

## 30V N-Channel MOSFET

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
30V	47mΩ@10V	3.16A
	65mΩ@4.5V	

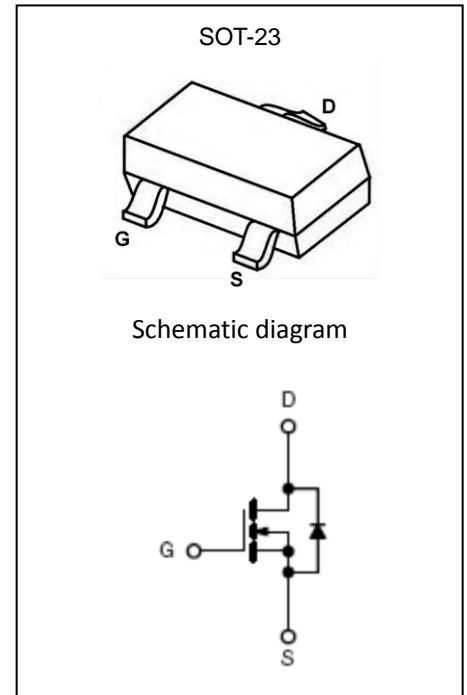
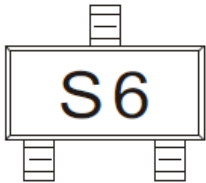
## Feature

- TrenchFET Power MOSFET
- AEC-Q101 qualified (Automotive grade with suffix "Q")
- Exsemi technology

## Application

- Load Switch for Portable Devices
- DC/DC Converter

## MARKING:

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	$V_{GS}$	$\pm 20$	
Continuous Drain Current( $T_J=150^\circ\text{C}$ )	$I_D$	3.16	A
Pulsed Drain Current	$I_{DM}$	20	
Continuous Source Current(Diode Conduction)	$I_S$	0.62	
Maximum Power Dissipation	$P_D$	0.35	W
Thermal Resistance from Junction to Ambient( $t \leq 5s$ )	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	

