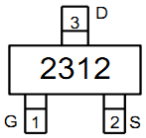
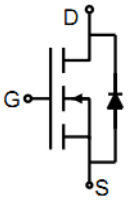
Main Product Characteristics:

V_{DSS}	20V
R_{DS}(on)	25mΩ (typ.)
I_D	4.5A

SOT-23



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 handing capability

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
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 4.5V ①	4.5	A
I_{DM}	Pulsed Drain Current ②	13.5	
P_D @T_A = 25°C	Power Dissipation ③	1.25	W
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-to-Source Voltage	± 8	V
T_J	Operating Junction	-55 to + 150	°C
T_{STG}	Storage Temperature Range	-55 to + 150	°C

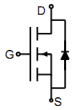
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	100	°C /W

Electrical Characterizes @T_A=25℃ unless otherwise specified

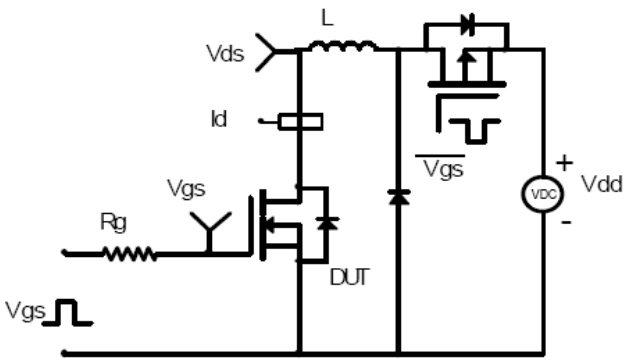
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source breakdown voltage	20	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	25	33	mΩ	V_{GS}=4.5V,I_D =5A
		—	34	40		V_{GS}=2.5V,I_D = 4.5A
$V_{GS(th)}$	Gate threshold voltage	0.5	—	1.2	V	V_{DS} = V_{GS}, I_D = 250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =20V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =8V
	Gate-to-Source reverse leakage	—	—	-100		V_{GS} = -8V
Q_g	Total gate charge	—	10	—	nC	I_D = 5A, V_{DS}=10V, V_{GS} = 4.5V
Q_{gs}	Gate-to-Source charge	—	2.3	—		
Q_{gd}	Gate-to-Drain charge	—	2.9	—		
$t_{d(on)}$	Turn-on delay time	—	6.6	—	ns	V_{GS}=4.5V, V_{DS}=10V, R_{GEN}=10Ω, I_D =5A
t_r	Rise time	—	18.1	—		
$t_{d(off)}$	Turn-Off delay time	—	18.3	—		
t_f	Fall time	—	7.9	—		
C_{iss}	Input capacitance	—	539	—	pF	V_{DS}=20V, V_{GS}=0V, f=1MHZ
C_{oss}	Output capacitance	—	62	—		
C_{rss}	Reverse transfer capacitance	—	55	—		

Source-Drain Ratings and Characteristics

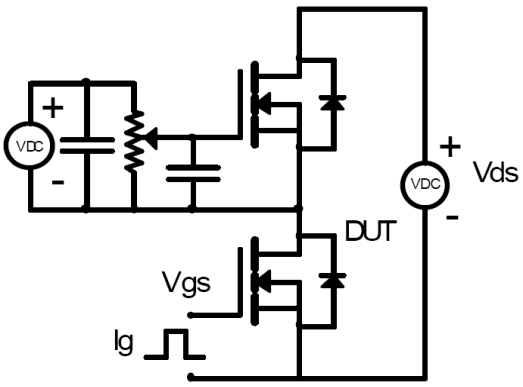
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Maximum Body-Diode Continuous Current	—	—	1	A	MOSFET symbol showing the integral reverse p-n junction diode. 
V_{SD}	Diode Forward Voltage	—	0.8	1.2	V	T_J=25℃,I_S=1A,V_{GS}=0V

Test Circuits and Wave Forms

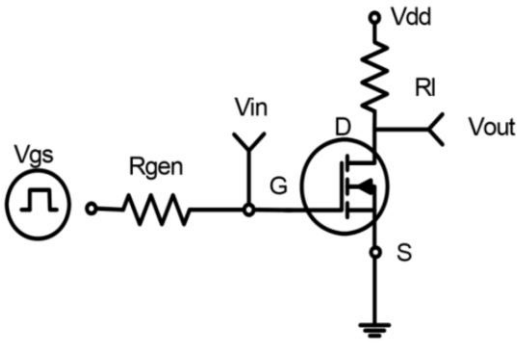
EAS Test Circuit:



