Leiditech

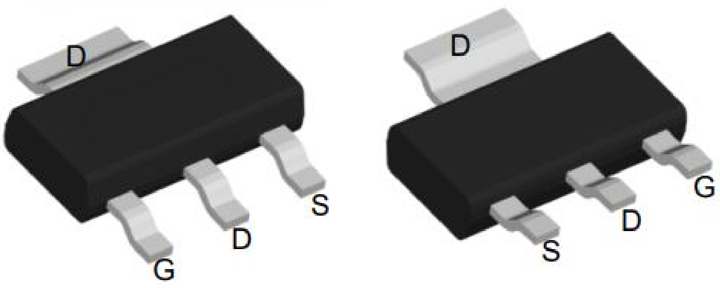
LMTM5N15

150V N-Channel Enhancement Mode MOSFET

Description

The LMTM5N15 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

Dimensions SOT-223-3L

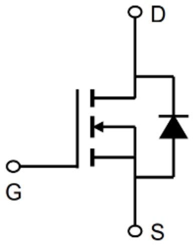


General Features

V_{DS} = 150V I_D =5A

$R_{DS(ON)}$ < 320mΩ@ V_{GS}=10V **(Typ.260mΩ)**

Pin Configuration



Application

- ●Automative lighting
- ●Load switch
- ●Uninterruptible power supply

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
LMTM5N15	AP5N15MSI	SOT-223-3L	Ø330mm	12mm	2500 units

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	150	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V	5	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 10V	3.1	A
IDM	Pulsed Drain Current[1]	15	A
P_D@T_C=25℃	Total Power Dissipation	2	W
P_D@T_A=25℃	Total Power Dissipation[3]	1.1	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
RθJA	Maximum Thermal Resistance, Junctionambient	70	℃/W
RθJC	Maximum Thermal Resistance, Junction-case	36	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	150	170		V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	1	1.6	3	V
IGSS	Gate Leakage Current	VDS=0V, VGS=±20V			±100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=150V, VGS=0V			1	μA
RDS(ON)	Drain-Source On-Resistance	VGS=10V, ID= 7A		260	320	mΩ
RDS(ON)	Drain-Source On-Resistance	VGS=4.5V, ID= 6A		300	380	mΩ
VSD	Diode Forward Voltage	IS=1.8A, VGS=0V		0.8	1.2	V
Qg	Total Gate Charge	VDS=75V, VGS=10V, ID=10A		17.5		nC
Qgs	Gate-Source Charge			4.5		nC
Qgd	Gate-Drain Charge			4.7		nC
Ciss	Input Capacitance	VDS=25V, VGS=0V,f=1MHz		538		pF
Coss	Output Capacitance			55		pF
Crss	Reverse Transfer Capacitance			21		pF
td(on)	Turn-On Delay Time	VDS=75V, RL =10.68Ω, VGEN=10V, RG=6Ω		11.6		ns
tr	Turn-On Rise Time			9.3		ns
td(off)	Turn-Off Delay Time			29.3		ns
tf	Turn-Off Fall Time			3.7		ns

Note :

1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3、The power dissipation is limited by 150℃ junction temperature

