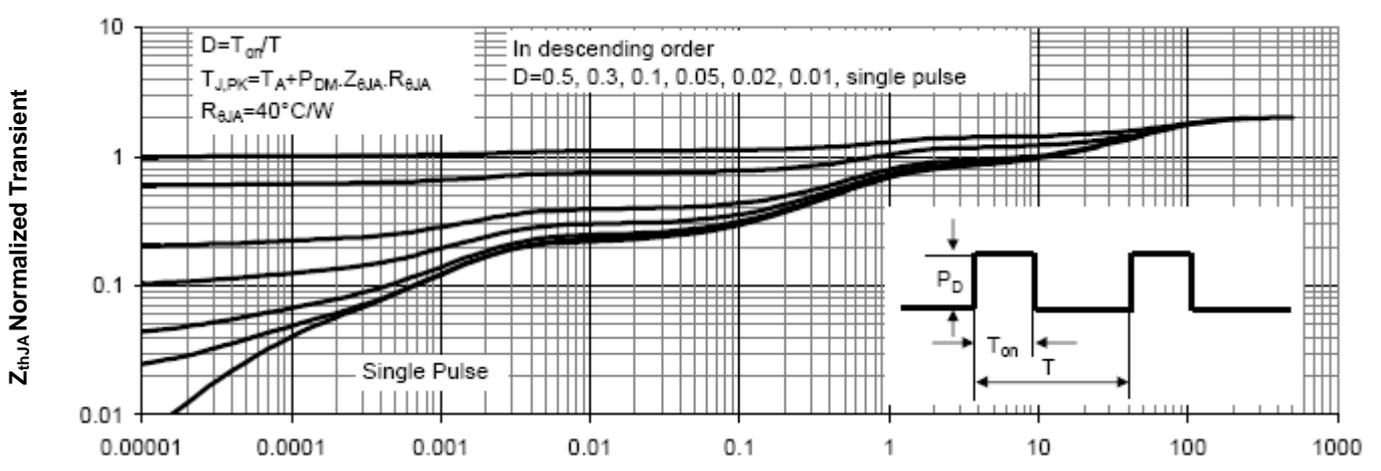
Gate charge test circuit



Switch Time Test Circuit

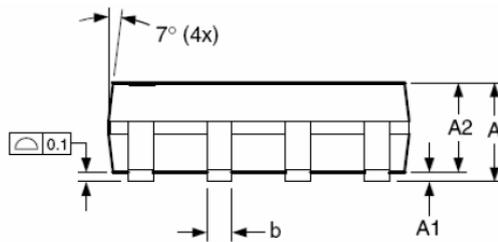
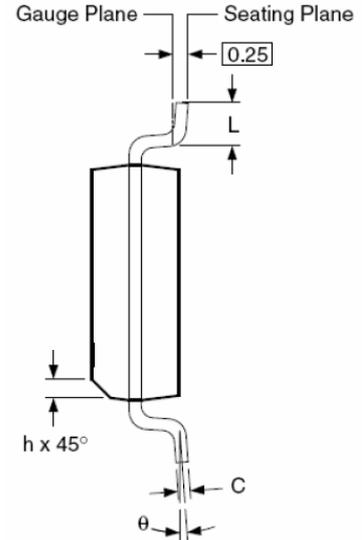
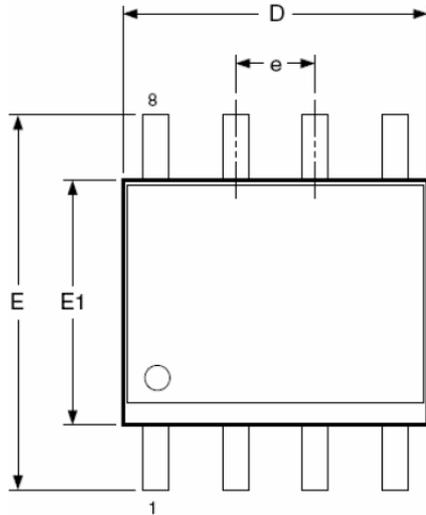


Switch Waveforms

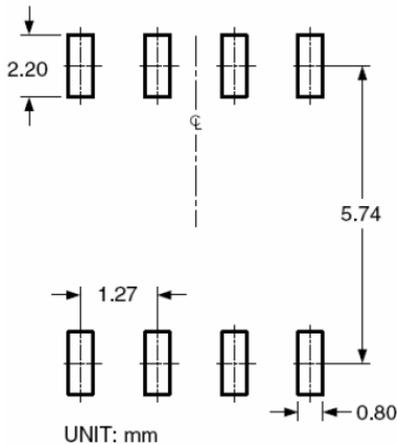


Transient Thermal Impedance Curve

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:

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

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