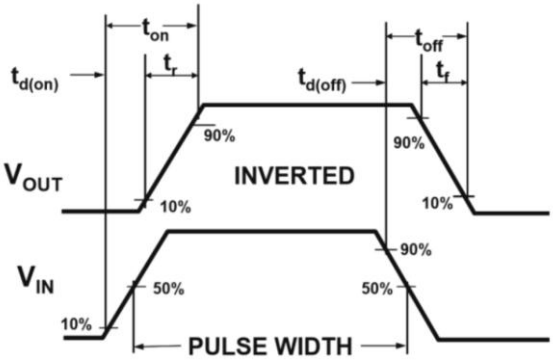
Gate Charge Test Circuit:



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 P_D 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

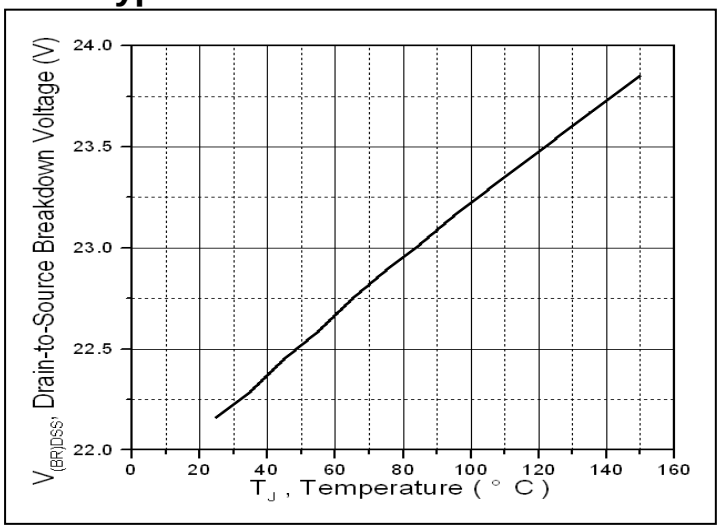


Figure 1. Drain-to-Source Breakdown Voltage vs. Temperature

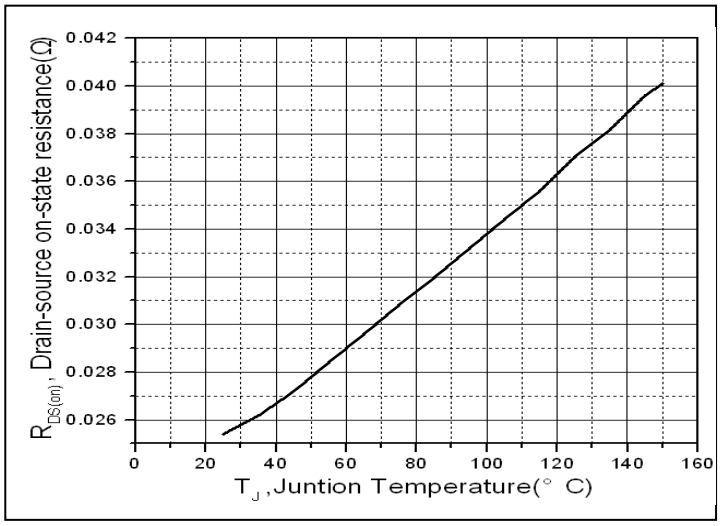


Figure 2.Normalized On-Resistance vs. Junction Temperature

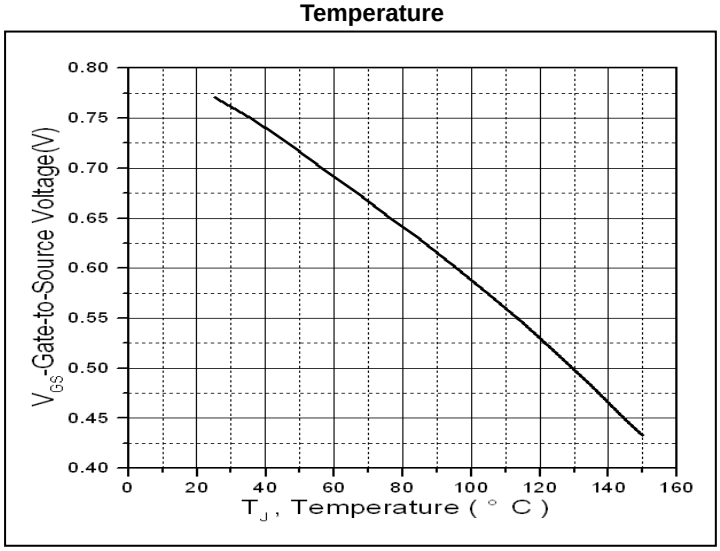


