

-20V/-2.4A P-Channel MOSFET

Features

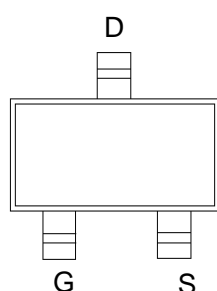
- Trench Power LV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching

Application

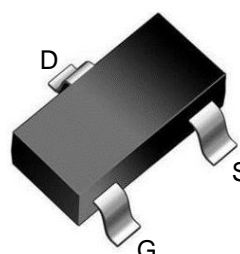
- Battery protection
- Load switch
- Power management

Product Summary

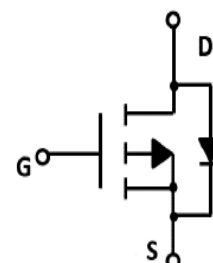
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
-20V	55m Ω @-4.5V	-2.4A
	80m Ω @-2.5V	



Marking and pin assignment



SOT-23 top view



Schematic diagram

Absolute Maximum Ratings (TA=25°C unless otherwise noted)				
Symbol	Parameter	Rating	Unit	
Common Ratings (TC=25°C Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage	-20	V	
V_{GS}	Gate-Source Voltage	± 12	V	
T_J	Maximum Junction Temperature	150	°C	
T_{STG}	Storage Temperature Range	-50 to 155	°C	
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$	-2.4	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	$T_C=25^\circ\text{C}$	-10	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	-2.4	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	0.5	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		250	°C/W

Electrical Characteristics (T_J=25 °C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25 °C (unless otherwise stated)						
B _{V(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V	--	--	-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±12V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.6	-1.0	-1.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-4.5V, I _D =-2.4A	--	44	55	mΩ
		V _{GS} =-2.5V, I _D =-2.0A	--	64	80	mΩ
Dynamic Electrical Characteristics @ T_J = 25 °C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	--	780	--	pF
C _{OSS}	Output Capacitance		--	75	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	40	--	pF
Q _g	Total Gate Charge	V _{DS} =-15V, I _D =-4.2A, V _{GS} =-10V	--	16	--	nC
Q _{gs}	Gate Source Charge		--	2	--	nC
Q _{gd}	Gate Drain Charge		--	1.9	--	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =-15V, I _D =-1A, V _{GS} =-10V, R _G =3Ω	--	7	--	nS
t _r	Turn-on Rise Time		--	3	--	nS
t _{d(off)}	Turn-Off Delay Time		--	27	--	nS
t _f	Turn-Off Fall Time		--	12	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25 °C, I _S =-2.4A,	--	-0.85	-1.2	V

