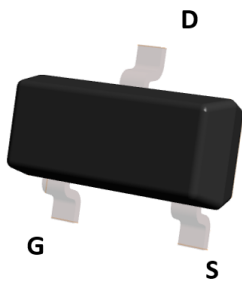




THE DATASHEET OF SL2333A

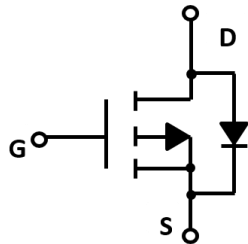
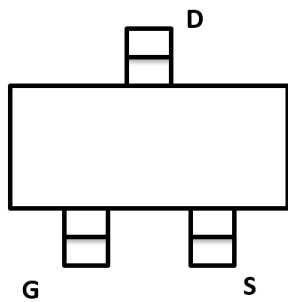


P-Channel Enhancement Mode Field Effect Transistor



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 ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-12			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-12V, V_{GS}=0V, T_C=25^{\circ}\text{C}$			-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-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	m Ω
		$V_{GS}=-2.5V, I_D=-4.0A$		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}	$V_{DS}=-4V, V_{GS}=0V, f=1\text{MHz}$		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	$t_{D(on)}$	$V_{GEN}=-8V, V_{DD}=-4V, R_L=1.2\Omega, I_D=-3.3A$		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 $\leq 300\mu s$, Duty cycle $\leq 2\%$.

