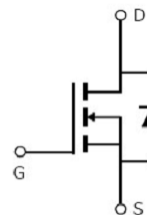


**Main Product Characteristics:**

$V_{DSS}$	30V
$R_{DS(on)}$	25.8m $\Omega$ (typ.)
$I_D$	5.8A ①


**SOT-23**

**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
- Fast switching and reverse body recovery
- 150°C operating temperature


**Description:**

It utilizes the latest trench processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications

**Absolute max Rating:**

Symbol	Parameter	Max.	Units
$I_D$ @ TC = 25°C	Continuous Drain Current, $V_{GS}$ @ 10V ①	5.8	A
$I_D$ @ TC = 100°C	Continuous Drain Current, $V_{GS}$ @ 10V ①	4.2	
$I_{DM}$	Pulsed Drain Current ②	30	
$P_D$ @TC = 25°C	Power Dissipation	1.4	W
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-to-Source Voltage	$\pm 12$	V
$T_J$ $T_{STG}$	Operating Junction and Storage Temperature Range	-55 to + 150	°C

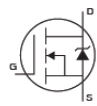
## Thermal Resistance

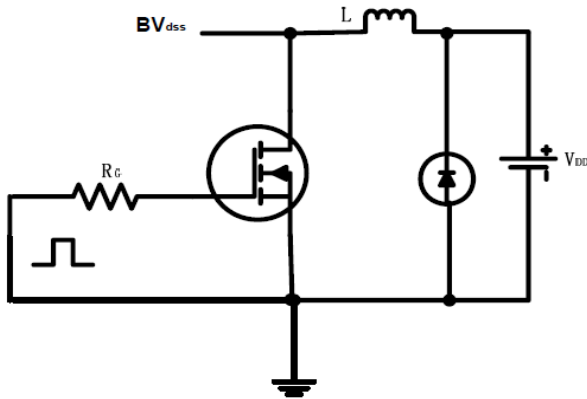
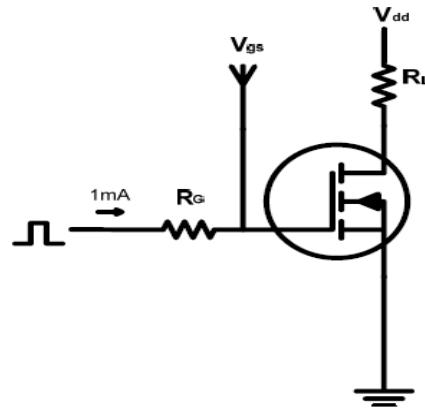
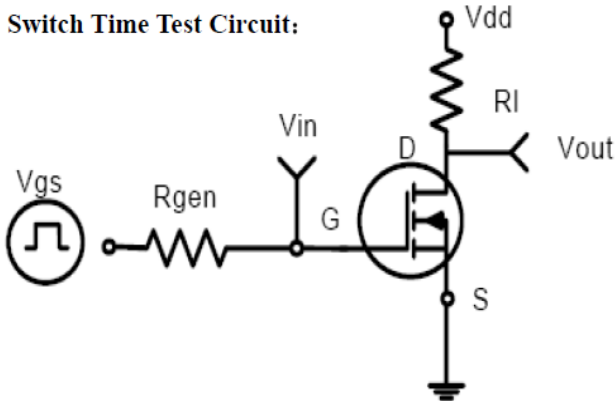
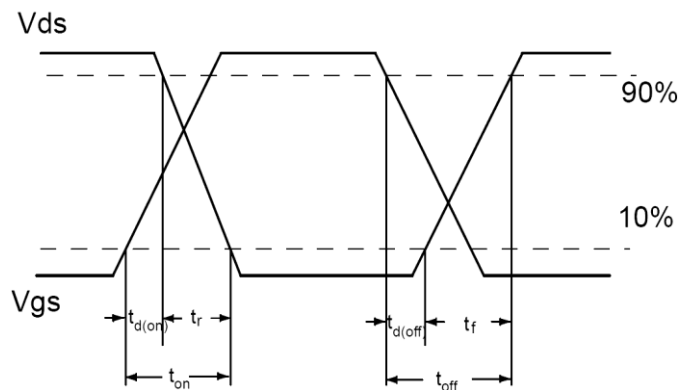
Symbol	Characterizes	Typ.	Max.	Units
R <sub>θJA</sub>	Junction-to-ambient (t ≤ 10s) ③	—	145	°C/W

