Leiditech

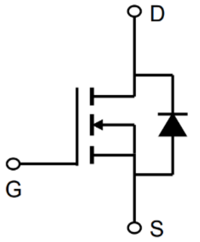
LMFB120N08

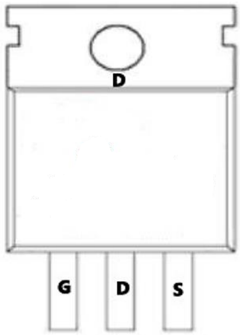
85V N-Channel Enhancement Mode MOSFET

Description

The LMFB120N08 uses advanced 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.





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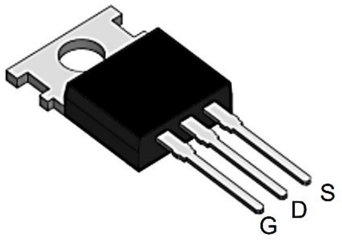

General Features

V_{DS} = 85V I_D =120A

$R_{DS(ON)}$ < 5.2mΩ V_{GS}=10V

Application

Battery protection

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
LMFB120N08	TO-220	AP120N08P XXX YYYY	1000

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	85	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	120	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	100	A
IDM	Pulsed Drain Current	480	A
EAS	Single Pulse Avalanche Energy	560	mJ
IAS	Avalanche Current	53	A
P_D@T_C=25℃	Total Power Dissipation[4]	220	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
R_{θ}JA	Thermal Resistance Junction-Ambient	0.70	℃/W
R_{θ}JC	Thermal Resistance Junction-Case	60	℃/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	85	95	-	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} = 80V, V_{GS} = 0V	-	-	1	μA
IDSS	Zero Gate Voltage Drain Current T_J=100°C	V_{DS} = 80V, V_{GS} = 0V	-	-	100	
VGS(th)	Gate-Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2	3	4	V
RDS(on)	Drain-Source on-Resistance[2]	V_{GS} = 10V, I_D = 20A	-	4.2	5.2	mΩ
gfs	Forward Transconductance[2]	V_{DS} = 5V, I_D =20A	-	55	-	S
Ciss	Input Capacitance	V_{DS} = 40V, V_{GS} =0V, f =1MHz	-	4645	-	pF
Coss	Output Capacitance		-	673	-	
Crss	Reverse Transfer Capacitance		-	41	-	
R_g	Gate Resistance	VDS=0V , VGS=0V , f=1MHz	-	1.8	-	Ω
Q_g	Total Gate Charge	V_{GS} = 10V, V_{DS} = 40V, I_D= 50A	-	61.3	-	nC
Qgs	Gate-Source Charge		-	21	-	
Qgd	Gate-Drain Charge		-	11	-	
td(on)	Turn-on Delay Time	V_{GS} =10V, V_{DS} = 40V, R_G = 3Ω, I_D= 50A	-	16.5	-	ns
t_r	Rise Time		-	51.8	-	
td(off)	Turn-off Delay Time		-	37.1	-	
t_f	Fall Time		-	8.2	-	
VSD	Diode Forward Voltage[2]	I_S = 50A, V_{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current[1,5]	V_G = V_D= 0V , Force Current	-	-	125	A
trr	Reverse Recovery Time[2]	I_F=20A, di/dt = 100A/μS	-	69	-	ns
Q_{rr}	Reverse Recovery Charge[2]		-	141	-	nC

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 .The EAS data shows Max. rating .
3、The test cond≦ 300us duty cycle ≦ 2%, duty cycle ition is V_{DD}=64V_{GS}=10V,L=0.1mH,I_{AS}=53.8A
4、The power dissipation is limited by 175℃ junction temperature
5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

