

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
-20V	130mΩ@-4.5V	-2.0A
	170mΩ@-2.5V	
	250mΩ@-1.8V	

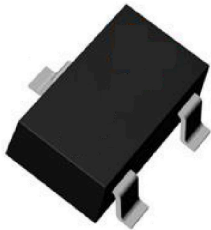
### Feature

- Advanced trench process technology
- High density cell design for ultra low on-resistance

### Application

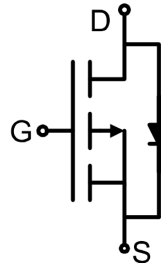
- High Side Load Switch
- Charging Circuit
- Single Cell Battery Applications such as Cell Phones, Digital Cameras, PDAs, etc

### Package

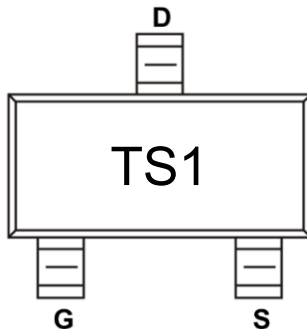


SOT-323

### Circuit diagram



### Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	-20	V
Gate-Source Voltage	V <sub>GS</sub>	±10	V
Continuous Drain Current	I <sub>D</sub>	-2.0	A
Pulsed Drain Current	I <sub>DM</sub>	-8.0	A
Power Dissipation	P <sub>D</sub>	0.45	W
Thermal Resistance from Junction to Ambient	R <sub>θJA</sub>	278	°C/W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C

### 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	-20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V			-1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±10V, 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> = -250μA	-0.4	-0.62	-1.2	V
Drain-source on-resistance <sup>1)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.5A		100	130	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -1.2A		130	170	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -1.0A		165	250	
<b>Dynamic characteristics<sup>2)</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V, f = 1MHz		290		pF
Output Capacitance	C <sub>oss</sub>			47		
Reverse Transfer Capacitance	C <sub>rss</sub>			29		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.0A		3.9		nC
Gate-Source Charge	Q <sub>gs</sub>			0.7		
Gate-Drain Charge	Q <sub>gd</sub>			0.9		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -10V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1A, R <sub>GEN</sub> = 2.5Ω		12		nS
Turn-on rise time	t <sub>r</sub>			54		
Turn-off delay time	t <sub>d(off)</sub>			15		
Turn-off fall time	t <sub>f</sub>			9		
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -2.0A			-1.2	V

Notes:

- 1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.
- 2) Guaranteed by design, not subject to production testing.

