

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
50V	3.5Ω@10V	0.22A
	6Ω@4.5V	

## Feature

- High density cell design for extremely low RDS(on)
- Rugged and Reliable

## Application

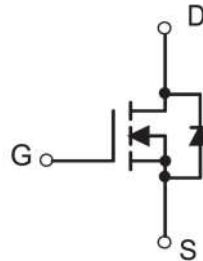
- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- Battery Operated Systems
- Solid-State Relays

## Package

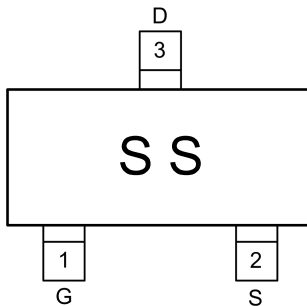


SOT-23

## Circuit diagram



## Marking



### Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	50	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	0.22	A
Pulsed Drain Current	I <sub>DM</sub>	0.88	A
Power Dissipation	P <sub>D</sub>	0.35	W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C
Thermal Resistance From Junction to Ambient	R <sub>θJA</sub>	357	°C/W

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

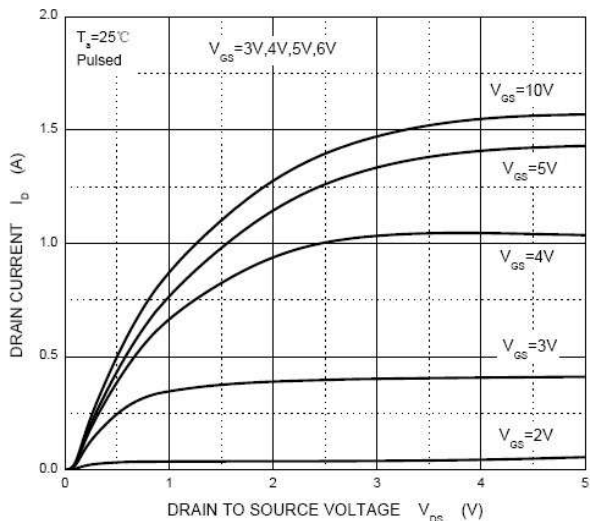
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	50			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0V			0.5	μA
		V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V			0.1	
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1mA	0.8		1.5	V
Drain-source on-resistance <sup>1)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = -0.22A			3.5	Ω
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 0.22A			6	
<b>Dynamic characteristics<sup>2)</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1MHz		27		pF
Output Capacitance	C <sub>oss</sub>			13		
Reverse Transfer Capacitance	C <sub>rss</sub>			6		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = 30V, V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.29A, R <sub>GEN</sub> = 6Ω		5		nS
Turn-on rise time	t <sub>r</sub>			10		
Turn-off delay time	t <sub>d(off)</sub>			36		
Turn-off fall time	t <sub>f</sub>			14		
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 0.44A			1.4	V

Notes: (1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

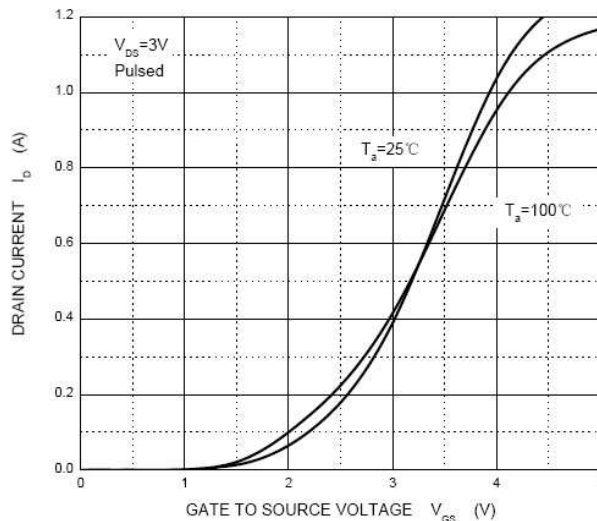
(2) Guaranteed by design, not subject to production testing.

