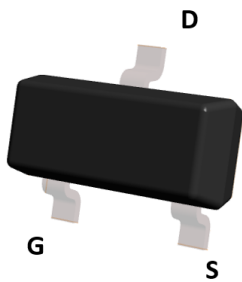
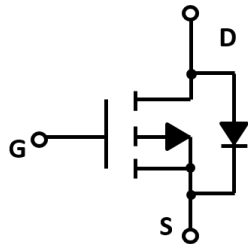
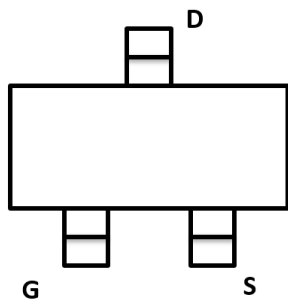


P-Channel Enhancement Mode Field Effect Transistor



Top View

SOT-23



Product Summary

- V_{DS} -12V
- I_D -6A
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <40 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-2.5V$) <50 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-1.8V$) <70 mohm

General Description

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

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}	-12	V
Gate-source Voltage	V_{GS}	± 8	V
Drain Current	I_D	-6	A
Pulsed Drain Current ^A	I_{DM}	-20	A
Total Power Dissipation @ $T_A=25^\circ C$ Steady State	P_D	1.2	W
Thermal Resistance Junction-to-Ambient @ Steady State ^B	$R_{\theta JA}$	104	$^\circ C / W$
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	-12			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-12V, V _{GS} =0V, T _C =25°C			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±8V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	-0.4	-0.6	-1.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = -4.5V, I _D =-5.4A		30	40	mΩ
		V _{GS} = -2.5V, I _D =-4.0A		37	50	
		V _{GS} = -1.8V, I _D =-1.0A		58	70	
Diode Forward Voltage	V _{SD}	I _S =-4A, V _{GS} =0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I _S				-6	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-4V, V _{GS} =0V, f=1MHZ		740		pF
Output Capacitance	C _{oss}			290		
Reverse Transfer Capacitance	C _{rss}			190		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-2.5V, V _{DS} =-4V, I _D =-4A		4.5		nC
Gate Source Charge	Q _{gs}			1.2		
Gate Drain Charge	Q _{gd}			1.6		
Turn-on Delay Time	t _{D(on)}	V _{GEN} =-8V, V _{DD} =-4V, R _L =1.2Ω, I _D =-3.3A		5		ns
Turn-on Rise Time	t _r			11		
Turn-off Delay Time	t _{D(off)}			22		
Turn-off Fall Time	t _f			16		

