



**SOT-23-3L Plastic-Encapsulate MOSFETS**

**MK2309A**

**P-Channel 60-V(D-S) MOSFET**

<b>V(BR)DSS</b>	<b>RDS(on)MAX</b>	<b>ID</b>
-60 V	165mΩ@-10V	-2A
	215mΩ@-4.5V	

**FEATURE**

※ TrenchFET Power MOSFET

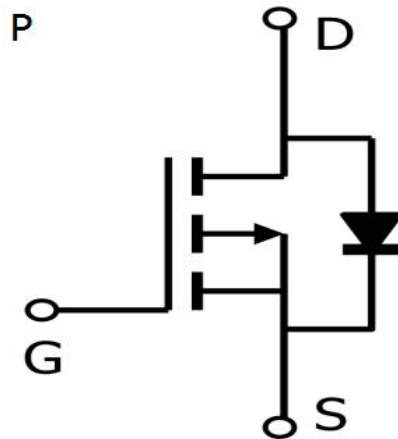
**APPLICATION**

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

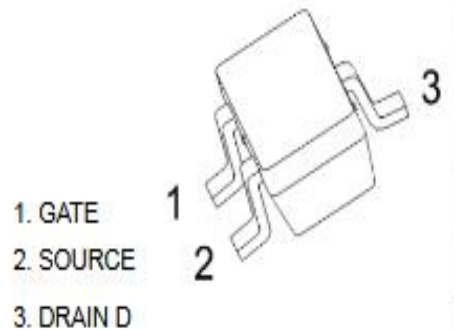
**MARKING**



**Equivalent Circuit**



**SOT-23-3L**



**Maximum ratings ( Ta=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	<b>VDS</b>	-60	V
Gate-Source Voltage	<b>VGS</b>	±20	
Continuous Drain Current	<b>ID</b>	- 2	A
Pulsed Drain Current	<b>IDM</b>	-8	
Continuous Source-Drain Current(Diode Conduction)	<b>IS</b>	-0.8	
Power Dissipation	<b>PD</b>	1.56	W
Thermal Resistance from Junction to Ambient (t≤5s)	<b>RθJA</b>	80	°C/W
Operating Junction	<b>TJ</b>	150	°C
Storage Temperature	<b>TSTG</b>	-55~+150	°C

