



Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	45m Ω @-4.5V	-3.1A
	70m Ω @-2.5V	
20V	23m Ω @4.5V	4.5A
	30m Ω @2.5V	

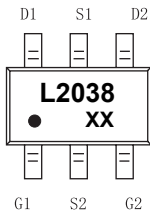
Feature

- TrenchFET Power MOSFET
- High Density Cell Design for Low $R_{DS(ON)}$

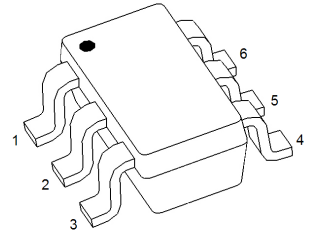
Application

- Load Switch for Portable Devices
- DC/DC Converter

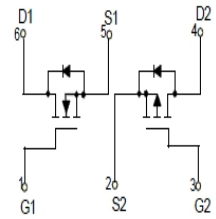
MARKING:



SOT-23-6L



Schematic diagram



ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
P-MOSFET			
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ^{1,2}	I_D	-3.1	A
Pulsed Drain Current	I_{DM}	-12	A
Power Dissipation	P_D	0.75	W
N-MOSFET			
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ^{1,2}	I_D	4.5	A
Pulsed Drain Current	I_{DM}	18	A
Power Dissipation	P_D	0.75	W
Temperature and Thermal Resistance			
Thermal Resistance from Junction to Ambient ^{1,2}	$R_{\theta JA}$	167	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

P-channel MOSFET ELECTRICAL CHARACTERISTICS(T_a = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -16V, V _{GS} = 0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V			±100	nA
On Characteristics³						
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.6	-1.0	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D = -3.0A		45	74	mΩ
		V _{GS} = -2.5V, I _D = -1.5A		70	110	
Forward transconductance	g _{FS}	V _{DS} = -5V, I _D = -2.0A	3			S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} = 0V, f = 1MHz		550		pF
Output Capacitance	C _{oss}			89		
Reverse Transfer Capacitance	C _{rss}			65		
Switching Characteristics						
Total gate charge	Q _g	V _{DS} = -10V, V _{GS} = -4.5V, I _D = -3A		4.3		nC
Gate-source charge	Q _{gs}			0.8		
Gate-drain charge	Q _{gd}			1.1		
Turn-on delay time	t _{d(on)}	V _{DD} = -10V, V _{GS} = -4.5V, R _L = 10Ω, R _G = 2.5Ω		12		nS
Turn-on rise time	t _r			54		
Turn-off delay time	t _{d(off)}			15		
Turn-off fall time	t _f			9		
Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	V _{GS} = 0V, I _{SD} = -0.6A			-1.2	V

N-channel MOSFET ELECTRICAL CHARACTERISTICS(T_a = 25°C unless otherwise noted)