## Typical Characteristics

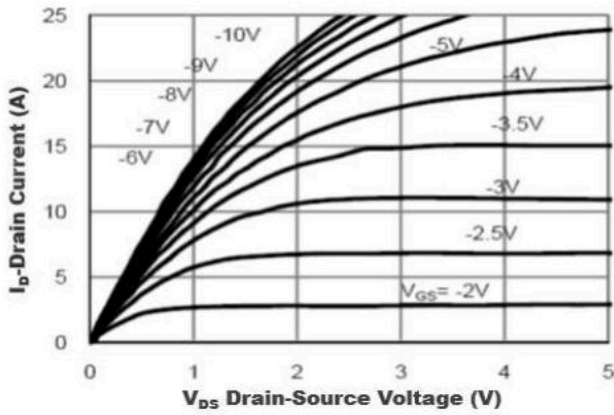


Figure1. Output Characteristics

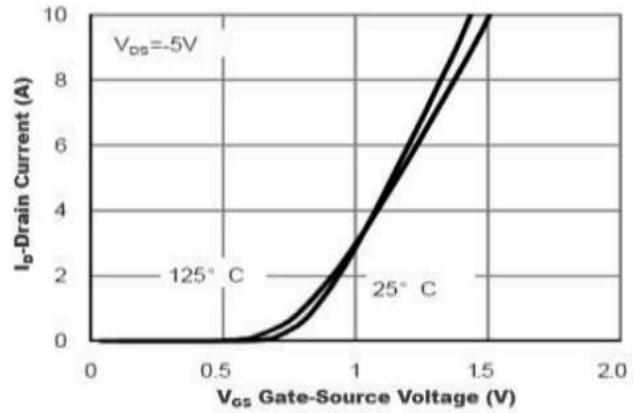


Figure2. Transfer Characteristics

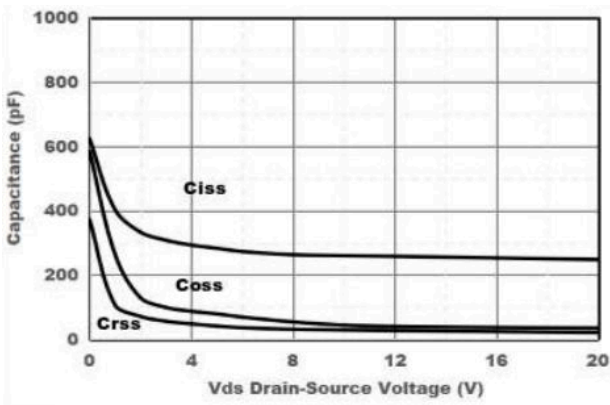


Figure3. Capacitance Characteristics

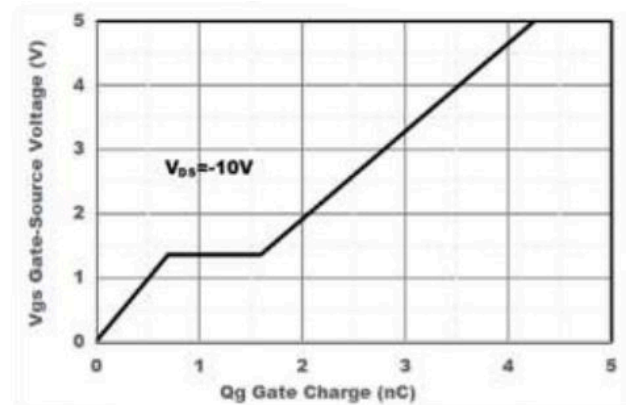


Figure4. Gate Charge

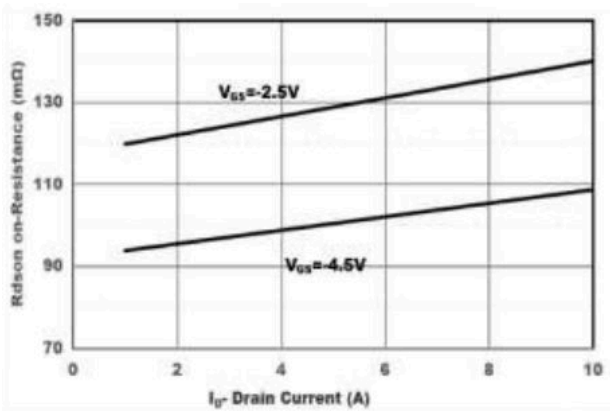


Figure5. Drain-Source on Resistance

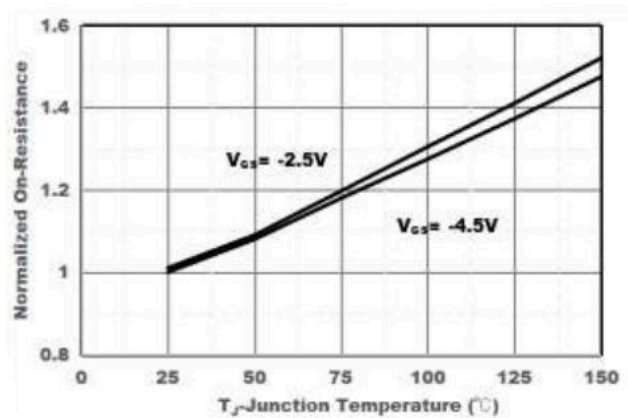


Figure6. Drain-Source on Resistance

