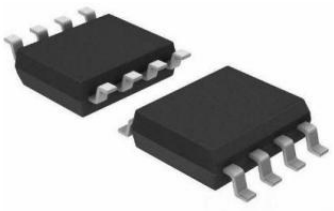
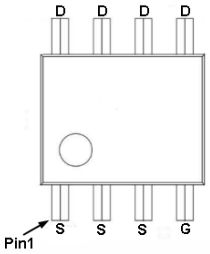
Main Product Characteristics

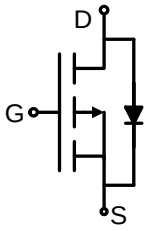
V_{DSS}	-30V
R_{DS}(on)	13mΩ (max)
I_D	-11.5A ①



SOP-8



Pin Assignment



Schematic Diagram

Features and Benefits

- Advanced 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℃ operating temperature

Description

It utilizes the latest 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 @ T_C = 25°C	Continuous Drain Current, V_{GS} @ -10V ①	-11.5	A
I_{DM}	Pulsed Drain Current ②	-40	
P_D @T_C = 25°C	Power Dissipation ③	2.5	W
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	50	°C/W

Electrical Characteristics @T_A=25℃ unless otherwise specified

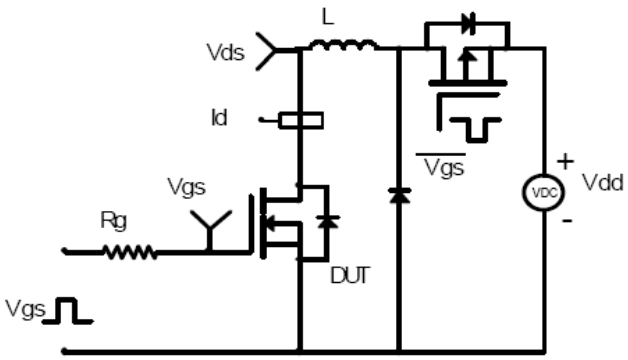
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-30	—	—	V	V_{GS} = 0V, I_D= -250uA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	—	13	mΩ	V_{GS}= -10V,I_D = -10A
		—	—	20		V_{GS}= -4.5V,I_D = -6A
$V_{GS(th)}$	Gate threshold voltage	-1	—	-3	V	V_{DS} = V_{GS}, I_D = -250μA
I_{DSS}	Drain-to-Source leakage current	—	—	-10	μA	V_{DS} = -24V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	25	—	nC	I_D = -6A,
Q_{gs}	Gate-to-Source charge	—	5	—		V_{DS}= -15V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	10	—		V_{GS} = -4.5V
$t_{d(on)}$	Turn-on delay time	—	12	—	ns	V_{GS}= -10V, V_{DD} = -15V,
t_r	Rise time	—	9	—		R_{GEN}=3.3Ω
$t_{d(off)}$	Turn-Off delay time	—	78	—		I_D = -1A
t_f	Fall time	—	35	—		
C_{iss}	Input capacitance	—	2930	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	280	—		V_{DS} = -15V
C_{rss}	Reverse transfer capacitance	—	200	—		f = 1MHz

Source-Drain Ratings and Characteristics

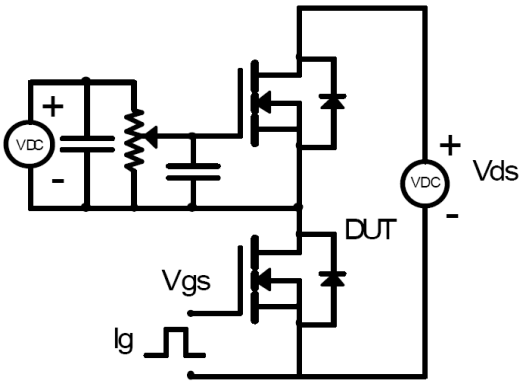
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V_{sd}	Diode Forward Voltage	—	—	-1.2	V	I_S=-2.1A,V_{GS}=0V,T_J = 25°C
t_{rr}	Reverse Recovery Time	—	18	—	ns	T_J = 25°C, I_F = -10A,
Q_{rr}	Reverse Recovery Charge	—	5	—	nC	di/dt = 100A/μs

