Leiditech

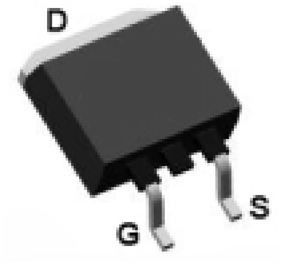
LMFZ150N10

100V N-Channel Enhancement Mode MOSFET

Description

The LMFZ150N10 uses advanced APM-SGTII technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.

Dimensions TO-263

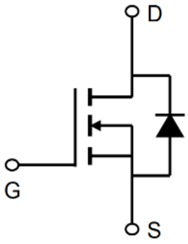


General Features

V_{DS} = 100V I_D =150A

$R_{DS(ON)}$ < 5.5mΩ @ V_{GS}=10V (Typ.4.2mΩ)

Pin Configuration



Application

- DC/DC Converter
- LED Backlighting
- Power Management Switches

Package Marking and Ordering Information

Device	Device Marking	Device Package	Reel Size	Tape width	Quantity
LMFZ150N10	AP150N10T	TO-263	-	-	800 units

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	100	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	150	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	110	A
IDM	Pulsed Drain Current	420	A
EAS	Single Pulse Avalanche Energy	250	mJ
IAS	Avalanche Current	53.4	A
P_D@T_C=25℃	Total Power Dissipation^4	148	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta}JA$	Thermal Resistance Junction-Ambient	0.84	℃/W
$R_{\theta}JC$	Thermal Resistance Junction-Case	62	℃/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
VDSS	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	100	-	-	V
IGSS	Gate-body Leakage current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current T_J=25°C	V_{DS} =100V, V_{GS} = 0V	-	-	1	μA
IDSS	Zero Gate Voltage Drain Current T_J=100°C		-	-	100	
VGS(th)	Gate-Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.0	2.9	4.0	V
RDS(on)	Drain-Source on-Resistance[2]	V_{GS} = 10V, I_D = 20A	-	4.2	5.5	mΩ
Ciss	Input Capacitance	V_{DS} = 50V, V_{GS} =0V, f =1MHz	-	4400	-	pF
Coss	Output Capacitance		-	645	-	
Crss	Reverse Transfer Capacitance		-	20	-	
R_g	Gate Resistance	V_{GS} = 0V, V_{DS} = 0V, f =1MHz	-	1.7	-	Ω
Q_g	Total Gate Charge	V_{GS} = 10V, V_{DS} = 50V, I_D=20A	-	75	-	nC
Qgs	Gate-Source Charge		-	17	-	
Qgd	Gate-Drain Charge		-	13	-	
td(on)	Turn-on Delay Time	V_{GS} =10V, V_{DS} =50V, R_G = 3Ω, I_D= 20A	-	15.4	-	ns
t_r	Rise Time		-	13	-	
td(off)	Turn-off Delay Time		-	34	-	
t_f	Fall Time		-	6.2	-	
VSD	Diode Forward Voltage[2]	I_F = 20A, V_{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	-	-	95	A
trr	Body Diode Reverse Recovery Time	I_F = 20A, dI/dt=100A/μs	-	55	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	101	-	nC

Notes:

1、The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.

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

3、The EAS data shows Max. rating . The test condition is V_{DD}=50V, V_{GS}=10V, L=0.4mH, I_{AS}=32A