Typical Operating Characteristics

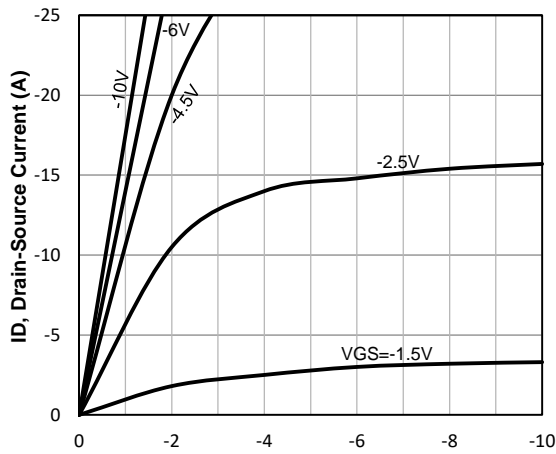


Fig1. Typical Output Characteristics

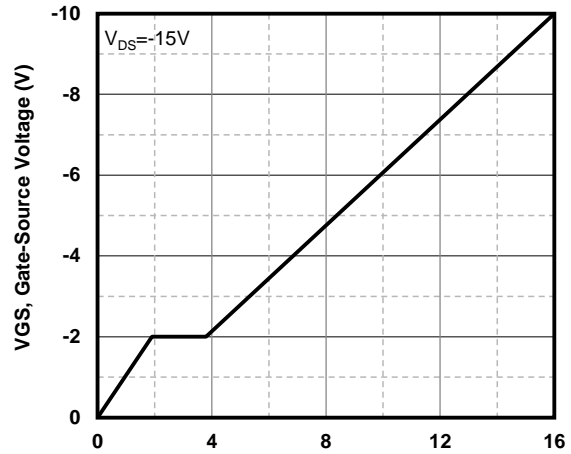


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

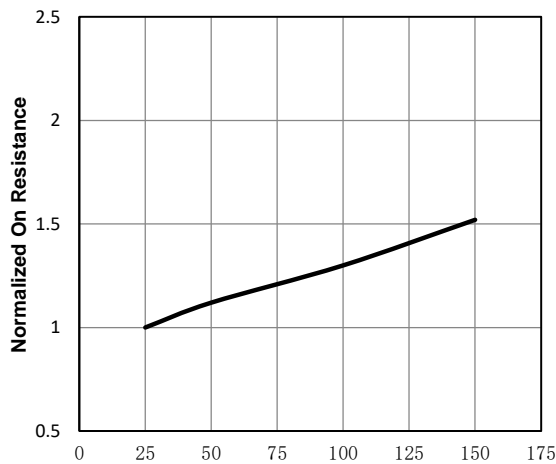


Fig3. Normalized On-Resistance Vs. Temperature

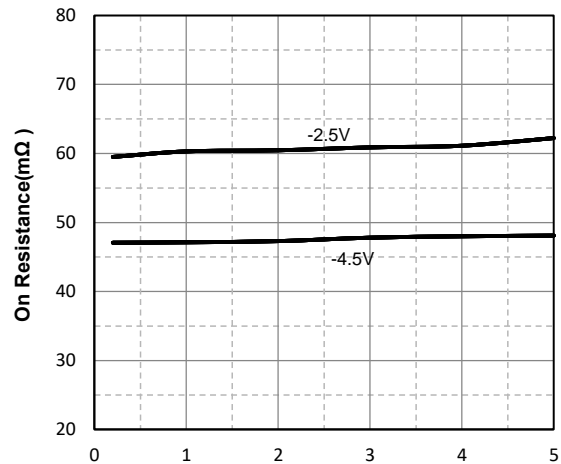


Fig4. On-Resistance Vs. Drain-Source Current

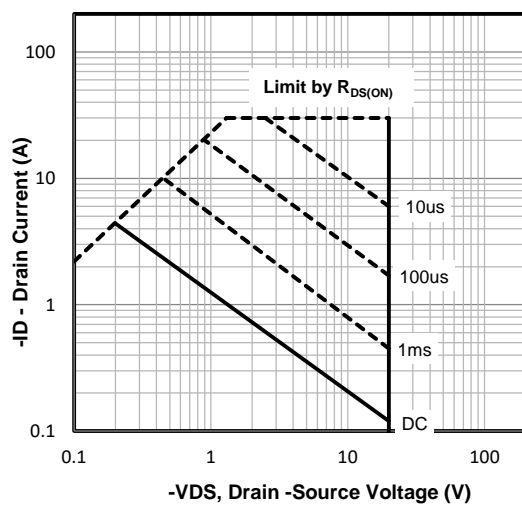