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

■ Typical Performance Characteristics

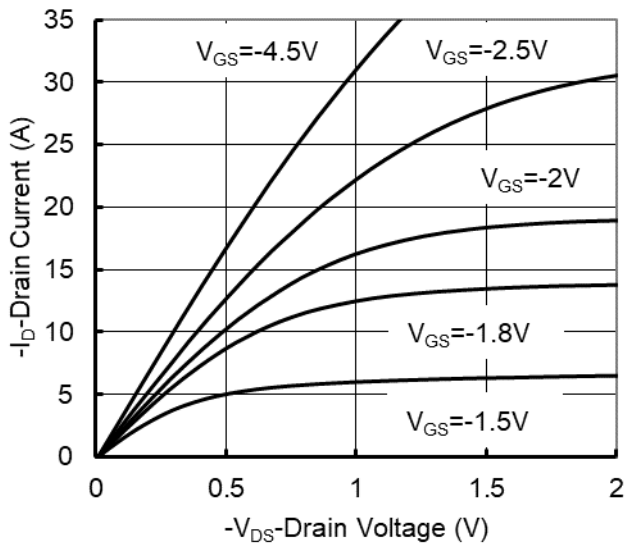


Figure1. Output Characteristics

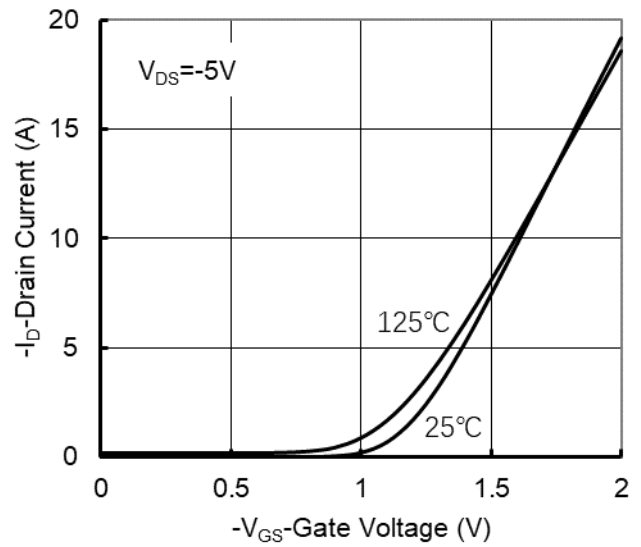


Figure2. Transfer Characteristics

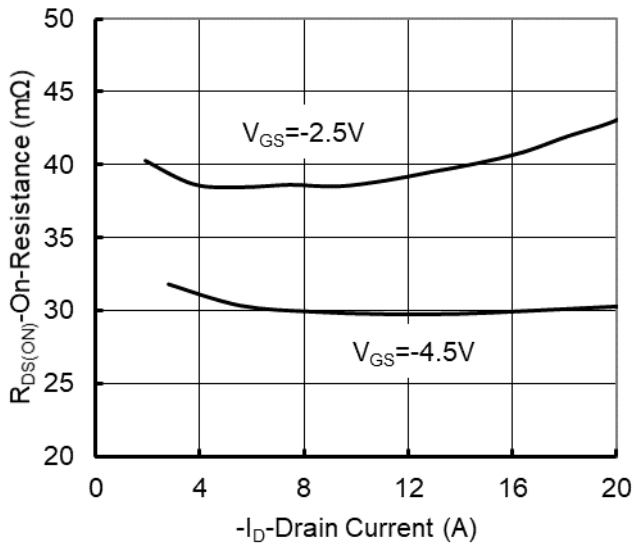


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

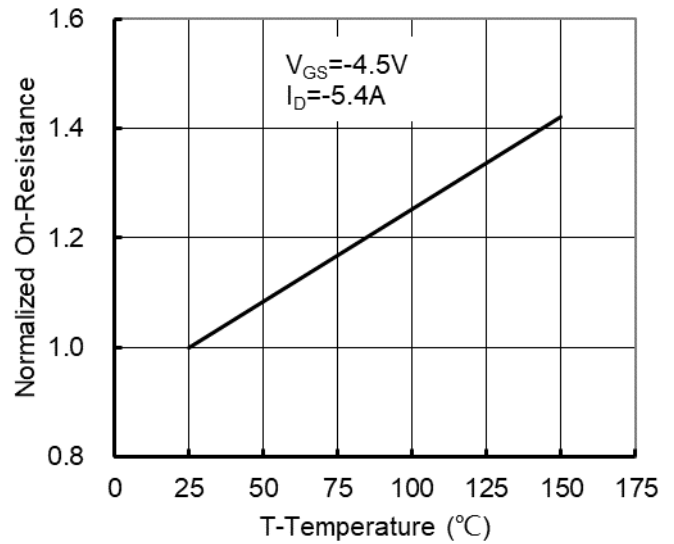


Figure 4: On-Resistance vs. Junction Temperature

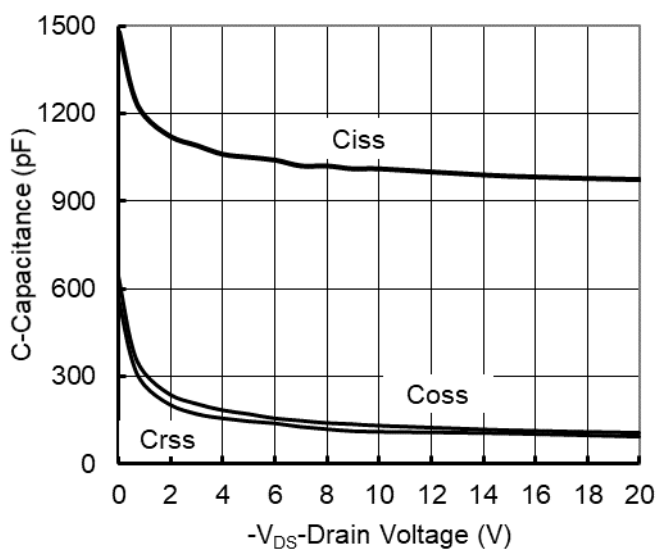


Figure5. Capacitance Characteristics

