Leiditech

LM2102

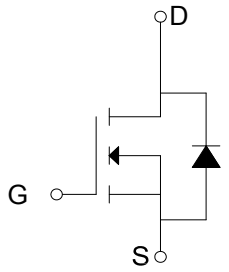
N-Channel Enhancement MOSFET

Features

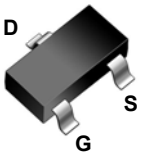
- V_{DS}=20V, I_D=2.1A
- $R_{DS(ON)}$<68mΩ@V_{GS}=4.5V
- $R_{DS(ON)}$<115mΩ@V_{GS}=2.5V
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Main Applications

- Battery Protection
- Load Switch
- Power Management



Schematic diagram



SOT-323 Top View

Absolute Maximum Ratings *($T_{Ambient}$=25ºC unless noted otherwise)*

Symbol	Description	Limit	Unit
V_{DS}	Drain-Source Voltage	20	Volt
V_{GS}	Gate-Source Voltage	±8	Volt
I_D	Drain Current-Continuous	2.1	Amp
I_{DM}	Drain Current-Pulsed (Note 1)	7.8	Amp
P_D	Maximum Power Dissipation	0.2	Watt
T_J	Operating Temperature Range	-55 to +150	℃
T_{STG}	Storage Temperature Range	-55 to +150	℃

Thermal Characteristic

Symbol	Description	Limit	Unit
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (Note 2)	625	℃/W

Electrical Characteristics *($T_{Ambient}$=25ºC unless noted otherwise)*

Symbol	Parameters	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0 V, I_D=250μA	20			Volt
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=16V, V_{GS}=0V			1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±8V, V_{DS}=0V			±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, ID=250μA	0.65		1.2	Volt
$R_{DS(ON)}$	Drain-Source On-State Resistance[1]	V_{GS}=4.5V, I_D=3.6A		59	68	mΩ
		V_{GS}=2.5V, I_D=3.1A		70	115	mΩ
g_{FS}	Forward Transconductance[1]	V_{DS}=5V, I_D=3.6A		8		S
Dynamic Characteristics						
C_{iss}	Input Capacitance[2]	V_{DD}=10V, V_{GS}=0V , F=1MHz		300		pF
C_{oss}	Output Capacitance[2]			120		pF
C_{rss}	Reverse Transfer Capacitance			80		pF
Switching Characteristics						
td(on)	Turn-on Delay Time	V_{DD}=10V, I_D=3.6A V_{GS}=4.5V, R_G=6Ω		7	15	nS
tr	Turn-on Rise Time			55	80	nS
td(off)	Turn-Off Delay Time			16	60	nS
tf	Turn-Off Fall Time			10	25	nS
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage(	V_{GS}=0V, I_S=0.94A		0.76	1.2	V

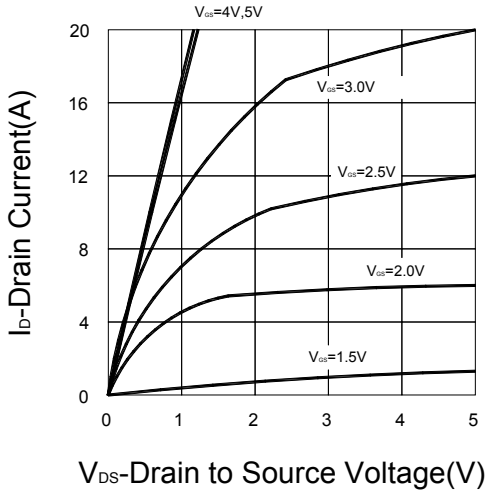
Notes:

1. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

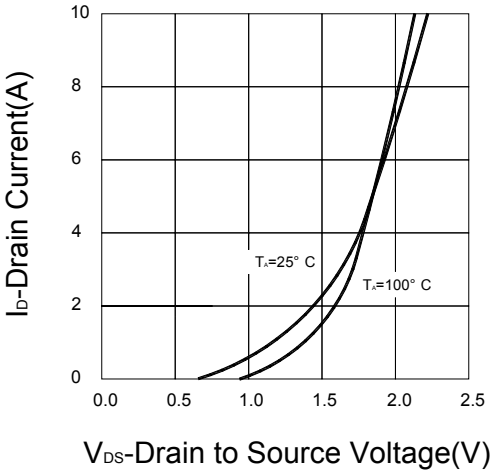
2. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics

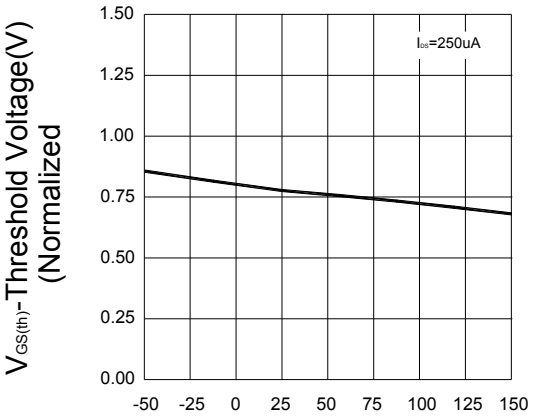
Output Characterics



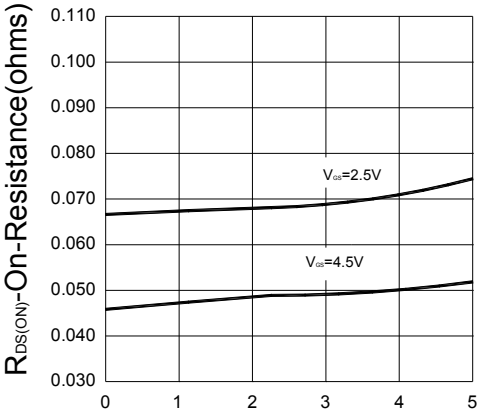
Transfer Characterics



Threshold Voltage vs. Junction Temperature

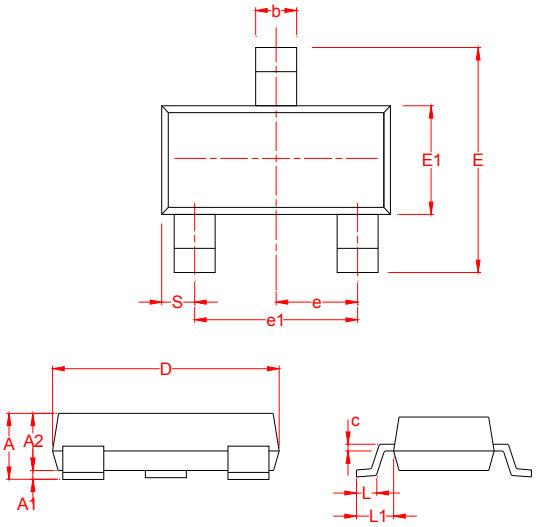


On-Resistance vs. Drain Current



Package Outline Dimension

SOT-323



DIM	MILLMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.10	0.031	0.043
A1	0.00	0.10	0.0000	0.004
A2	0.80	1.00	0.031	0.039
b	0.20	0.40	0.008	0.016
c	0.08	0.15	0.003	0.006
D	2.00	2.20	0.079	0.087
E	1.65	1.95	0.064	0.076
E1	1.15	1.35	0.045	0.053
e	0.65 TYP		0.026 TYP	
e1	1.20	1.40	0.047	0.055
L	0.26	0.46	0.010	0.018
L1	0.525 Ref		0.021 Ref	
S	0.50 Ref		0.020 Ref	

Shanghai Leiditech Electronic Co.,Ltd
Email: sale1@leiditech.com
Tel : +86- 021 50828806
Fax : +86- 021 50477059