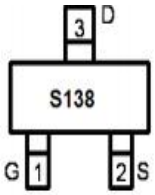
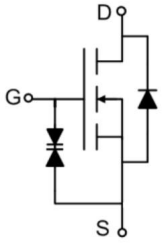
Main Product Characteristics:

V_{DSS}	50V
R_{DS}(on)	3.5Ω(Max)
I_D	0.22A

SOT-23



Marking and Pin Assignments



Schematic Diagram

Features and Benefits

- Advanced 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 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} @ 10V①	0.22	A
I_{DM}	Pulsed Drain Current②	0.88	
P_D @T_C = 25°C	Power Dissipation③	0.43	W
V_{DS}	Drain-Source Voltage	50	V
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

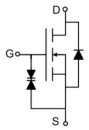
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient④	—	350	℃/W

Electrical Characterizes @T_A=25℃unless otherwise specified

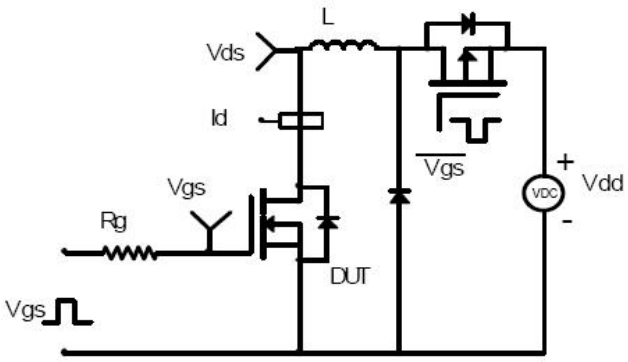
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	50	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	—	3.5	Ω	V_{GS}=10V, I_D=0.22A
		—	—	6	Ω	V_{GS}=4.5V, I_D=0.22A
$V_{GS(th)}$	Gate threshold voltage	0.5	—	1.6	V	V_{DS} = V_{GS}, I_D =250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =50V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	10	μA	V_{GS} =20V
		—	—	-10		V_{GS} =-20V
Q_g	Total gate charge	—	1.7	—	nC	V_{DS}=25V
Q_{gs}	Gate-to-Source charge	—	0.1	—		I_D=0.22A
Q_{gd}	Gate-to-Drain("Miller") charge	—	0.4	—		V_{GS}=10V
$t_{d(on)}$	Turn-on delay time	—	2.6	—	ns	V_{DD}=30V
t_r	Rise time	—	9	—		V_{GS}=10V
$t_{d(off)}$	Turn-Off delay time	—	20	—		R_{GEN}=6Ω
t_f	Fall time	—	6	—		I_D=0.22A
C_{iss}	Input capacitance	—	30	—	pF	V_{DS}=25V
C_{oss}	Output capacitance	—	15	—		V_{GS}=0V
C_{rss}	Reverse transfer capacitance	—	6	—		f=1.0MHz

Source-Drain Ratings and Characteristics

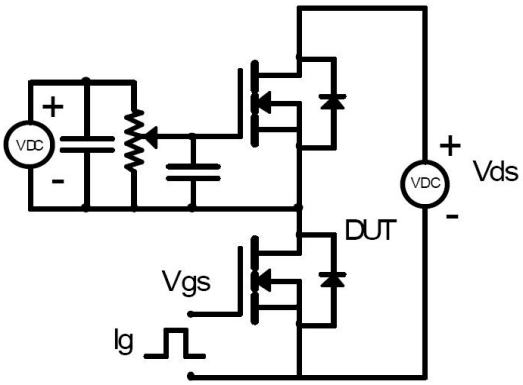
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	0.22	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	0.88	A	
V_{SD}	Diode Forward Voltage	—	—	1.4	V	I_S=0.44A, V_{GS}=0V