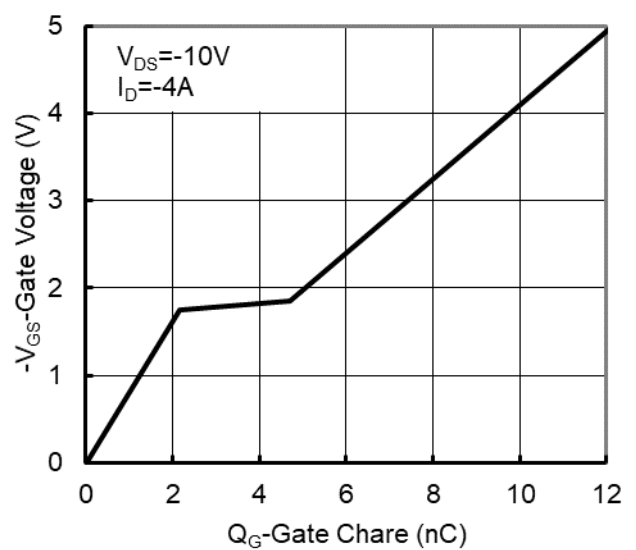


Figure6. Gate Charge

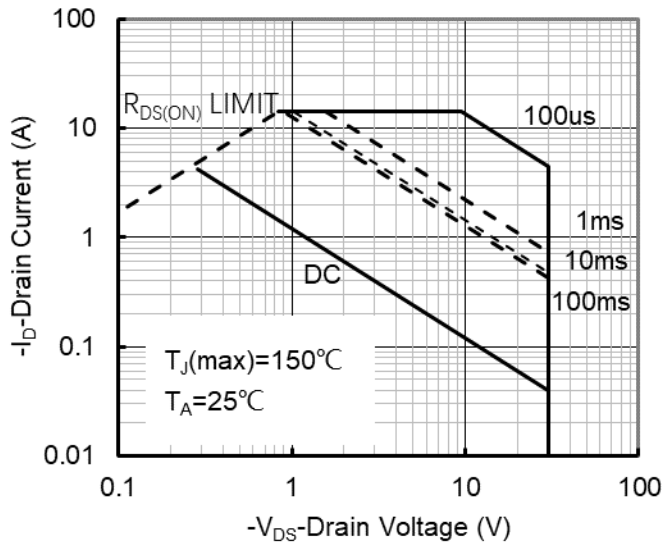


Figure7. Safe Operation Area

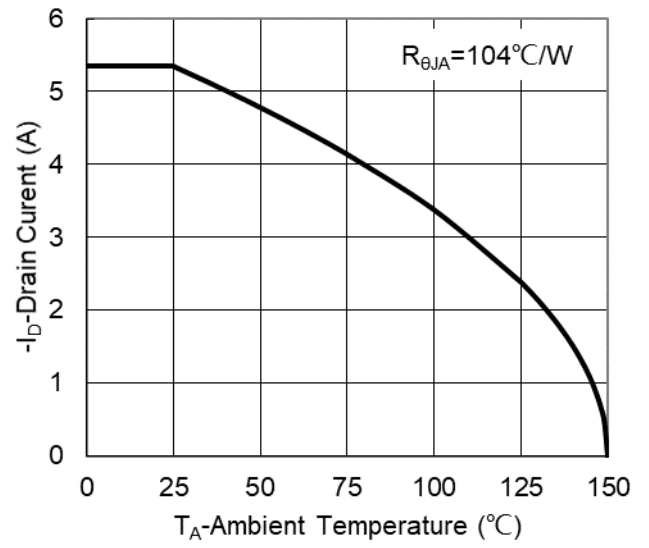
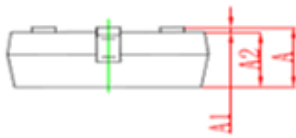
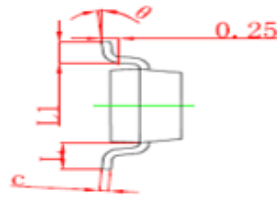
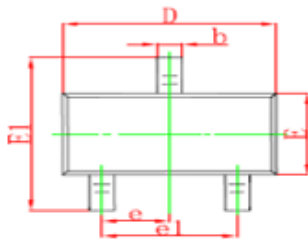


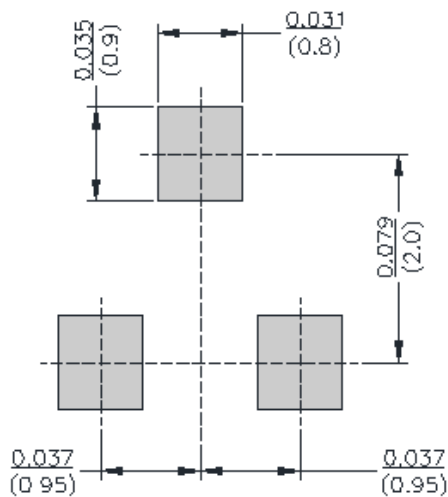
Figure8. Maximum Continuous Drain Current vs Ambient Temperature

■ 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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