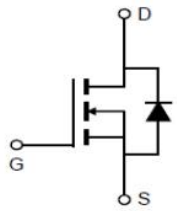
•General Description

The Power MOSFET LH10N80A has the low $R_{DS(on)}$,low gate charge,fast switching and excellent avalanche characteristics.This device offers extremely fast and robust body diode,and is suitable for telecom and power supplies.



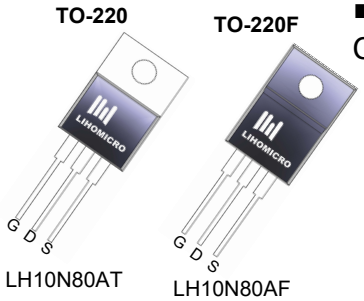
V_{DS} =800V

$R_{DS(ON)}$ =0.72Ω

I_D =10A

TO-220 TO-220F

■ RoHS COMPLIANT



LH10N80AT LH10N80AF

•Features

■Low Thermal Resistance
■Fast Switching
■High Input Resistance

•Application

■LED/LCD/TV and monitor Lighting
■Power Supplies

•Ordering Information:

Part number	LH10N80A	LH10N80A
Package	TO-220F	TO-220
Basic ordering unit (pcs)	1000	1000
Normal Package Material Ordering Code	LH10N80AF-TO220F-TU	LH10N80AT-TO220-TU
Halogen Free Ordering Code	LH10N80AF-TO220F-TU -HF	LH10N80AT-TO220-TU-HF

•Absolute Maximum Ratings（TC =25℃）

PARAMETER		SYMBOL	Value		UNIT
Drain-Source Breakdown Voltage		BV_{DSS}	800		V
Gate-Source Voltage		V_{GS}	±30		V
Continuous Drain Current	TC = 25°C	I_D	10		A
	TC = 100°C		6.5		
Pulsed drain current (TC = 25°C, tp limited by Tjmax)[1]		I_{DM}	40		A
Single Pulse Avalanche Energy[2]		E_{AS}	1000		mJ
Power Dissipation(TC=25℃)		P_D	TO-220F: 50	TO-220: 156	W
Junction Temperature		T_J	-55~+150		℃
Storage Temperature		T_{STG}	-55~+150		℃
Reverse Diode dv/dt(Isd≤10A,Tj=25℃)		dv/dt	5.0		V/nS

●Electronic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D=250uA	800	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=VGS,I_D=250uA	2.0	--	4.0	V
Drain-source On Resistance[3]	$R_{DS(ON)}$	V_{GS} =10V, I_D=6A	--	0.72	1.0	Ω
Drain-Source Leakage Current	I_{DSS}	V_{DS}=800V,V_{GS}=0V,T_J=25℃	--	--	10	uA
		V_{DS}=640V,V_{GS}=0V,T_J=125℃	--	--	100	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±30	--	--	±10	uA
Forward Transconductance[3]	gfs	V_{DS}=40V,I_D=5A	--	18	--	S
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 25V f = 1.0MHz	--	2260	--	pF
Output Capacitance	Coss		--	200	--	
Reverse transfer Capacitance	Crss		--	28	--	
Turn-Off Delay Time	Td(off)	V_{DD}=400V,I_D=10A,R_G=24Ω	--	90	--	nS
Total Gate Charge	Qg	I_D =10A, V_{DS} = 640V V_{GS} = 10V [3]	--	52	---	nC
Gate-to-Source Charge	Qgs		--	12	--	
Gate-to-Drain Charge	Qgd		--	19	---	
Continuous Diode Forward Current	I_S		--	--	10	A
Pulsed Diode Forward Current	I_{SM}		--	--	40	A
Diode Forward Voltage[3]	V_{SD}	Tj=25°C, Is=10A V_{GS} =0V	--	--	1.4	V
Reverse Recovery Time	trr	If=Is di_F/dt=100A/μs [3]	--	200	--	ns
Reverse Recovery Charge	Qrr		--	2.4	--	uC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX		UNIT
		TO-220F	TO-220	
Thermal Resistance Junction-case	Rth_{JC}	2.5	0.78	℃/W
Thermal Resistance Junction-ambient	Rth_{JA}	62.5	62.5	℃/W