Test Circuits and Waveforms

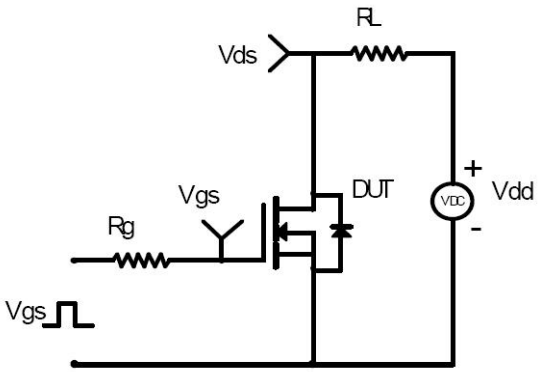
EAS Test Circuit:



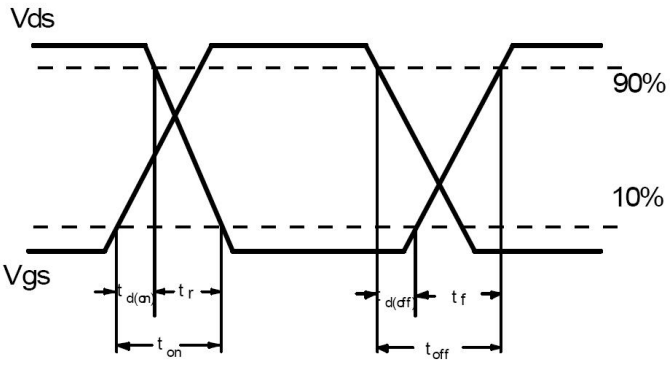
Gate Charge Test Circuit:



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 ℃

Typical Electrical and Thermal Characteristics

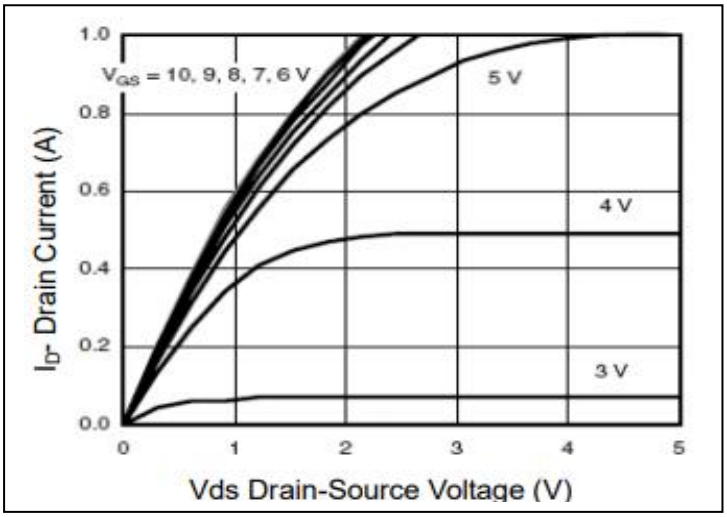


Figure1.Typical Output Characteristics

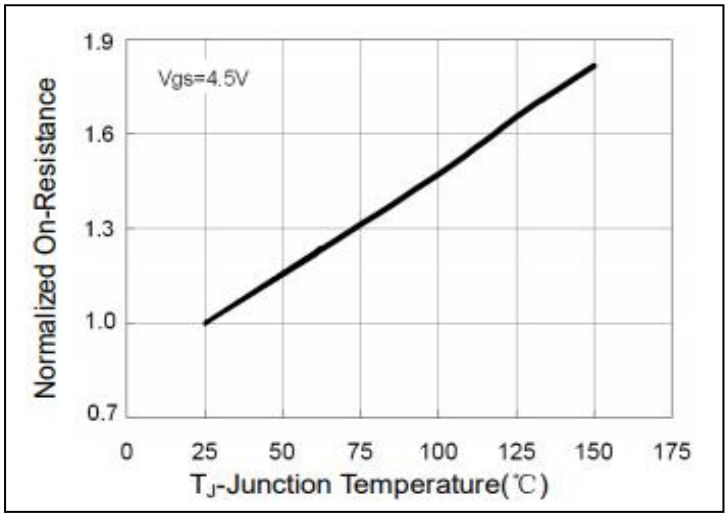


Figure2. Drain-Source On-Resistance Voltage

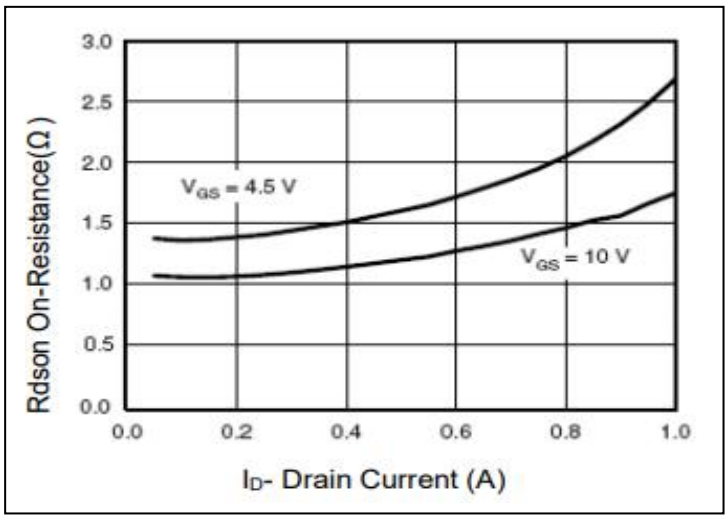


Figure3. Drain-Source On-Resistance

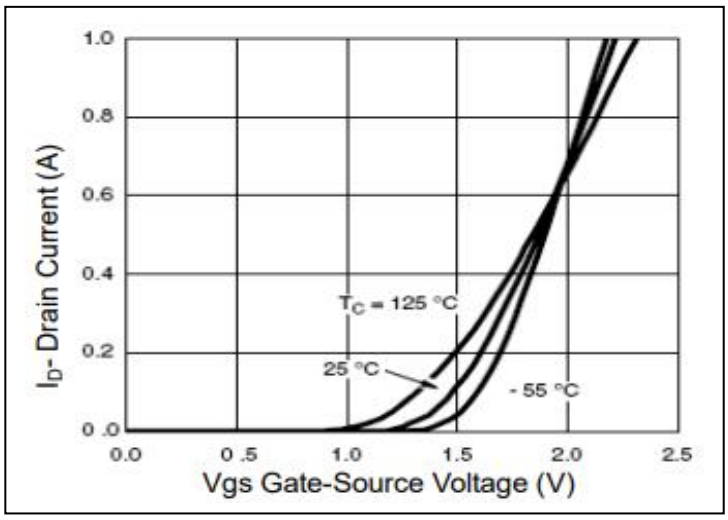