**MOSFET ELECTRICAL CHARACTERISTICS****Static Electrical Characteristics (Ta = 25 °C Unless Otherwise Noted)**

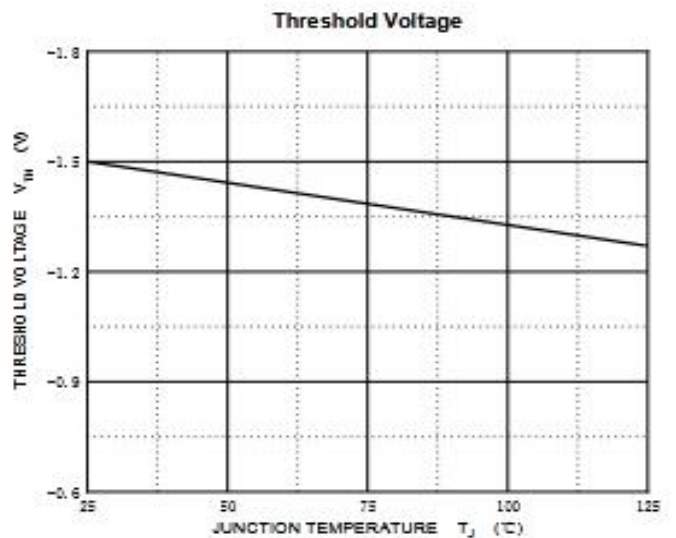
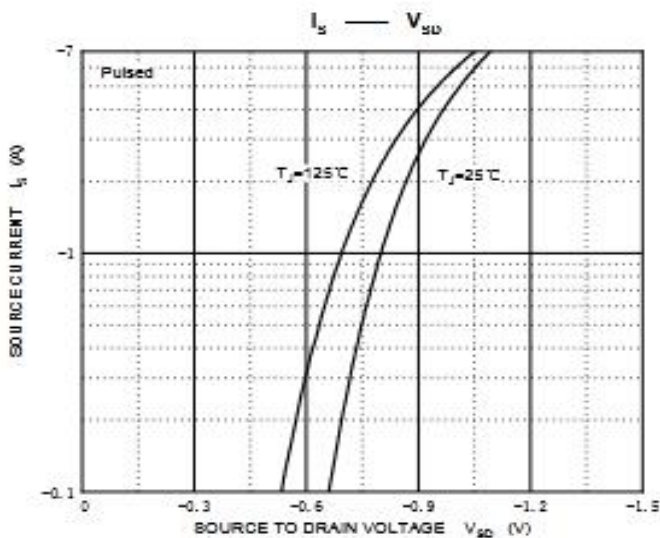
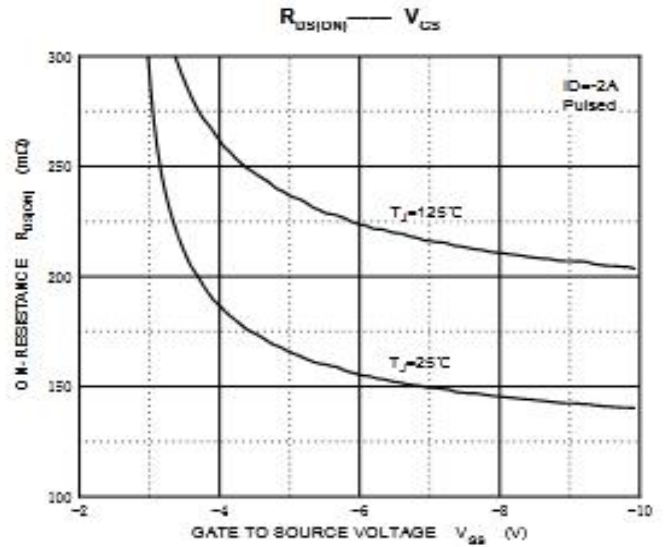
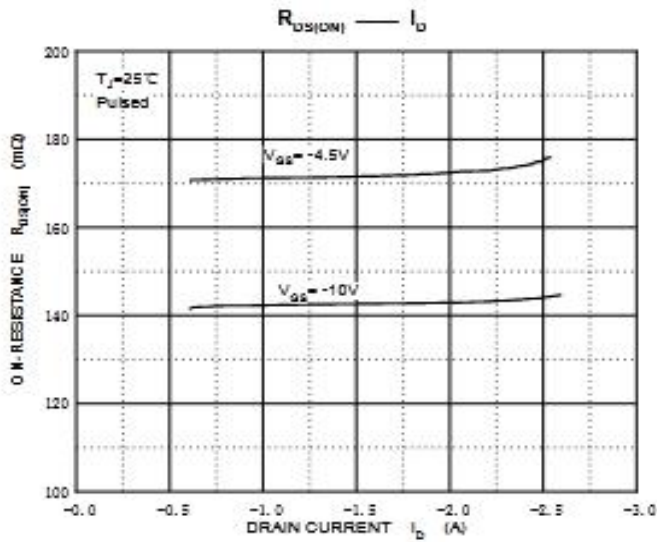
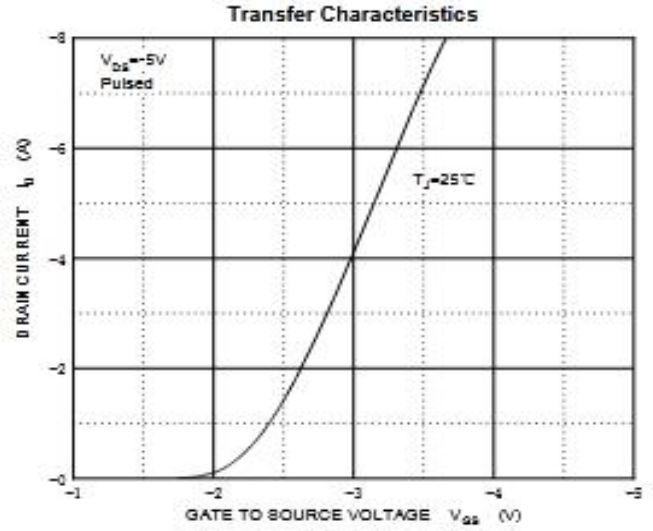
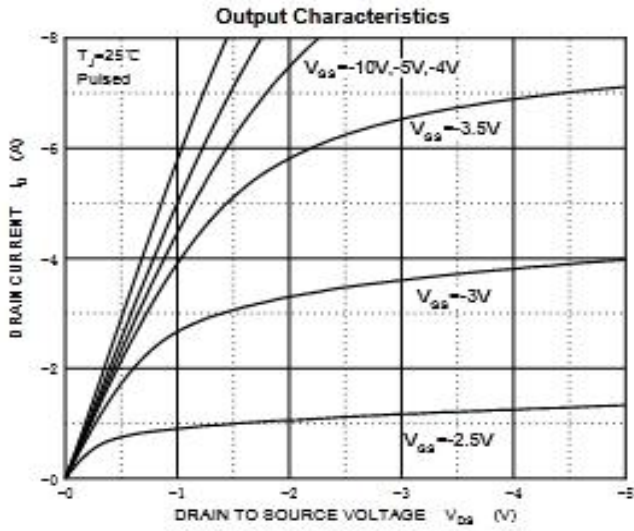
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-source breakdown voltage	<b>V(BR)DSS</b>	VGS = 0V, ID = -250μA	-60			V
Gate-source threshold voltage	<b>VGS(th)</b>	VDS = VGS, ID = -250μA	-1		-3	V
Gate-source leakage	<b>IGSS</b>	VDS = 0V, VGS = ±20V			±100	nA
Zero gate voltage drain current	<b>IDSS</b>	VDS = -60V, VGS = 0V			-1	μA
Drain-source on-state resistancea	<b>RDS(on)</b>	VGS = -10V, ID = -2A		156	165	mΩ
		VGS = -4.5V, ID = -1A		198	215	mΩ
Forward transconductancea	<b>gfs</b>	VDS = -10V, ID = -2A		4		S
Diode forward voltage	<b>VSD</b>	IS = -1.25A, VGS = 0V		-0.82	-1.28	V
<b>Dynamic</b>						
Input capacitance	<b>Ciss</b>	VDS = -30V, VGS = 0V, f = 1MHz		425		pF
Output capacitance	<b>Coss</b>			35		pF
Reverse transfer capacitanceb	<b>Crss</b>			20		pF
Total gate charge	<b>Qg</b>	VDS = -30V, VGS = -10V, ID = -2A		8.2	12	nC
Gate-source charge	<b>Qgs</b>			1.8	3.6	nC
Gate-drain charge	<b>Qgd</b>			1.5	3	nC
Gate resistance	<b>Rg</b>	f = 1MHz		17		Ω
<b>Switchingb</b>						
Turn-on delay time	<b>td(on)</b>	VDD = -30V RL = 10Ω, ID ≈ -1A, VGEN = -10V, Rg = 6Ω		5.5	10	ns
Rise time	<b>tr</b>			19	36	ns
Turn-off delay time	<b>td(off)</b>			35	67	ns
Fall time	<b>tf</b>			11	20	ns
<b>Drain-source body diode characteristics</b>						
Continuous Source-Drain Diode Current	<b>IS</b>	Tc = 25°C			-2	A
Pulsed Diode forward Current	<b>ISM</b>				-8	A

