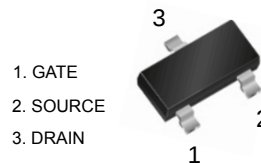


P-Channel Enhancement Mode Field Effect Transistor

Product Summary

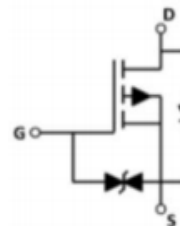
- V_{DS} -20V
- I_D -5.6A
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <42 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-2.5V$) <55 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-1.8V$) <100 mohm
- ESD Protected Up to 2.0KV (HBM)

SOT-23



General Description

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



Equivalent Circuit

Applications

- Battery protection
- Load switch
- Power management

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

Parameter		Symbol	Maximum	Unit
Drain-source Voltage		V_{DS}	-20	V
Gate-source Voltage		V_{GS}	± 12	V
Drain Current	$T_A=25^{\circ}C$ Steady State	I_D	-5.6	A
	$T_A=70^{\circ}C$ Steady State		-4.5	
Pulsed Drain Current ^A		I_{DM}	-23	A
Total Power Dissipation @ $T_A=25^{\circ}C$ Steady State		P_D	1.3	W
Thermal Resistance Junction-to-Ambient @ Steady State ^B		$R_{\theta JA}$	96	$^{\circ}C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^{\circ}C$

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V,V _{GS} =0V,T _C =25℃			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} =0V		±2.5	±10	μA
		V _{GS} = ±8V, V _{DS} =0V		±900	±2000	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	-0.40	-0.62	-1.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = -4.5V, I _D =-5.6A		29	42	mΩ
		V _{GS} = -2.5V, I _D =-4.3A		36	55	
		V _{GS} = -1.8V, I _D =-2.0A		55	100	
Diode Forward Voltage	V _{SD}	I _S =-5.6A,V _{GS} =0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I _S				-5.6	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-10V,V _{GS} =0V,f=1MHZ		940		pF
Output Capacitance	C _{oss}			219		
Reverse Transfer Capacitance	C _{rss}			116		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-4.5V,V _{DD} =-10V,I _D =-4A		7.2		nC
Gate Source Charge	Q _{gs}			1.2		
Gate Drain Charge	Q _{gd}			1.6		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-4.5V,V _{DD} =-10V, R _L =2.5Ω, R _{GEN} =3Ω		15		ns
Turn-on Rise Time	t _r			63		
Turn-off Delay Time	t _{D(off)}			21		
Turn-off Fall Time	t _f			12		