4、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Typical Characteristics

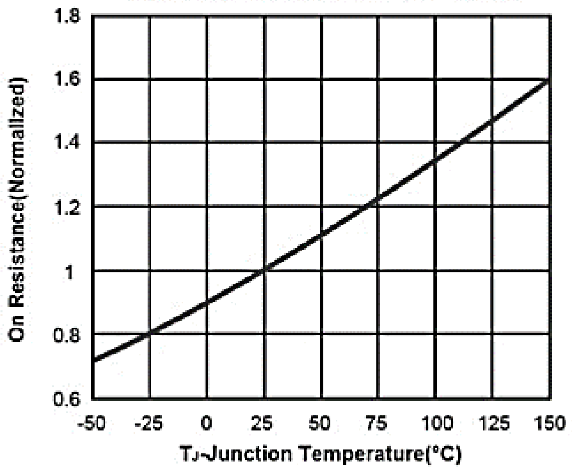


Fig.1 On Resistance Vs Junction Temperature

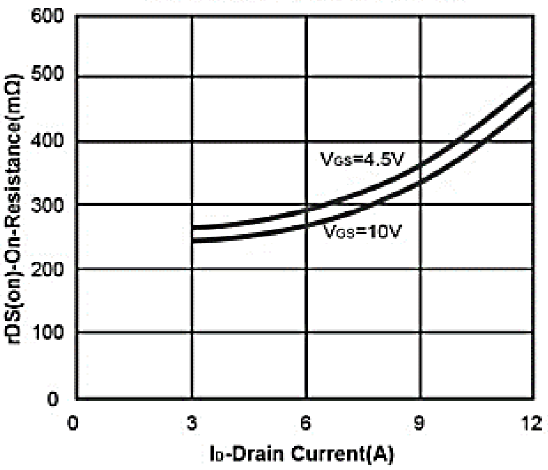


Fig.2 On-Resistance Vs.Drain Current

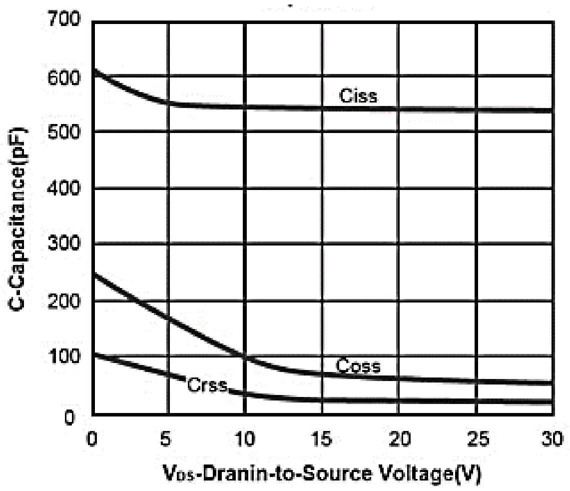


Fig.3 Capacitance

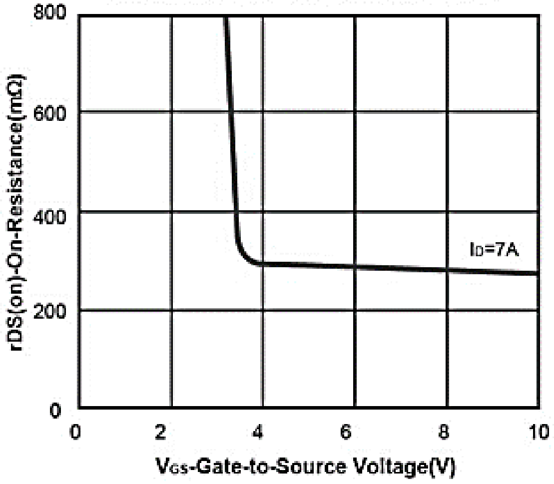


Fig.4 On-Resistance Vs. Gate-to-Sourece Voltage

