

-20V/-2.3A P-Channel MOSFET

Features

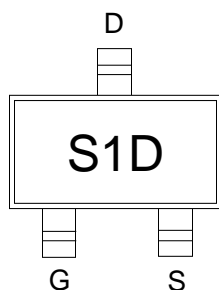
- Leading trench technology for low $R_{DS(on)}$
- Low Gate Charge

Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
-20V	160mΩ@4.5V	-2.3A
	250mΩ@2.5V	

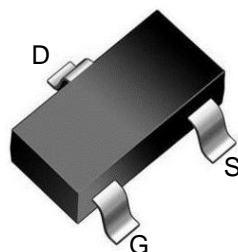
Application

- Video monitor
- Power management

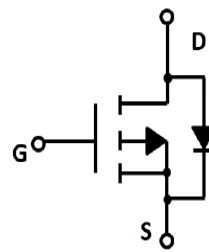


S1D: Device code

Marking and pin assignment



SOT-23 top view

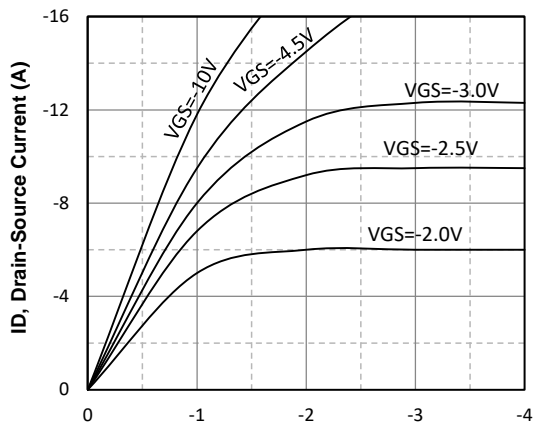


Schematic diagram

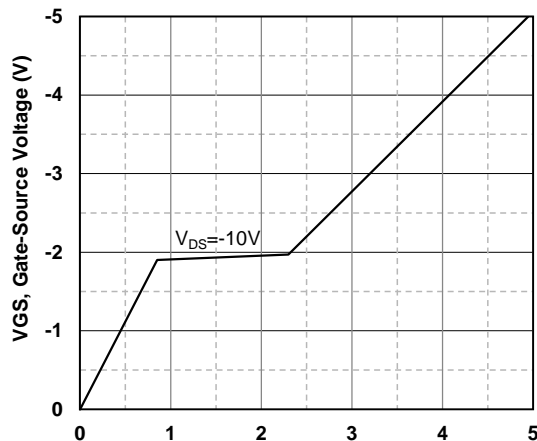
Absolute Maximum Ratings (TA=25°C unless otherwise noted)				
Symbol	Parameter	Rating	Unit	
Common Ratings (TC=25°C Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage	-20	V	
V_{GS}	Gate-Source Voltage	±10	V	
T_J	Maximum Junction Temperature	150	°C	
T_{STG}	Storage Temperature Range	-55 to 150	°C	
I_S	Diode Continuous Forward Current	Tc=25°C	-2.3	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	-6.0	A
I_D	Continuous Drain Current@GS=10V	Tc=25°C	-2.3	A
P_D	Maximum Power Dissipation	Tc=25°C	0.7	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		178	°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=-20V, VGS=0V	--	--	-1.0	uA
I _{GSS}	Gate-Body Leakage Current	VGS=±10V, VDS=0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	VDS=VGS, ID=-250μA	-0.4	-0.62	-1.0	V
R _{DS(on)}	Drain-Source On-State Resistance	VGS=-4.5V, ID=-2.5A	--	95	160	mΩ
		VGS=-2.5V, ID=-2.0A	--	140	250	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	VDS=-10V, VGS=0V, f=1MHz	--	327	--	pF
C _{OSS}	Output Capacitance		--	60	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	55	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	VDS=-10V, ID=-2A, VGS=-4.5V	--	4.4	--	nC
Q _{gs}	Gate Source Charge		--	0.8	--	nC
Q _{gd}	Gate Drain Charge		--	1.3	--	nC
t _{d(on)}	Turn-on Delay Time	VDD=-10V, ID=-1A, VGS=-4.5V, RG=2.8Ω	--	6	--	nS
t _r	Turn-on Rise Time		--	31	--	nS
t _{d(off)}	Turn-Off Delay Time		--	45	--	nS
t _f	Turn-Off Fall Time		--	40	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25°C, I _S =-2.5A,	--	--	-1.2	V