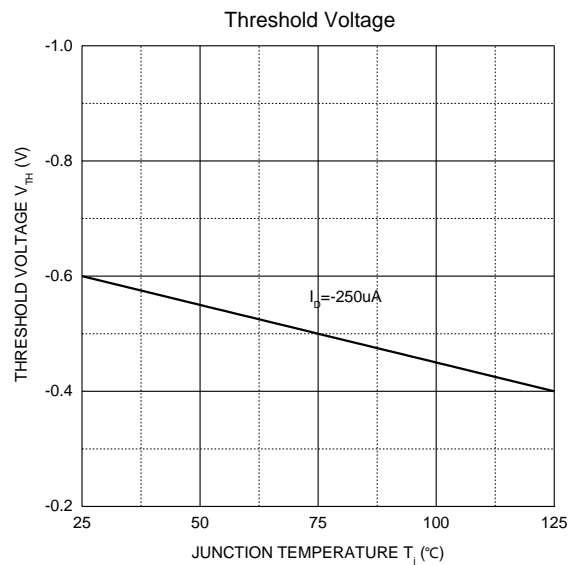
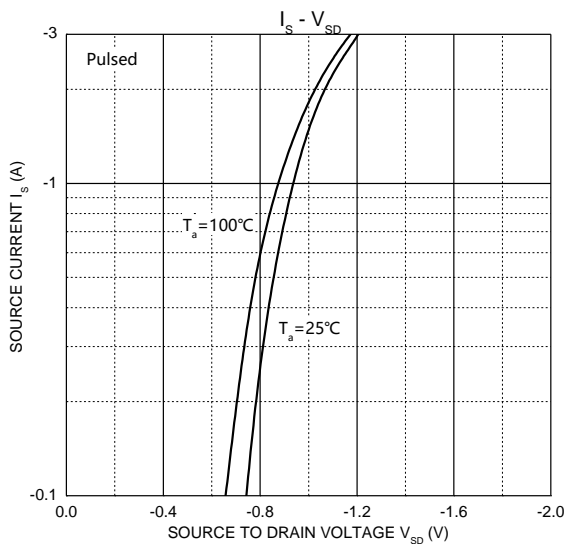
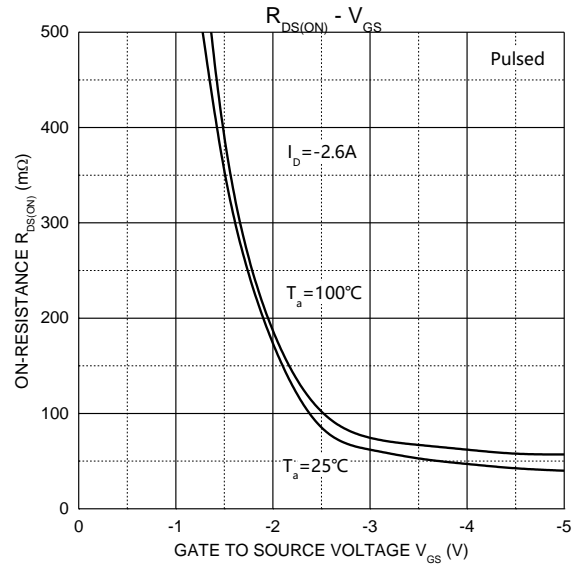
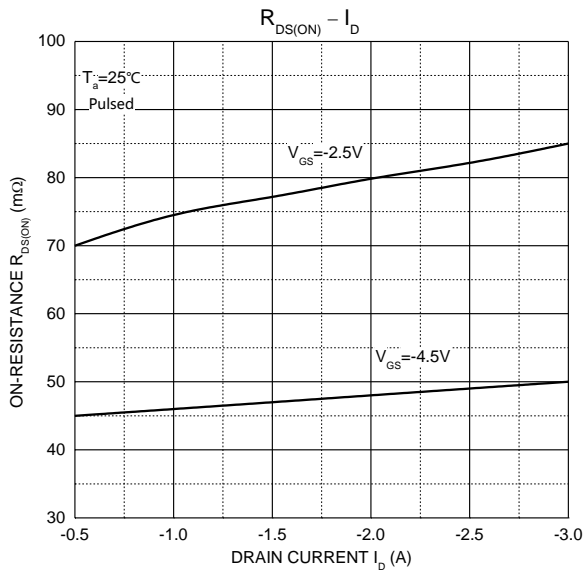
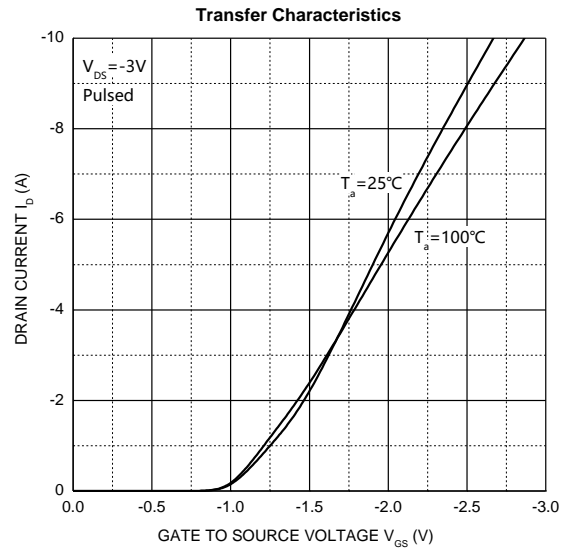
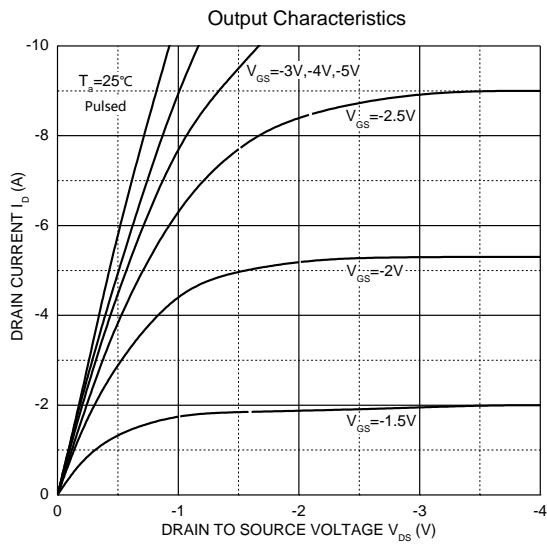
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 16V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V			±100	nA
On Characteristics³						
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.4	0.6	1.0	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} = 4.5V, I _D = 4.0A		23	35	mΩ
		V _{GS} = 2.5V, I _D = 2.5A		30	43	
Forward transconductance	g _{FS}	V _{DS} = 5V, I _D = 3.6A	5			S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz		595		pF
Output Capacitance	C _{oss}			106		
Reverse Transfer Capacitance	C _{rss}			59		
Switching Characteristics						
Total gate charge	Q _g	V _{DS} = 10V, V _{GS} = 4.5V, I _D = 4.3A		6.6		nC
Gate-source charge	Q _{gs}			0.9		
Gate-drain charge	Q _{gd}			1.4		
Turn-on delay time	t _{d(on)}	V _{DD} = 10V, R _L = 1.5Ω, V _{GS} = 4.5V, R _G = 3Ω		13		ns
Turn-on rise time	t _r			54		
Turn-off delay time	t _{d(off)}			18		
Turn-off fall time	t _f			11		
Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	V _{GS} = 0V, I _{SD} = 1.0A			1.2	V