Fig5. Maximum Safe Operating Area

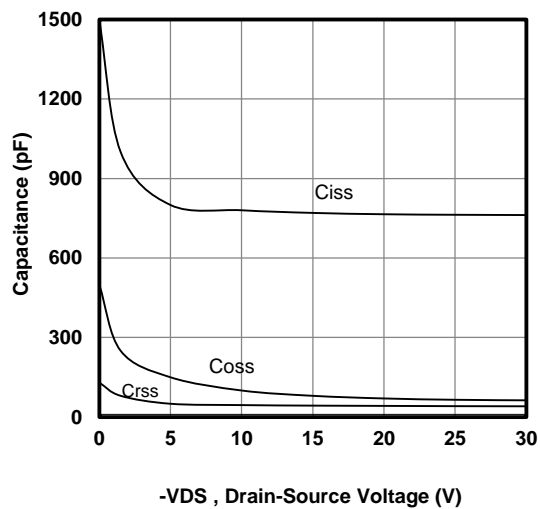
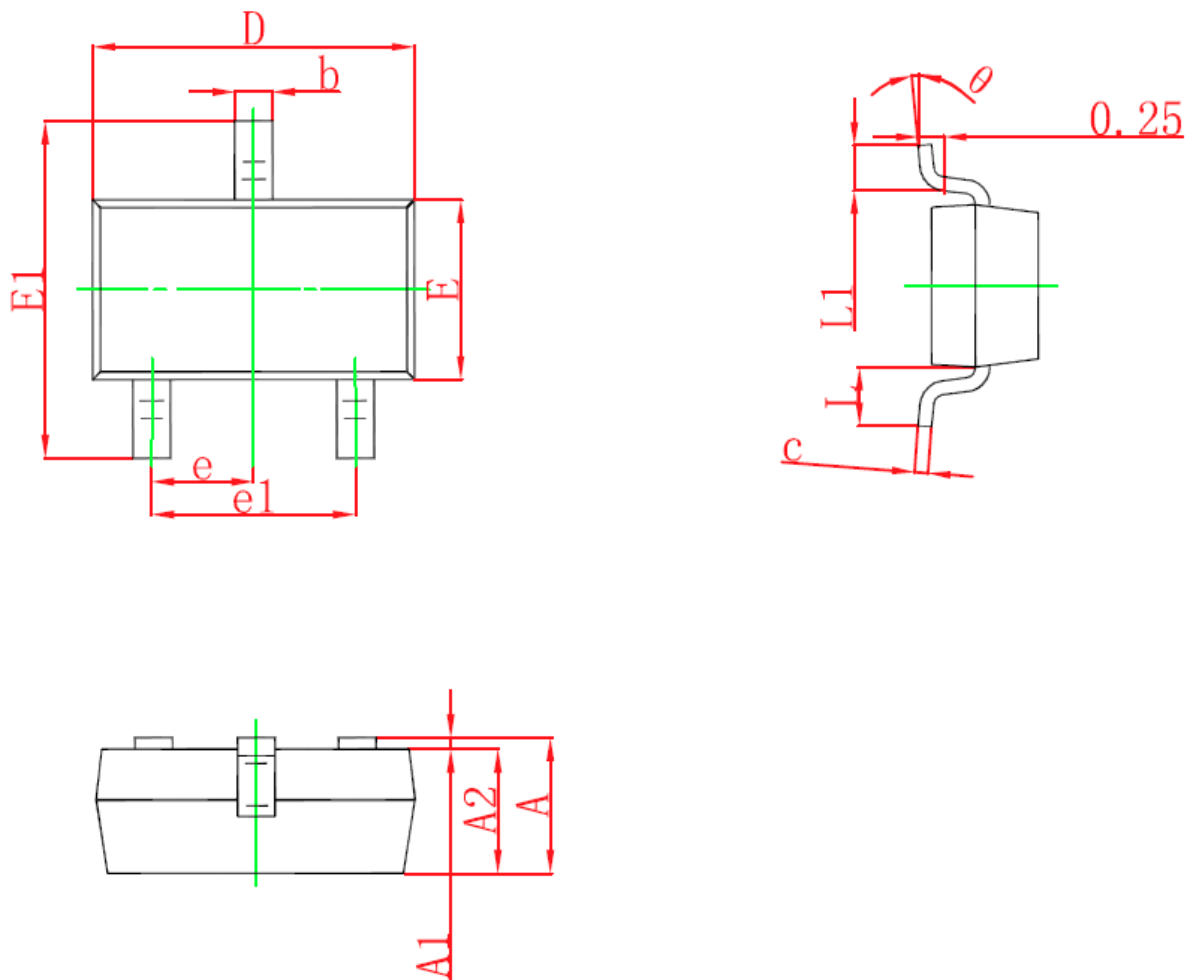


Fig6. Typical Capacitance Vs. Drain-Source Voltage

SOT-23 Package information


Symbol	Dimensions in Millimeters(mm)		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	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E1	2.250	2.550	0.088	0.100
E	1.200	1.400	0.047	0.055
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°