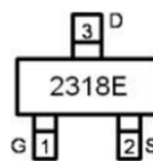


Main Product Characteristics:

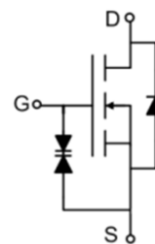
V_{DSS}	20V
$R_{DS(on)}$	18m Ω (typ.)
I_D	6.5A



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°C 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
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ ①	6.5	A
I_{DM}	Pulsed Drain Current②	30	
$P_D @ T_C = 25^\circ C$	Power Dissipation③	1.4	W
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-to-Source Voltage	± 8	V
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ C$

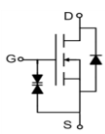
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
R _{θJA}	Junction-to-Ambient ^④	—	90	°C/W

Electrical Characterizes @T_A=25°C unless otherwise specified

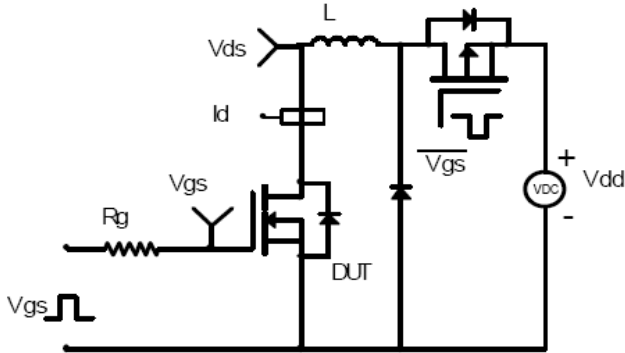
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source breakdown voltage	20	—	—	V	V _{GS} = 0V, I _D = 250μA
R _{DS(on)}	Static Drain-to-Source on-resistance	—	18	22	mΩ	V _{GS} =4.5V, I _D =6.5A
		—	24	30	mΩ	V _{GS} =2.5V, I _D =5.5A
V _{GS(th)}	Gate threshold voltage	0.4	—	1	V	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	—	—	±1	uA	V _{GS} =±4.5V, V _{DS} =0V
		—	—	±10		V _{GS} =±8V, V _{DS} =0V
Q _g	Total gate charge	—	10	—	nC	V _{DS} =10V
Q _{gs}	Gate-to-Source charge	—	2.3	—		I _D =6.5A
Q _{gd}	Gate-to-Drain("Miller") charge	—	3	—		V _{GS} =4.5V
t _{d(on)}	Turn-on delay time	—	6.5	—	ns	V _{DD} =10V
t _r	Rise time	—	13	—		I _D =1A
t _{d(off)}	Turn-Off delay time	—	50	—		V _{GS} =5V
t _f	Fall time	—	30	—		R _{GEN} =3Ω
C _{iss}	Input capacitance	—	1160	—	pF	V _{GS} = 0V
C _{oss}	Output capacitance	—	200	—		V _{DS} = 10V
C _{rss}	Reverse transfer capacitance	—	140	—		f = 1MHz

Source-Drain Ratings and Characteristics

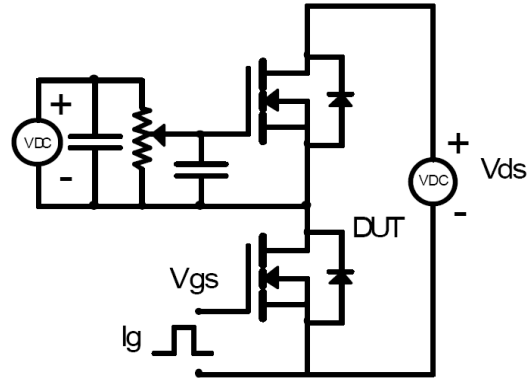
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	6.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode)	—	—	30	A	
V _{SD}	Diode Forward Voltage	—	0.76	1	V	V _{GS} =0V, I _S =1A