Test circuits and Waveforms

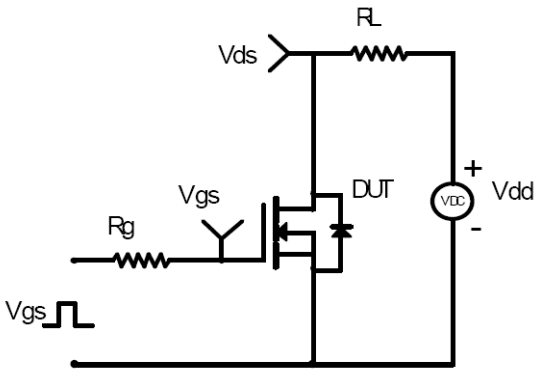
EAS Test Circuit:



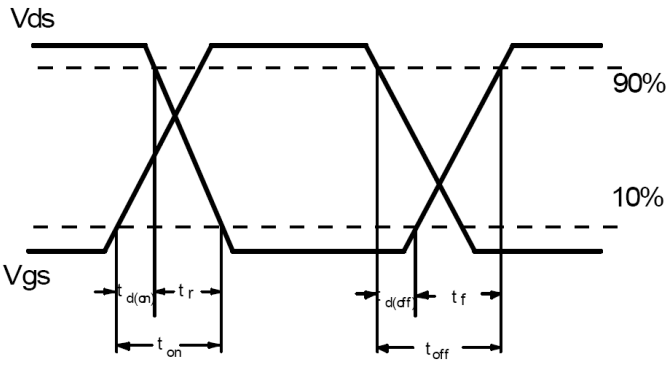
Gate charge test circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.

②Repetitive rating; pulse width limited by max. junction temperature.

