



### SOT-23 Plastic-Encapsulate MOSFETS

P-Channel 20-V(D-S) MOSFET

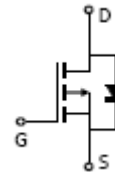
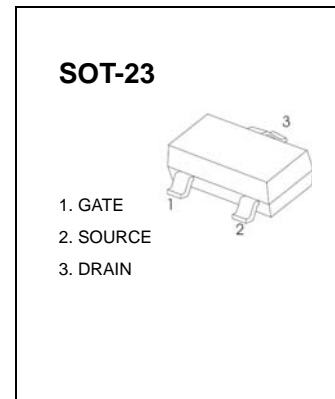
#### FEATURE

TrenchFET Power MOSFET

#### APPLICATIONS

- Load Switch for Portable Devices
- DC/DC Converter
- **Pb-Free package is available**  
RoHS product for packing code suffix "G"  
Halogen free product for packing code suffix "H"

MARKING: S1



#### 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	$V_{GS}$	$\pm 8$	
Continuous Drain Current	$I_D$	-2.3	A
Pulsed Drain Current	$I_{DM}$	-10	
Continuous Source-Drain Diode Current	$I_S$	-0.72	
Maximum Power Dissipation	$P_D$	0.35	W
Thermal Resistance from Junction to Ambient( $t \leq 5s$ )	$R_{\theta JA}$	357	$^{\circ}\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature	$T_{stg}$	-55 ~+150	



