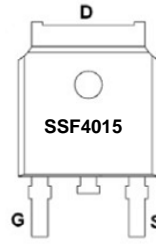
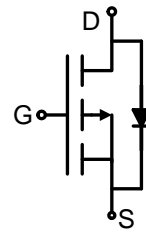


Main Product Characteristics:

V_{DSS}	-40V
$R_{DS(on)}$	11m Ω (typ.)
I_D	-40A


TO-252 (D-PAK)

**Marking and pin
Assignment**

Schematic diagram
Features and Benefits:

- Advanced trench MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- High Power and current handling capability
- 175°C operating temperature


Description:

It utilizes the advanced trench processing techniques to achieve extremely low on resistance and low gate charge. These features combine to make this design an extremely efficient and reliable device for use in PWM, load switching and a wide variety of other applications.

Absolute max Rating:

Symbol	Parameter	Max.	Units
ID @ TC = 25°C	Continuous Drain Current, VGS @ 10V ^①	-40	A
ID @ TC = 100°C	Continuous Drain Current, VGS @ 10V ^①	-28	
IDM	Pulsed Drain Current ^②	-120	
ISM	Pulsed Source Current (Body Diode) ^②	-120	
PD @TC = 25°C	Power Dissipation ^③	75	W
VDS	Drain-Source Voltage	-40	V
VGS	Gate-to-Source Voltage	± 20	V
EAS	Single Pulse Avalanche Energy @ L=0.1mH	40	mJ
IAS	Single Pulse Avalanche Current @ L=0.1mH	28	A
TJ TSTG	Operating Junction and Storage Temperature Range	-55 to + 175	°C

Thermal Resistance

Symbol	Characterizes	Value	Unit
R _{θJA}	Junction-to-ambient (t ≤ 10s) ④	14	°C/W
	Junction-to-Ambient (PCB mounted, steady-state) ④	40	°C/W
R _{θJC}	Maximum Junction-to-Case⑤	2	°C/W

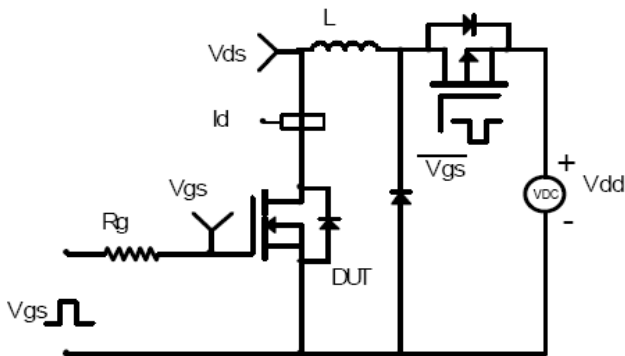
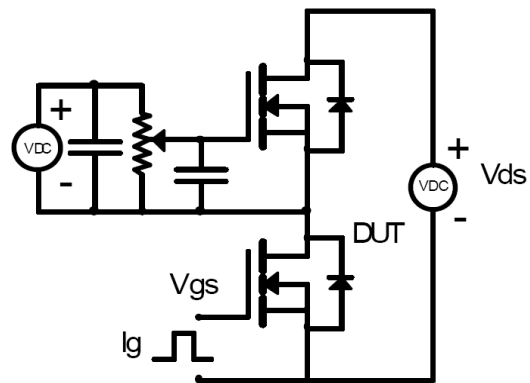
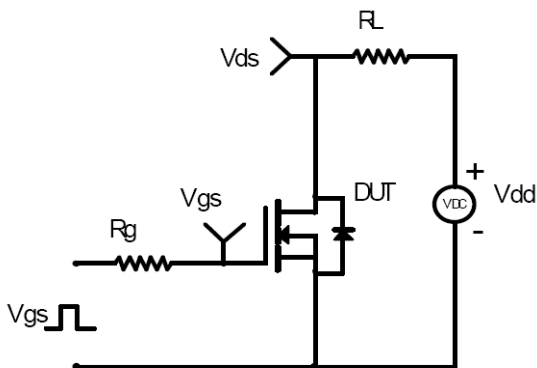
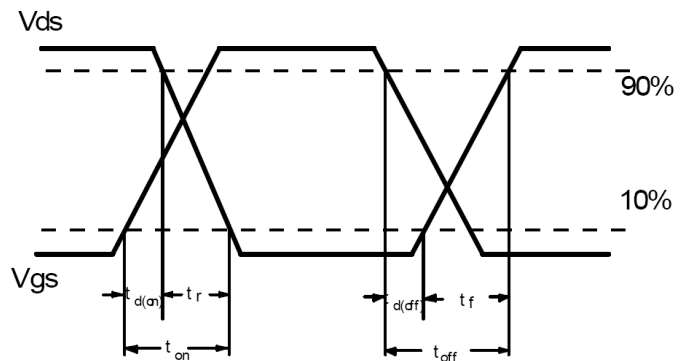
Electrical Characterizes @T_A=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
BVDSS	Drain-to-Source breakdown voltage	-40	—	—	V	VGS = 0V, ID = 250μA
RDS(on)	Static Drain-to-Source on-resistance	—	11	15	mΩ	VGS=10V, ID = 12A
		—	14.3	—		TJ = 125°C
		—	18.5	25		VGS=4.5V, ID = 8A
		—	23.6	—		TJ = 125°C
VGS(th)	Gate threshold voltage	-1	—	-3	V	VDS = VGS, ID =250uA
IDSS	Drain-to-Source leakage current	—	—	-1	μA	VDS =-40V,VGS = 0V
		—	—	-5		TJ = 55°C
IGSS	Gate-to-Source forward leakage	—	—	100	nA	VGS =20V
	Gate-to-Source reverse leakage	—	—	-100		VGS = -20V
G(fs)	Forward transconductance	5	27	—	S	VDS=-5V,ID=-12.0A
Qg	Total gate charge	—	57.4	40	nC	ID=-20A, VDD=-12V, VGS=-10V
Qgs	Gate-to-Source charge	—	10.8	6		
Qgd	Gate-to-Drain("Miller") charge	—	11.9	15		
td(on)	Turn-on delay time	—	15.2	—	ns	VDD=-18.8V,ID=-12.5A, RL=1.50Ω,RG=3.00Ω, VGS=-10V
tr	Rise time	—	23.7	—		
td(off)	Turn-Off delay time	—	53.3	—		
tf	Fall time	—	12.7	—		
Ciss	Input capacitance	—	5188	—	pF	Vds=-20V, Vgs=0V, f=1MHZ
Coss	Output capacitance	—	376	—		
Crss	Reverse transfer capacitance	—	293	—		

