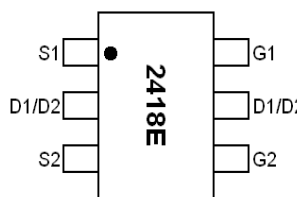
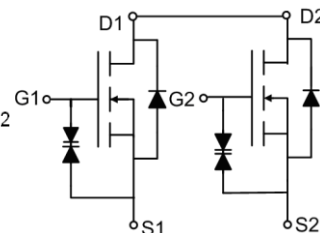


**Main Product Characteristics:**

$V_{DSS}$	20V
$R_{DS(on)}$	18mohm(typ.)
$I_D$	6A


**SOT23-6**

**Marking and Pin Assignments**

**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°C 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 <sup>①</sup>	6	A
$I_{DM}$	Pulsed Drain Current <sup>②</sup>	30	
$P_D$ @TC = 25°C	Power Dissipation <sup>③</sup>	1.3	W
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-to-Source Voltage	± 12	V
ESD	ESD Rating (HBM)	2	KV
$T_J$ $T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	°C

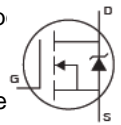
**Thermal Resistance**

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient ( $t \leq 10s$ ) <sup>④</sup>	—	95	°C/W

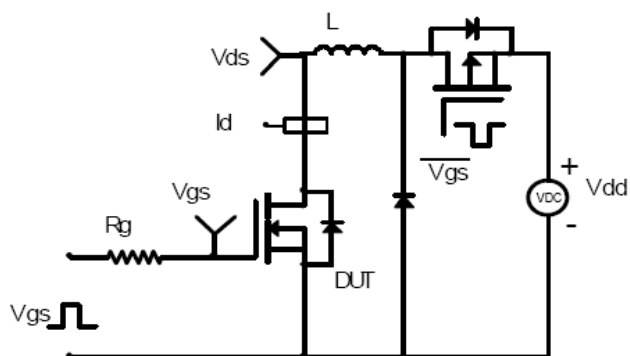
**Electrical Characterizes @ $T_A=25^{\circ}\text{C}$  unless otherwise specified**

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	—	18	24	m $\Omega$	$V_{GS}=4.5V, I_D = 6A$
		—	19	25		$V_{GS}=4V, I_D = 5.5A$
		—	21	29		$V_{GS}=3.1V, I_D = 5A$
		—	25	33		$V_{GS}=2.5V, I_D = 4A$
$V_{GS(th)}$	Gate threshold voltage	0.5	—	1	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
$I_{DSS}$	Drain-to-Source leakage current	—	—	1	$\mu A$	$V_{DS} = 20V, V_{GS} = 0V$
$I_{GSS}$	Gate-to-Source forward leakage	—	—	10	$\mu A$	$V_{GS} = 10V$
		—	—	-10		$V_{GS} = -10V$
$g_{FS}$	Forward Transconductance	—	7	—	S	$V_{DS}=5V, I_D=6A$
$Q_g$	Total gate charge	—	8	—	nC	$V_{DS}=10V,$ $I_D=6A,$ $V_{GS}=4.5V$
$Q_{gs}$	Gate-to-Source charge	—	1.5	—		
$Q_{gd}$	Gate-to-Drain("Miller") charge	—	2	—		
$t_{d(on)}$	Turn-on delay time	—	20	—	ns	$V_{DD}=10V, I_D=1A$ $V_{GS}=4.5V, R_{GEN}=10\Omega$
$t_r$	Rise time	—	50	—		
$t_{d(off)}$	Turn-Off delay time	—	64	—		
$t_f$	Fall time	—	40	—		
$C_{iss}$	Input capacitance	—	650	—	pF	$V_{GS} = 0V$ $V_{DS} = 10V$ $f = 1.0MHz$
$C_{oss}$	Output capacitance	—	170	—		
$C_{rss}$	Reverse transfer capacitance	—	150	—		

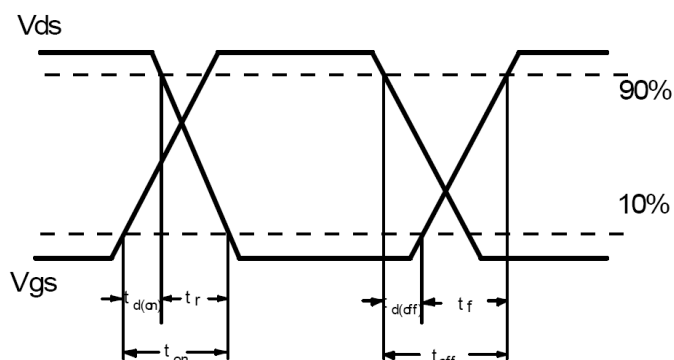
**Source-Drain Ratings and Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$I_S$	Continuous Source Current (Body Diode)	—	—	6	A	MOSFET symb showing the integral reverse p-n junction diode. 
$I_{SM}$	Pulsed Source Current (Body Diode)	—	—	30	A	
$V_{SD}$	Diode Forward Voltage	—	0.76	1.1	V	

