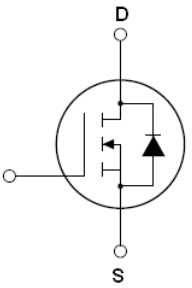
SSF1030B

Feathers:

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

ID =7A
BV=100V
Rdson=25mΩ（typ.）



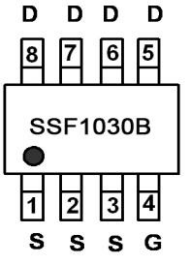
Description:

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.

Application:

- 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

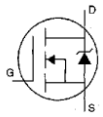
	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case	—	17	—	℃/W
$R_{\theta JA}$	Junction-to-ambient	—	—	85	

Electrical Characteristics @TJ=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

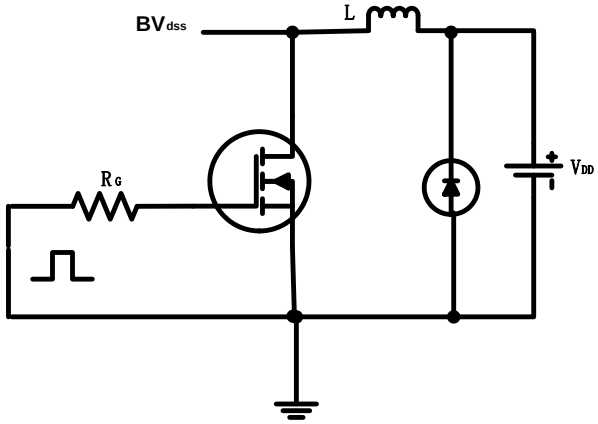
	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	7	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	30		
V_{SD}	Diode Forward Voltage	—	—	1.3	V	T_J=25℃,I_S=30A,V_{GS}=0V ③
t_{rr}	Reverse Recovery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

Notes:

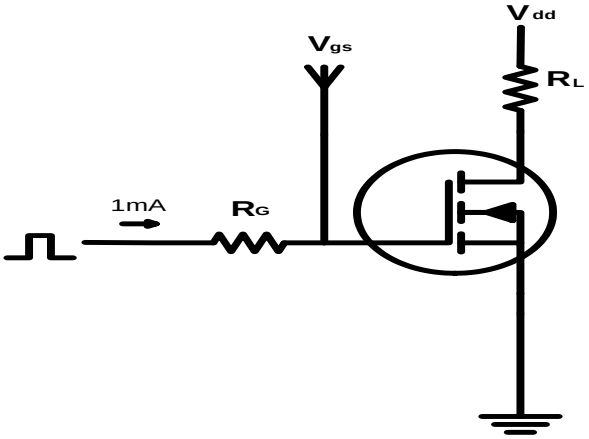
① Repetitive rating; pulse width limited by max junction temperature.

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

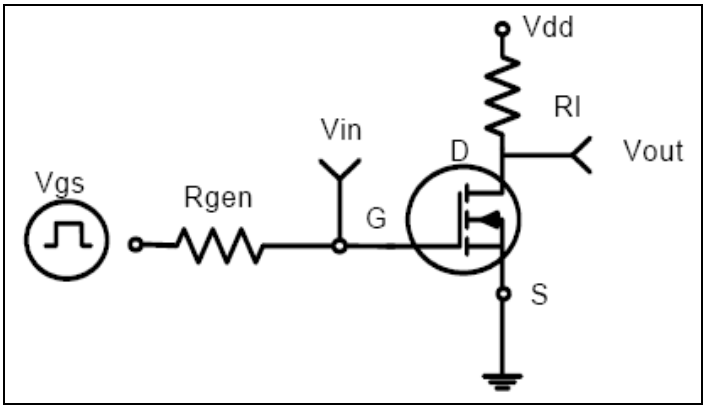
③ Pulse width≤300μS, duty cycle≤1.5% ; RG = 25Ω Starting TJ = 25°C



