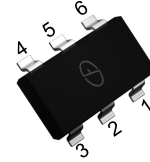


## N-Channel 20V (D-S) Power MOSFET

### Features

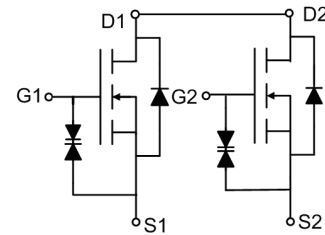
- 100% Avalanche Tested
- Halogen Free, Pb-Free
- RoHS Compliant



SOT-23-6

### Applications

- Relay driver
- Switching circuits
- High-side load switch
- High-speed line driver



### Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain Source Voltage	$V_{DS}$	20	V
Gate Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current, Continuous $V_{GS}=-10\text{V}$	$I_D$	6	A
$T_C=25^\circ\text{C}$			
Drain Current, Pulsed (Note 1)	$I_{DM}$	30	A
Power Dissipation	$P_D$	1.3	W
$T_C=25^\circ\text{C}$			
Operating Junction/ Storage Temperature Range	$T_J/ T_{STG}$	-55 to +150	$^\circ\text{C}$

Note 1: Single pulse;  $t_p \leq 1\mu\text{s}$ .

### Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Ambient (Note 2)	$R_{thJA}$	95	$^\circ\text{C}/\text{W}$

Note 2: Device mounted on 1 square inch FR4 PCB board, with 2oz single-sided copper, in a  $25^\circ\text{C}$  still air environment.

## Electrical Characteristics (T<sub>A</sub> =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	20	--	--	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V	--	--	1	μA
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250μA	0.5	--	1	V
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V	--	--	±10	μA
Drain-Source On-state Resistance (Note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =6A	--	18	24	mΩ
		V <sub>GS</sub> =4V, I <sub>D</sub> =5.5A	--	19	25	
		V <sub>GS</sub> =3.1V, I <sub>D</sub> =5A	--	21	39	
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =4A	--	25	33	
Total Gate Charge	Q <sub>g</sub>	V <sub>GS(off)</sub> =0V, V <sub>GS(on)</sub> =4.5V, V <sub>DD</sub> =10V, I <sub>D</sub> =6A	--	8	--	nC
Gate-Source Charge	Q <sub>gs</sub>		--	1.5	--	
Gate-Drain Charge	Q <sub>gd</sub>		--	2	--	
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> =4.5V, V <sub>DD</sub> =10V, I <sub>D</sub> =1A, R <sub>G</sub> =10Ω	--	20	--	ns
Turn-on Rise Time	t <sub>r</sub>		--	50	--	
Turn-off Delay Time	t <sub>d(off)</sub>		--	64	--	
Turn-off Fall Time	t <sub>f</sub>		--	40	--	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =10V, f=1MHz	--	650	--	pF
Output Capacitance	C <sub>oss</sub>		--	170	--	
Reverse Transfer Capacitance	C <sub>riss</sub>		--	150	--	

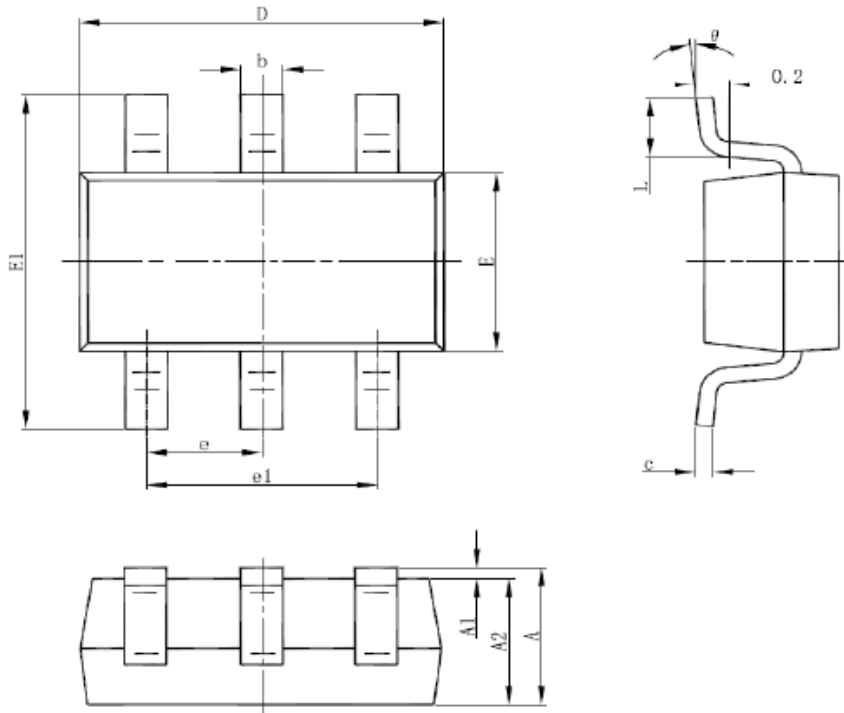
## Reverse Diode Characteristics (T<sub>A</sub> =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Current, Continuous	I <sub>SD</sub>	T <sub>C</sub> =25°C	--	--	6	A
Diode Forward Voltage (Note 3)	V <sub>SD</sub>	I <sub>F</sub> =1A, V <sub>GS</sub> =0V	--	--	1.1	V

Note 3: Pulse test; pulse width ≤ 380μs, duty cycle ≤ 1%.

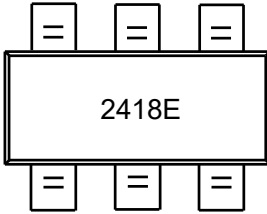
**Package Outline Dimensions** (Unit: millimeters)

**SOT23-6**



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
θ	0°	8°	0°	8°

## Marking Outline



Part Name: GMN2418E

1. P/N Mark: 2418E

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