

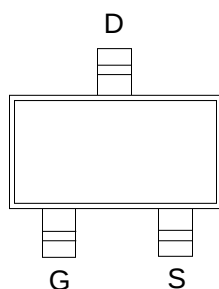
-20V/-7A P-Channel MOSFET

Features

- Trench Power LV MOSFET technology
- High Density Cell Design for Low $R_{DS(ON)}$
- High Speed switching

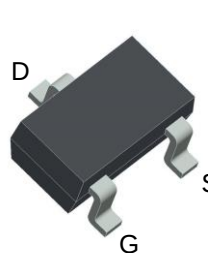
Application

- Battery protection
- Load switch
- Power management

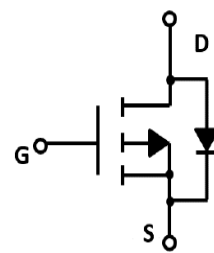


Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
-20V	30mΩ@4.5V	-7A
	40mΩ@2.5V	



SOT-23-3L top view



Schematic diagram

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Unit
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Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)

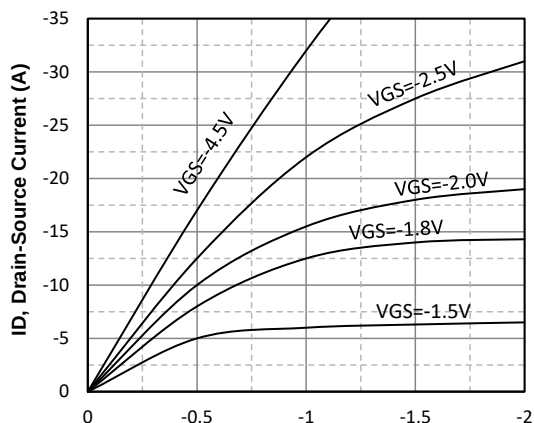
V_{DS}	Drain-Source Breakdown Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 10	V
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ -7	A

Mounted on Large Heat Sink

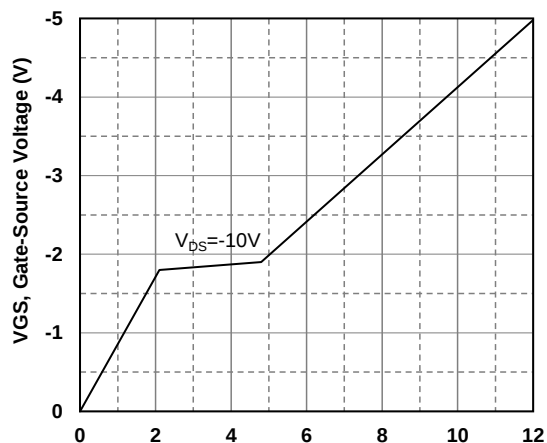
I_{DM}	Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ -25	A
I_D	Continuous Drain Current@ $V_{GS}=10V$	$T_C=25^\circ\text{C}$ -7	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 1.2	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient	105	$^\circ\text{C/W}$

Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25℃ (unless otherwise stated)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	VGS=0V, ID=-250μA	-20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	VDS=-18V, 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	-0.7	-1.0	V
R _{DS(on)}	Drain-Source On-State Resistance	VGS=-4.5V, ID=-4A	--	21	30	mΩ
		VGS=-2.5V, ID=-2A	--	29	40	mΩ
		VGS=-1.8V, ID=-1A	--	40	75	mΩ
Dynamic Electrical Characteristics @ TJ = 25℃ (unless otherwise stated)						
C _{ISS}	Input Capacitance	VDS=-9V, VGS=0V, f=1MHz	--	1015	--	pF
C _{OSS}	Output Capacitance		--	138	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	105	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	VDS=-9V, ID=-5.6A, VGS=-4.5V	--	11.3	--	nC
Q _{gs}	Gate Source Charge		--	2.3	--	nC
Q _{gd}	Gate Drain Charge		--	2.4	--	nC
t _{d(on)}	Turn-on Delay Time	VDD=-9V, ID=-1A, VGS=-4.5V, RG=2.5Ω	--	8.5	--	nS
t _r	Turn-on Rise Time		--	35.5	--	nS
t _{d(off)}	Turn-Off Delay Time		--	78	--	nS
t _f	Turn-Off Fall Time		--	58	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25℃, Is=-5.6A,	--	--	-1.2	V

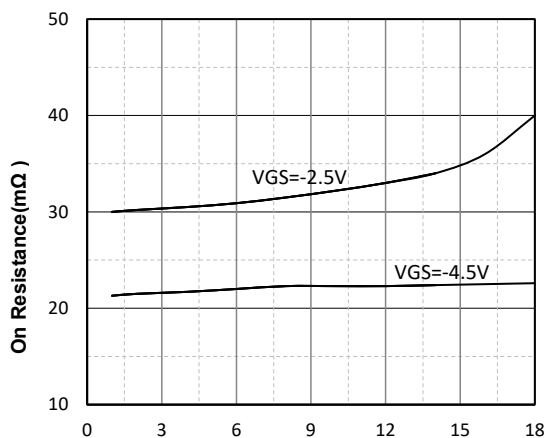
Typical Operating Characteristics



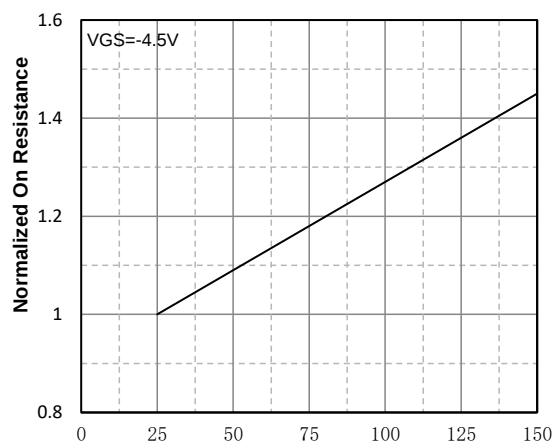
VDS, Drain-Source Voltage (V)
Fig1. Typical Output Characteristics



