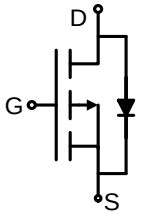
Main Product Characteristics:

V_{DSS}	-20V
R_{DS}(on)	76mΩ (typ.)
I_D	-3A 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℃ 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	-3	A
I_{DM}	Pulsed Drain Current ②	-10	
P_D @TC = 25°C	Power Dissipation	1.25	W
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-to-Source Voltage	± 10	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

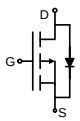
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ③	—	100	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

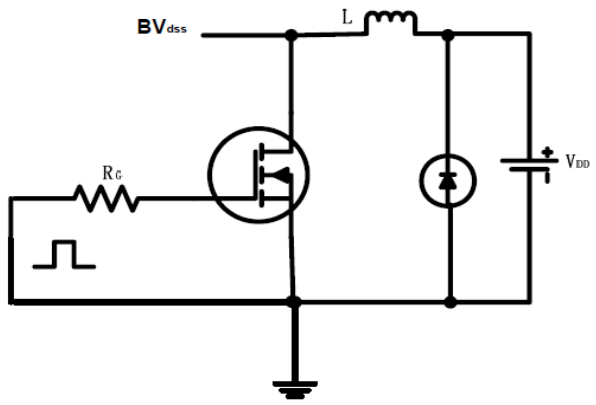
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-20	—	—	V	V_{GS} = 0V, I_D = -250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	76	110	mΩ	V_{GS}= -4.5V,I_D= -3A
		—	100	140		V_{GS}= -2.5V,I_D = -2A
$V_{GS(th)}$	Gate threshold voltage	-0.4	—	-1	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} =10V
		—		-100		V_{GS} = -10V
Q_g	Total gate charge	—	6	—	nC	I_D = -2.3A,
Q_{gs}	Gate-to-Source charge	—	0.9	—		V_{DS}= -6V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	1.7	—		V_{GS} = -4.5V
$t_{d(on)}$	Turn-on delay time	—	13	—	ns	V_{GS}=-4.5V, V_{DS} = -6V, R_{GEN}=6Ω,R_L=6Ω
t_r	Rise time	—	35	—		
$t_{d(off)}$	Turn-Off delay time	—	40	—		
t_f	Fall time	—	34	—		
C_{iss}	Input capacitance	—	248	—	pF	V_{GS} = 0V,
C_{oss}	Output capacitance	—	51	—		V_{DS} = -15V,
C_{rss}	Reverse transfer capacitance	—	32	—		f = 1MHz

Source-Drain Ratings and Characteristics

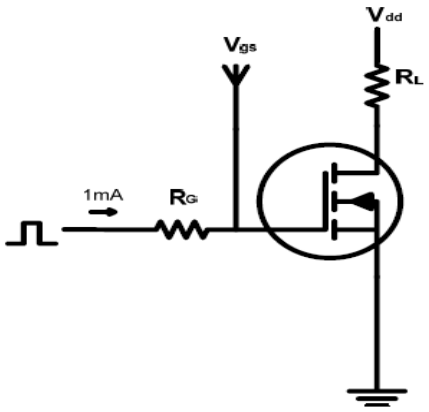
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	-1.6	A	MOSFET symbol showing the integral reverse p-n junction diode. 
V_{sd}	Diode Forward Voltage	—	-0.8	-1.2	V	I_S=-1A, V_{GS}=0V

Test circuits and Waveforms

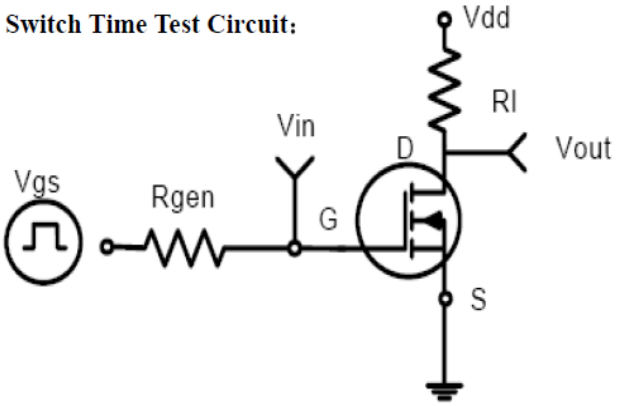
EAS test circuits:



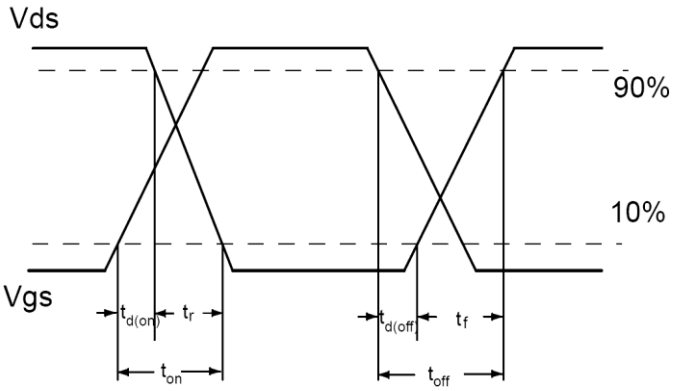
Gate charge test circuit:



Switch Time Test Circuit:



Switch Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.

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

③The 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

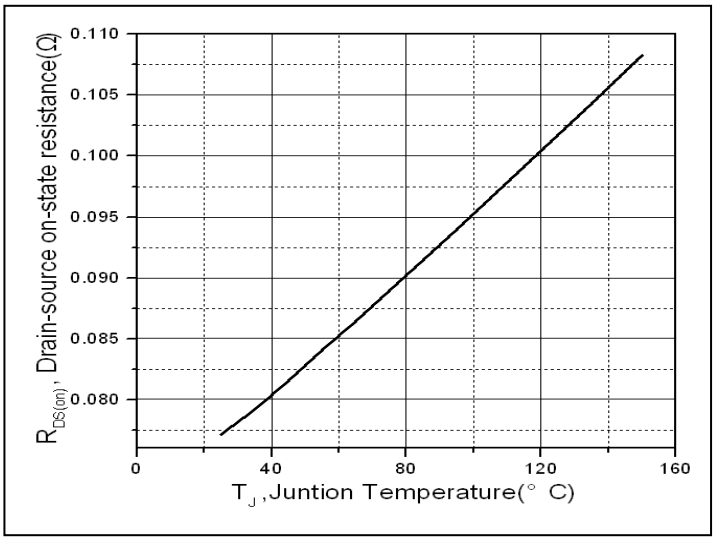


Figure 1. Normalized On-Resistance Vs. Case Temperature

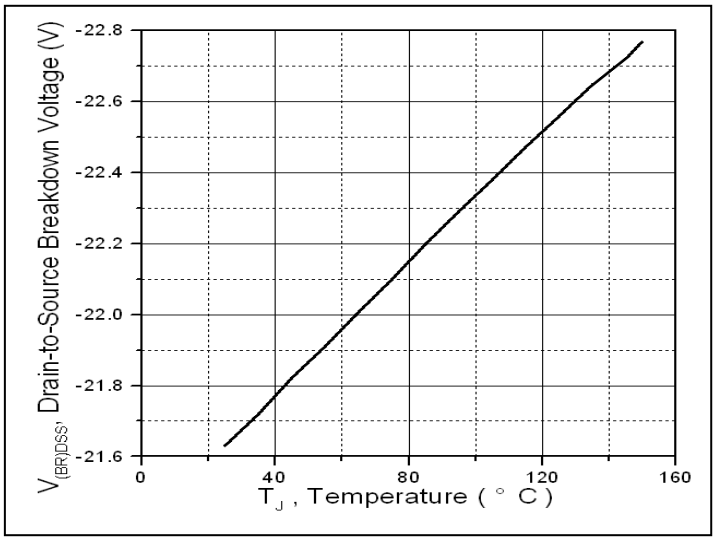


Figure 2. Drain-to-Source Breakdown Voltage vs.Temperature