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

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

■ Typical Performance Characteristics

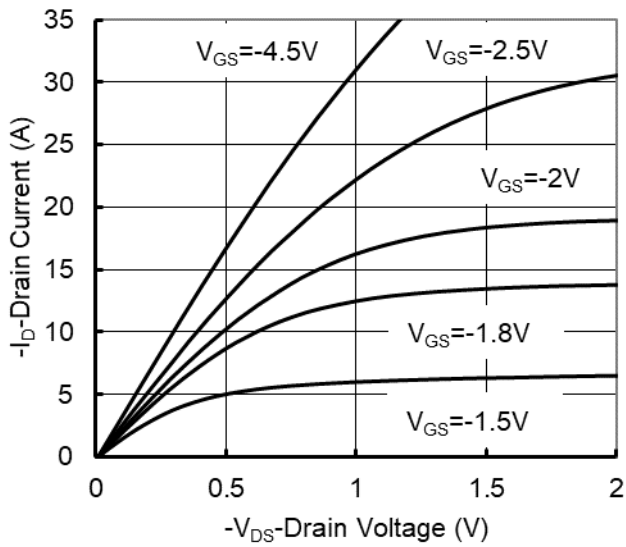


Figure1. Output Characteristics

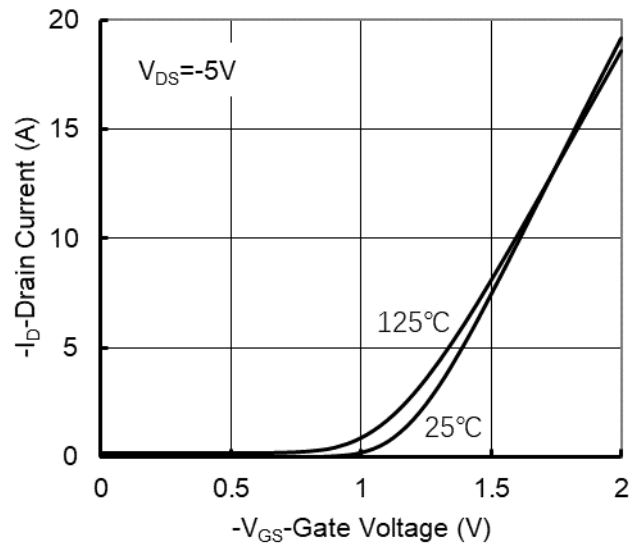


Figure2. Transfer Characteristics

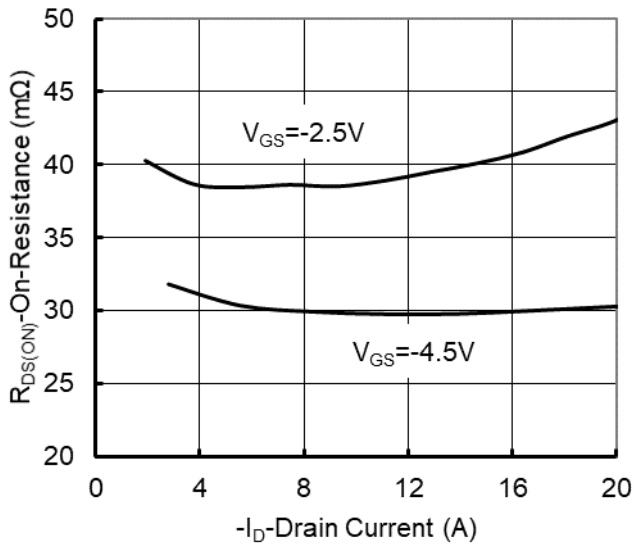


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

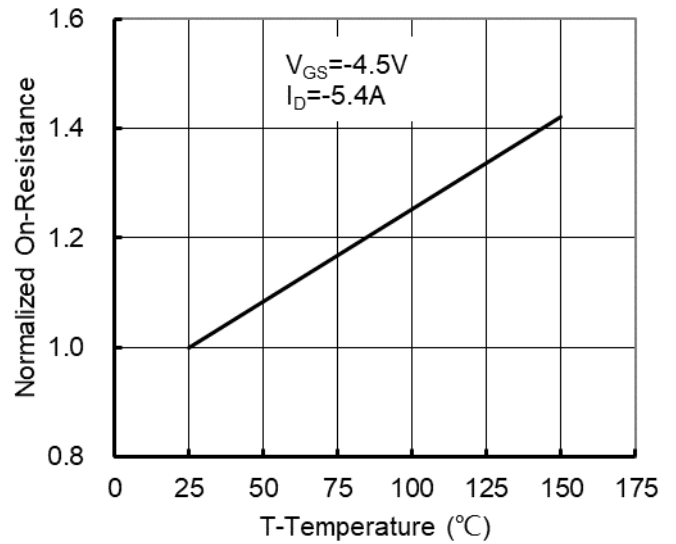


Figure 4: On-Resistance vs. Junction Temperature

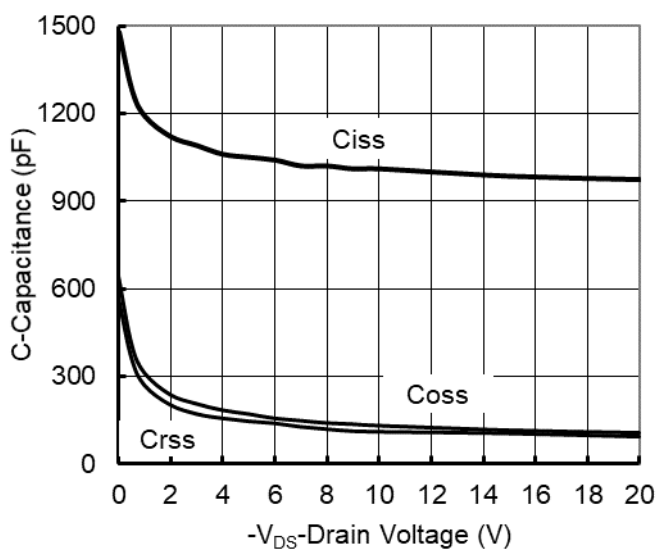


Figure5. Capacitance Characteristics

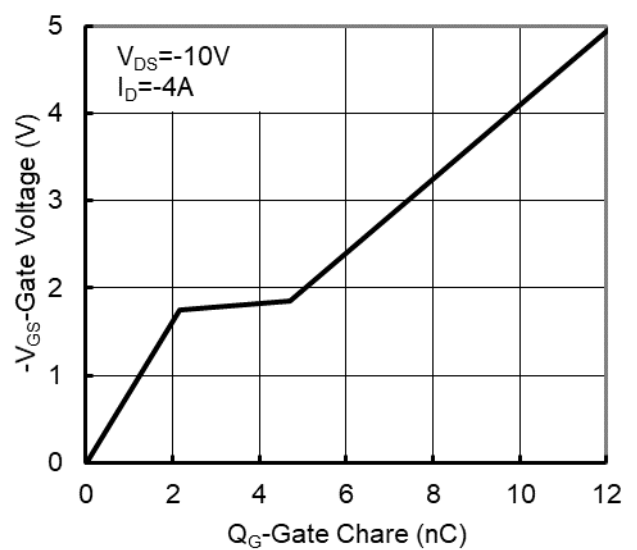