**MOSFET ELECTRICAL CHARACTERISTICS(T<sub>a</sub>=25°C unless otherwise noted)**

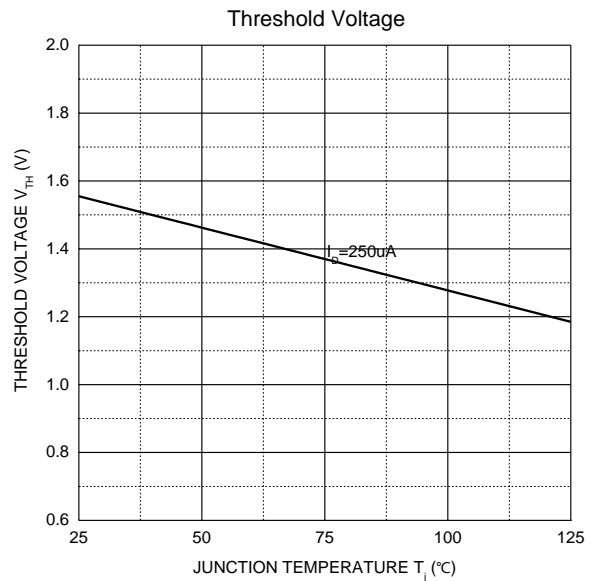
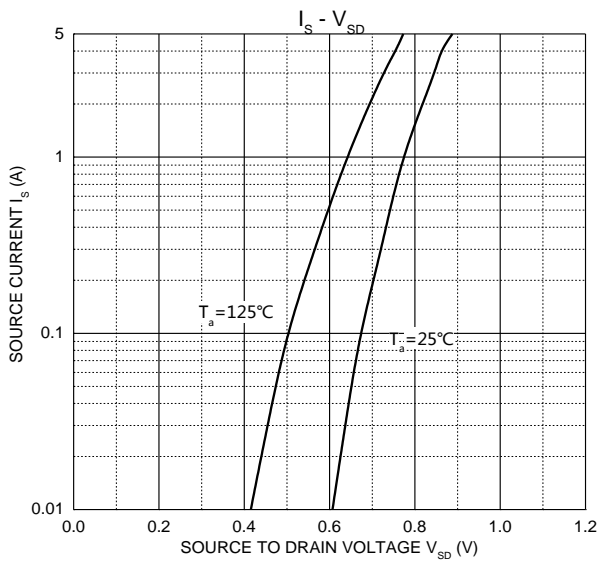
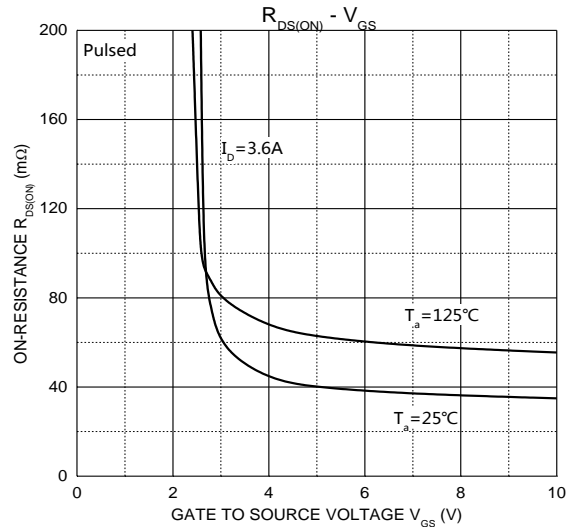
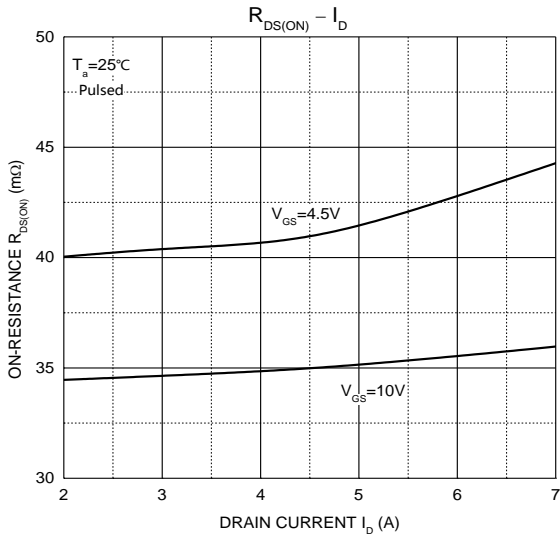
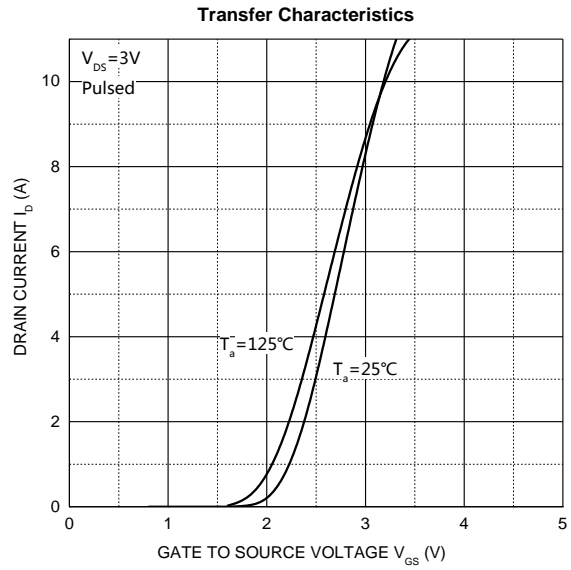
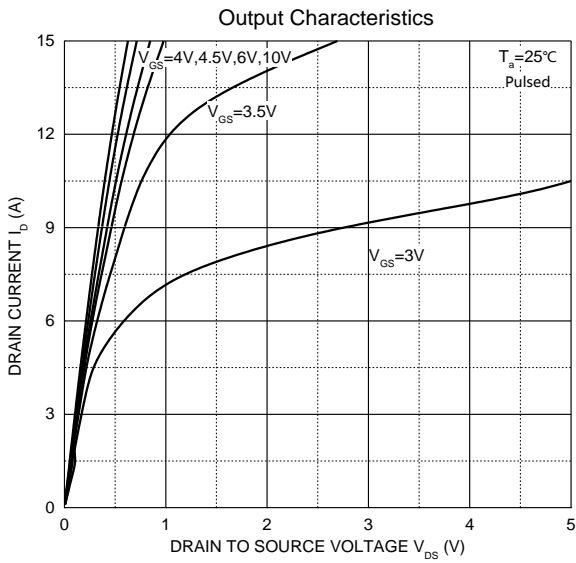
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	30			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> = 0V			0.5	μA
Gate-body leakage 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> =250μA	1	1.6	3	V
Drain-source on-resistance <sup>a</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =3.5A		33	47	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =2.8A		43	65	
Forward tranconductance <sup>a</sup>	g <sub>FS</sub>	V <sub>DS</sub> =4.5V, I <sub>D</sub> =2.5A		7		S
<b>Dynamic characteristics<sup>b</sup></b>						
gate charge	Q <sub>g</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =5V, I <sub>D</sub> =2.5A		3.0	4.5	nC
Total Gate Charge	Q <sub>gt</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =2.5A		6	9	
Gate-source charge	Q <sub>gs</sub>			1.6		
Gate-drain charge	Q <sub>gd</sub>			0.6		
Gate resistance	R <sub>g</sub>	f =1.0MHz	2.5	5	7.5	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f =1MHz		305		pF
Output Capacitance	C <sub>oss</sub>			65		
Reverse Transfer Capacitance	C <sub>rss</sub>			29		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =15V, R <sub>L</sub> =15Ω, I <sub>D</sub> ≈1A, V <sub>GEN</sub> =10V, R <sub>g</sub> =6Ω		7	11	ns
Turn-on rise time	t <sub>r</sub>			12	18	
Turn-off delay time	t <sub>d(off)</sub>			14	25	
Turn-off fall time	t <sub>f</sub>			6	10	
<b>Source-Drain Diode characteristics</b>						
Body diode voltage	V <sub>SD</sub>	I <sub>S</sub> =1.25A, V <sub>GS</sub> =0V		0.8	1.2	V