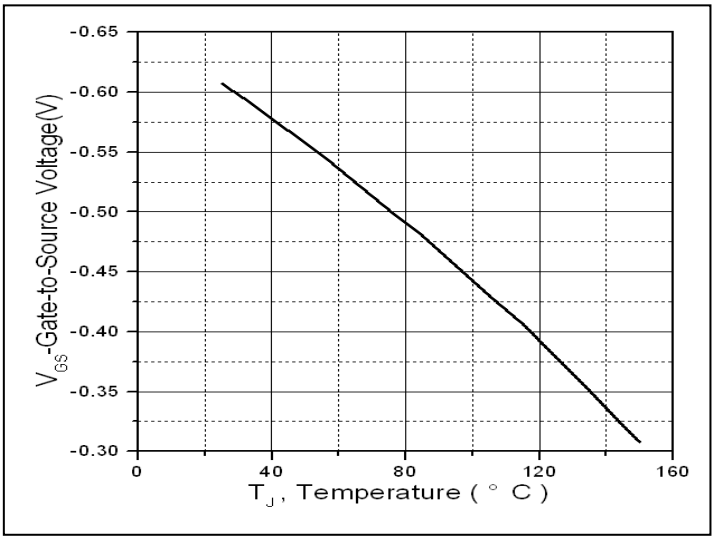


Figure 3. Gate to source cut-off voltage

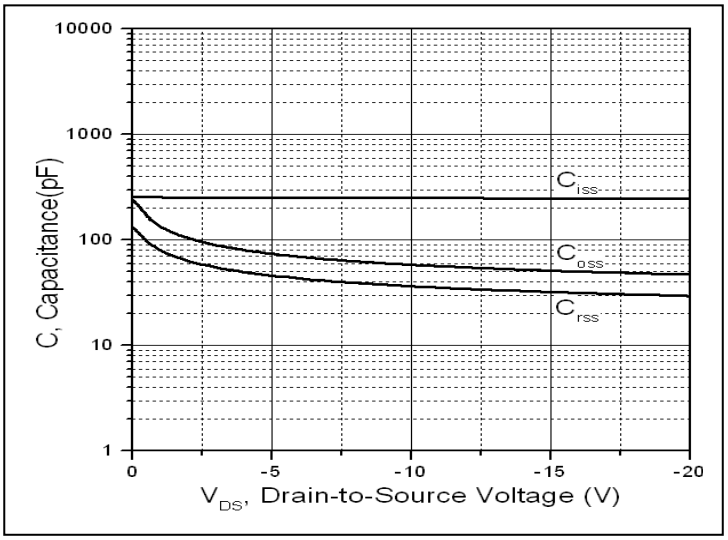
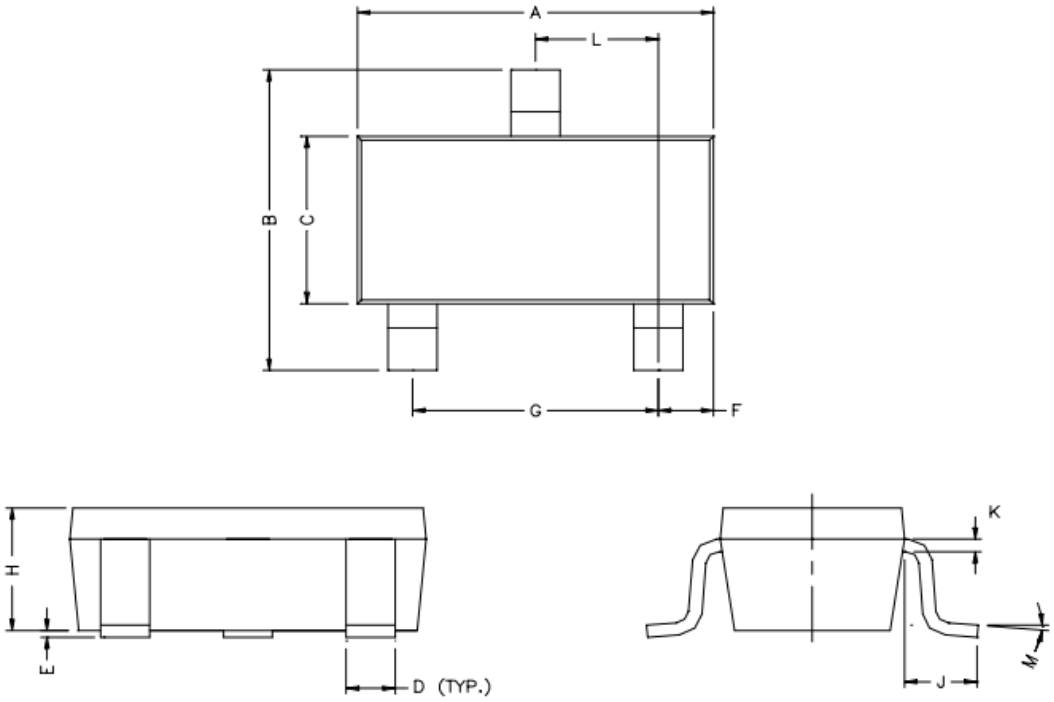


Figure 4. Typical Capacitance Vs. Drain-to-Source Voltage

Mechanical Data：



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	1.90	REF.
B	2.40	2.80	H	1.00	1.30
C	1.40	1.60	K	0.10	0.20
D	0.35	0.50	J	0.40	-
E	0	0.10	L	0.85	1.15
F	0.45	0.55	M	0°	10°

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