4、The power dissipation is limited by 150°C junction temperature

5、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Thermal Characteristics

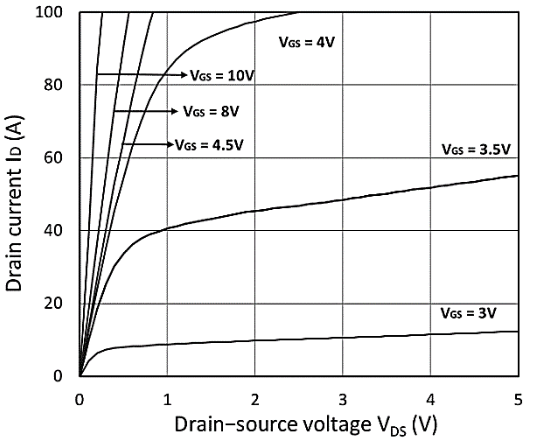


Figure 1. Output Characteristics

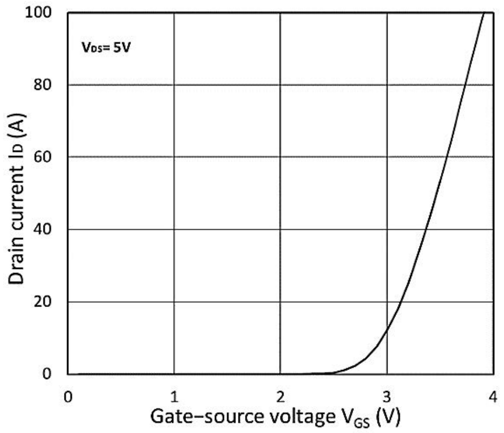


Figure 2. Transfer Characteristics

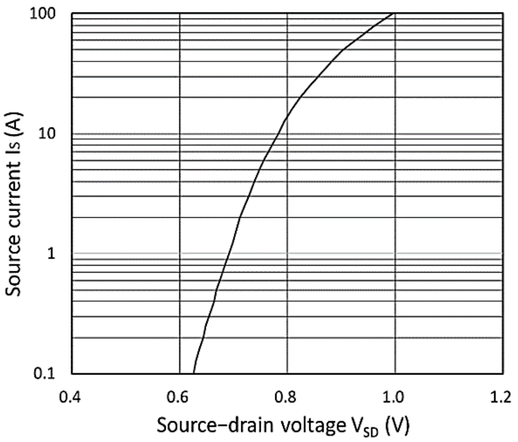


Figure 3. Forward Characteristics of Reverse

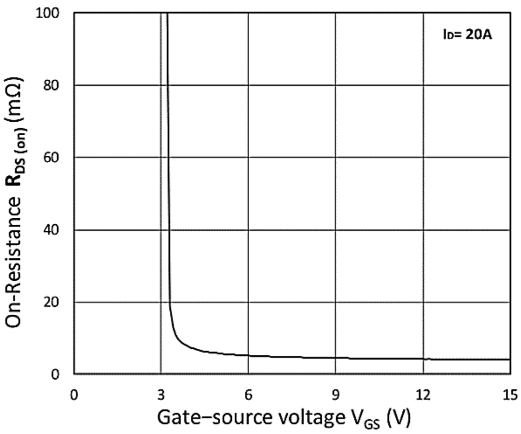


Figure 4. RDS(ON) vs. VGS