Figure 3. Gate to Source Cut-off Voltage

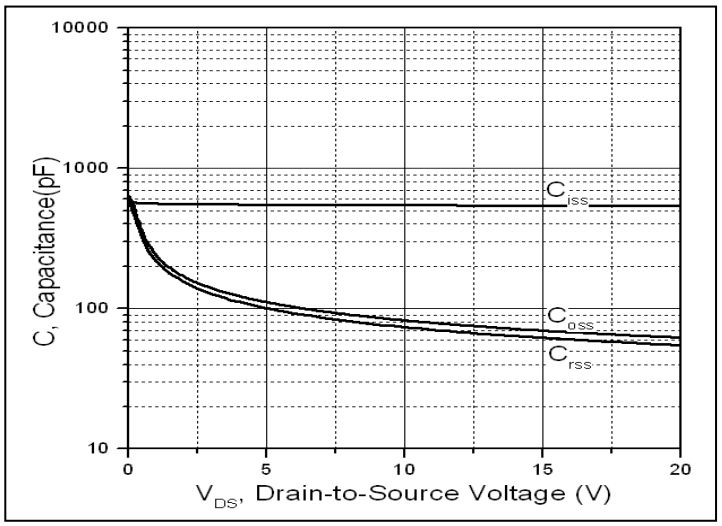
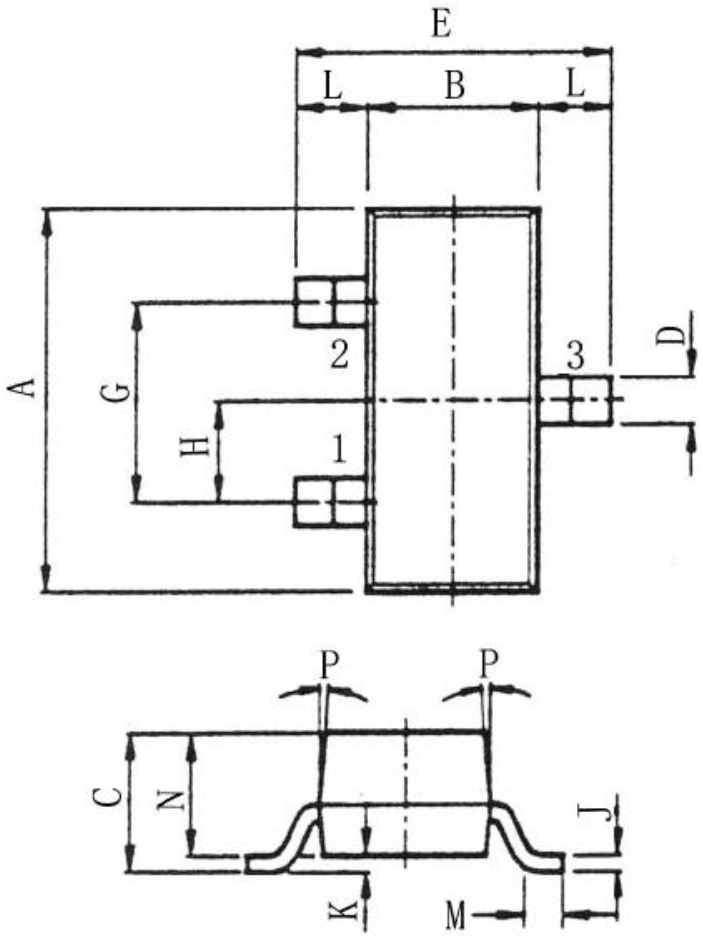


Figure 4. Capacitance

Mechanical Data：



单位：mm

A	2.90±0.20
B	1.30+0.20/−0.15
C	1.30MAX
D	0.40+0.15/−0.05
E	2.40+0.30/−0.20
G	1.90±0.2
H	0.95±0.1
J	0.10+0.10/−0.05
K	0.00~0.10
L	0.55±0.1
M	0.20MIN
N	1.00+0.20/−0.10
P	7°

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