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

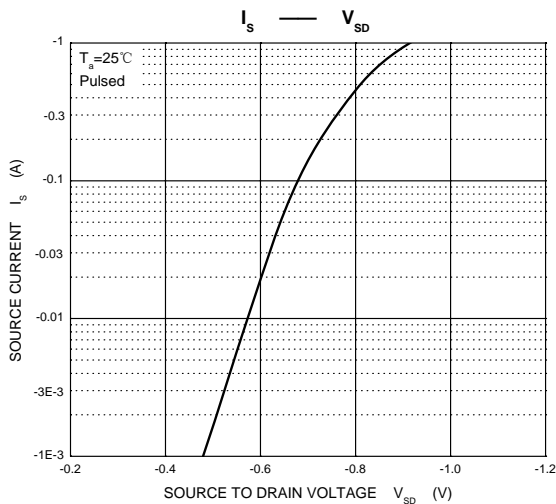
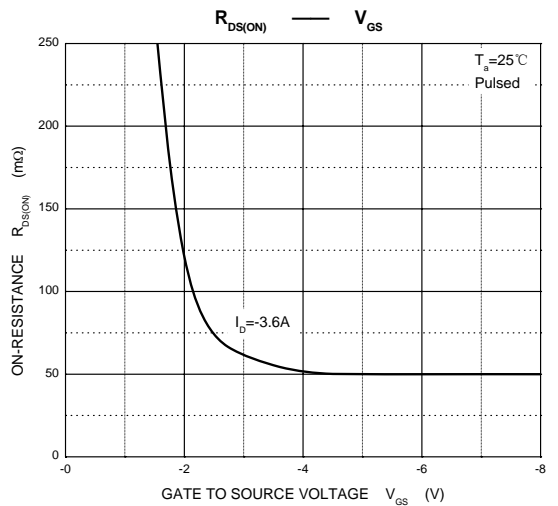
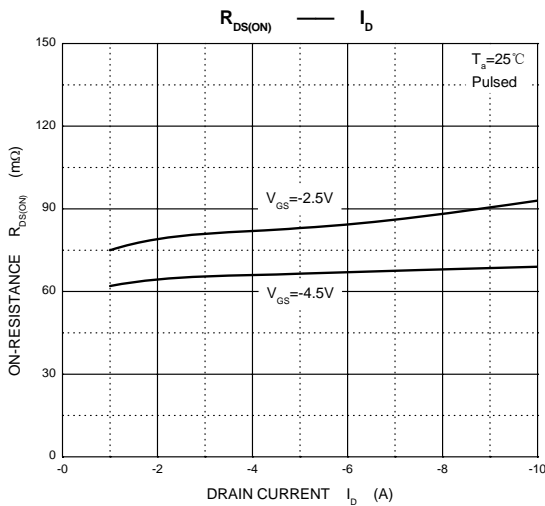
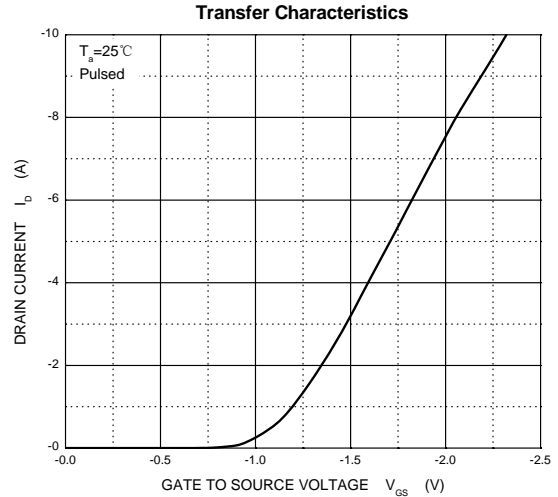
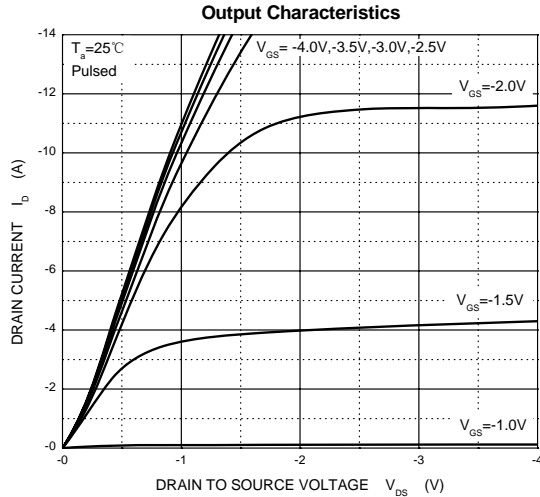
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-20			V
Gate-source threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.4		-1	
Gate-source leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±8V			±100	nA
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V			-1	μA
Drain-source on-state resistance <sup>a</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2.8A		0.090	0.112	Ω
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -2.0A		0.110	0.142	
Forward transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = -2.8A		6.5		S
<b>Dynamic<sup>b</sup></b>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V, f = 1MHz		405		pF
Output capacitance	C <sub>oss</sub>			75		
Reverse transfer capacitance	C <sub>rss</sub>			55		
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3A		5.5	10	nC
				3.3	6	
Gate-source charge	Q <sub>gs</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -3A		0.7		
Gate-drain charge	Q <sub>gd</sub>			1.3		
Gate resistance	R <sub>g</sub>	f = 1MHz		6.0		Ω
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -10V, R <sub>L</sub> = 10Ω, I <sub>D</sub> = -1A, V <sub>GEN</sub> = -4.5V, R <sub>g</sub> = 1Ω		11	20	ns
Rise time	t <sub>r</sub>			35	60	
Turn-off delay time	t <sub>d(off)</sub>			30	50	
Fall time	t <sub>f</sub>			10	20	
<b>Drain-source body diode characteristics</b>						
Continuous source-drain diode current	I <sub>S</sub>	T <sub>C</sub> = 25°C			-1.3	A
Pulse diode forward current <sup>a</sup>	I <sub>SM</sub>				-10	
Body diode voltage	V <sub>SD</sub>	I <sub>S</sub> = -0.7A		-0.8	-1.2	V

