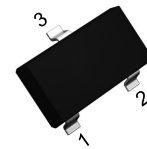


## N-Channel 30V (D-S) Power MOSFET

### Features

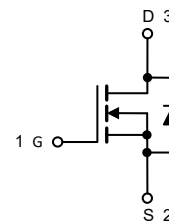
- 100% Avalanche Tested
- Halogen Free, Pb-Free
- RoHS Compliant



SOT-23

### 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	$V_{DS}$	30	V
Gate Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current, Continuous $V_{GS}=10\text{V}$	$I_D$	$T_C=25^\circ\text{C}$	5.8
		$T_C=100^\circ\text{C}$	4.2
Drain Current, Pulsed <i>(Note 1)</i>	$I_{DM}$	30	A
Power Dissipation	$P_D$	1.4	W
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 <i>(Note 2)</i>	$R_{thJA}$	145	$^\circ\text{C/W}$

*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	30	--	--	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V	--	--	1	uA
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250uA	0.7	--	1.4	V
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	--	--	±100	nA
Drain-Source On-state Resistance (Note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =5.8A	--	26	30	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A	--	29	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> =15V, I <sub>D</sub> =5.8A	--	11	--	nC
Gate-Source Charge	Q <sub>gs</sub>		--	2	--	
Gate-Drain Charge	Q <sub>gd</sub>		--	3	--	
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =15V, R <sub>G</sub> =3Ω	--	7	--	ns
Turn-on Rise Time	t <sub>r</sub>		--	15	--	
Turn-off Delay Time	t <sub>d(off)</sub>		--	38	--	
Turn-off Fall Time	t <sub>f</sub>		--	3	--	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1MHz	--	495	--	pF
Output Capacitance	C <sub>oss</sub>		--	48	--	
Reverse Transfer Capacitance	C <sub>rss</sub>		--	43	--	

### 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	--	--	1.6	A
Diode Forward Voltage (Note 3)	V <sub>SD</sub>	I <sub>F</sub> =1A, V <sub>GS</sub> =0V	--	--	1.2	V

