FDN302P

-20V/-2.4A P-Channel MOSFET

Features

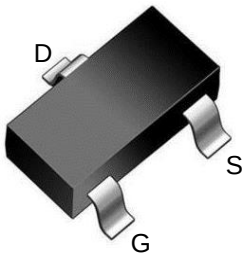
- Trench Power LV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching

Product Summary

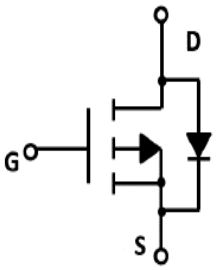
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
-20V	55mΩ@-4.5V	-2.4A
	80mΩ@-2.5V	

Application

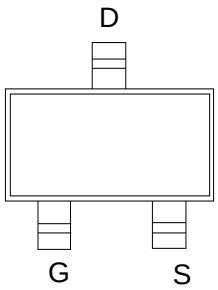
- Battery protection
- Load switch
- Power management



SOT-23 top view



Schematic diagram

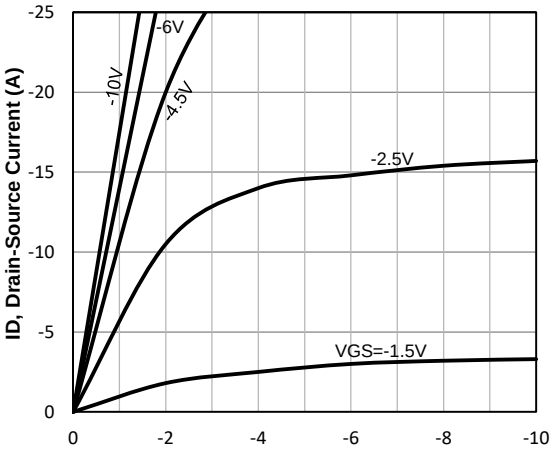


Marking and pin assignment

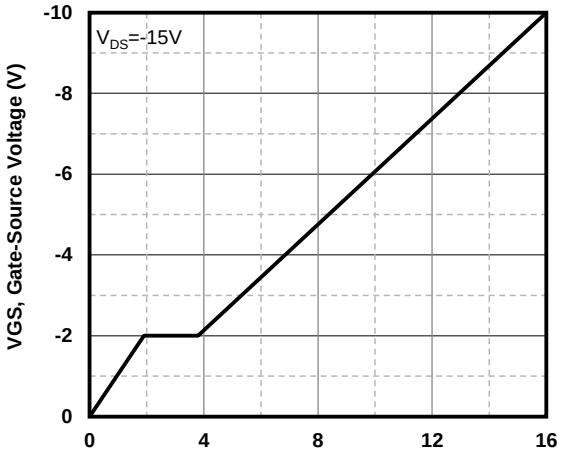
Absolute Maximum Ratings (TA=25℃unless otherwise noted)				
Symbol	**Parameter**		**Rating**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage		-20	V
V_{GS}	Gate-Source Voltage		±12	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature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

Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	**Parameter**	**Condition**	**Min**	**Typ**	**Max**	**Unit**
Static Electrical Characteristics @ TJ = 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=±12V，VDS=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	VDS=VGS，ID=-250μA	-0.6	-1.0	-1.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	VGS=-4.5V， ID=-2.4A	--	44	55	mΩ
		VGS=-2.5V，ID=-2.0A	--	64	80	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	VDS=-15V，VGS=0V， f=1MHz	--	780	--	pF
C_{OSS}	Output Capacitance		--	75	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	40	--	pF
Q_g	Total Gate Charge	VDS=-15V，ID=-4.2A，VGS=-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	VDS=-15V，ID=-1A，VGS=-10V，RG=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	Tj=25℃，Is=-2.4A，	--	-0.85	-1.2	V

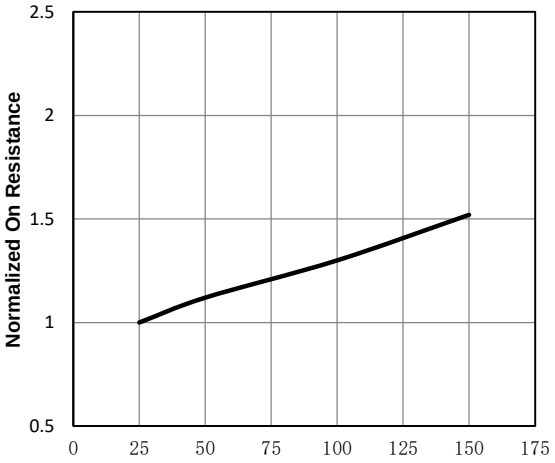
Typical Operating Characteristics



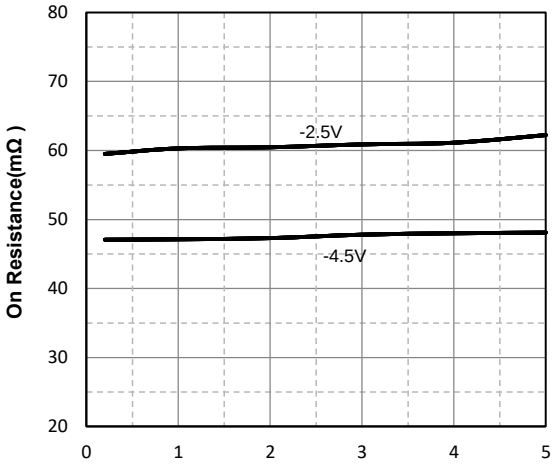
VDS, Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



