

●General Description

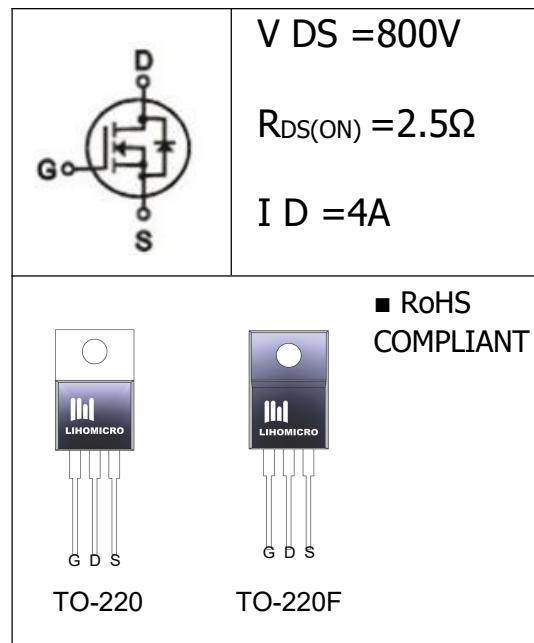
The N-Channel MOSFET LH4N80A has the low $R_{DS(on)}$, low gate charge, fast switching and excellent avalanche characteristics. This device is suitable for switch power and lighting.

●Features

- Low Thermal Resistance
- High Input Resistance
- Fast Switching

●Application

- Lighting
- Switch Mode Power Supply
- High Efficiency SMPS



●Ordering Information:

Part Number	LH4N80A	LH4N80A
Package	TO-220	TO-220F
Basic Ordering Unit (pcs)	1000	1000
Normal Package Material Ordering Code	LH4N80AT-TO220-TU	LH4N80AF-TO220F-TU
Halogen Free Ordering Code	LH4N80ATTO220-TU-HF	LH4N80AF-TO220F-TU-HF

●Absolute Maximum Ratings (TC = 25°C)

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV _{DSS}	800	V
Gate-Source Voltage	V _{GS}	±30	V
Continuous Drain Current , T _C = 25°C	I _D	4.0	A
	I _{D(TC=100°C)}	2.5	
Drain Current-Pulsed ¹	I _{DM}	16	A
Single Pulse Avalanche Energy ²	E _{AS}	240	mJ
Power Dissipation	P _D	50	W
Operating Temperature	T _J	-55~+150	°C
Storage Temperature	T _{STG}	-55~+150	°C

•Electronic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	800	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.0	--	4.0	V
Drain-source On Resistance ²	$R_{DS(ON)}$	$V_{GS}=10V, I_D=13A$	--	2.5	2.8	Ω
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=800V, V_{GS}=0V, T_J=25^\circ C$	--	--	1	μA
		$V_{DS}=640V, V_{GS}=0V, T_J=125^\circ C$	--	--	10	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=+30V, V_{DS}=0V$	--	--	+100	nA
		$V_{GS}=-30V, V_{DS}=0V$	--	--	-100	
Forward Transconductance ³	g_{FS}	$V_{GS}=40V, I_D=2A$	--	4.0	--	S
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V, f=1MHz$	--	780	--	pF
Output Capacitance	C_{oss}		--	56	--	
Reverse Transfer Capacitance	C_{rss}		--	14	--	
Turn -Off Delay Time ³	$T_{d(off)}$	$V_{DD}=400V, RG=25\Omega, I_D=4A$	--	35	--	ns
Total Gate Charge(10V) ³	Q_g	$V_{GS}=10V, I_D=4A, V_{DS}=640V$	--	19	--	nC
Gate-to-Source Charge ³	Q_{gs}		--	4.2	--	
Gate-to-Drain Charge ³	Q_{gd}		--	9.1	--	
Continuous Diode Forward Current ^{1,5}	I_s	Integral PN-diode in MOSFET	--	--	4	A
Diode Forward Voltage ³	V_{SD}	$I_s=7A, V_{GS}=0V, T_J=25^\circ C$	--	--	1.4	V
Reverse Recovery Time	trr	$T_J=25^\circ C, If=4A, di/dt=100A/\mu s$	--	570	--	ns
Reverse Recovery Charge	Qrr		--	3.6	--	μC