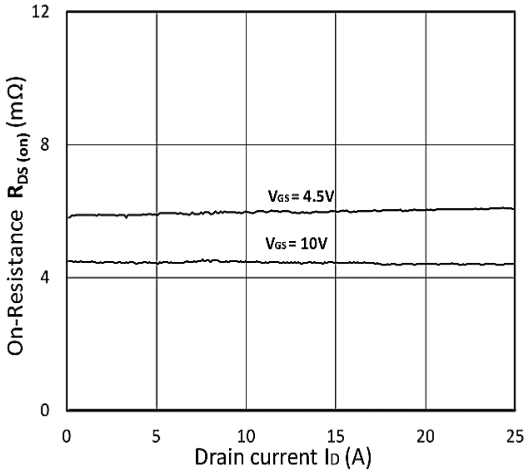


Figure 5. R DS(ON) vs. I D

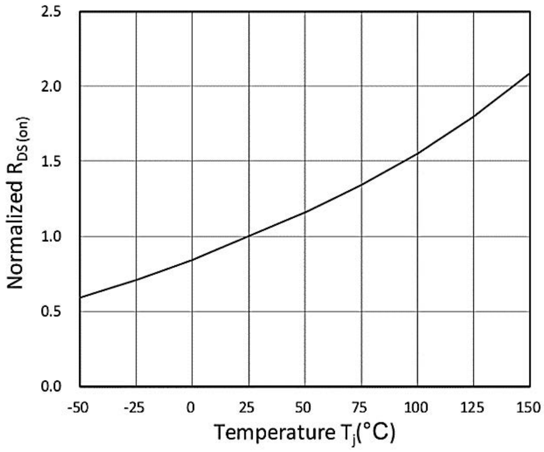


Figure 6. Normalized R DS(on) vs. Temperature

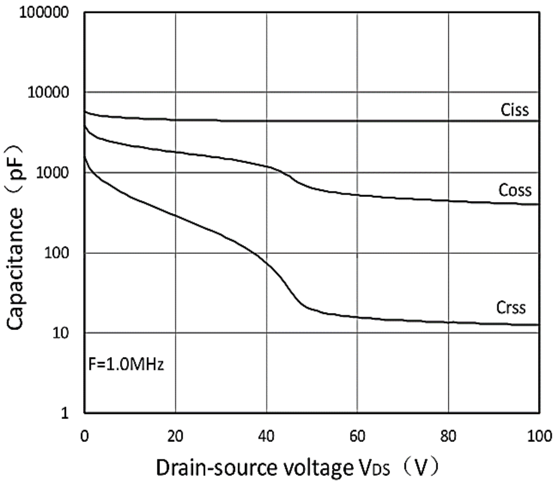


Figure 7. Capacitance Characteristics

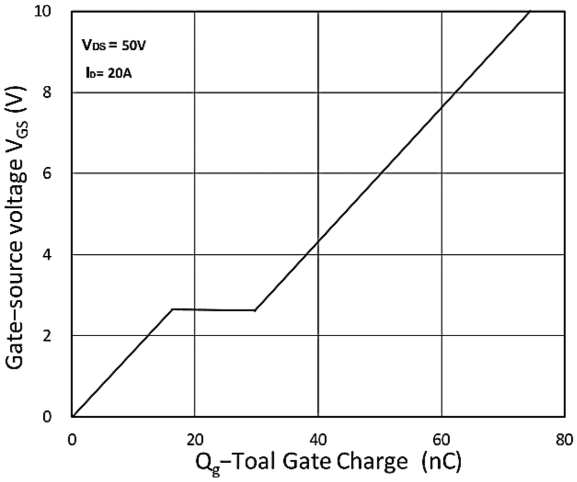


Figure 8. Gate Charge Characteristics

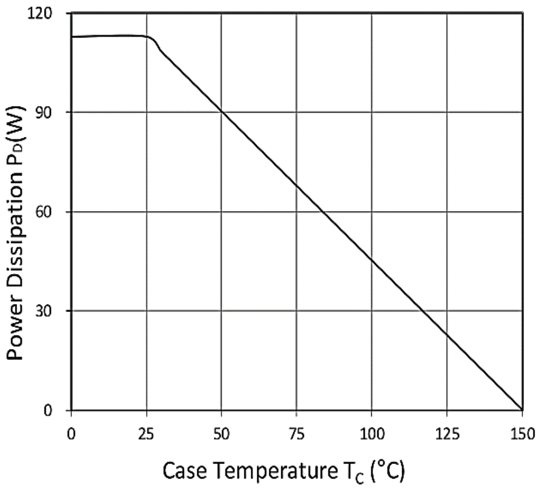


Figure 9. Power Dissipation

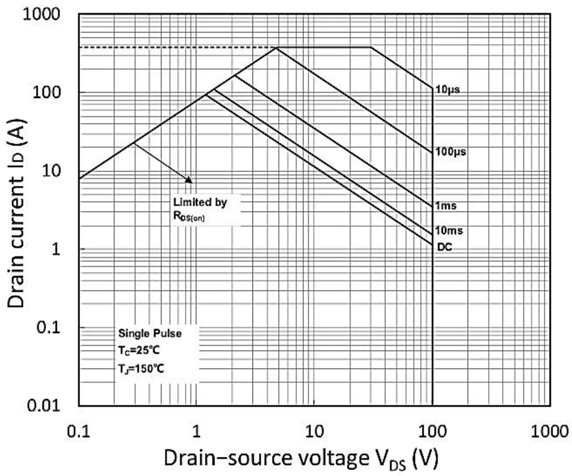