## Electrical Characterizes @T<sub>A</sub>=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V <sub>(BR)DSS</sub>	Drain-to-Source breakdown voltage	30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
R <sub>DS(on)</sub>	Static Drain-to-Source on-resistance	—	25.8	30	mΩ	V <sub>GS</sub> =10V, I <sub>D</sub> = 5.8A
		—	28.7	33		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A
		—	36.6	52		V <sub>GS</sub> =2.5V, I <sub>D</sub> =4A
V <sub>GS(th)</sub>	Gate threshold voltage	0.7	—	1.4	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
I <sub>DSS</sub>	Drain-to-Source leakage current	—	—	1	μA	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V
I <sub>GSS</sub>	Gate-to-Source forward leakage	—	—	100	nA	V <sub>GS</sub> =12V
		—	—	-100		V <sub>GS</sub> = -12V
Q <sub>g</sub>	Total gate charge	—	11	—	nC	I <sub>D</sub> = 5.8A, V <sub>DS</sub> =15V, V <sub>GS</sub> = 4.5V
Q <sub>gs</sub>	Gate-to-Source charge	—	2	—		
Q <sub>gd</sub>	Gate-to-Drain("Miller") charge	—	3	—		
t <sub>d(on)</sub>	Turn-on delay time	—	7	—	ns	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>GEN</sub> =3Ω
t <sub>r</sub>	Rise time	—	15	—		
t <sub>d(off)</sub>	Turn-Off delay time	—	38	—		
t <sub>f</sub>	Fall time	—	3	—		
C <sub>iss</sub>	Input capacitance	—	495	—	pF	V <sub>GS</sub> = 0V, V <sub>DS</sub> =15V, f = 1MHz
C <sub>oss</sub>	Output capacitance	—	48	—		
C <sub>riss</sub>	Reverse transfer capacitance	—	43	—		

## Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode) ①	—	—	1.6	A	MOSFET symbol showing the integral reverse p-n junction diode. 
V <sub>SD</sub>	Diode Forward Voltage	—	0.78	1.2	V	I <sub>S</sub> =1A, V <sub>GS</sub> =0V

**Test circuits and Waveforms**
**EAS test circuits:**

**Gate charge test circuit:**

**Switch Time Test Circuit:**

**Switch Waveforms:**

**Notes:**

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max junction temperature.
- ③ 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  $T_A = 25^\circ\text{C}$