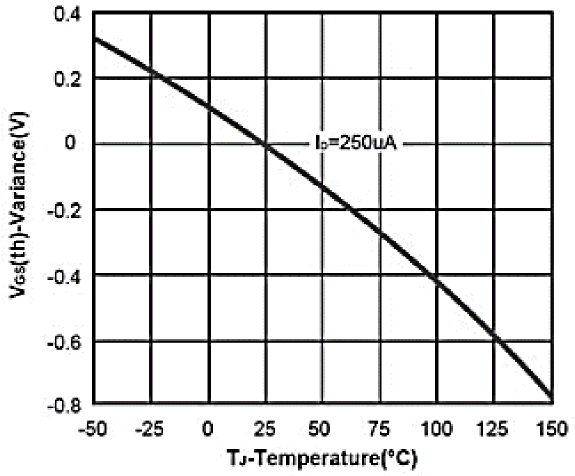


Fig.5 Threshold Voltage

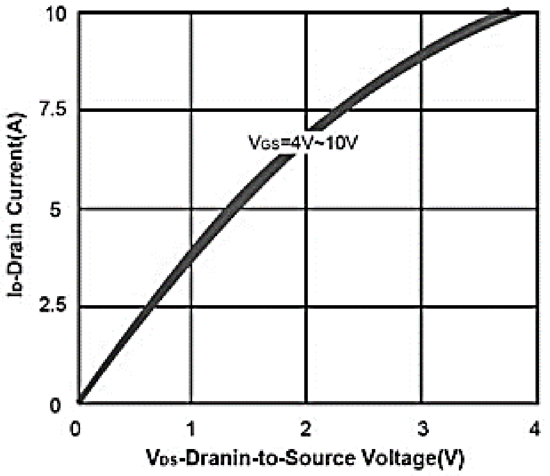


Fig.6 On-Region Characteristics

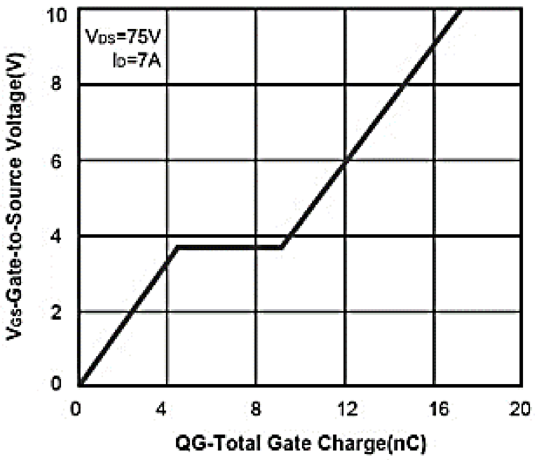


Fig.7 Gate Charge

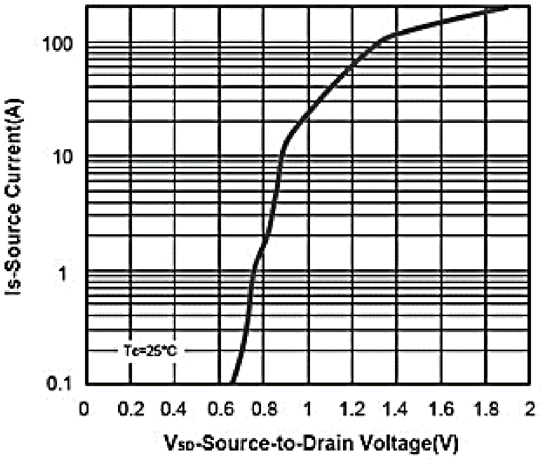


Fig.8 Body-diode Characteristice

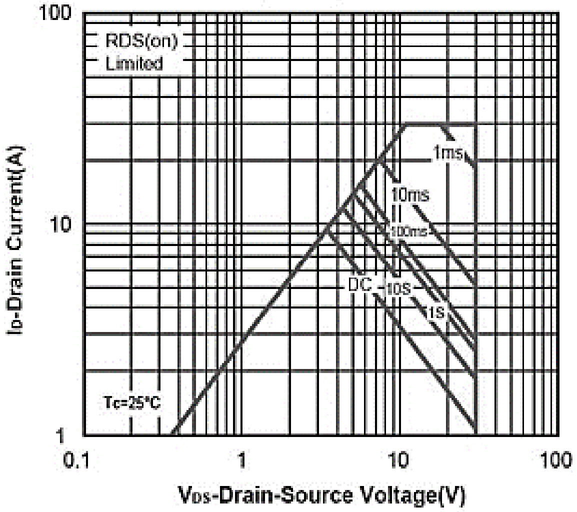
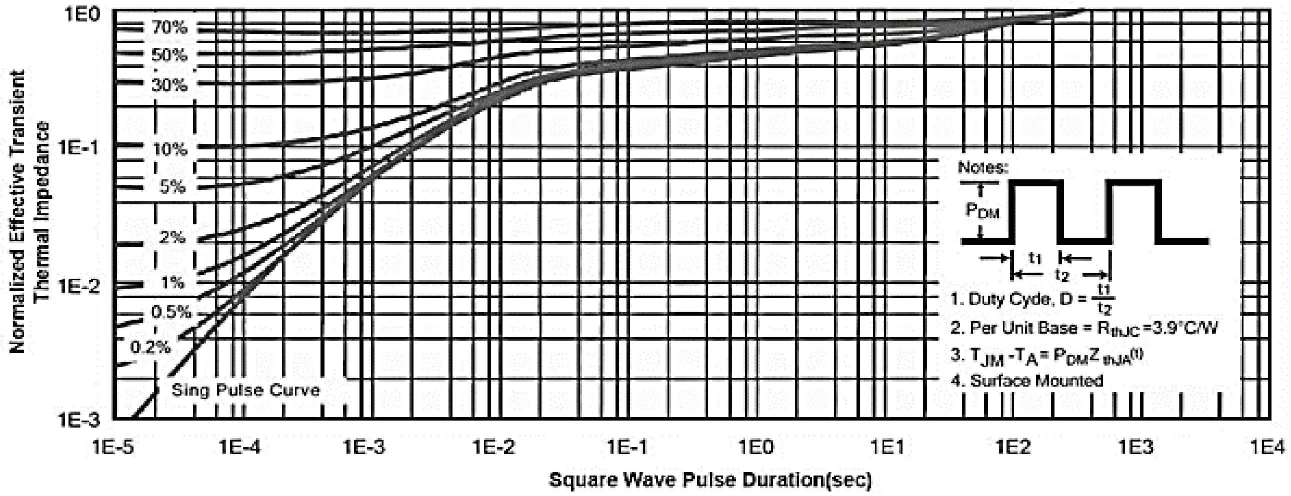