**Note :**

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

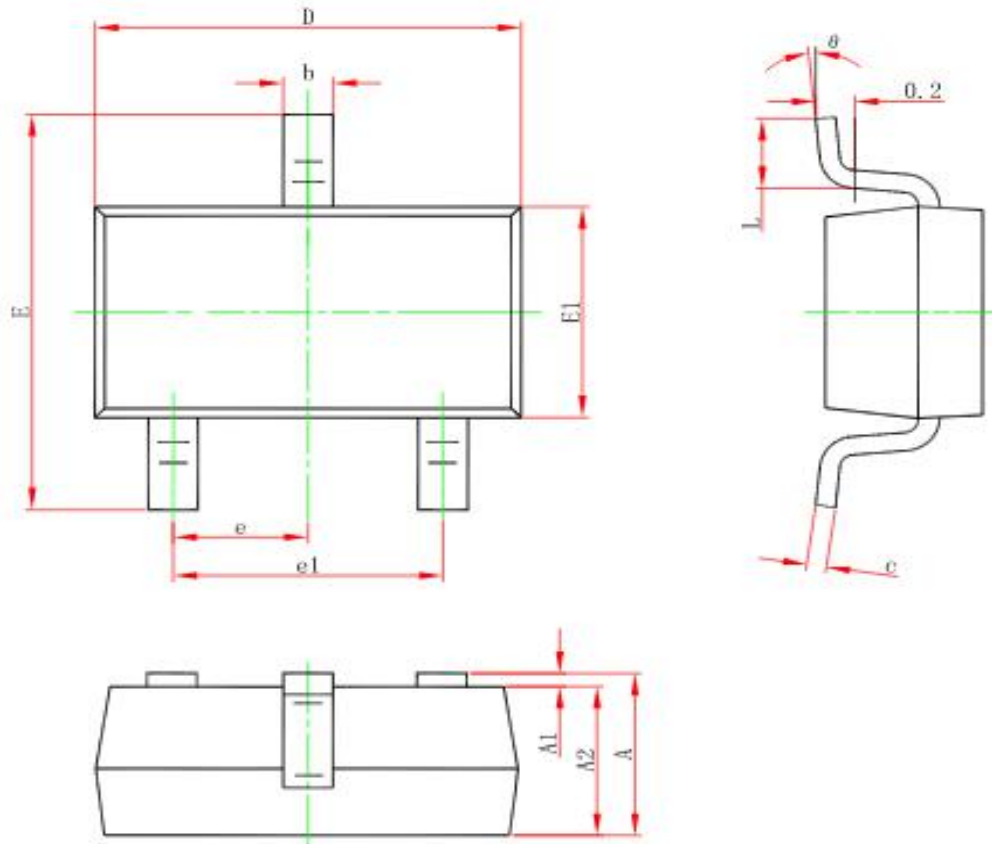


TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS





**SOT-23-3L PACKAGE OUTLINE DIMENSIONS**



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
E1	1.500	1.700	0.059	0.067
E	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°