Typical electrical and thermal characteristics

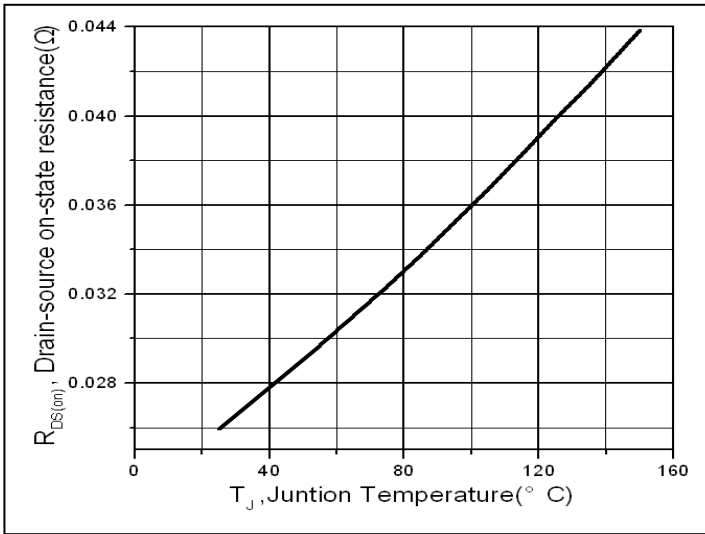


Figure 1. Normalized On-Resistance Vs. Case Temperature

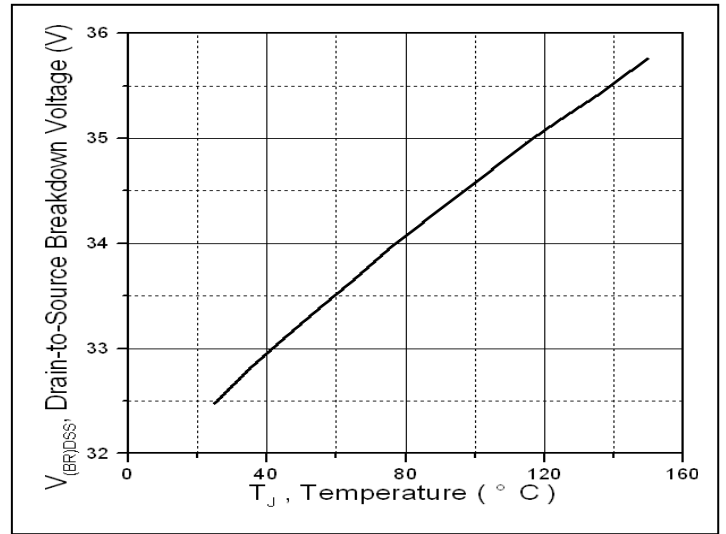


Figure 2. Drain-to-Source Breakdown Voltage vs. Temperature

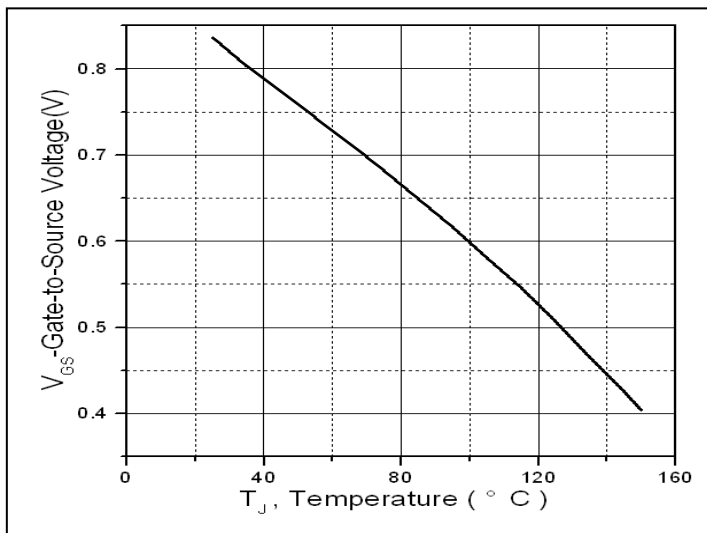


Figure 3. Gate to source cut-off voltage

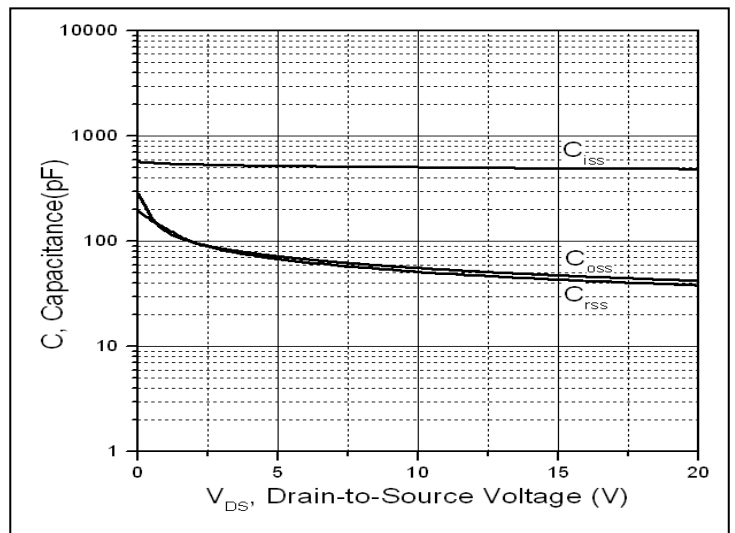
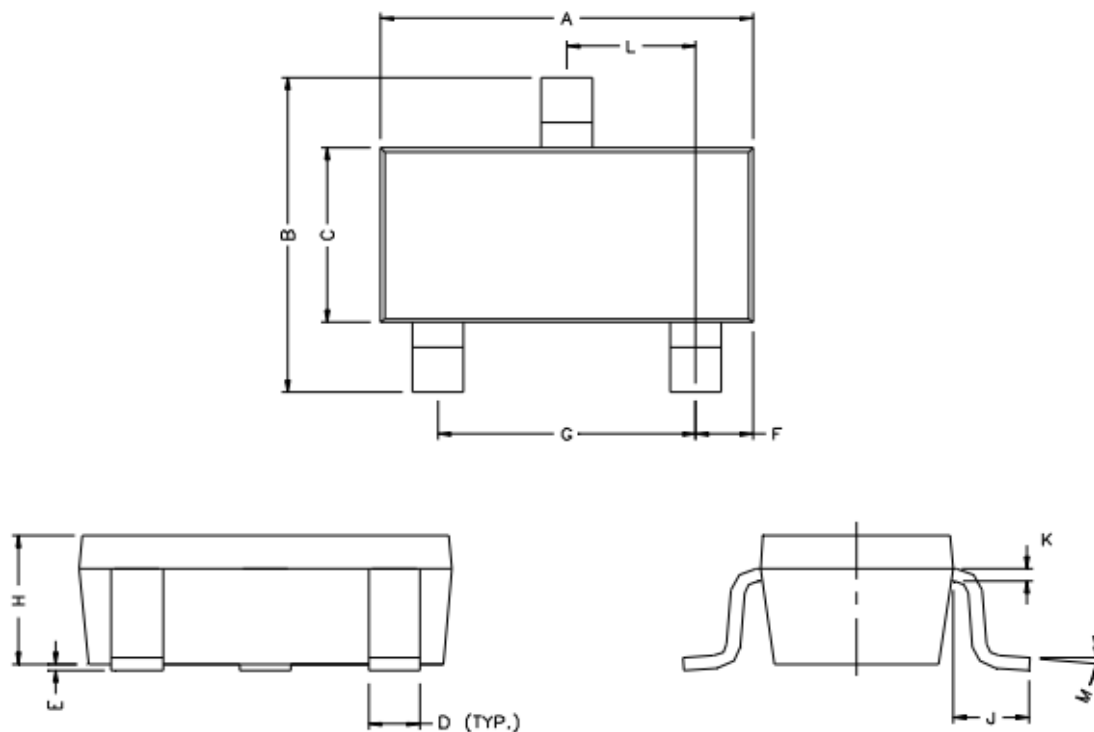


Figure 4. Typical Capacitance Vs. Drain-to-Source Voltage

**Mechanical Data:**


REF.	Millimeter		REF.	Millimete	
	Min.	Max.		Min.	Max.
A	2.80	3.00	G	1.80	2.00
B	2.30	2.50	H	0.90	1.1
C	1.20	1.40	K	0.10	0.20
D	0.30	0.50	J	0.35	0.70
E	0	0.10	L	0.92	0.98
F	0.45	0.55	M	0°	10°

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Sales@silikron.com

**Technical Support:**

Technical@silikron.com

**Suzhou Silikron Semiconductor Corp.**

501, NW-20, Nanopolis, 99th Jinjihu Avenue, Industrial Park, Suzhou, P.R, China

**TEL:** (86-512) 62560688

**FAX:** (86-512) 62560688-8092

**E-mail:** Sales@silikron.com