Typical Characteristics

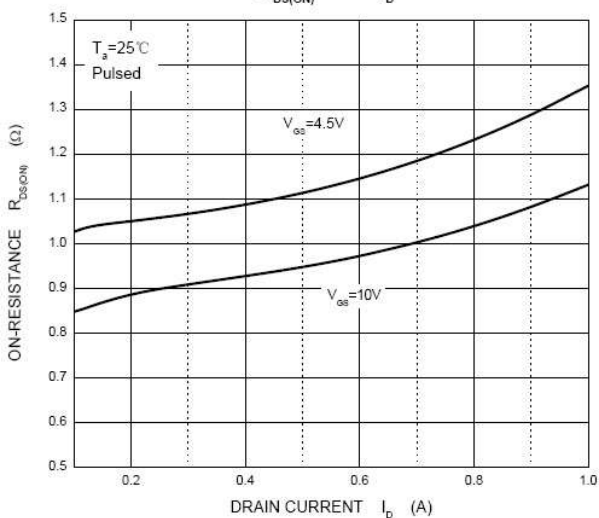
Output Characteristics



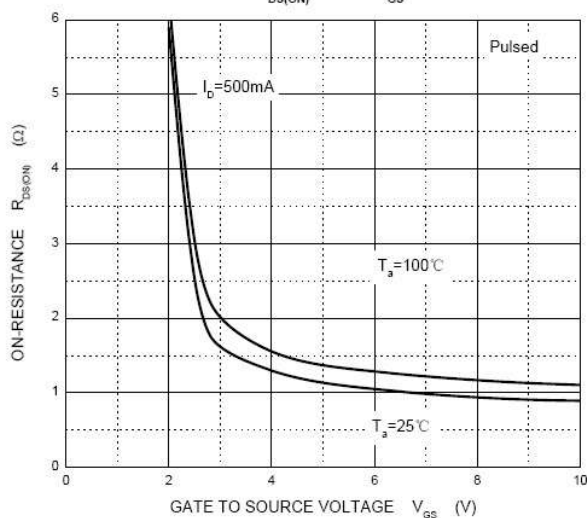
Transfer Characteristics



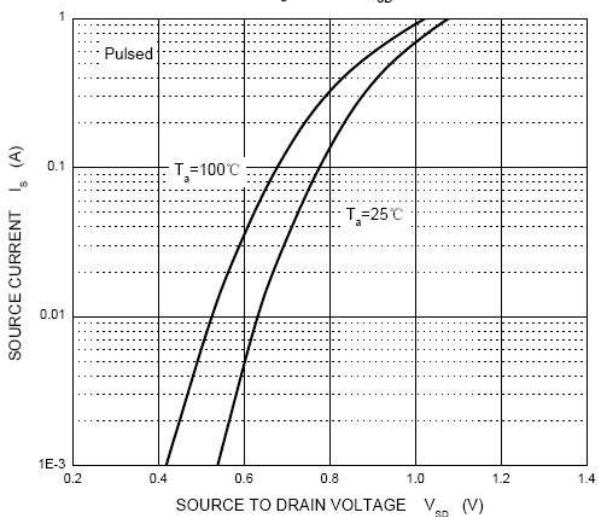
$R_{DS(ON)}$  —  $I_D$



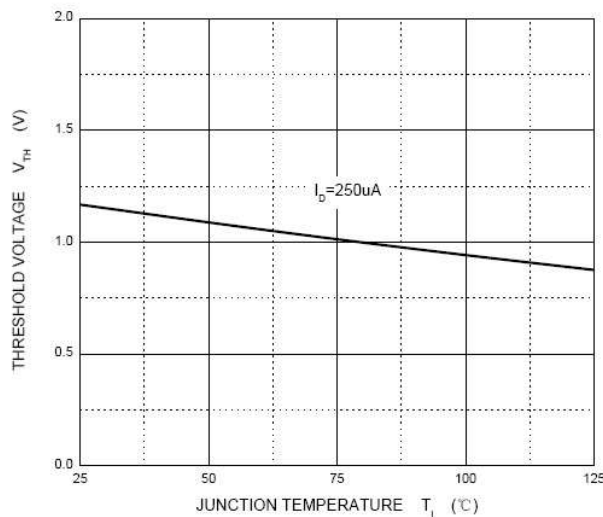
$R_{DS(ON)}$  —  $V_{GS}$



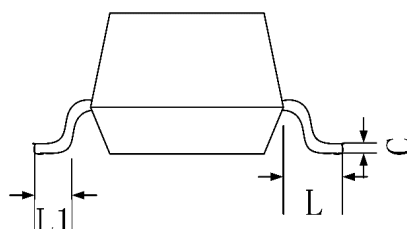
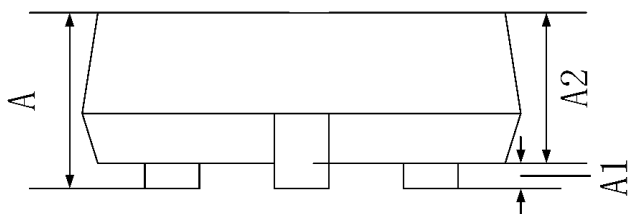
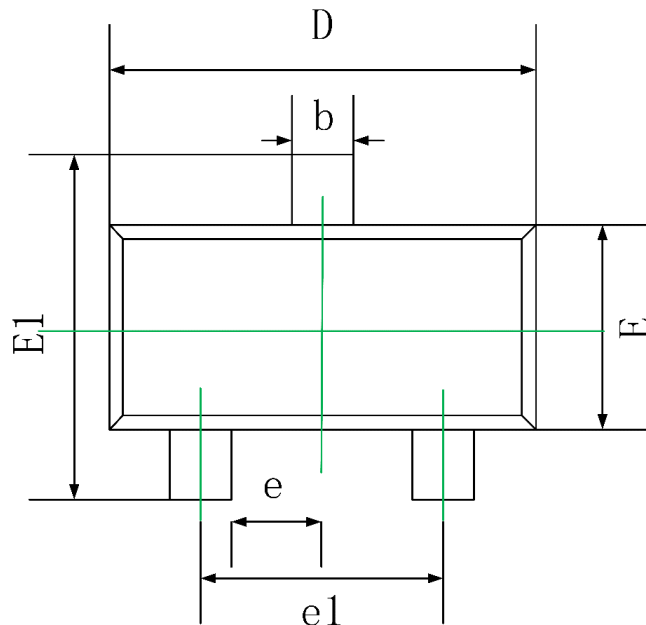
$I_S$  —  $V_{SD}$



Threshold Voltage



**SOT-23 Package Information**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079