

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
-20V	80mΩ@-4.5V	-3A
	100mΩ@-2.5V	

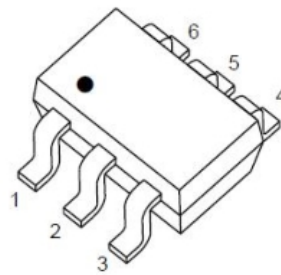
## Feature

- TrenchFET Power MOSFET
- Excellent  $R_{DS(on)}$  and Low Gate Charge

## Applications

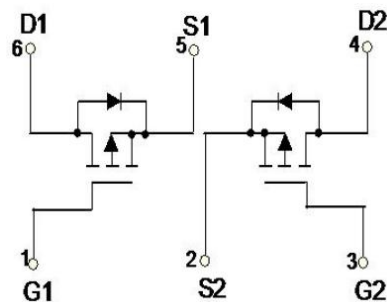
- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

## Package

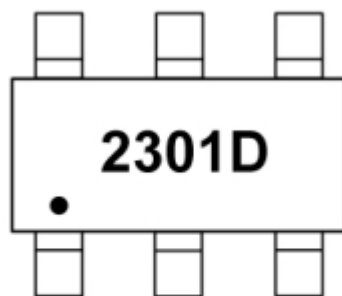


SOT-23-6

## Circuit diagram



## Marking



**2301D    =Device Code**

## 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
Continuous Drain Current	$I_D$	-3	A
Pulsed Drain Current	$I_{DM}$	-12	A
Power Dissipation	$P_D$	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	83.3	$^{\circ}\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^{\circ}\text{C}$