## Typical Characteristics

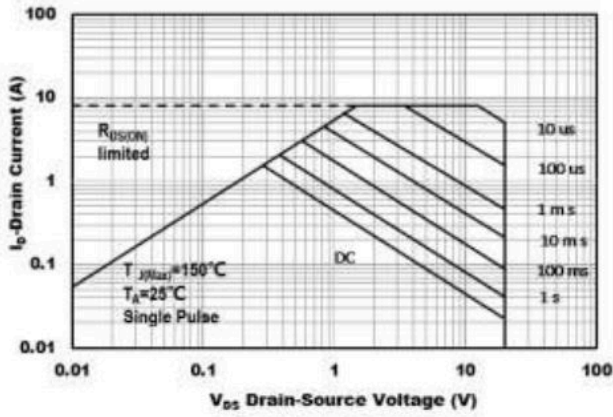


Figure7. Safe Operation Area

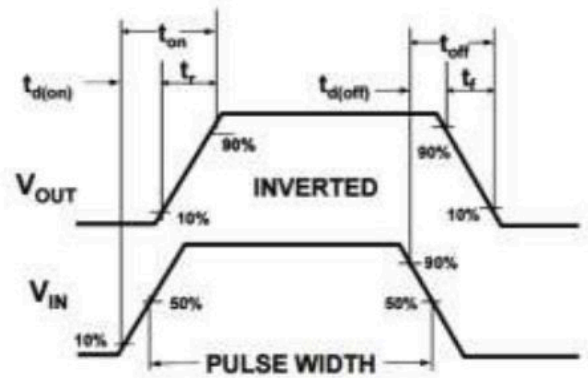
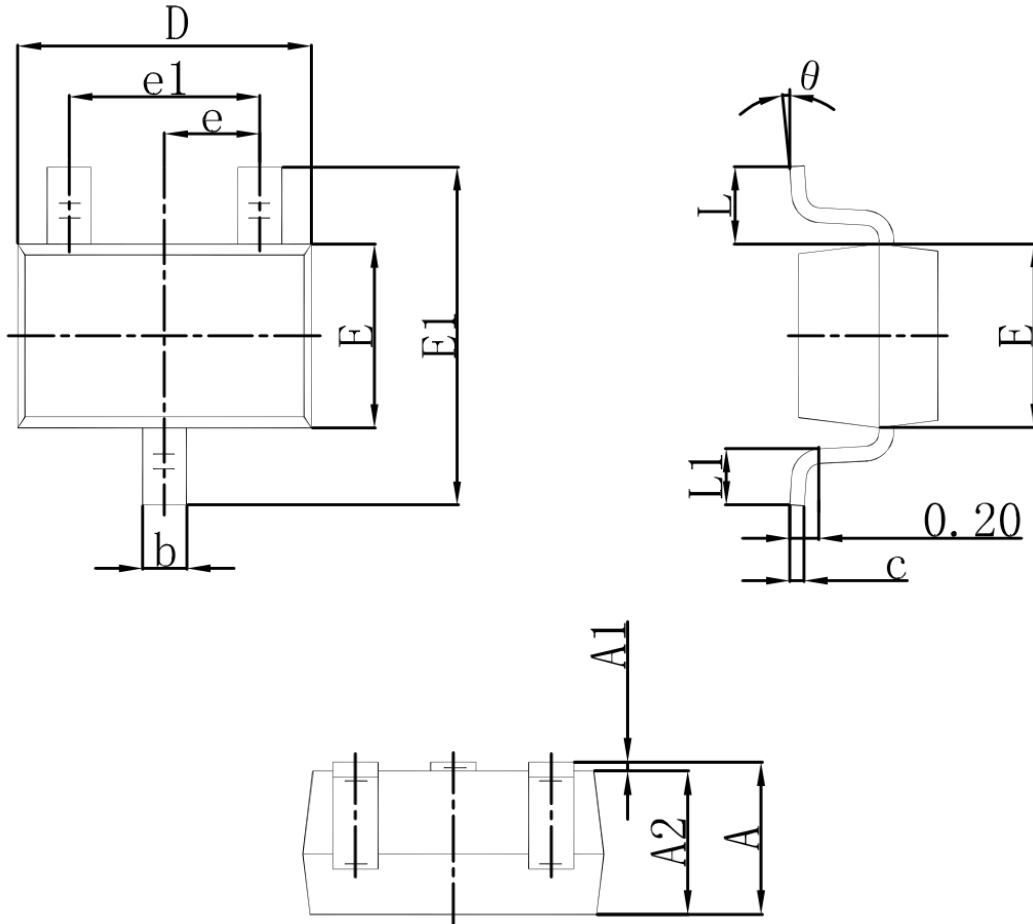


Figure8. Switching wave

### SOT-323 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.400	0.006	0.016
c	0.080	0.250	0.003	0.010
D	1.800	2.200	0.071	0.087
E	1.150	1.350	0.045	0.053
E1	2.100	2.450	0.083	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
$\theta$	0°	8°	0°	8°