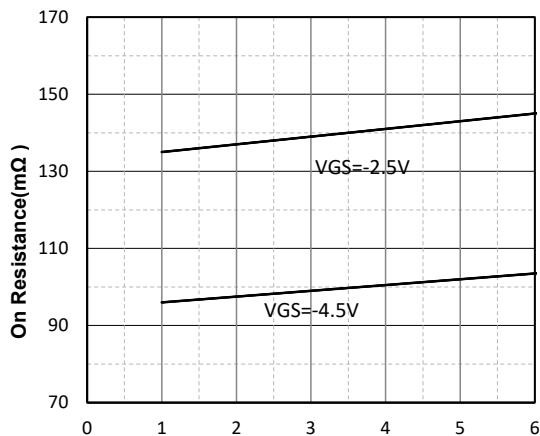
Typical Operating Characteristics



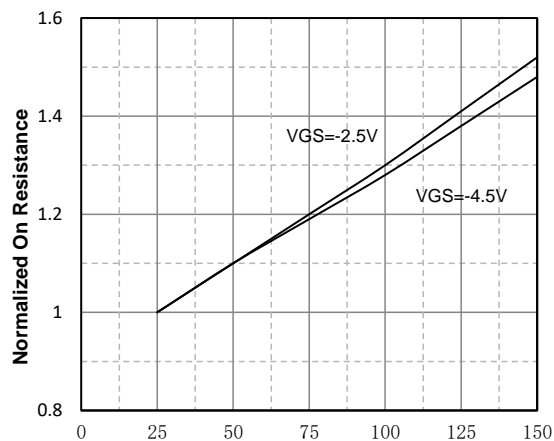
VDS, Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



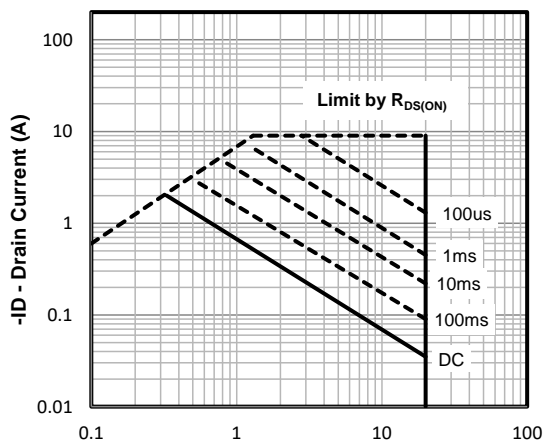
Qg -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs. Gate-Source Voltage



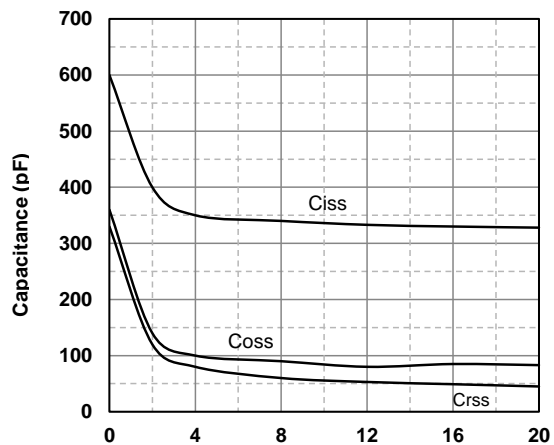
-ID, Drain-Source Current (A)
Fig3. Drain-Source on Resistance