③The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

④The 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 TA =25°C

Typical Electrical and Thermal Characteristics

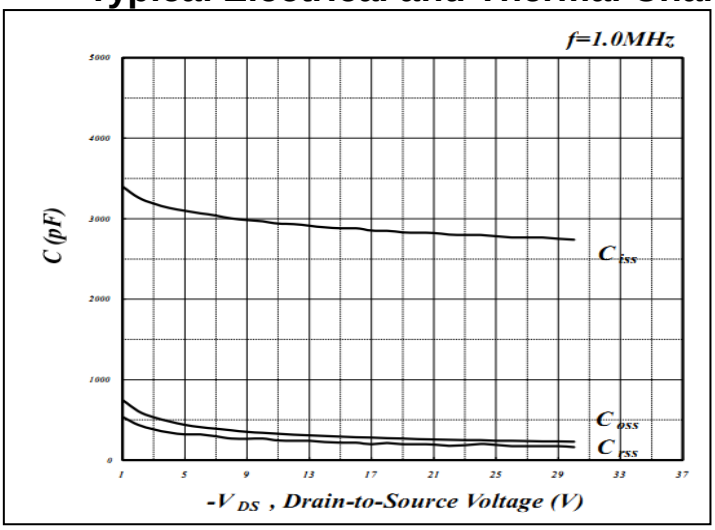


Figure1. Capacitance

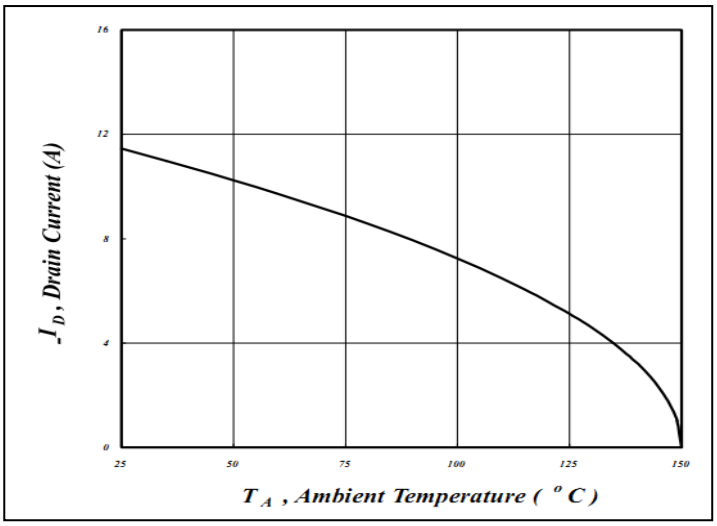


Figure2. Drain Current

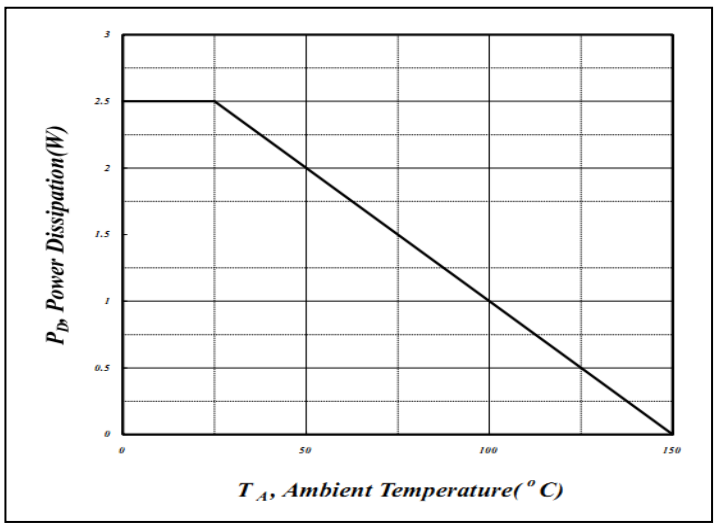
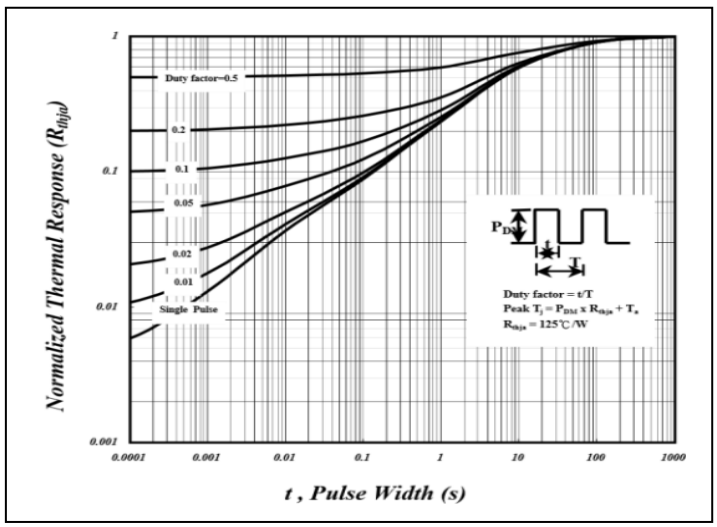
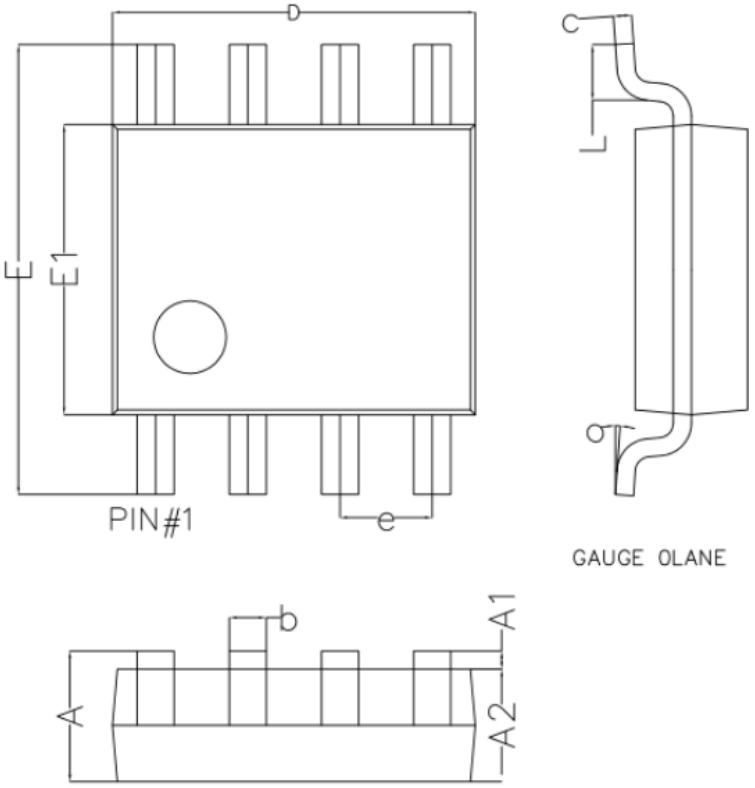


Figure3. Power Dissipation



Figur 4. Normalized Maximum Transient Thermal Impedance

Mechanical Data：



Symbol	Dim in mm		
	Min	Nor	Max
A	1.350	1.550	1.750
A1	0.100	0.175	0.250
A2	1.350	1.450	1.550
b	0.330	0.420	0.510
c	0.170	0.210	0.250
D	4.800	4.900	5.000
e	1.270(BSC)		
E	5.800	6.000	6.200
E1	3.800	3.900	4.000
L	0.400	0.835	1.2700
θ	0°	4°	8°

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Customer Service

Worldwide Sales and Service:

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