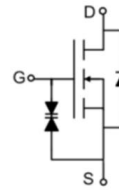


Main Product Characteristics:

V_{DSS}	20V
$R_{DS(on)}$	12.3mΩ(typ.)
I_D	7.2A



SOT-23



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



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
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}^{①}$	7.2	A
I_{DM}	Pulsed Drain Current ^②	28.8	
$P_D @ T_A = 25^\circ\text{C}$	Power Dissipation ^③	1.34	W
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-to-Source Voltage	± 10	V
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	°C

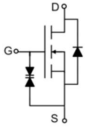
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient ^④	—	93	°C/W

Electrical Characterizes @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

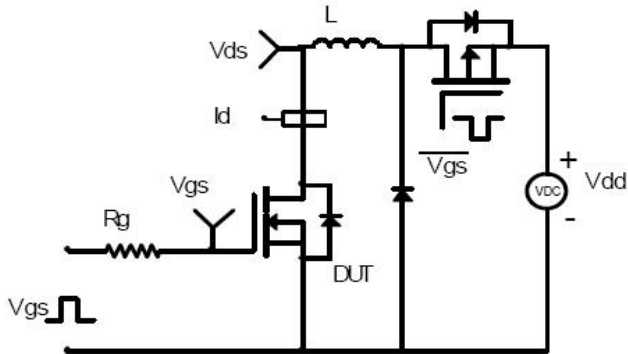
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	20	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	12.3	16	m Ω	$V_{GS}=4.5V, I_D = 5A$
		—	15.6	20.7	m Ω	$V_{GS}=2.5V, I_D = 4A$
$V_{GS(th)}$	Gate threshold voltage	0.5	—	1	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	$V_{DS} = 20V, V_{GS} = 0V$
I_{GSS}	Gate-to-Source forward leakage	—	—	± 10	μA	$V_{GS} = \pm 10V, V_{DS} = 0V$
Q_g	Total gate charge	—	9	—	nC	$I_D = 5A,$ $V_{DS} = 10V,$ $V_{GS} = 4.5V$
Q_{gs}	Gate-to-Source charge	—	1.5	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	2.1	—		
$t_{d(on)}$	Turn-on delay time	—	12	—	ns	$V_{GS}=4.5V, V_{DS}=10V,$ $R_{GEN}=3\Omega$ $R_L=2\Omega$
t_r	Rise time	—	35	—		
$t_{d(off)}$	Turn-Off delay time	—	56	—		
t_f	Fall time	—	52	—		
C_{iss}	Input capacitance	—	672	—	pF	$V_{GS} = 0V$ $V_{DS} = 10V$ $f = 1MHz$
C_{oss}	Output capacitance	—	152	—		
C_{rss}	Reverse transfer capacitance	—	91	—		

Source-Drain Ratings and Characteristics

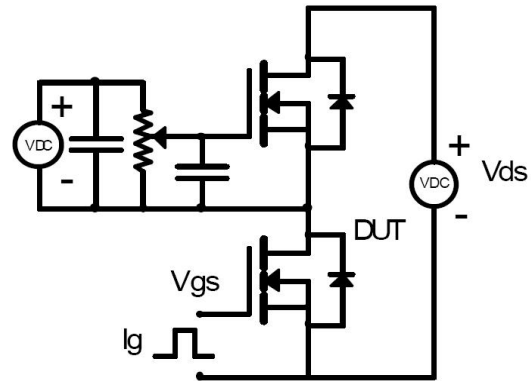
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	7.2	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	28.8	A	
V_{SD}	Diode Forward Voltage	—	—	1.2	V	

Test Circuits and Waveforms

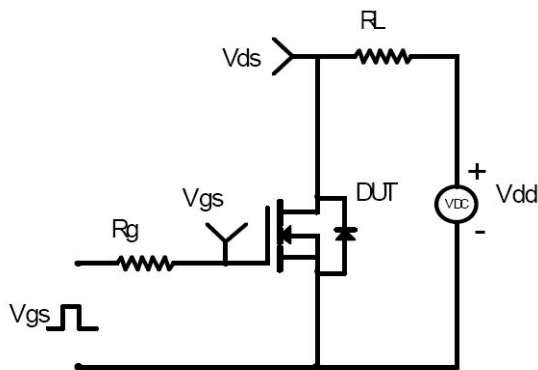
EAS Test Circuit:



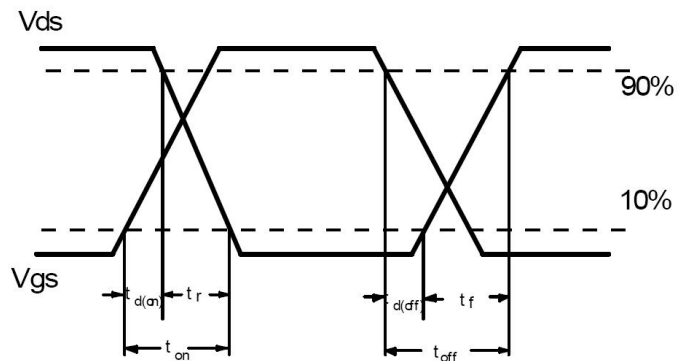
Gate Charge Test Circuit:



Switching Time Test Circuit:

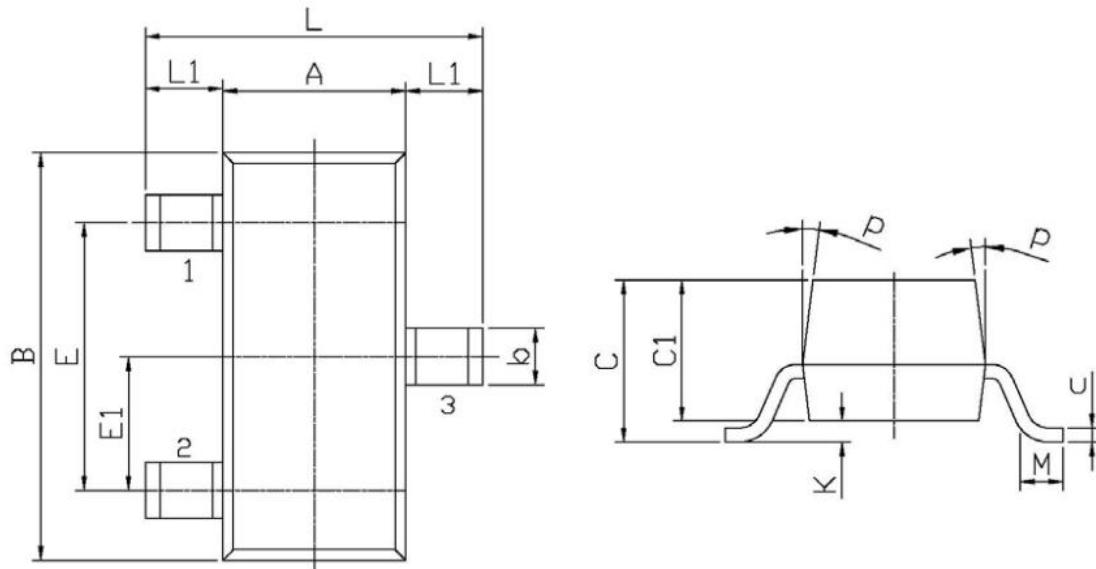


Switching Waveforms:



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 P_D 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)


Symbol	Dimensions in Millimeter		Symbol	Dimensions in Millimeter	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30 Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	c	0.05	0.20
B	2.70	3.10	K	0	0.10
E	1.70	2.10	M	0.20 Min	
E1	0.85	1.05	P	7°	
b	0.35	0.55			

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