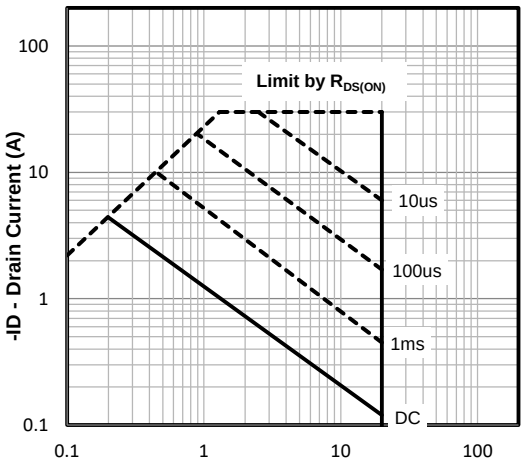
Qg -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs.Gate-Source Voltage



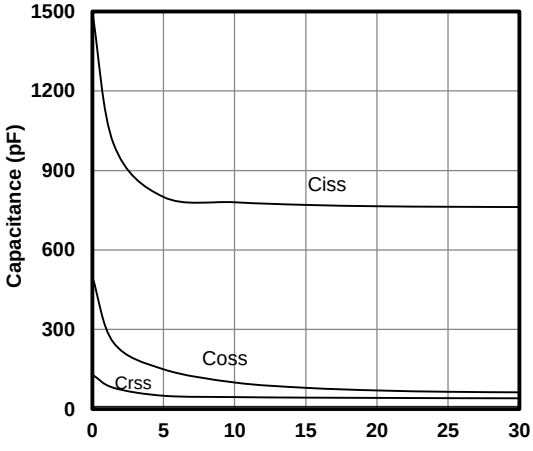
Tj - Junction Temperature (°C)
Fig3. Normalized On-Resistance Vs. Temperature



ID, Drain-Source Current (A)
Fig4. On-Resistance Vs. Drain-Source Current

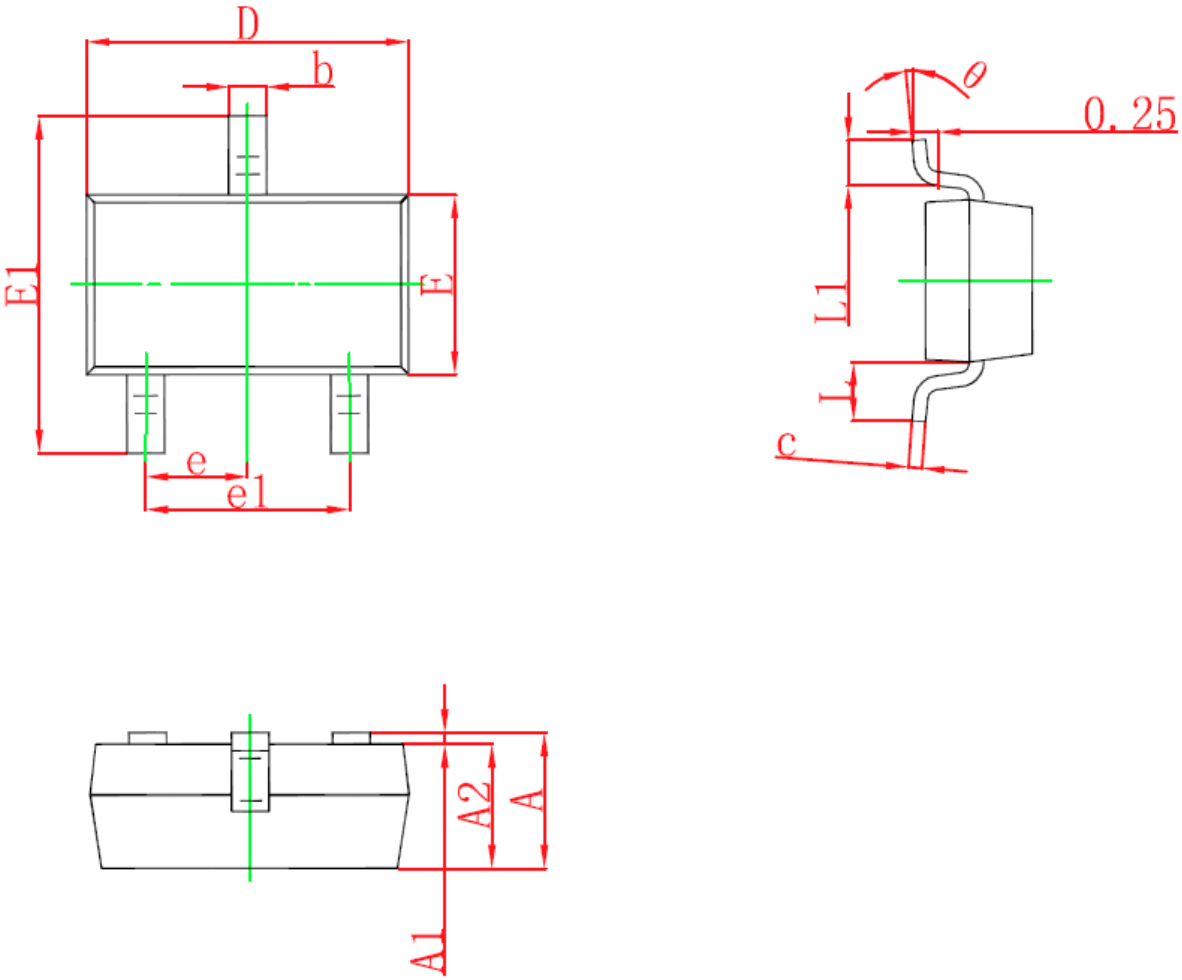


-VDS, Drain -Source Voltage (V)
Fig5. Maximum Safe Operating Area



-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°

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