Figure6. Gate Charge

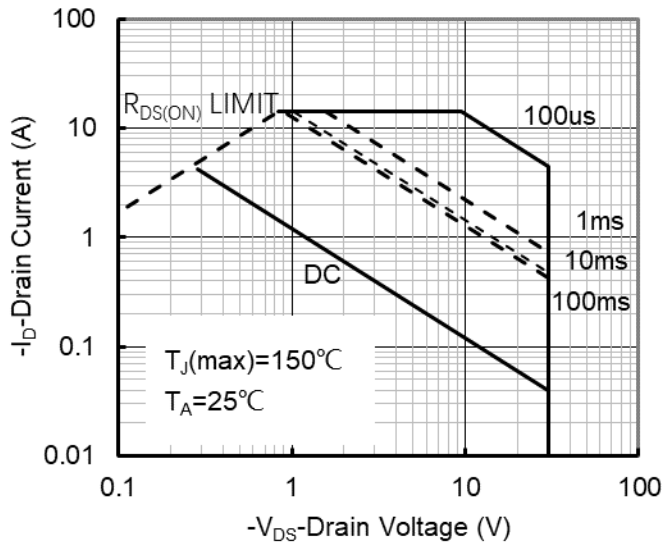


Figure7. Safe Operation Area

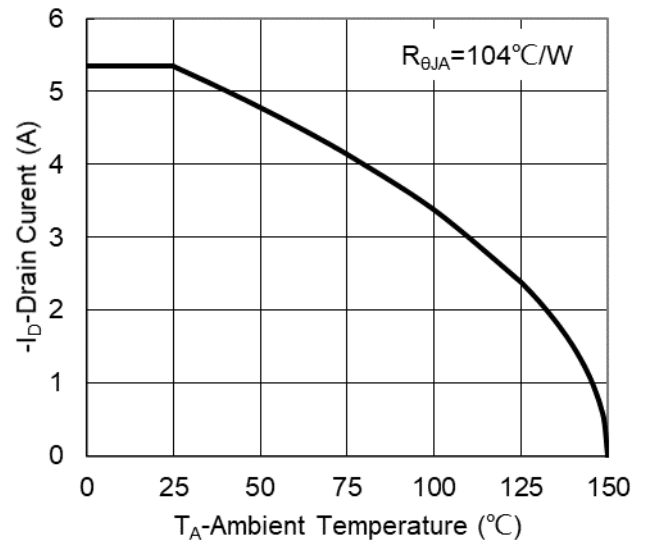
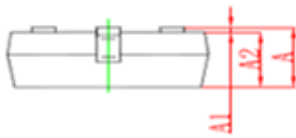
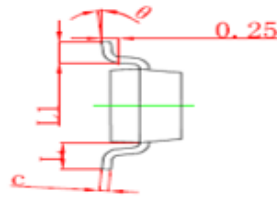
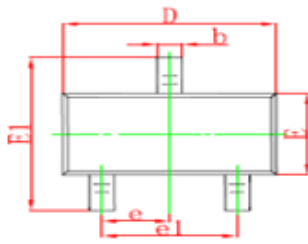


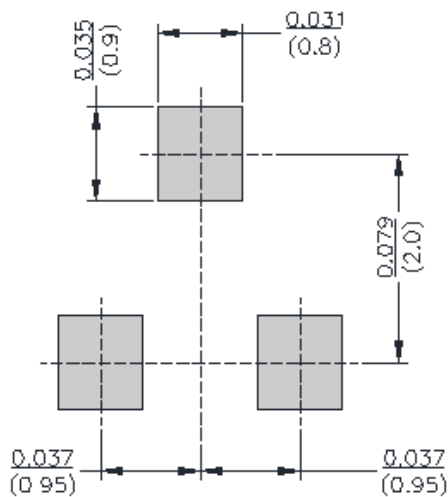
Figure8. Maximum Continuous Drain Current vs Ambient Temperature

■ SOT-23 Package information



Symbol	Dimensions in Millimeter		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	0.100	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



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