A. Pulse Test: Pulse Width ≤ 300μs, Duty cycle ≤ 2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

■ Typical Performance Characteristics

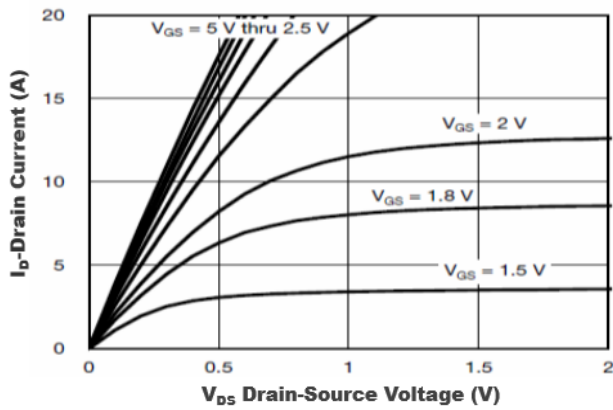


Figure1. Output Characteristics

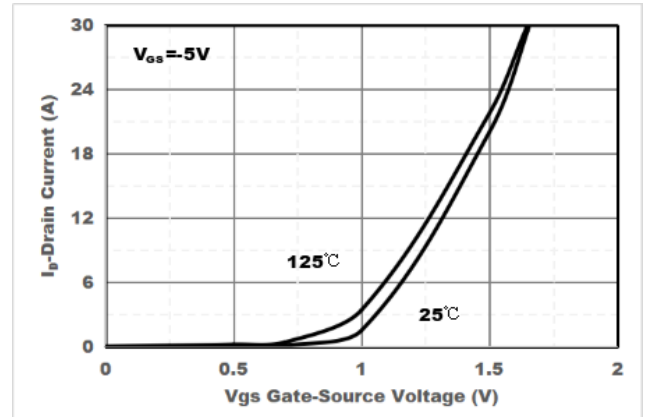


Figure2. Transfer Characteristics

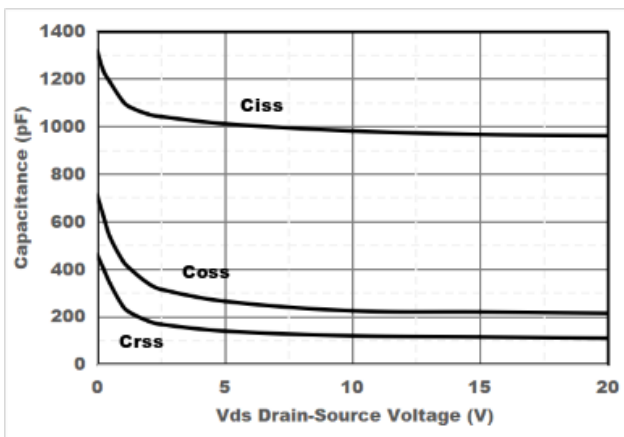


Figure3. Capacitance Characteristics

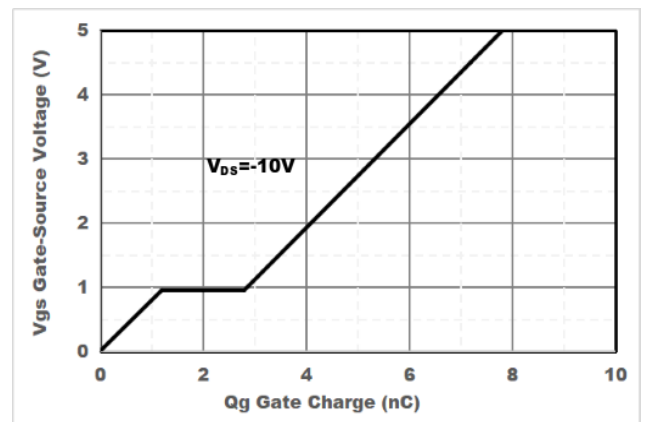


Figure4. Gate Charge

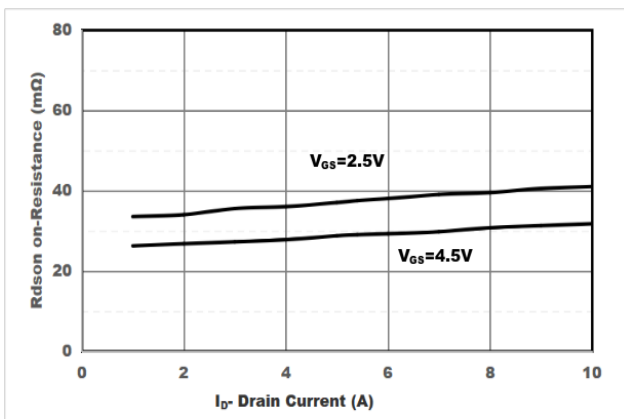


Figure5. Drain-Source on Resistance

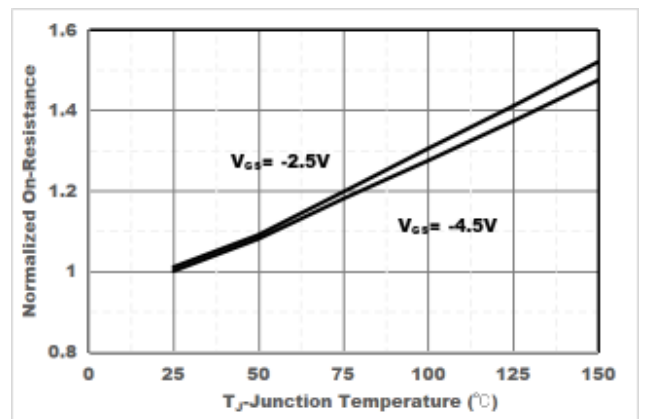


Figure6. Drain-Source on Resistance

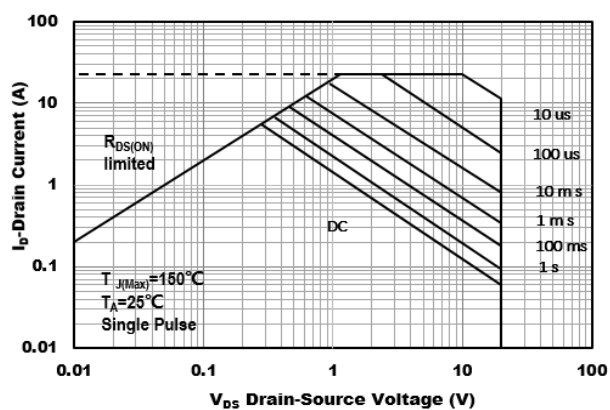


Figure7. Safe Operation Area

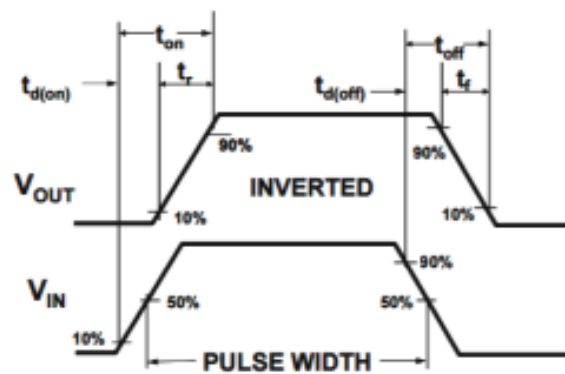
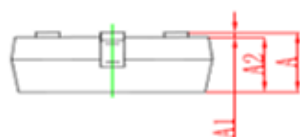
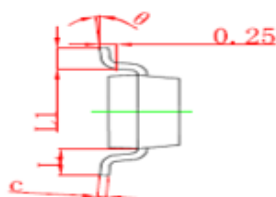
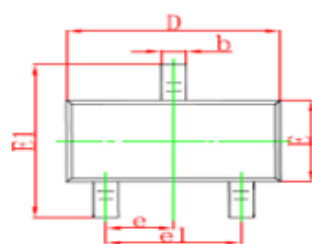


Figure8. Switching wave

■ SOT-23 Package information



Symbol	Dimentions in Millimeter		Dimentions 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	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950Type		0.037Type	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.220REF	
L1	0.300	0.500	0.012	0.020
θ	0 °	8 °	0 °	8 °

■ SOT-23 Suggested Pad Layout

