

-20V/-2A P-Channel MOSFET

Features

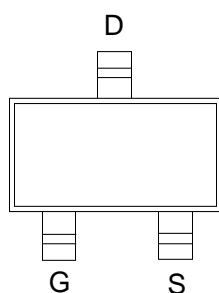
- Leading trench technology for low $R_{DS(on)}$
- Low Gate Charge

Product Summary

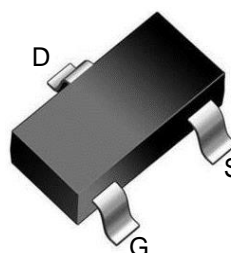
V_{DS}	$R_{DS(on)}$ MAX	I_D MAX
-20V	70m Ω @-4.5V	-2A
	110m Ω @-2.5V	

Application

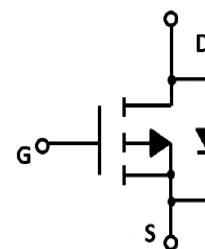
- Video monitor
- Power management



Marking and pin assignment



SOT-23 top view



Schematic diagram

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)				
Symbol	Parameter		Rating	Unit
Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage		-20	V
V_{GS}	Gate-Source Voltage		± 8	V
T_J	Maximum Junction Temperature		150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range		-55 to 150	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$	-2	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	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	0.5	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		250	$^\circ\text{C/W}$

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)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	VGS=0V, ID=-250μA	-20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	VDS=-16V, VGS=0V	--	--	-1	uA
I _{GSS}	Gate-Body Leakage Current	VGS=±8V, VDS=0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	VDS=VGS, ID=-250μA	-0.4	-0.8	1.5	V
R _{DS(on)}	Drain-Source On-State Resistance	VGS=-4.5V, ID=-2.0A	--	60	70	mΩ
		VGS=-2.5V, ID=-1.7A	--	82	110	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	VDS=-10V, VGS=0V, f=1MHz	--	400	--	pF
C _{OSS}	Output Capacitance		--	73	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	54	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	VDS=-10V, ID=-3A, VGS=-4.5V	--	5.3	--	nC
Q _{gs}	Gate Source Charge		--	0.7	--	nC
Q _{gd}	Gate Drain Charge		--	1.2	--	nC
t _{d(on)}	Turn-on Delay Time	VDD=-10V, ID=-1A, VGS=-4.5V, RG=2.8Ω	--	11	--	nS
t _r	Turn-on Rise Time		--	35	--	nS
t _{d(off)}	Turn-Off Delay Time		--	28	--	nS
t _f	Turn-Off Fall Time		--	10	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25°C, I _S =-2.0A,	--	--	-1.2	V