## Test Circuits and Waveforms

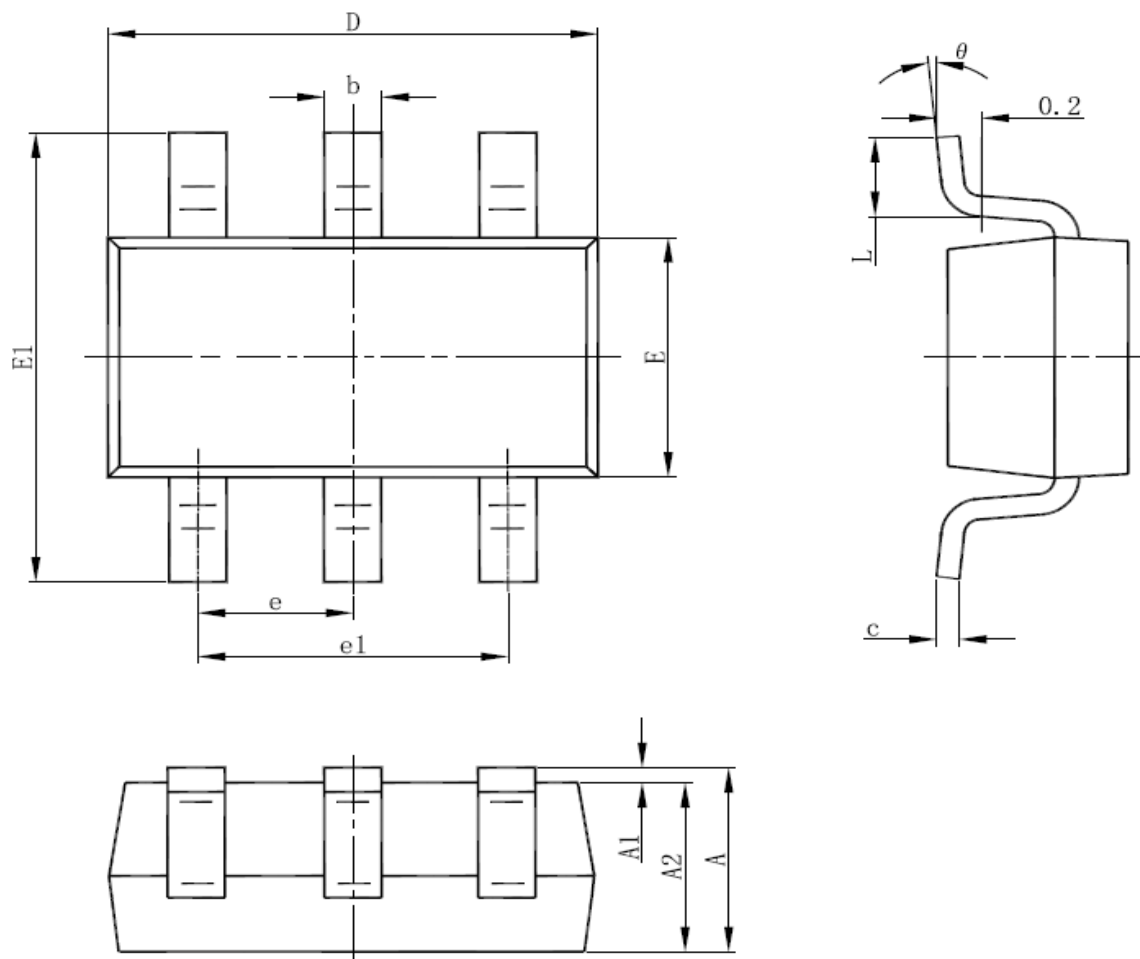
**EAS Test Circuit:**

**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 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-23-6L PACKAGE OUTLINE DIMENSION**


Symbol	Dimension In Millimeters		Dimension In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.95(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
$\theta$	$0^{\circ}$	$8^{\circ}$	$0^{\circ}$	$8^{\circ}$

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