



SOT-23-3L Plastic-Encapsulate MOSFETS

MK2138

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

V(BR)DSS	RDS(on)MAX	ID
20 V	17mΩ@4.5V	8A
	20mΩ@2.5V	

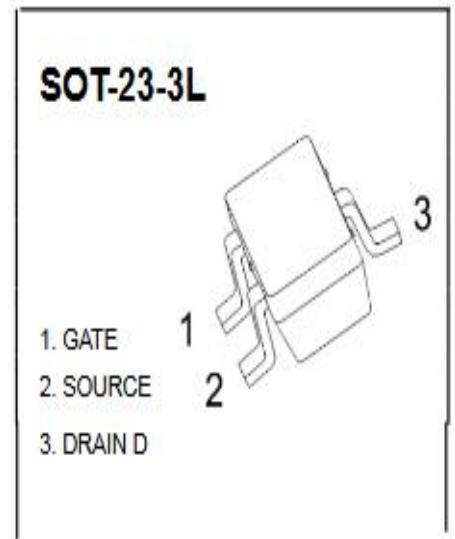
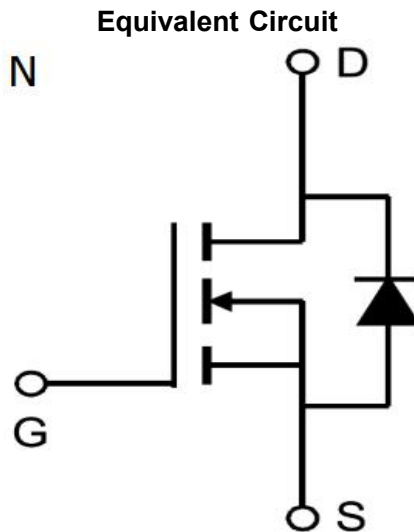
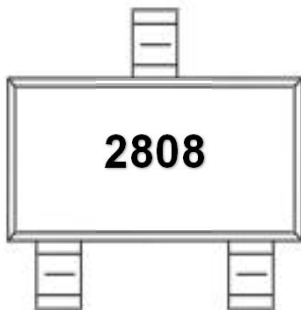
FEATURE

※ TrenchFET Power MOSFET

APPLICATION

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

MARKING



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	20	V
Gate-Source Voltage	VGS	±12	
Continuous Drain Current	ID	8	A
Pulsed Diode Current	IDM	20	
Continuous Source-Drain Current(Diode Conduction)	IS	0.8	
Power Dissipation	PD	0.75	W
Thermal Resistance from Junction to Ambient (t≤5s)	RθJA	150	°C/W
Operating Junction	TJ	150	°C
Storage Temperature	TSTG	-55~+150	°C



MOSFET ELECTRICAL CHARACTERISTICS

Static Electrical Characteristics (Ta = 25 °C Unless Otherwise Noted)

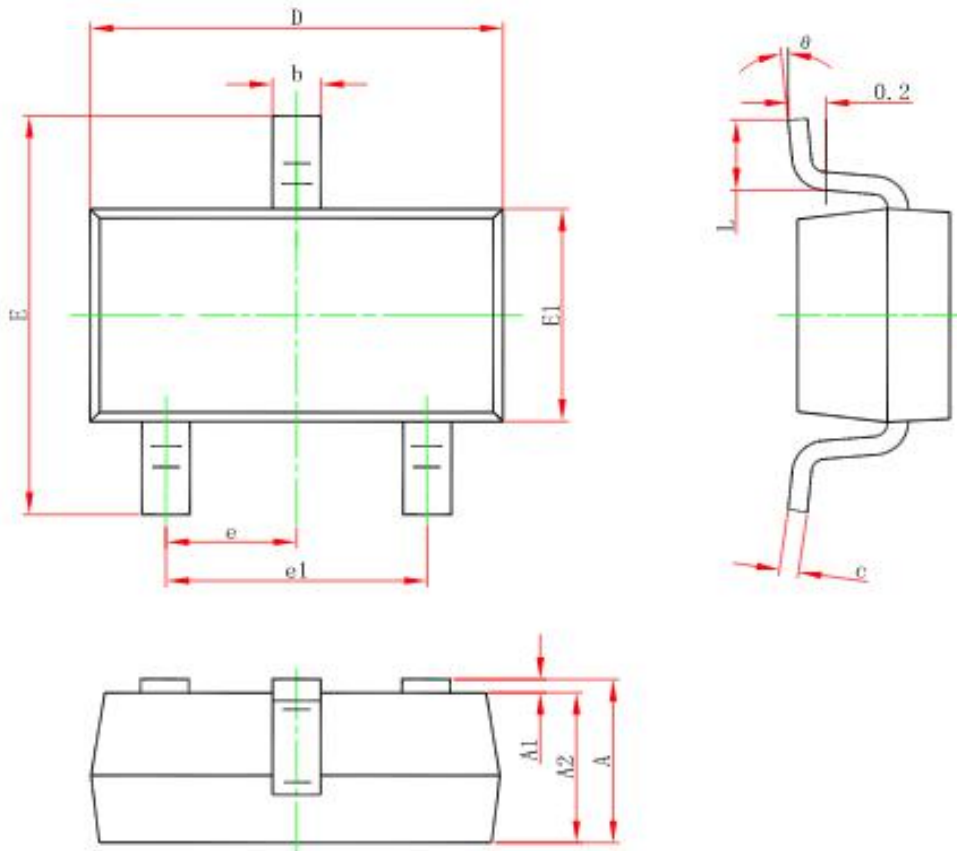
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	V(BR)DSS	VGS = 0V, ID = 250μA	20			V
Gate-source threshold voltage	VGS(th)	VDS = VGS, ID = 250μA	0.5		1	V
Gate-source leakage	IGSS	VDS = 0V, VGS = ±12V			±100	nA
Zero gate voltage drain current	IDSS	VDS = 20V, VGS = 0V			1	μA
Drain-source on-state resistancea	RDS(on)	VGS = 4.5V, ID = 8A		15	17	mΩ
		VGS = 2.5V, ID = 6A		18	20	mΩ
Forward transconductancea	gfs	VDS = 4.5V, ID = 8A		7		S
Diode forward voltage	VSD	IS = 0.5A, VGS = 0V	0.2	0.4	1.3	V
Dynamic						
Input capacitance	Ciss	VDS = 15V, VGS = 0V, f = 1MHz		378		pF
Output capacitance	Coss			45		pF
Reverse transfer capacitanceb	Crss			31		pF
Total gate charge	Qg	VDS = 15V, VGS = 4.5V, ID = -8A		11.2		nC
Gate-source charge	Qgs			1.4		nC
Gate-drain charge	Qgd			2.2		nC
Gate resistance	Rg	f = 1MHz				Ω
Switchingb						
Turn-on delay time	td(on)	VDD = 10V RL = 10Ω, ID ≈ 8A, VGEN = 4.5V, Rg = 6Ω		15		ns
Rise time	tr			40		ns
Turn-off delay time	td(off)			48		ns
Fall time	tf			31		ns
Drain-source body diode characteristics						
Continuous Source-Drain Diode Current	IS	Tc = 25°C			1.3	A
Pulsed Diode forward Curren	ISM				20	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.



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°