Tj - Junction Temperature (°C)
Fig4. Normalized On-Resistance Vs. Temperature

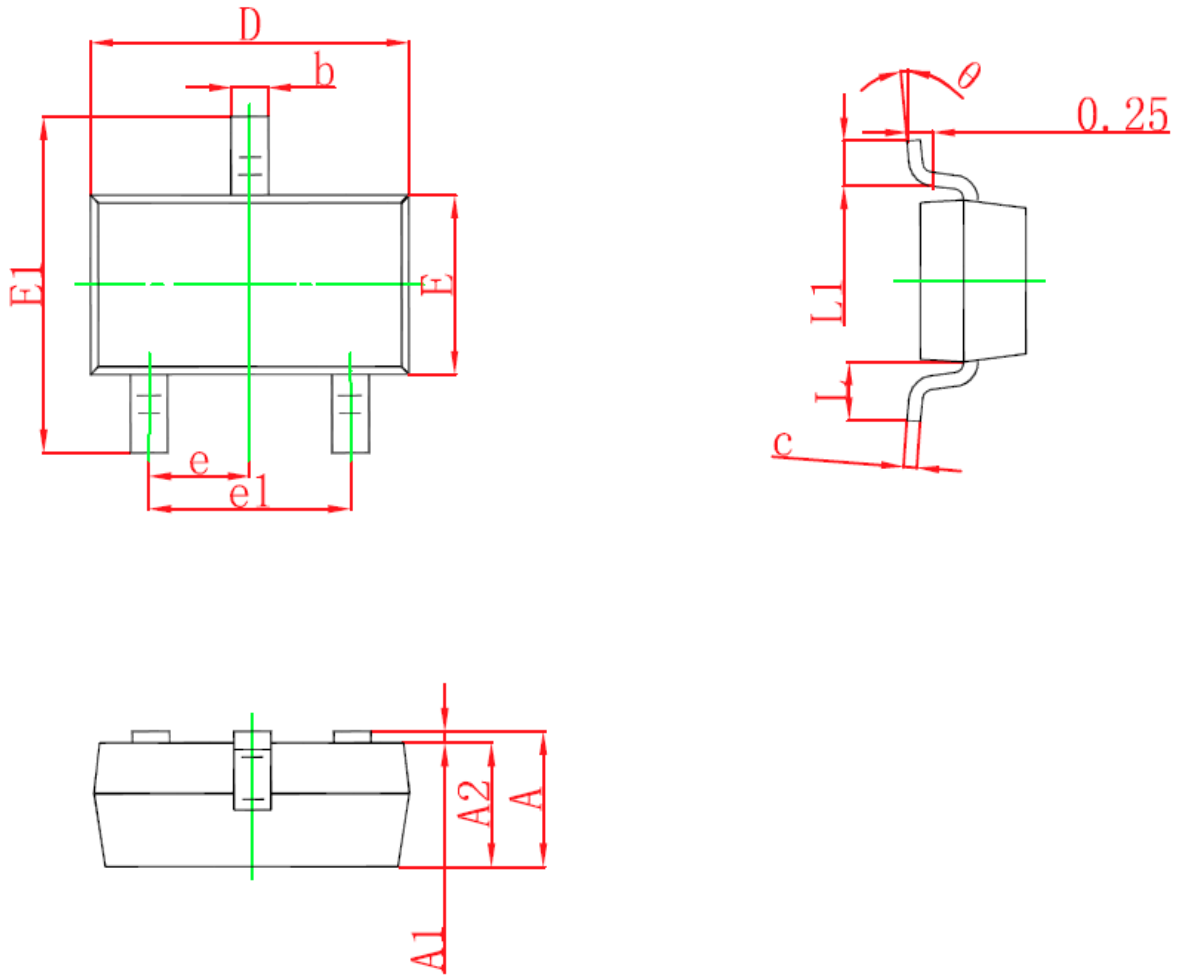


-VDS, Drain -Source Voltage (V)
Fig5. Maximum Safe Operating Area



-VDS, Drain-Source Voltage (V)
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°