#### Notes :

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



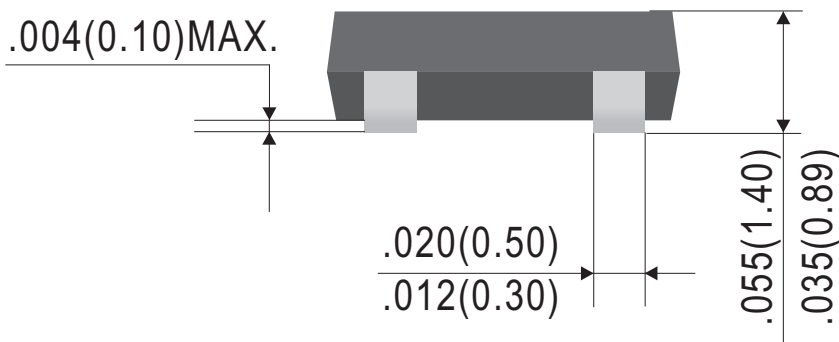
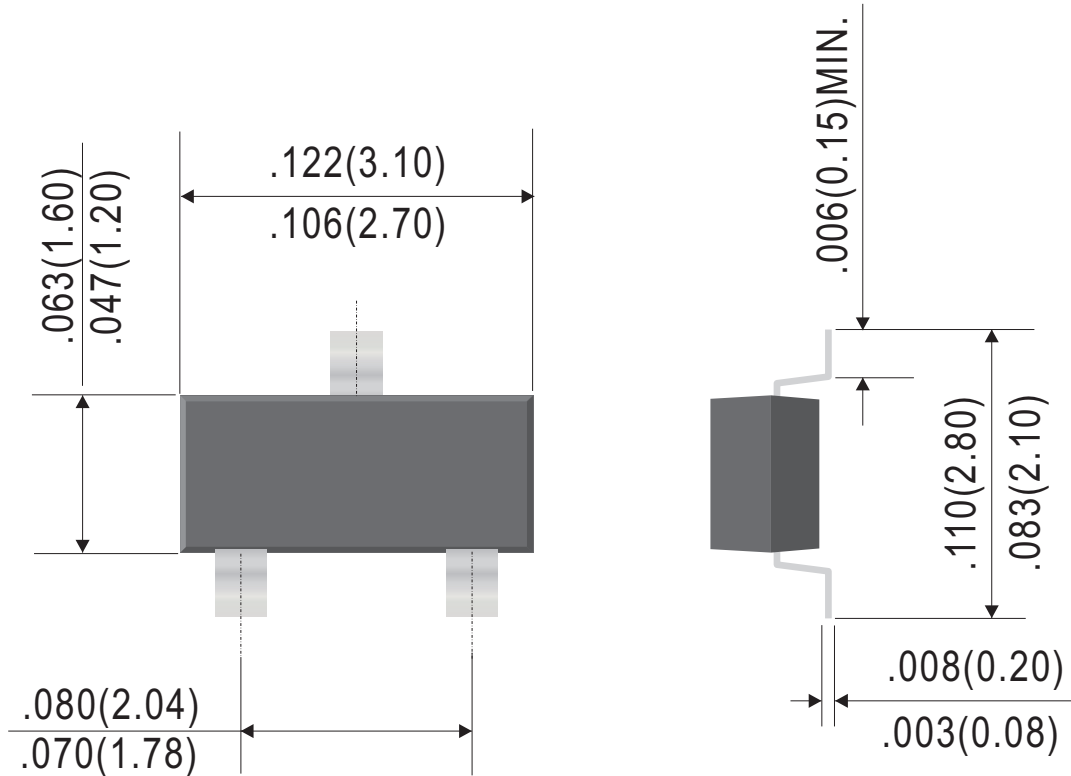
## Typical Characteristics





### Outline Drawing

### SOT-23



Dimensions in inches and (millimeters)

**SOT-23 Plastic-Encapsulate MOSFETS****Ordering Information:**

Device PN	Packing
SE2301-T <sup>(1)</sup> G <sup>(2)</sup> -WS	Tape&Reel: 3 Kpcs/Reel

Note: (1) Packing code, Tape &amp; Reel

(2) RoHS product for packing code suffix "G" ; Halogen free product for packing code suffix "H"

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