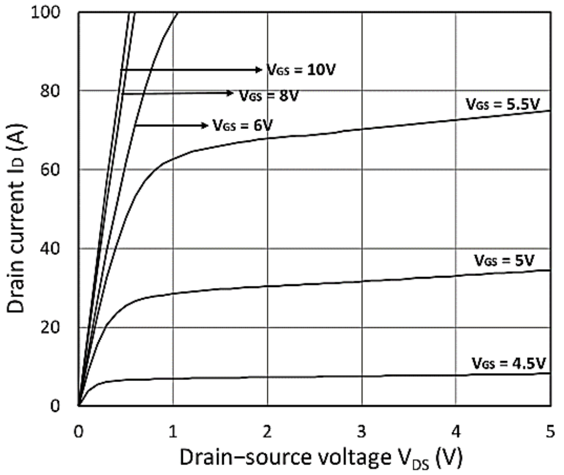

Figure 1. Output Characteristics

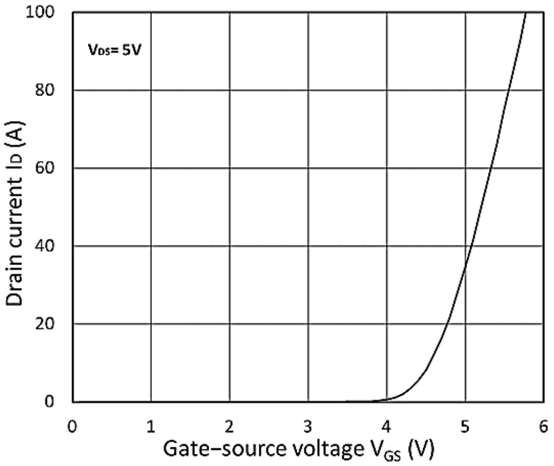

Figure 2. Transfer Characteristics

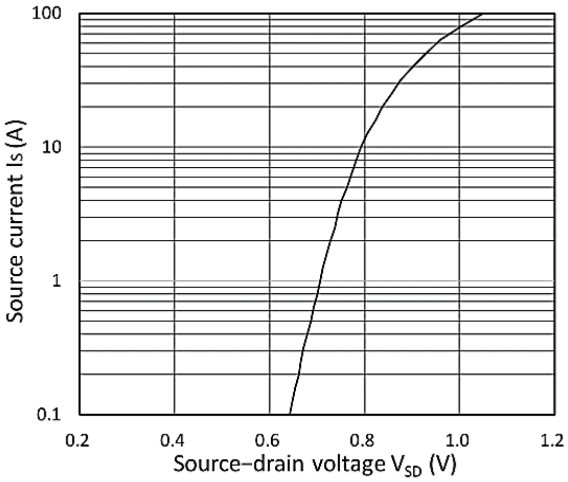

Figure 3. Forward Characteristics of Reverse

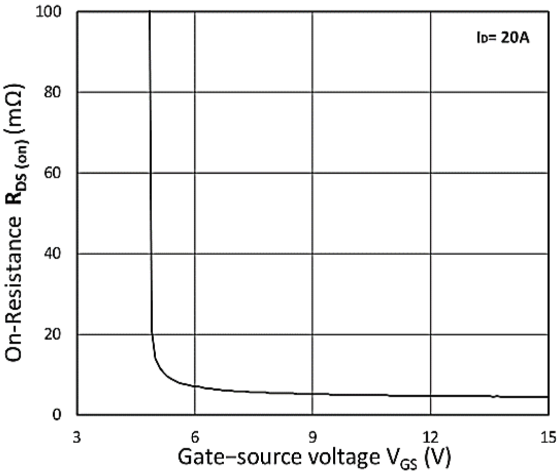

Figure 4. RDS(ON) vs.VGS

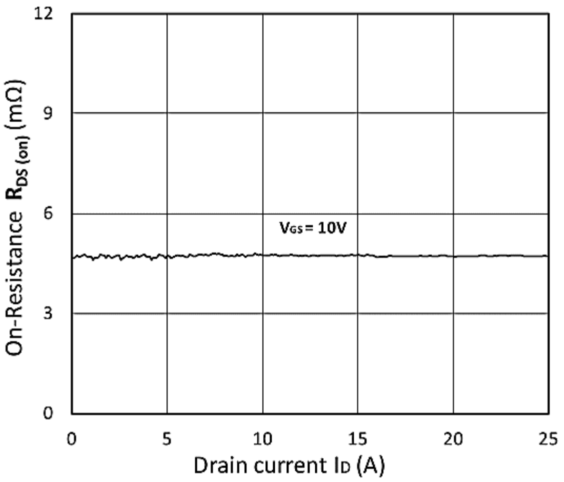

Figure 5. RDS(ON) vs. ID