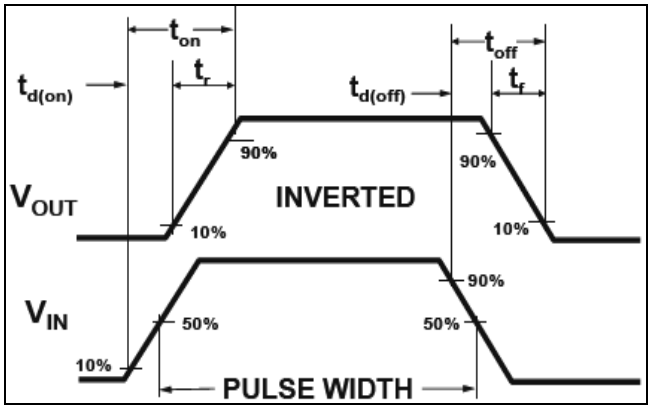
EAS test circuit



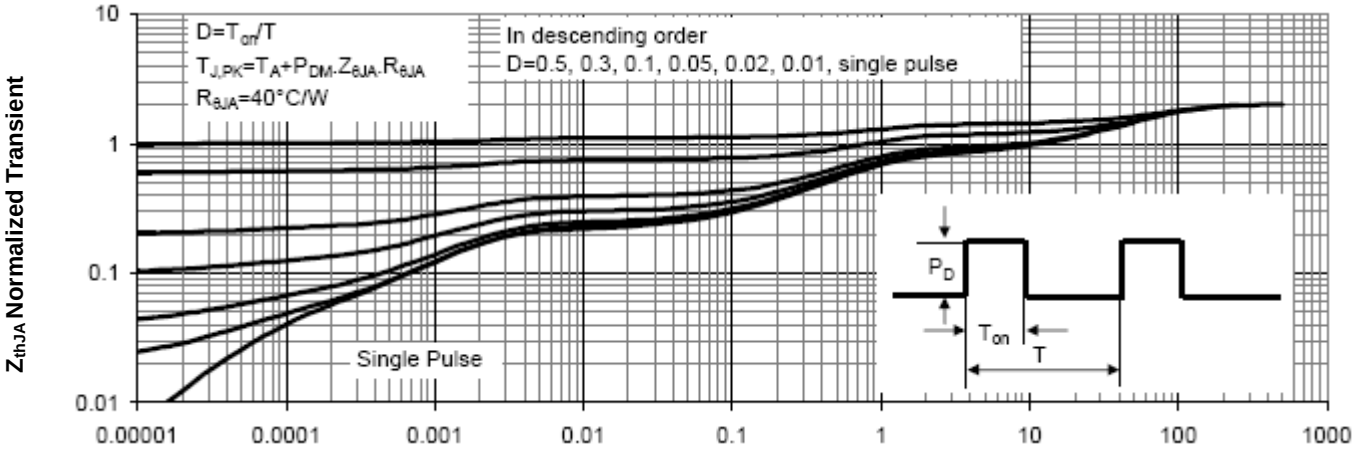
Gate charge test circuit



Switch Time Test Circuit

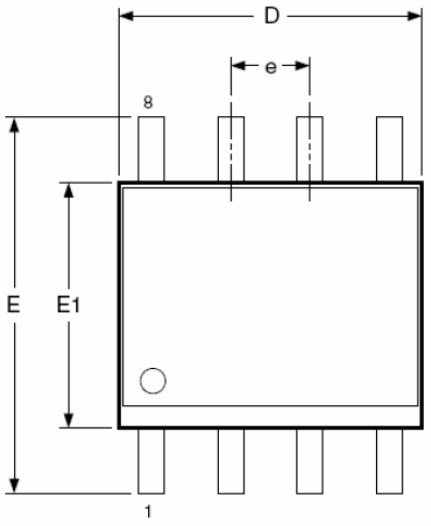


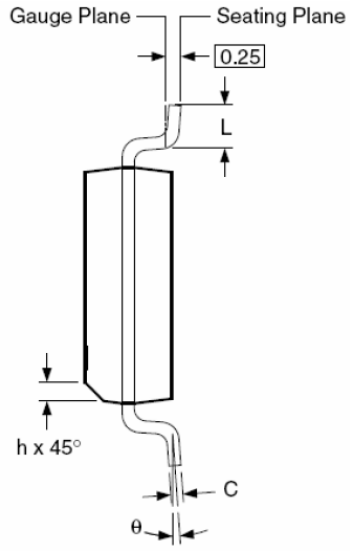
Switch Waveforms



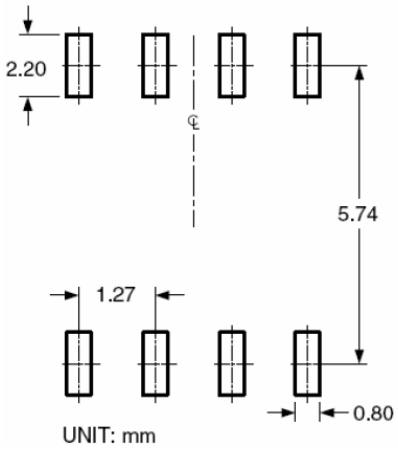
Transient Thermal Impedance Curve

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.

ATTENTION:

- Any and all Silikron products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your Silikron representative nearest you before using any Silikron products described or contained herein in such applications.
- Silikron assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all Silikron products described or contained herein.
- Specifications of any and all Silikron products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- Silikron Semiconductor CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all Silikron products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of Silikron Semiconductor CO.,LTD.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. Silikron believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the Silikron product that you intend to use.
- This catalog provides information as of Dec, 2008. Specifications and information herein are subject to change without notice.