## Electrical characteristics

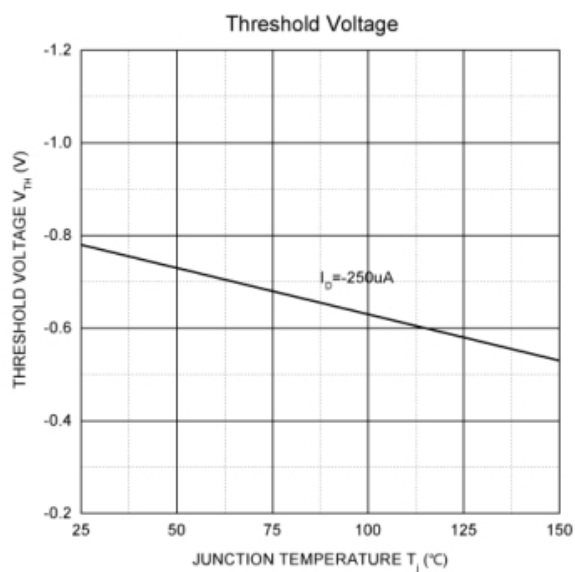
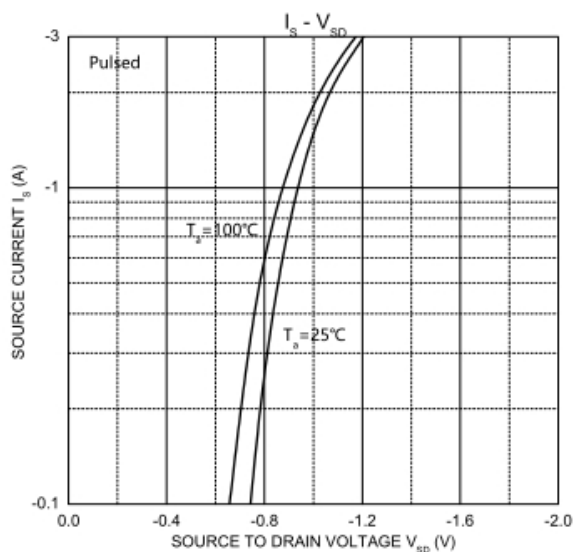
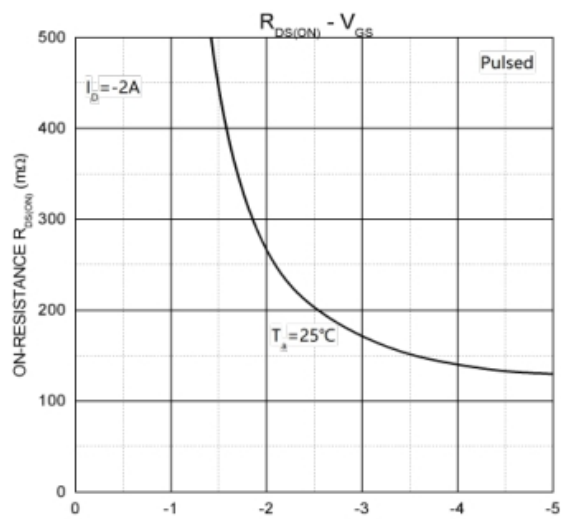
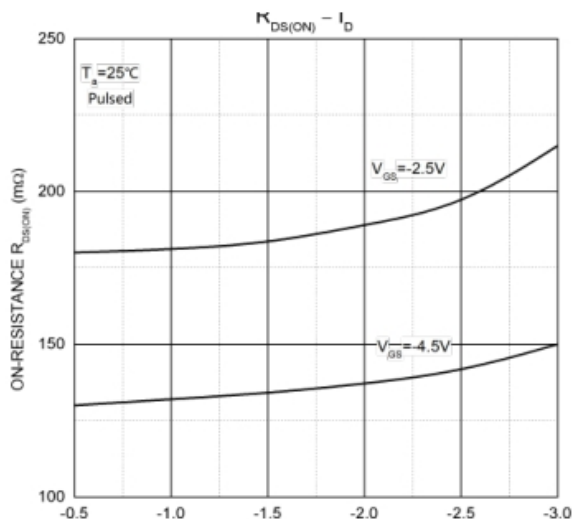
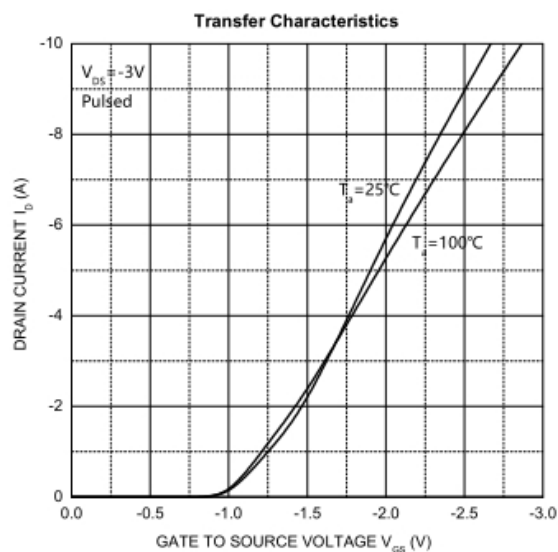
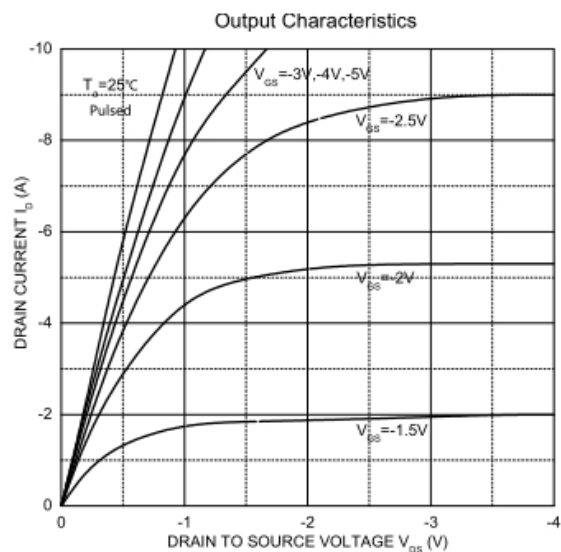
( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV (BR)DSS	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> = -16V, V <sub>GS</sub> = 0V			-1	uA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V			±100	uA
Gate threshold voltage <sup>(1)</sup>	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.4	-0.7	-0.9	V
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -4A		80	110	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -2A		100	140	
Dynamic Characteristics						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V, f = 1MHz		327		pF
Output capacitance	C <sub>oss</sub>			62		
Reverse transfer capacitance	C <sub>rss</sub>			55		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -3A		4.5	12	nC
Gate-Source Charge	Q <sub>gs</sub>			0.85		
Gate-Drain Charge	Q <sub>gd</sub>			1.4		
Turn-on Delay Time	T <sub>d(on)</sub>	V <sub>DD</sub> = -10V, V <sub>GEN</sub> = -4.5V, I <sub>D</sub> = -1A, R <sub>L</sub> = 10Ω, R <sub>GEN</sub> = 1Ω		6		nS
Turn-on Rise Time	T <sub>r</sub>			30		
Turn-Off Delay Time	T <sub>d(off)</sub>			45		
Turn-Off Fall Time	t <sub>f</sub>			46		
Source-Drain Diode Characteristics						
Diode Forward voltage	V <sub>DS</sub>	I <sub>S</sub> = -1.25A, V <sub>GS</sub> = 0V		-0.8	-1.3	V