•Thermal Characteristics

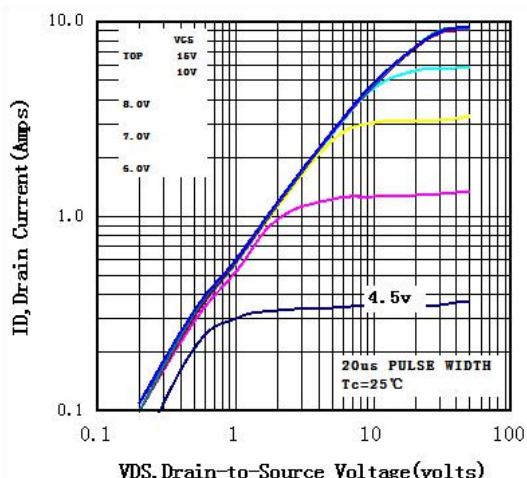
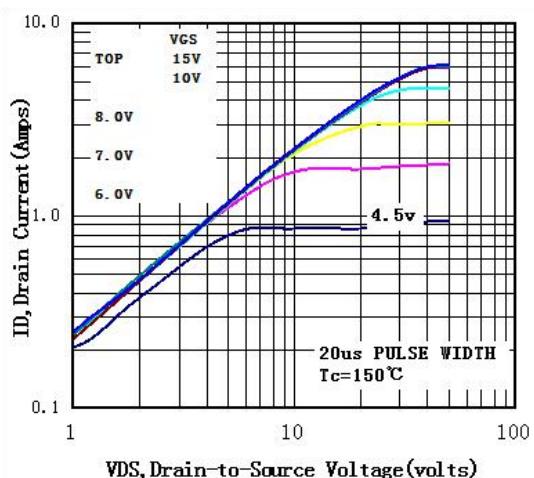
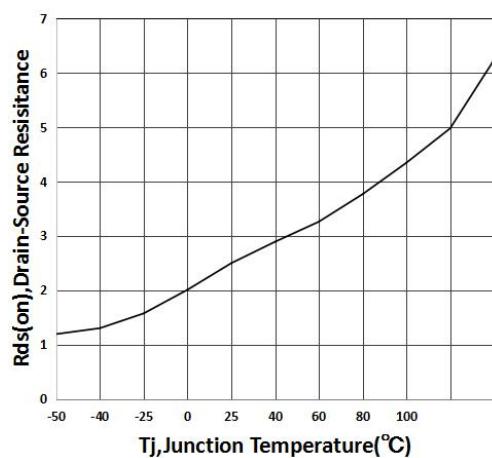
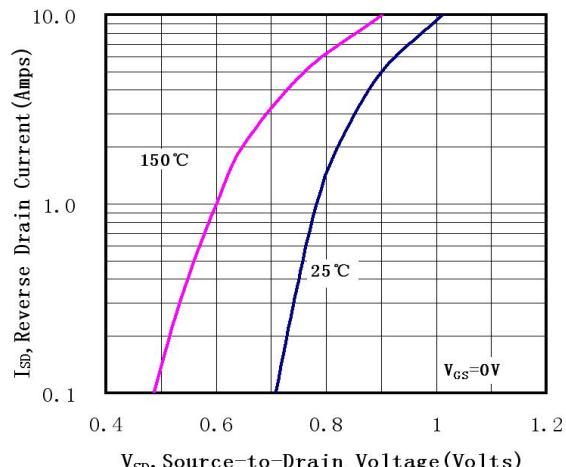
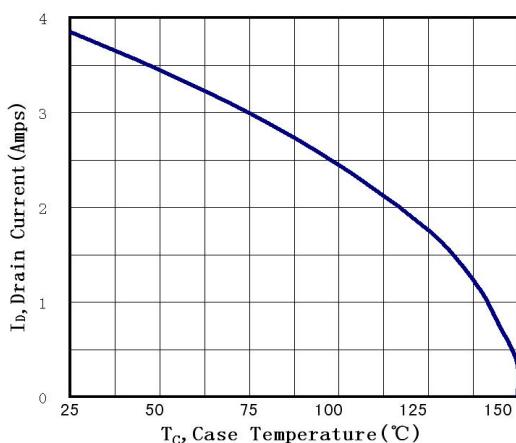
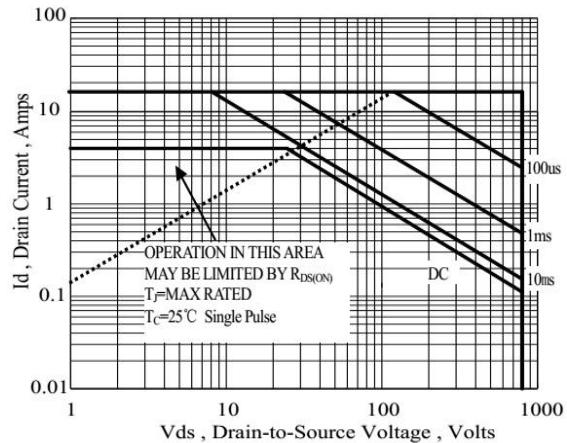
PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	R_{thJC}	2.5	$^\circ C/W$
Thermal Resistance Junction-ambient ¹	R_{thJA}	83.3	$^\circ C/W$

Notes:

1. Repetitive rating: pulse width limited by maximum junction temperature.

2. Starting $T_J=25^\circ C, V_{DD}=50V, L=30mH, R_G=25\Omega, I_{AS}=4A$

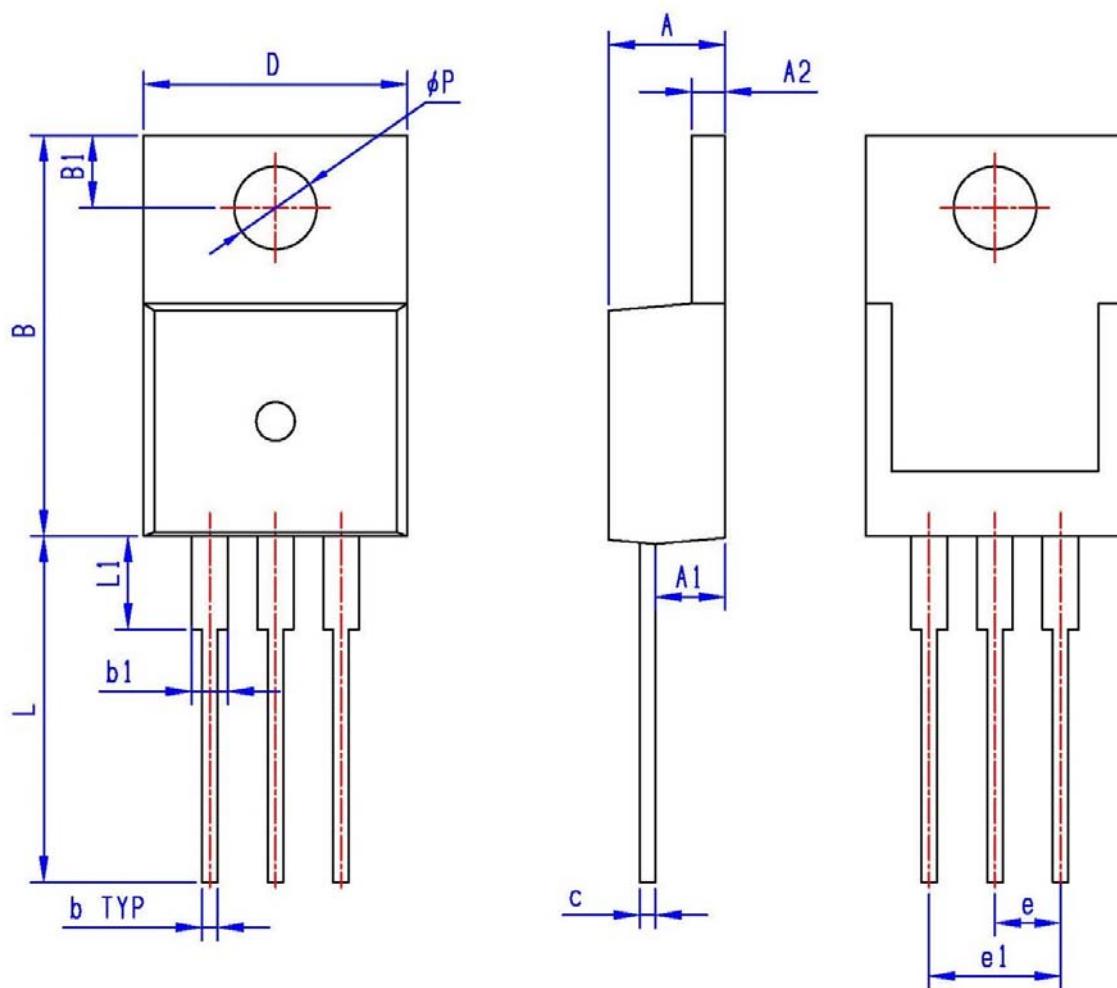
3. Pulse width≤380us,duty cycle≤2%.

•Typical Characteristics
Fig1 Typical Output Characteristics, $T_c=25^\circ\text{C}$

Fig2 Typical Output Characteristics, $T_c=150^\circ\text{C}$

Fig3 Normalized On-Resistance Vs.Temperatu

Fig4 Typical Source-Drain Diode Forward Voltage

Fig5 Maximum Drain Current Vs.Case Temperature

Fig6 Maximum Safe Operating Area


•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	ØP	3.50	3.90
D	9.80	10.60			
B	15.20	16.20			



•Dimensions (TO-220F)

UNIT:mm

SYMBOL	min	max	SYMBOL	min	max
A	4.20	4.80	E1	8.30	8.70
A1	2.50	2.90	e	2.40	2.70
A2	2.90	3.30	e1	4.95	5.25
b	0.40	0.80	F	2.50	2.90
b1	1.10	1.50	L	13.00	14.00
c	0.50	0.70	L1	3.00	4.00
D	9.80	10.60	ØP	2.90	3.50
E	14.60	15.60			

