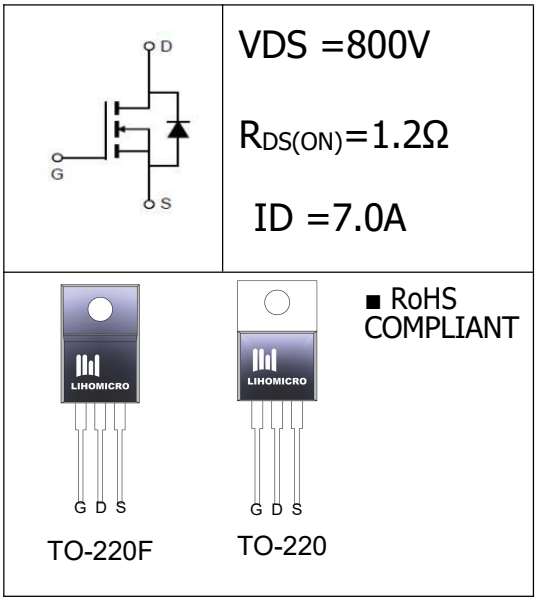
650V Power MOSFET

● General Description

The Power MOSFET LH7N80 with a low resistance package to provide extremely low RDS(ON).This device is ideal for switch power and LED power.



● Features

■LOW thermal resistance

■FSAT switching

■HIGH input resistance

■RoHS compliant

●Application

■Electronic ballast

■Electronic transformer

■Switch mode power supply

●Ordering Information:

Part number	LH7N80	LH7N80
Package	TO-220F	TO-220
Basic ordering unit (pcs)	1000	1000
Normal Package Material Ordering Code	LH7N80F-TO220F-TU	LH7N80T-TO220-TU
Halogen Free Ordering Code	LH7N80F-TO220F-TU-HF	LH7N80T-TO220-TU-HF

●Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current T_C = 25°C	I_D	7.0	A
Continuous Drain Current T_C= 100°C	I_D	4.2	A
Pulsed drain current	I_{DM} [1]	28	A
Single Pulse Avalanche Energy	E_{AS} [2]	340	mJ
Total Power Dissipation(TC=25℃)	Ptot	TO-220:167 TO-220F:48	W
Operating Junction Temperature	Tj	150	℃
Storage Temperature	T_{stg}	-55-150	℃

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	800			V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta Tj$	I_D=250uA, Referenced to 25°C		0.65		V/°C
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250μA	2.0		4.0	V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =800V, V_{GS} =0V, Tj=25°C			1	uA
		V_{DS} =640V, V_{GS} =0V, Tj=125°C			10	
Gate- Source Leakage Current	I_{GSS}	V_{GS} =±30V			±100	uA
Static Drain-source On	$R_{DS(ON)}$	V_{GS} =10V, I_D=3.5A 3		1.2	1.7	Ω
Transconductance	gfs	V_{DS} =15V, I_D=3.5A 3		7.0		S

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	V_{GS} = 0V, V_{DS} = 25V F = 1.0MHZ		1290		pF
Output capacitance	Coss			120		
Reverse transfer capacitance	Crss			21		
Turn -Off Delay Time	Td(off)	V_{DD}=400V, I_D =7.0A R_G=25Ω 3		80		ns
Total Gate Charge	Qg	I_D =7.0A, V_{DS} = 400V V_{GS} = 10V 3		24		nC
Gate-to-Source Charge	Qgs			6.1		
Gate-to-Drain Charge	Qgd			7.7		
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=7.0A V_{GS} =0V 3			1.4	V
Body Diode Reverse Recovery Time	Trr	Tj=25°C,If=7.0A di/dt=100A/μs 3		320		ns
Body Diode Reverse Recovery Charge	Q_{rr}			2.4		nC
Continuous Source Current (body diode)	I_S				7.0	A

●Thermal resistance

Parameter	Symbol	Max.		Unit
		TO-220FP(L)	TO-220	
Thermal resistance, junction - case	R_{thJC}	2.60	0.75	°C/W
Thermal resistance, junction - ambient	R_{thJA}	62.5	62.5	°C/W

Notes:

1. Repetitive rating: Pulse width limited by maximum junction temperature
2. Starting Tj=25ºC, VDD =50V, L=14mH, RG =25Ω, IAS=7.0A
3. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