Source-Drain Ratings and Characteristics

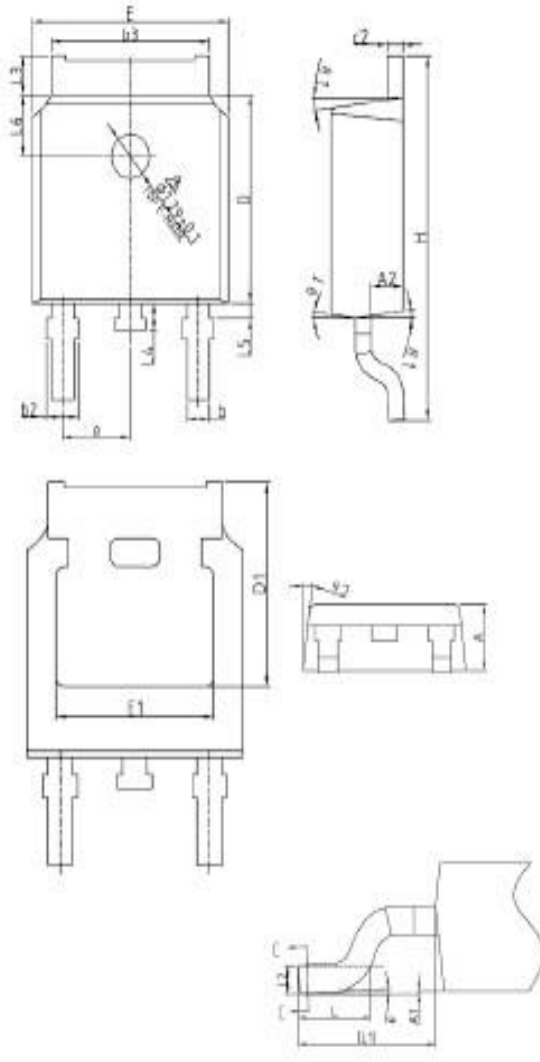
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
IS	Maximum Body-Diode Continuous Current	—	-40	—	A	
VSD	Diode Forward Voltage	—	-0.74	1.2	V	TJ=25°C, IS=-1A, VGS=0V

Test circuits and Waveforms

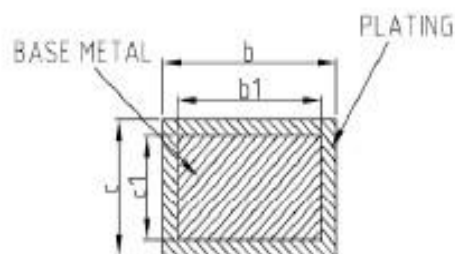
EAS Test Circuit:

Gate charge test circuit:

Switching Time Test Circuit:

Switching Waveforms:


Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$

Mechanical Data:
TO-252E-2-M PACKAGE INFORMATION
Dimensions in Millimeters


SYMBOL	MIN	NOM	MAX
A	2.20	2.30	2.38
A1	0	—	0.10
A2	0.90	1.01	1.10
b	0.72	—	0.85
b1	0.71	0.76	0.81
b2	0.72	—	0.90
b3	5.13	5.33	5.46
c	0.47	—	0.60
c1	0.46	0.51	0.56
c2	0.47	—	0.60
D	6.00	6.10	6.20
D1	5.25	—	—
E	6.50	6.60	6.70
E1	4.70	—	—
e	2.186	2.286	2.386
H	9.80	10.10	10.40
L	1.40	1.50	1.70
L1	2.90REF		
L2	0.51BSC		
L3	0.90	—	1.25
L4	0.60	0.80	1.00
L5	0.15	—	0.75
L6	1.80REF		
θ	0°	—	8°
θ 1	5°	7°	9°
θ 2	5°	7°	9°



Ordering and Marking Information
Device Marking: SSF4015

Package (Available)
TO-252
Operating Temperature Range
C : -55 to 175°C

Devices per Unit
Option1:

Package Type	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
TO-252	80	50	4000	10	40000

Option2:

Package Type	Units/Tape	Tapes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
TO-252	2500	2	5000	7	35000

Option3:

Package Type	Units/Tape	Tapes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
TO-252	2500	1	2500	10	25000

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.

Customer Service**Worldwide Sales and Service:**

Sales@silikron.com

Technical Support:

Technical@silikron.com

Suzhou Silikron Semiconductor Corp.

Building 11A Suchun Industrial Square, 428# Xinglong Street, Suzhou P.R. China

TEL: (86-512) 62560688

FAX: (86-512) 65160705

E-mail: Sales@silikron.com