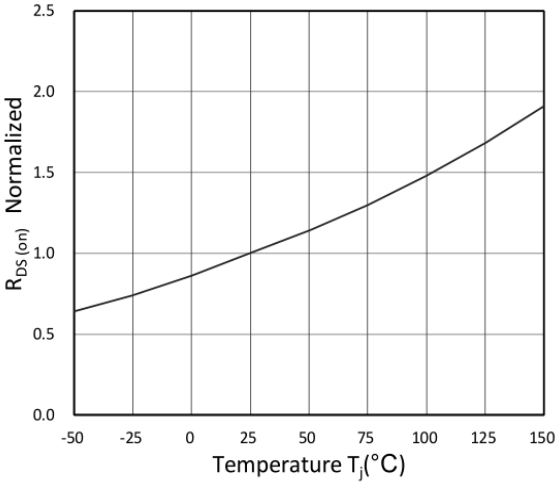

Figure 6. Normalized R DS(on) vs. Temperature

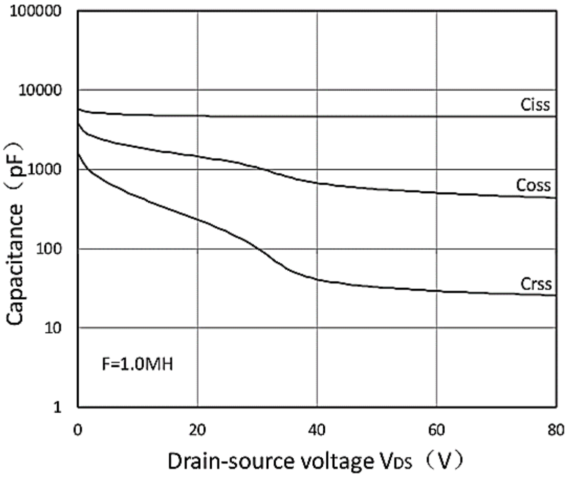

Figure 7. Capacitance Characteristics

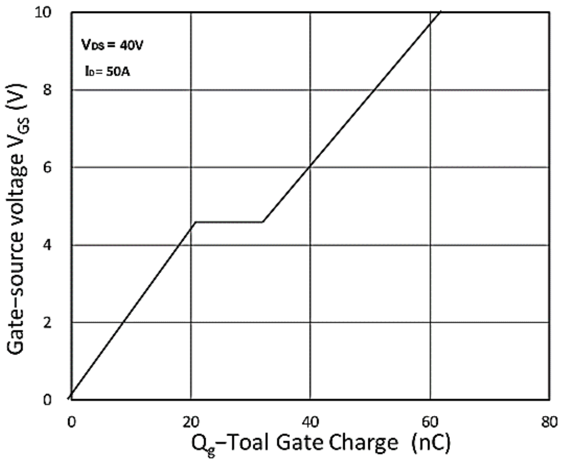

Figure 8. Gate Charge Characteristics

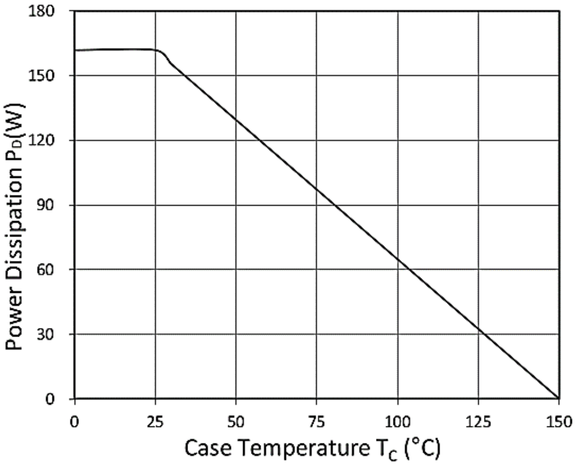

Figure 9. Power Dissipation

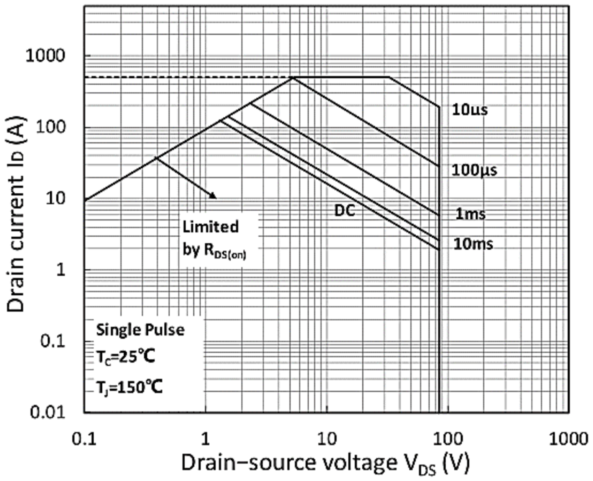