Typical Characteristics

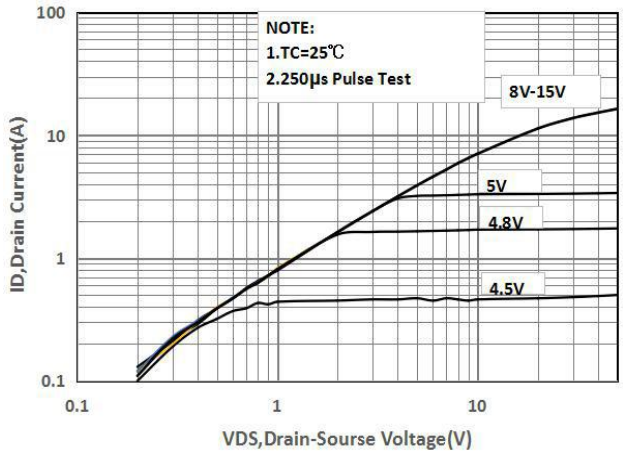


Fig1 Typical Output Characteristics, Tc=25℃

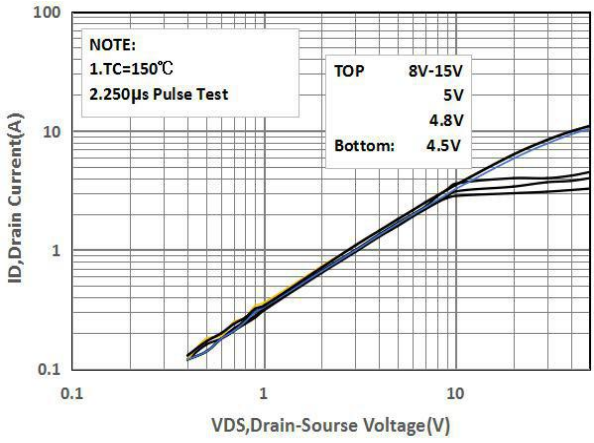


Fig2 Typical Output Characteristics, Tc=150℃

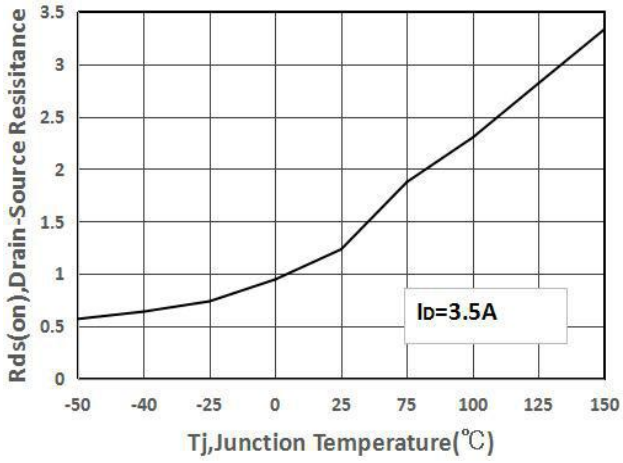


Fig3 Drain-Source On-Resistance Vs.Temperature

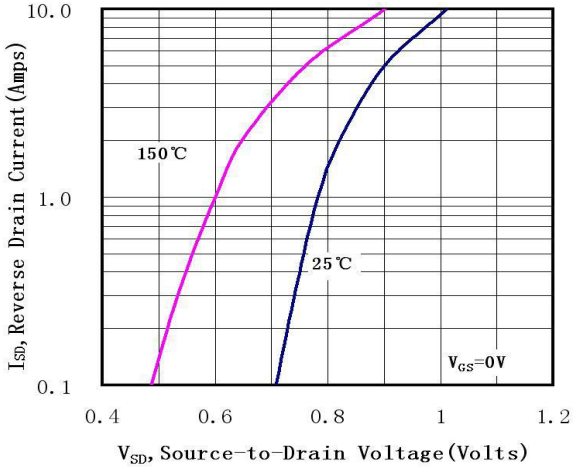


Fig4 Typical Source-Drain Diode Forward Voltage

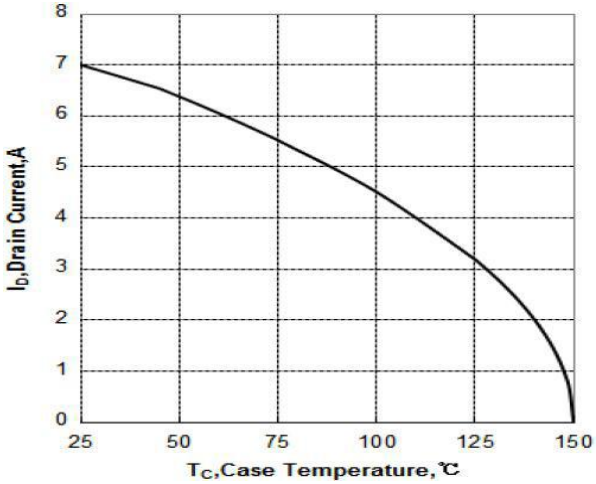


Fig5 Maximum Drain Current Vs.Case Temperature

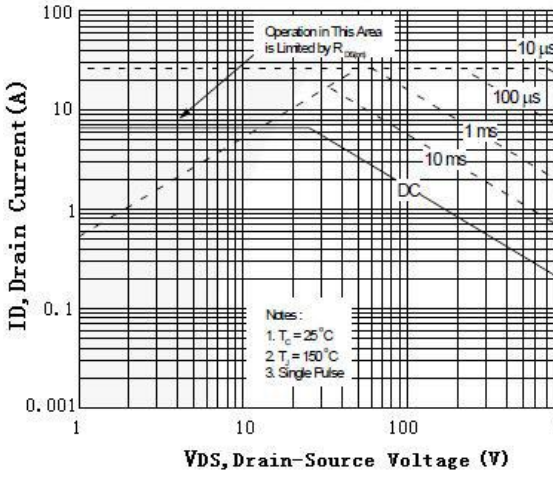
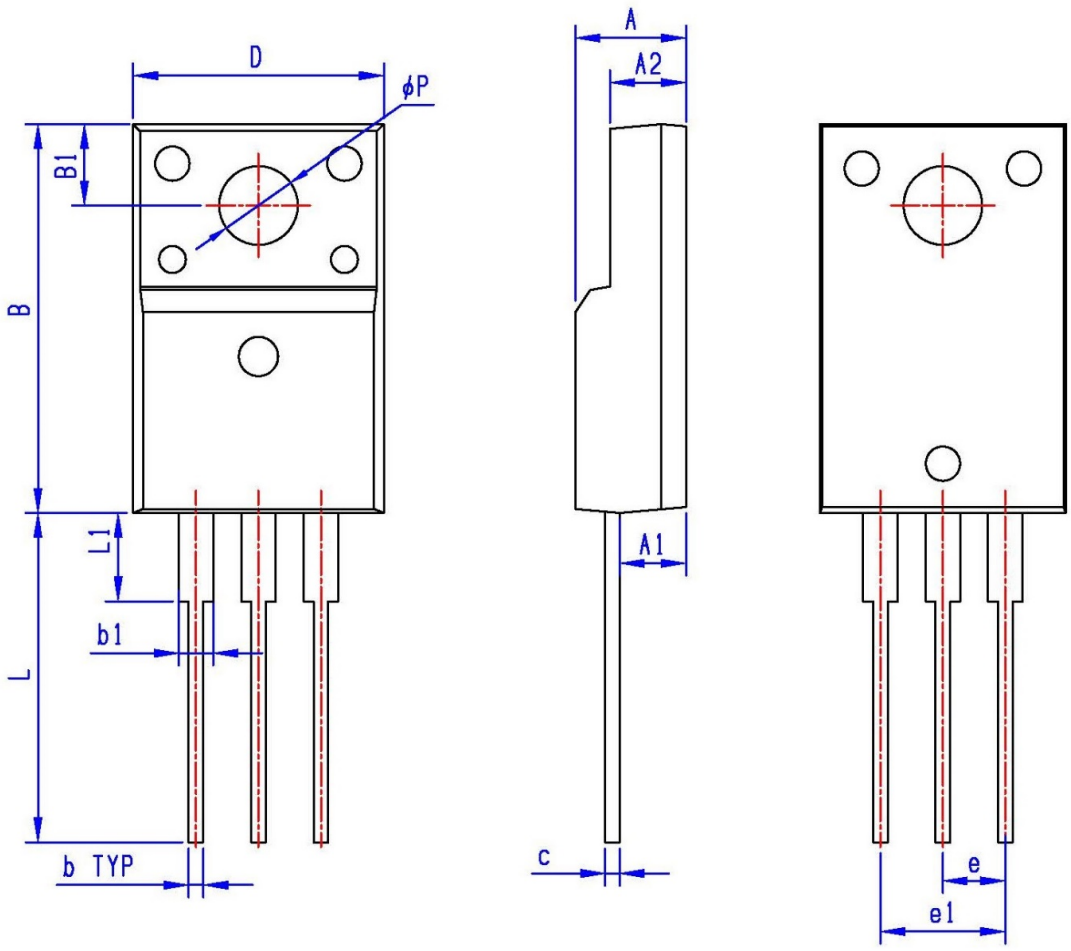


Fig6 Maximum Safe Operating Area

- **Dimensions（TO-220F)**

UNIT：mm

SYMBOL	min	max	SYMBOL	min	max
A	4.40	4.90	B1	2.90	3.70
A1	2.40	3.00	e	2.40	2.70
A2	2.30	3.00	e1	4.95	5.25
b	0.60	0.90	L	12.40	14.20
b1	1.10	1.70	L1	2.40	3.40
c	0.40	0.70	⌀P	2.90	3.50
D	9.80	10.60			
B	15.40	16.40			



- **Dimensions (TO-220)**

UNIT：mm

SYMBOL	min	max	SYMBOL	min	max
A	4.25	4.85	B1	2.60	3.00
A1	2.30	3.00	e	2.40	2.70
A2	1.20	1.40	e1	4.95	5.25
b	0.60	0.90	L	12.60	14.40
b1	1.10	1.70	L1	2.40	4.00
c	0.40	0.70	⌀P	3.50	3.90
D	9.80	10.60			
B	15.20	16.20