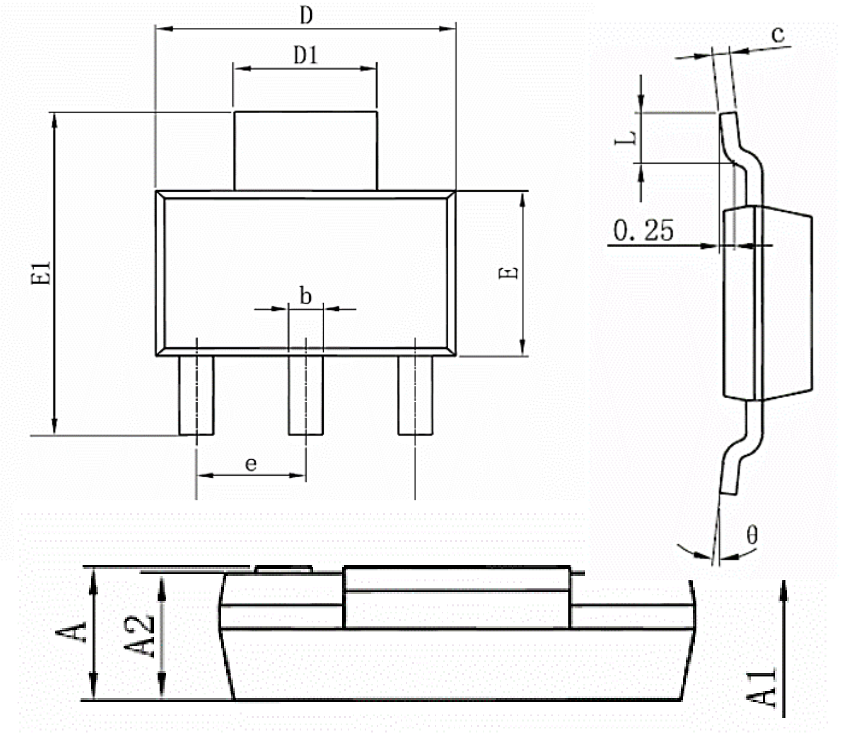
Fig.9 Safe Operating Area



1. Duty Cyde, D = $\frac{t1}{t2}$
2. Per Unit Base = R_{thJC}=3.9°C/W
3. T_{JM} -T_A= $P_{DM}Z_{thJA}^{(t)}$
4. Surface Mounted

Fig.10 Normalized Maximum Transient Thermal Impedance

Package Mechanical Data:SOT-223-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.52	1.8	0.06	0.049
A1	0.000	0.100	0.000	0.004
A2	1.5	1.7	0.059	0.045
b	0.66	0.82	0.026	0.032
c	0.25	0.35	0.010	0.014
D	6.2	6.4	0.244	0.252
D1	2.9	3.1	0.114	0.122
E	3.3	3.7	0.130	0.146
E1	6.83	7.07	0.269	0.278
e	2.300(BSC)		0.037(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.15	0.035	0.045
θ	0°	10°	0°	10°

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