Notes :

- 1.R_{θJA} is measured with the device mounted on 1 in² FR4 board with 1 oz. single side copper, in a still air environment with T_A = 25°C.
- 2.R_{θJA} is measured in the steady state
- 3.Pulse test : Pulse width ≤ 380μs, duty cycle ≤ 2%.

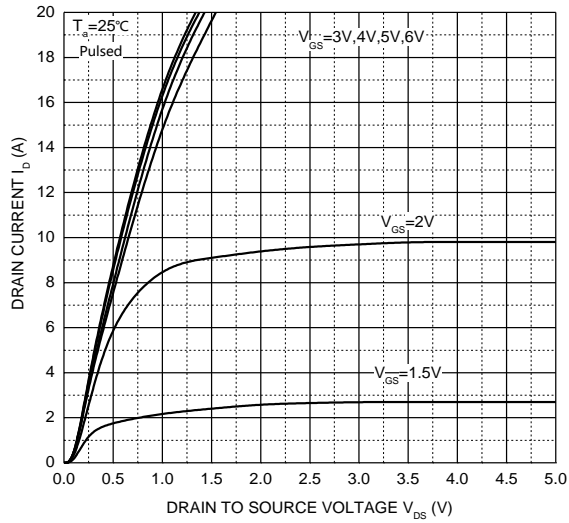
Typical Electrical and Thermal Characteristics