Figure4.Transfer Characteristics

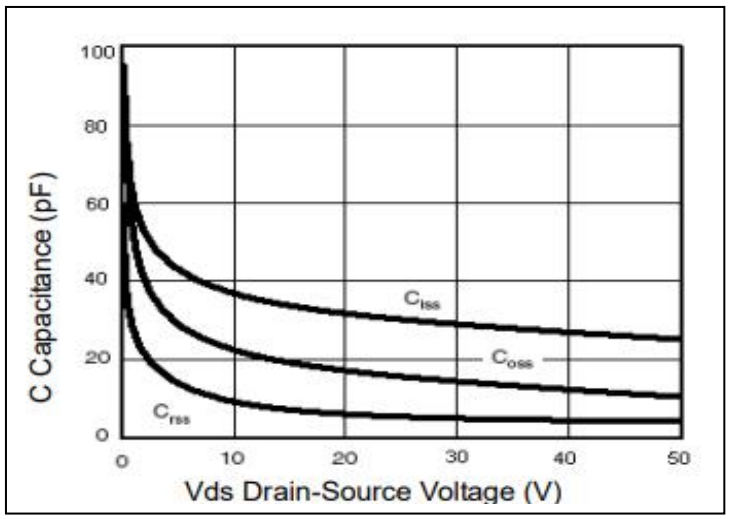


Figure5. Capacitance vs. Vds

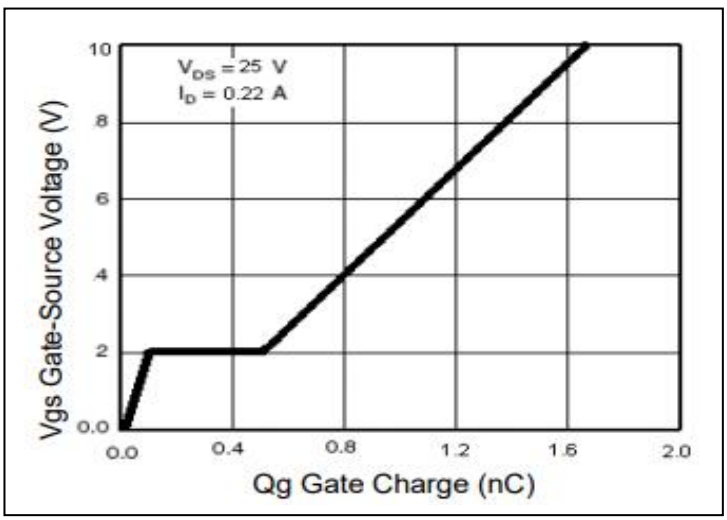
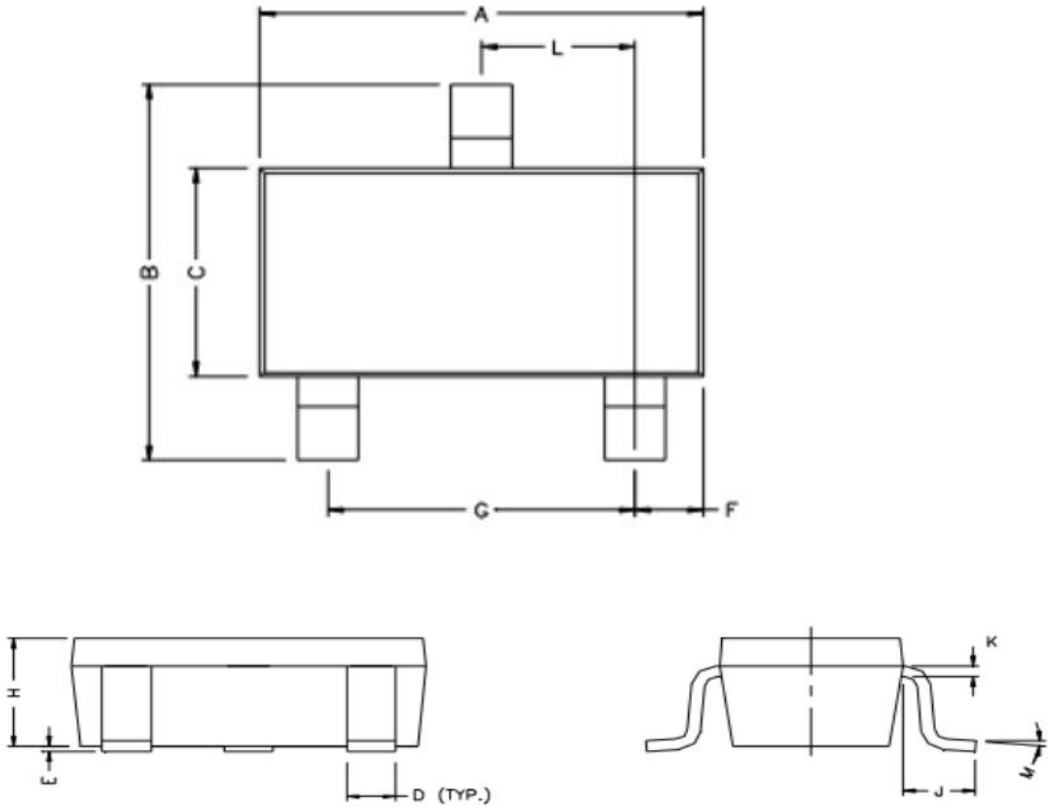


Figure6. Gate Charge

Mechanical Data：

SOT-23 Package Outline(Unit:mm)



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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