Test Circuits and Waveforms

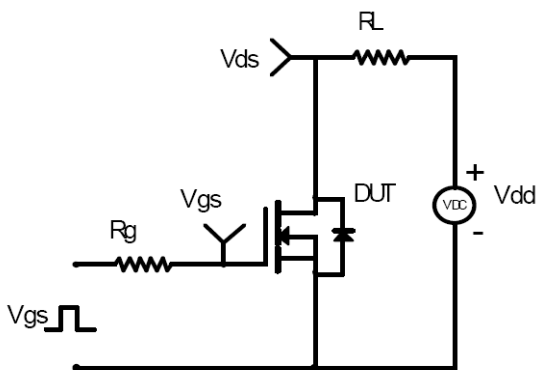
EAS Test Circuit:



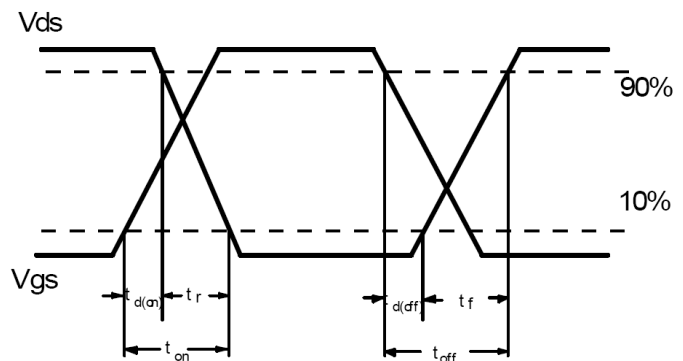
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:

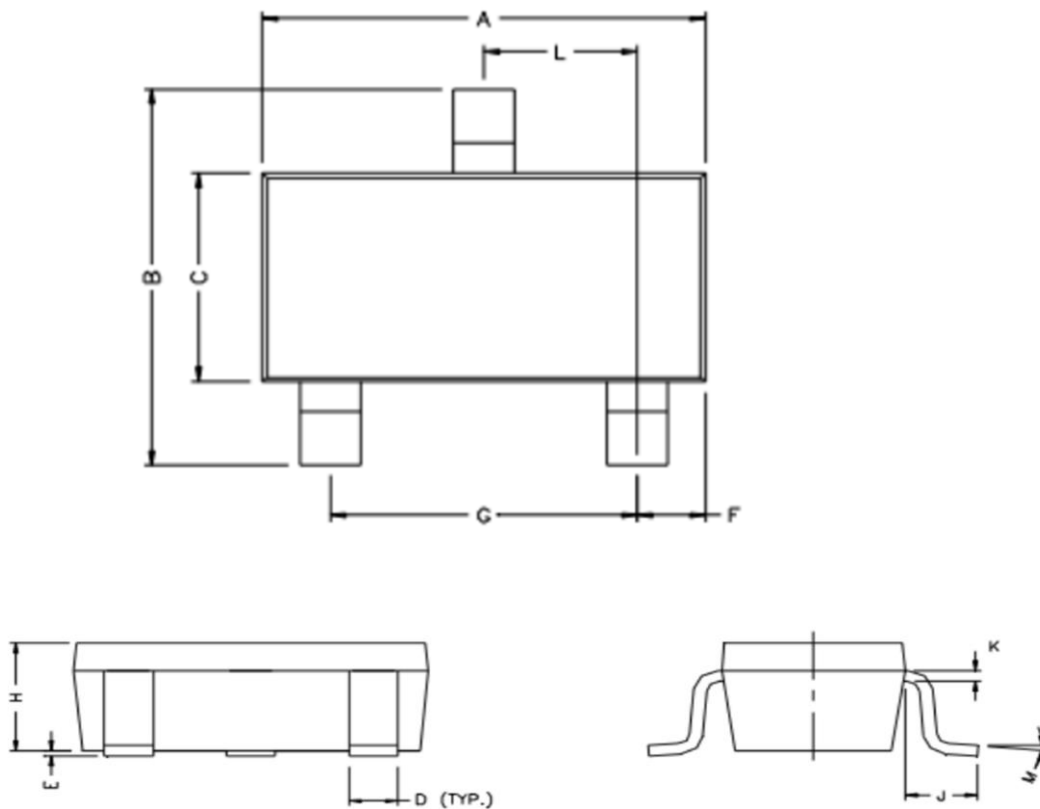


Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ 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 $T_A = 25^\circ\text{C}$

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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