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

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

Fig.1 - Normalized On-Resistance

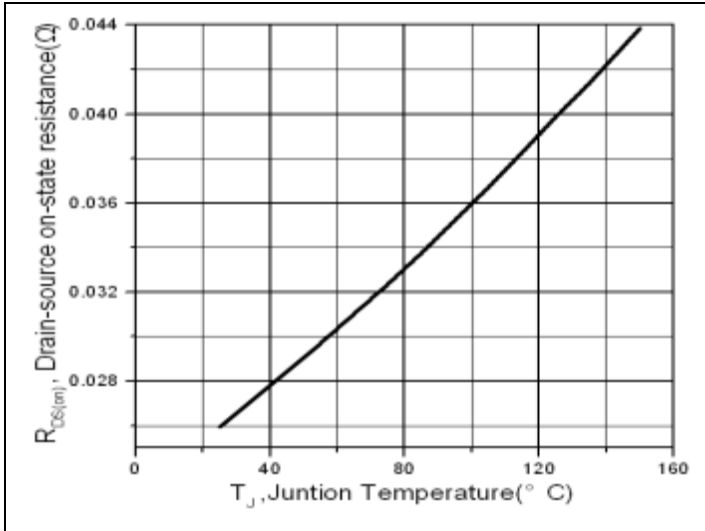


Fig.2 - Drain-to-Source Breakdown Voltage

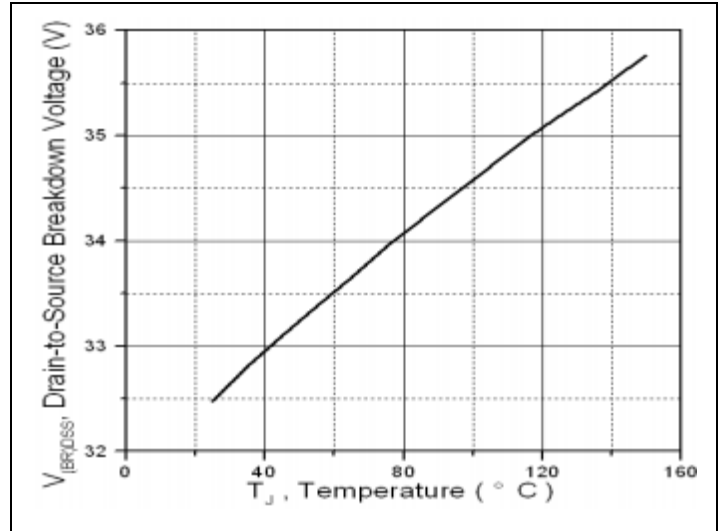


Fig.3 - Gate to Source Voltage

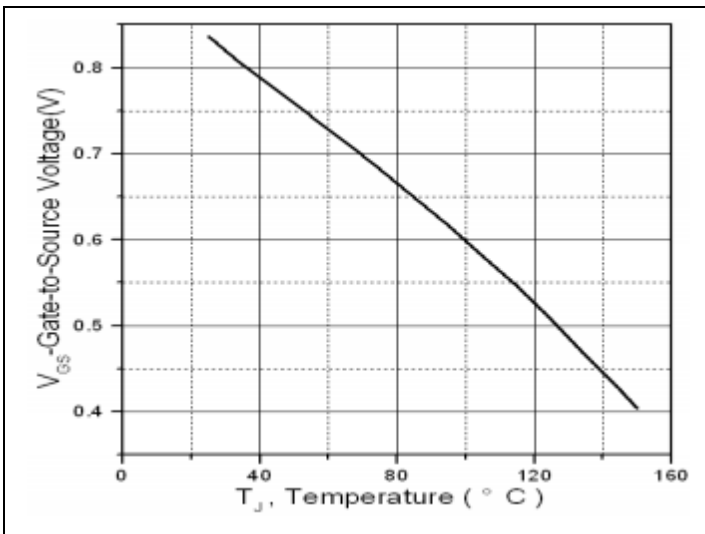
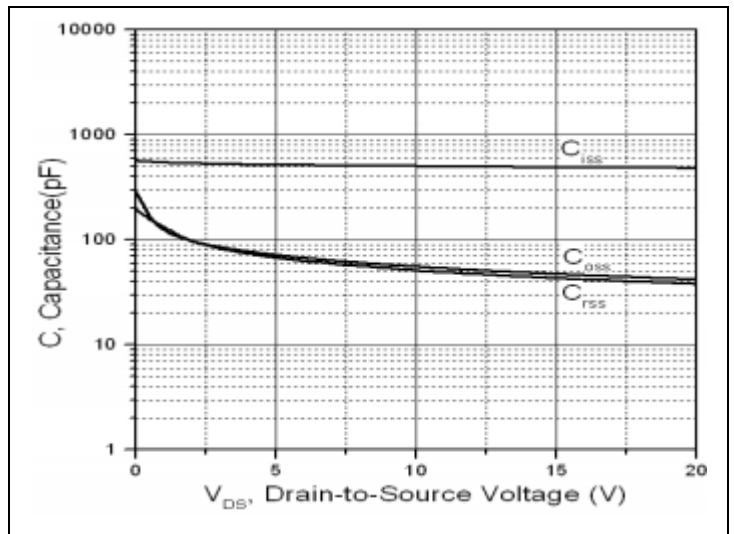
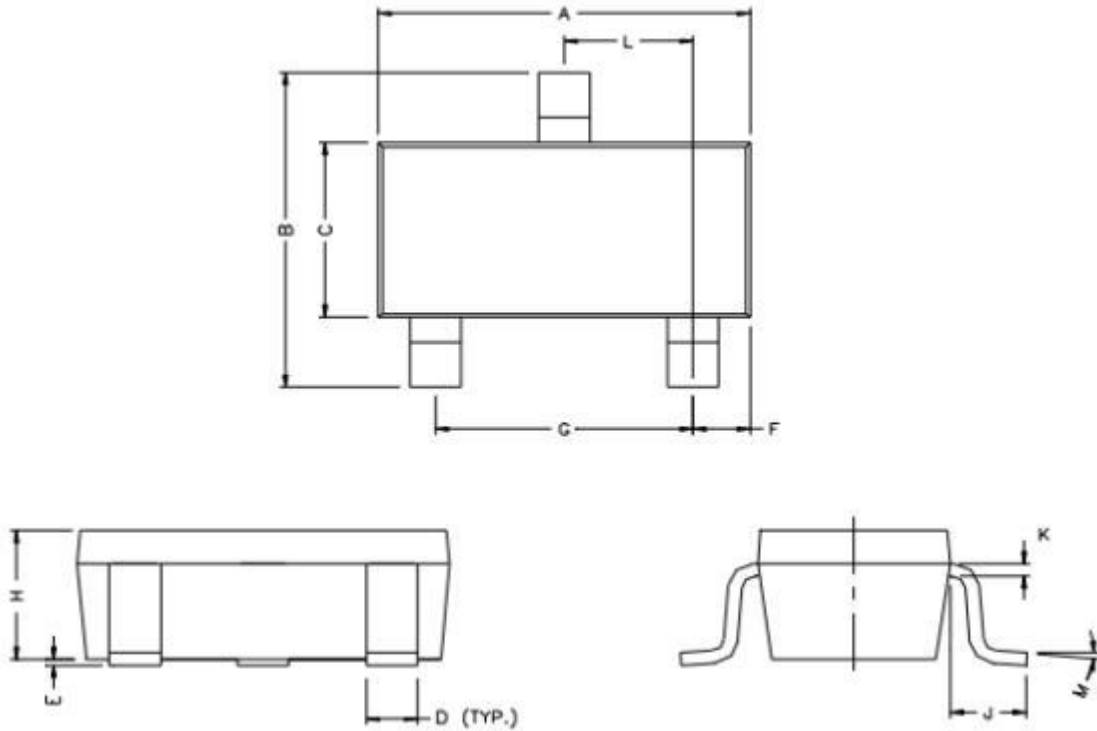


Fig.4 - Capacitance



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

**SOT-23**



SOT-23					
REF	Min.	Max.	REF	Min.	Max.
A	2.80	3.00	G	1.80	2.00
B	2.30	2.50	H	0.90	1.10
C	1.20	1.40	K	0.10	0.20
D	0.30	0.50	J	0.35	0.70
E	0.00	0.10	L	0.92	0.98
F	0.45	0.55	M	0°	10°

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