Figure10. Safe Operating Area

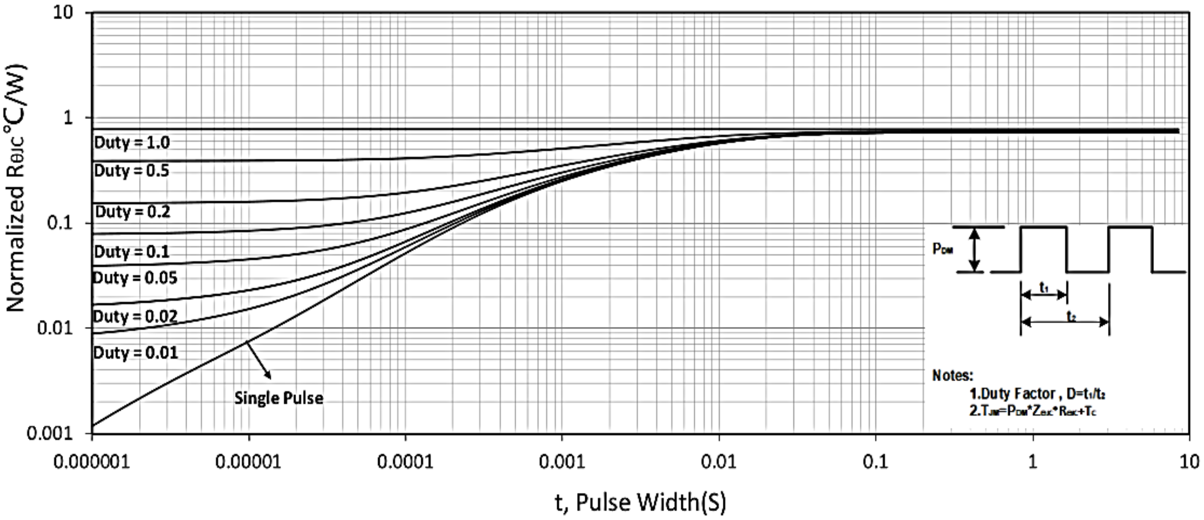

Figure 11. Normalized Maximum Transient Thermal Impedance

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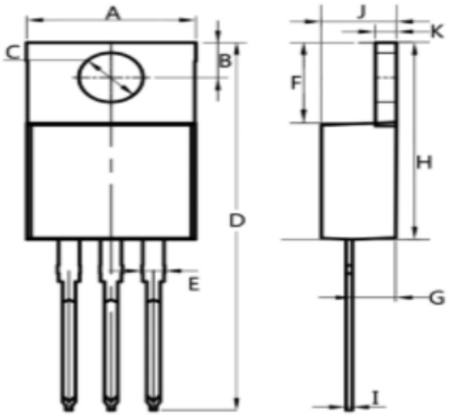

Dim.	Min.	Max.
A	10.0	10.4
B	2.5	3.0
C	3.5	4.0
D	28.0	30.0
E	1.1	1.5
F	6.2	6.6
G	2.9	3.3
H	15.0	16.0
I	0.35	0.45
J	4.3	4.7
K	1.2	1.4
All Dimensions in millimeter		