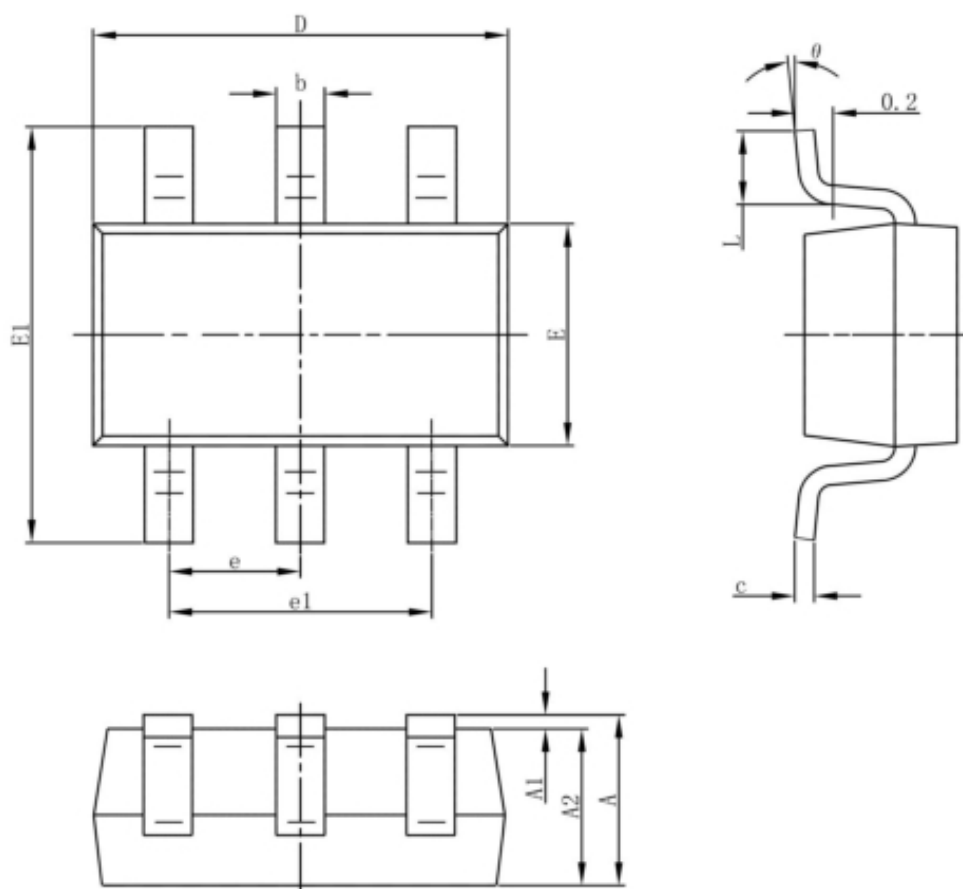
### Notes:

1. Pulse Test: Pulse Width < 300 $\mu s$ , Duty Cycle  $\leq 2\%$ .
2. Guaranteed by design, not subject to production testing.

## Typical Characteristics



## SOT-23-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions 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	0.950(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°