**Notes:**

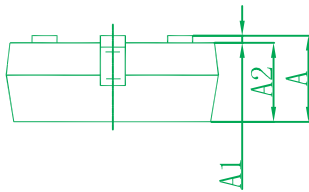
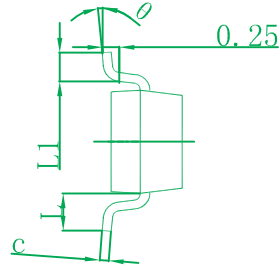
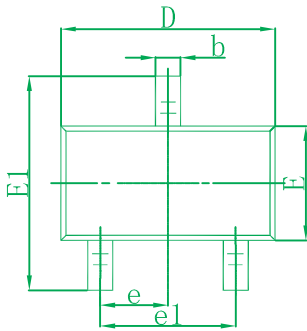
a.Pulse Test : Pulse width≤300μs, duty cycle ≤2%.

b.Guaranteed by design, not subject to production testing.

Typical Characteristics

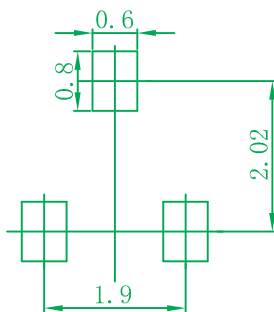


## SOT-23 Package Information



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	1.150	0.035	0.045
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.050	0.110	0.120
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
L	0.550 REF		0.022 REF	
L1	0.360 REF		0.014 REF	
θ	0°	8°	0°	8°

## SOT-23 Suggested Pad Layout



## Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$  mm.
3. The pad layout is for reference purposes only.

## Ordering information

Device	Package	Shipping
EP2306	SOT-23	3000/Tape&Reel(7inches)