Typical Operating Characteristics

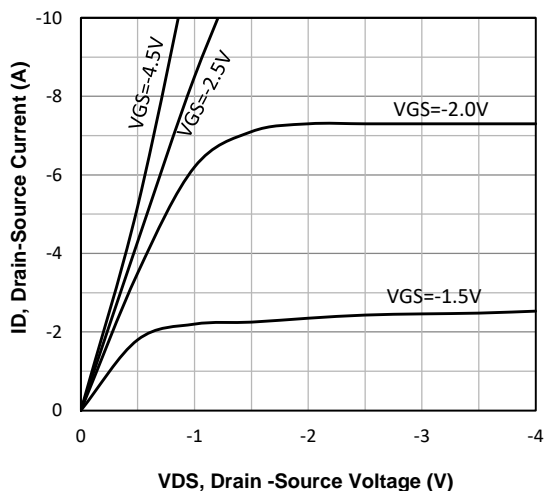


Fig1. Typical Output Characteristics

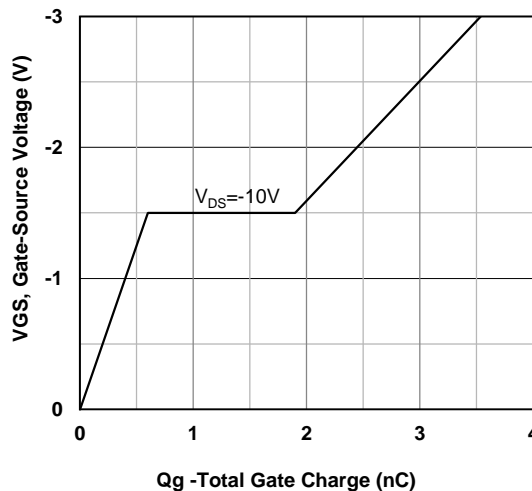


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

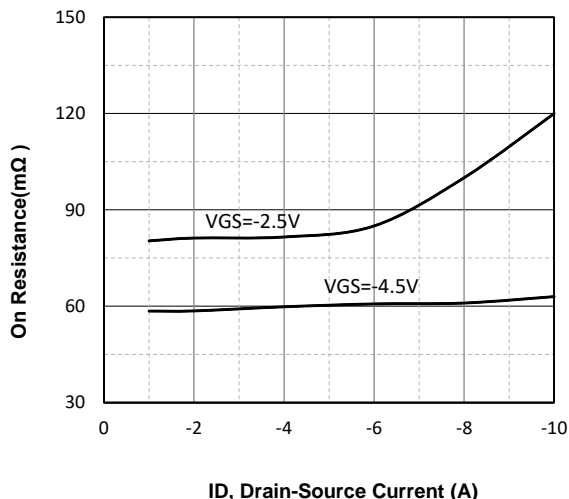


Fig3. Drain-Source on Resistance

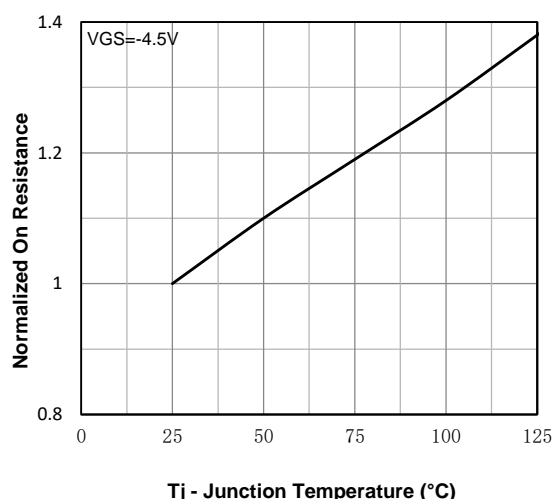