P-Channel MOS

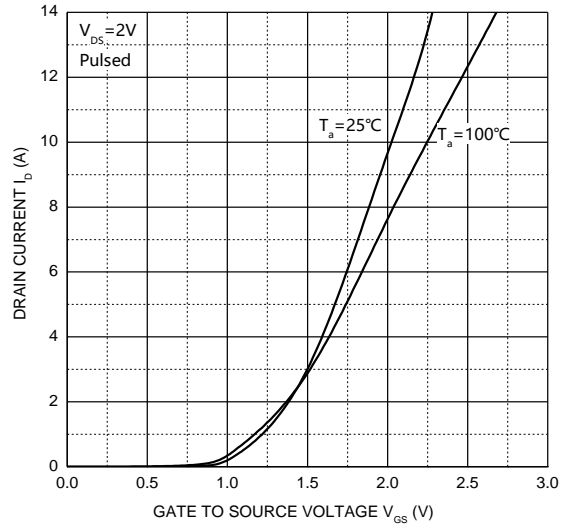


N-Channel MOS

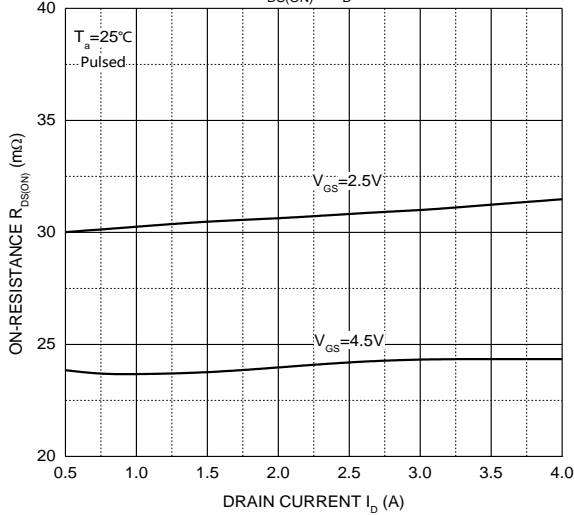
Output Characteristics



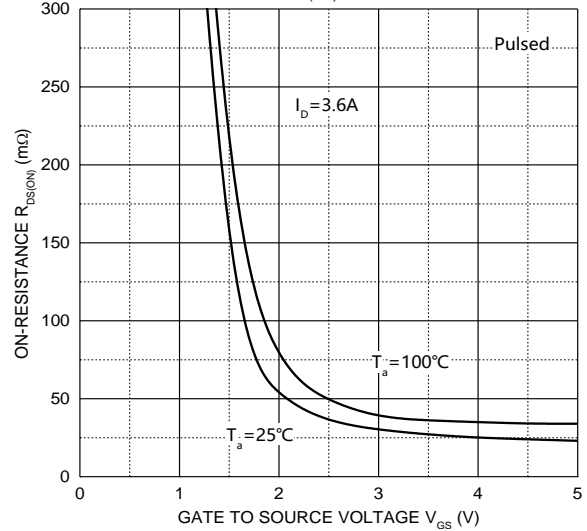
Transfer Characteristics



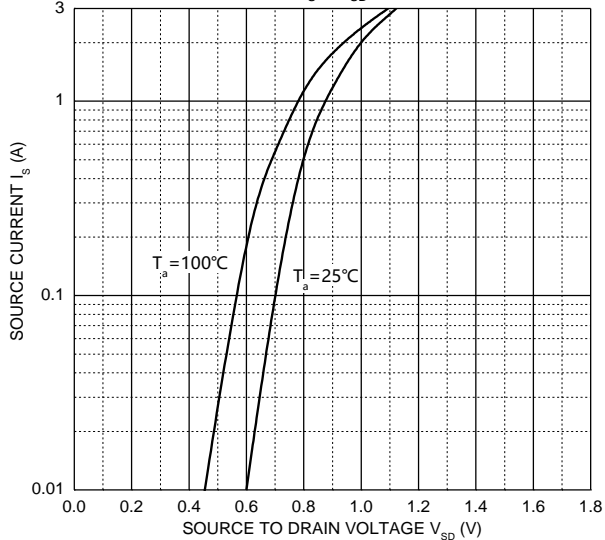
$R_{DS(ON)} - I_D$



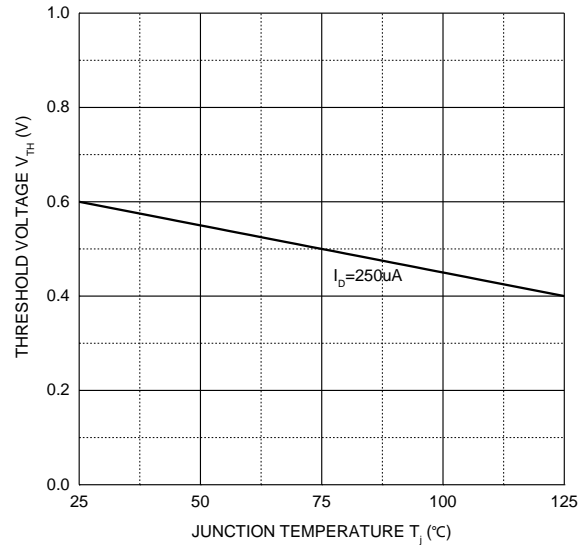
$R_{DS(ON)} - V_{GS}$

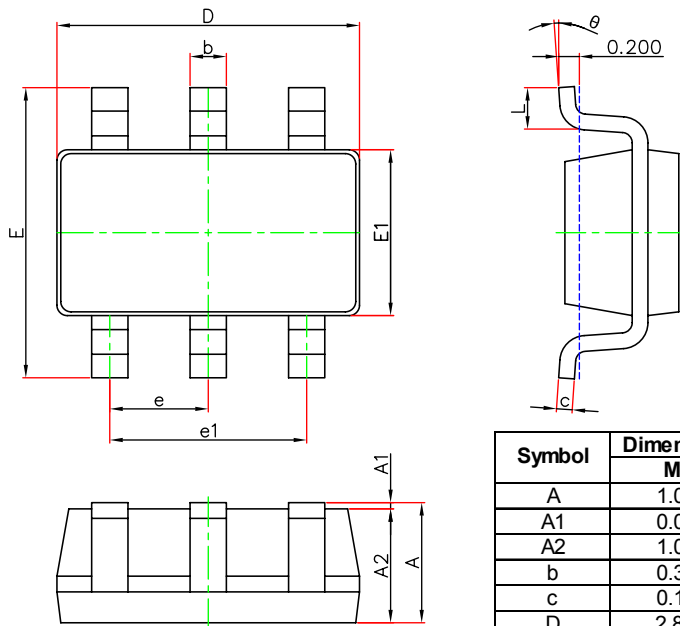


$I_S - V_{SD}$



Threshold Voltage



SOT-23-6L Package Information


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