

60V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	105mΩ@10V	3A
	125mΩ@4.5V	

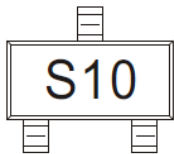
Feature

- High power and current handing capability
- Surface mount package
- AEC-Q101 qualified (Automotive grade with suffix "Q".)
- Expsemi electronics

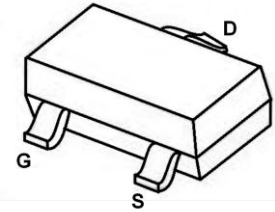
Application

- Battery Switch
- DC/DC Converter

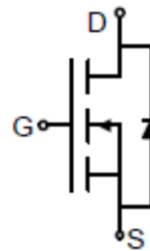
MARKING:



SOT-23



Schematic diagram



ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	3	A
Pulsed Drain Current ¹	I_{DM}	10	
Maximum Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient ²	$R_{\theta JA}$	357	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +150	

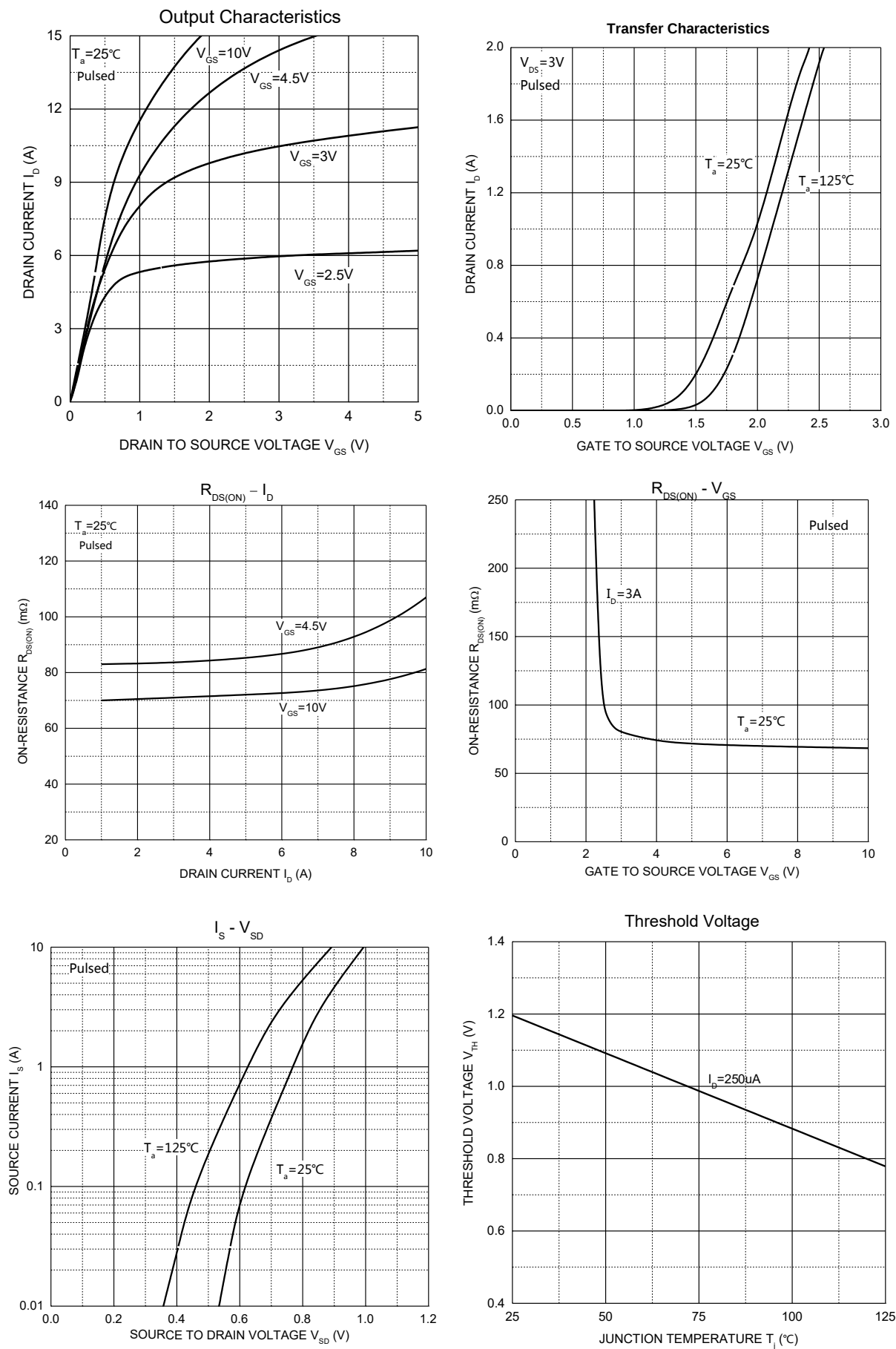
MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate Threshold Voltage ³	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	1.2	2	V
Drain-Source On-Resistance ³	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3A$		70	105	m Ω
		$V_{GS} = 4.5V, I_D = 3A$		82	125	
Forward Tranconductance ³	g_{FS}	$V_{DS} = 15V, I_D = 2A$	1.4	2.5		S
DYNAMIC CHARACTERISTICS ⁴						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1MHz$		250		pF
Output Capacitance	C_{oss}			26		
Reverse Transfer Capacitance	C_{rss}			20		
SWITCHING CHARACTERISTICS ⁴						
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 4.5V, I_D = 3A$		7		nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			1.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DD} = 30V, I_D = 1.5A, R_{GEN} = 1\Omega$		6.5		ns
Turn-On Rise Time	t_r			15.2		
Turn-Off Delay Time	$t_{d(off)}$			15.2		
Turn-Off Fall Time	t_f			10.3		
Source-Drain Diode characteristics ⁴						
Body Diode Voltage	V_{SD}	$I_S = 3A, V_{GS} = 0V$		0.8	1.2	V

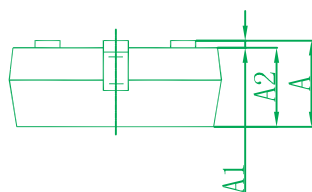
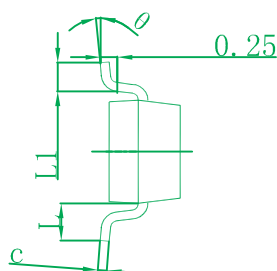
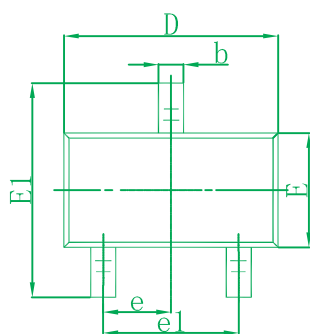
Notes :

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , $t \leq 10s$.
3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.
4. Guaranteed by design, not subject to producing.

Typical Characteristics

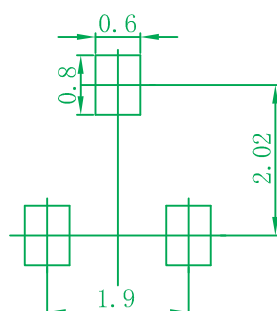


SOT-23 Package Information



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: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.

Ordering information

Device	Package	Shipping
EP2310	SOT-23	3000/Tape&Reel(7inches)