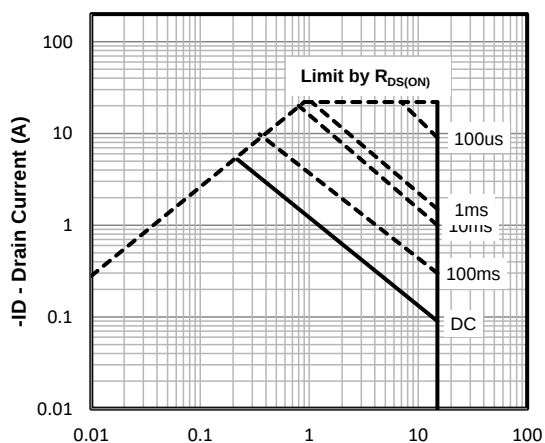
Qg -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs. Gate-Source Voltage



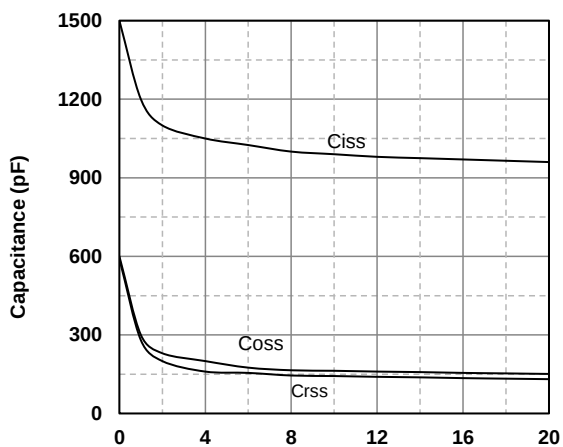
ID, Drain-Source Current (mA)
Fig3. Drain-Source on Resistance



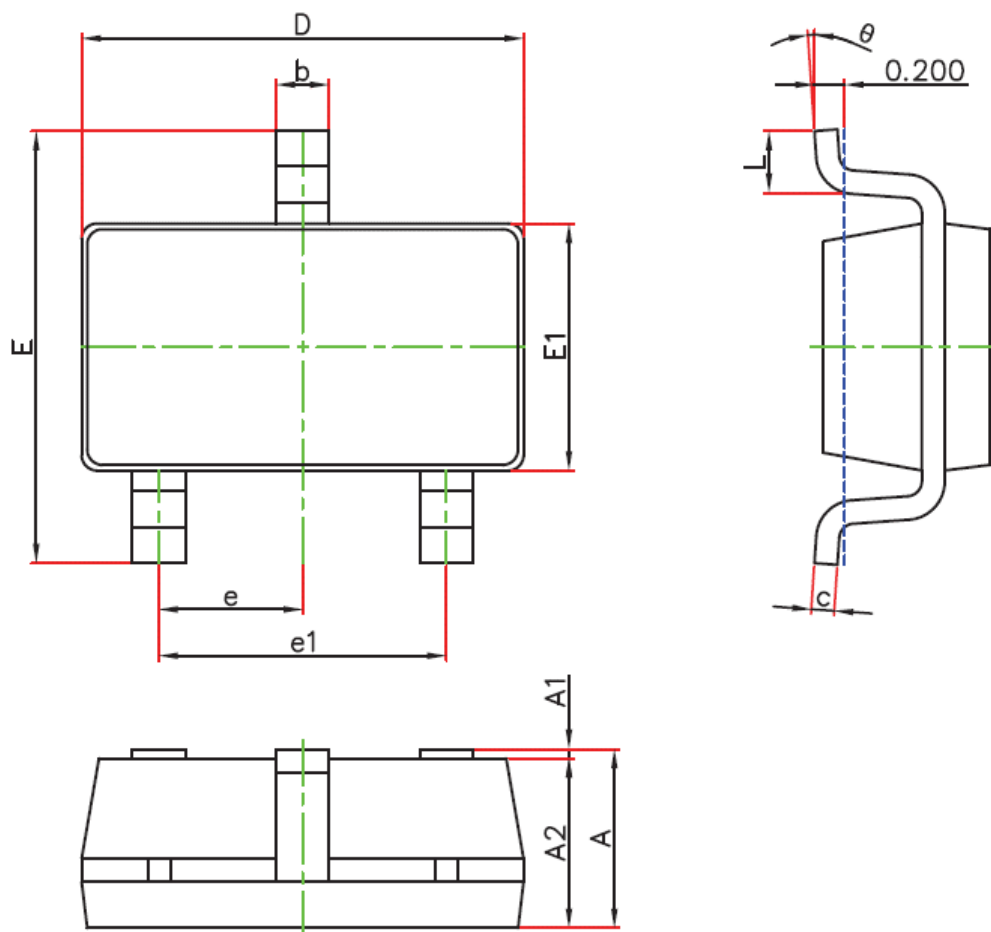
TJ - Junction Temperature (°C)
Fig4. Normalized On-Resistance Vs. Temperature



-VDS, Drain-Source Voltage (V)
Fig7. Maximum Safe Operating Area



-VDS, Drain-Source Voltage (V)
Fig6 Typical Capacitance Vs. Drain-Source Voltage

SOT-23-3L Package information


Symbol	Dimensions in Millimeters(mm)		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	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°