Fig4. Normalized On-Resistance Vs. Temperature

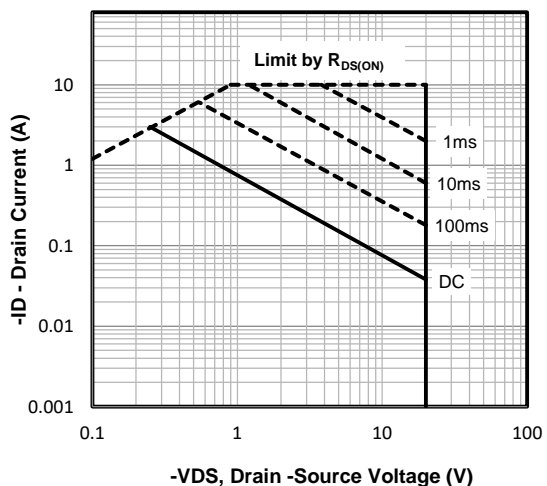


Fig5. Maximum Safe Operating Area

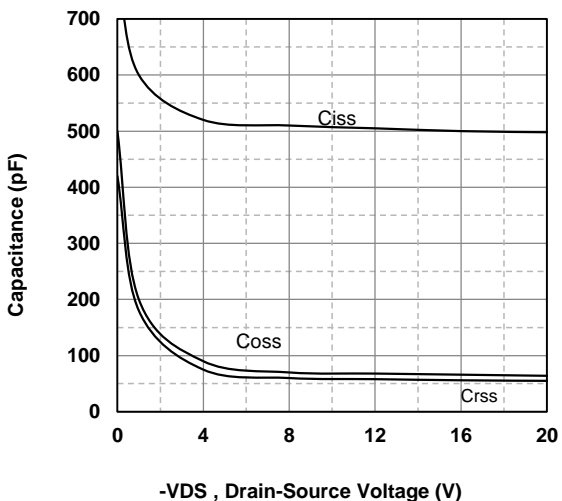
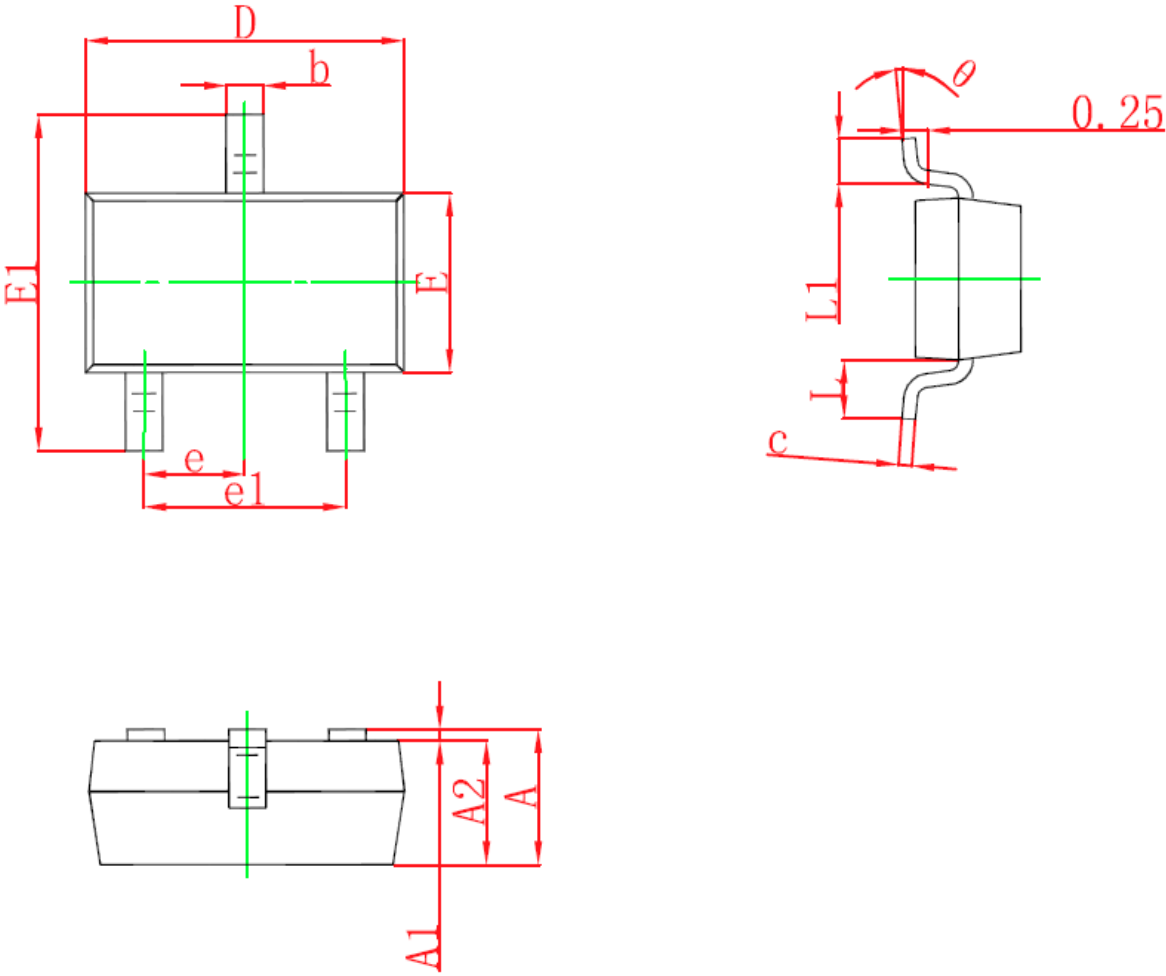


Fig6 Typical Capacitance Vs. Drain-Source Voltage

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°