Figure10. Safe Operating Area

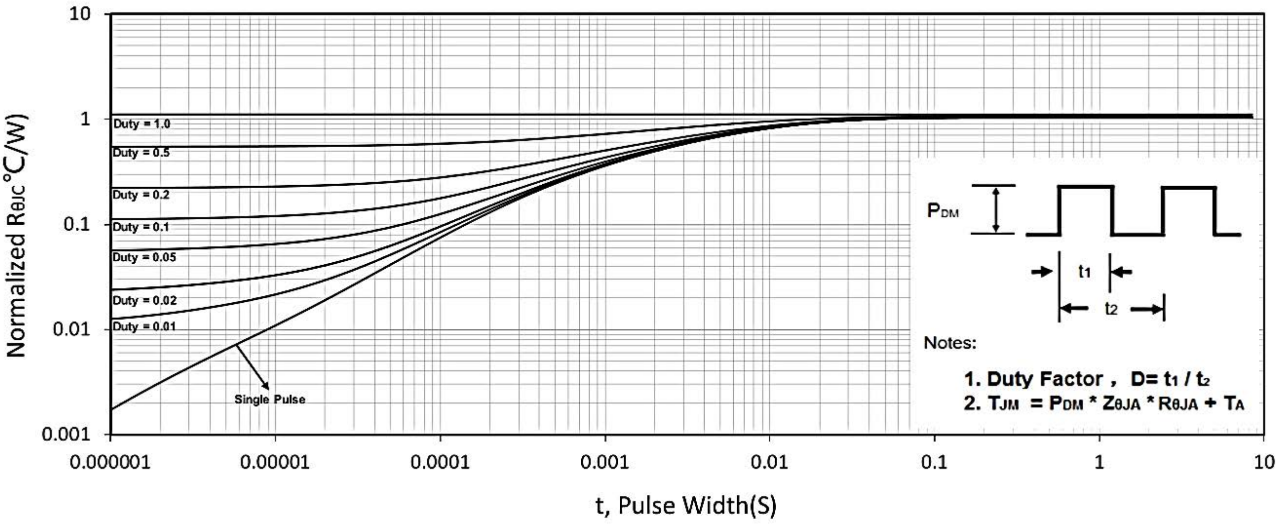


Figure 11. Normalized Maximum Transient Thermal Impedance

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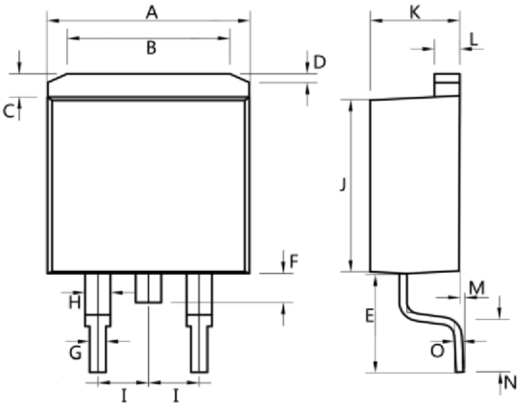

Dim.	Min.	Max.
A	10.0	10. 5
B	7.25	7.75
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.75	0.95
H	1.15	1.35
I	Typ 2.54	
J	8.4	8.6
K	4.4	4.6
L	1.25	1.45
M	0.02	0.1
N	2.4	2.8
O	0.35	0.45
All Dimensions in millimeter		