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

2. I_{AS} = 10A, V_{DD} = 50V, R_G = 25Ω,L=10Mh, Starting T_J = 25°C

3. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

●Typical Characteristics

Fig1 Typical Output Characteristics, Tc=25℃

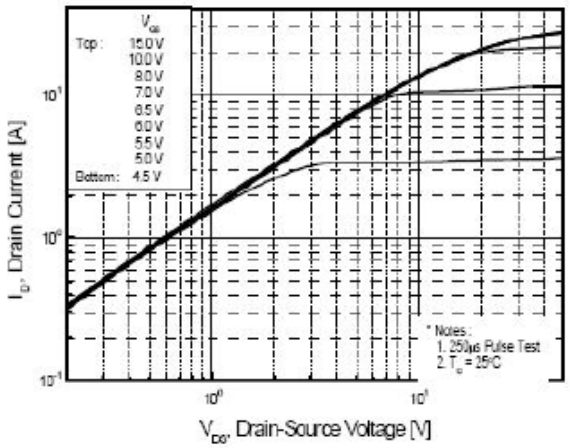


Fig2 On-Resistance Vs.Drain Current and Gate Voltage

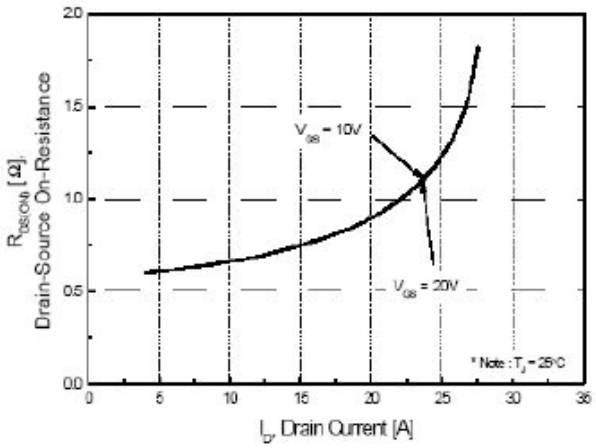


Fig3 Normalized On-Resistance Vs.Temperature

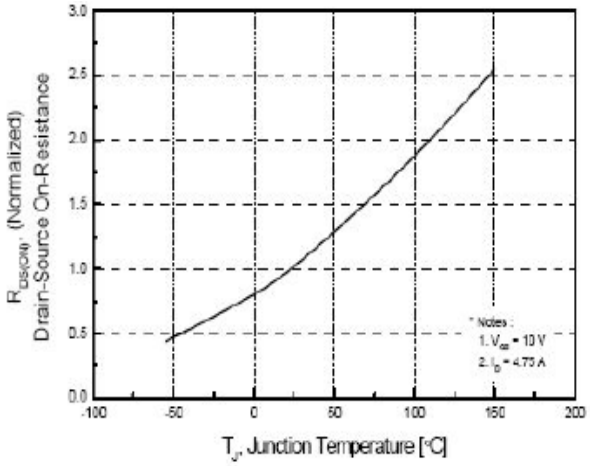


Fig4 Typical Source-Drain Diode Forward Voltage

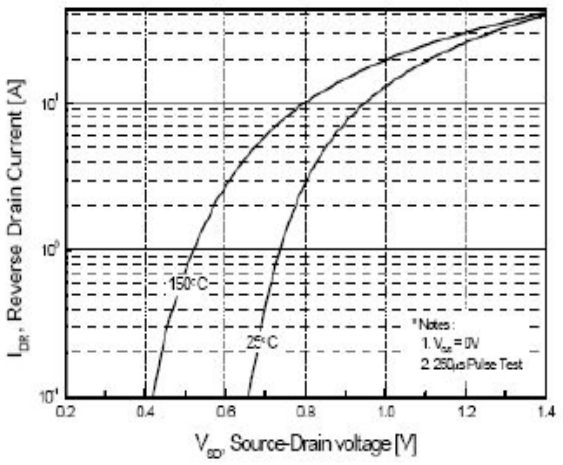
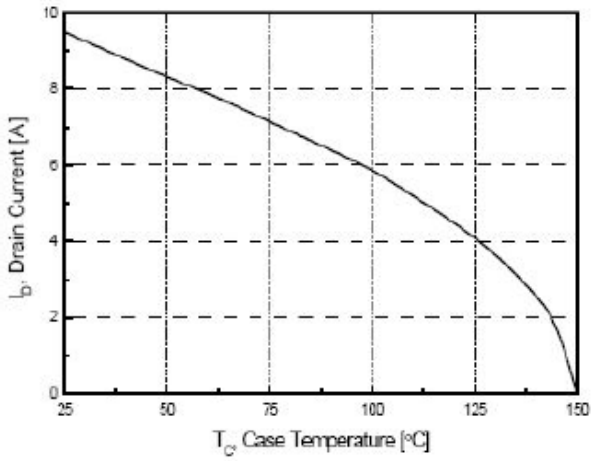


Fig5 Maximum Drain Current Vs.Case Temperature



●Typical Characteristics(cont.)

Fig6-1 Maximum Safe Operating Area
TO-220

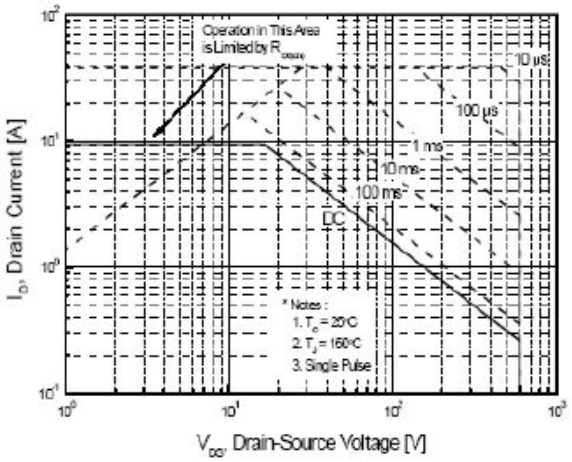
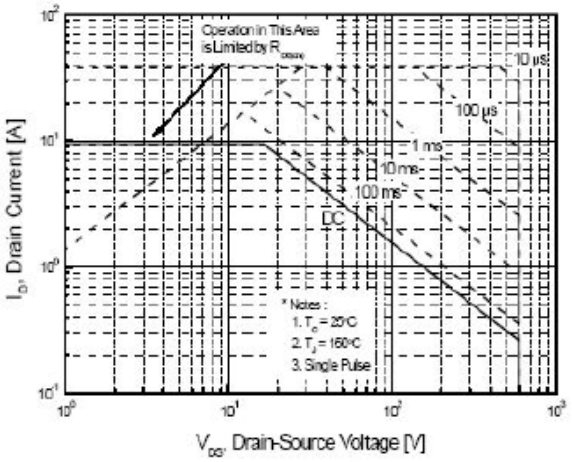


Fig6 -2Maximum Safe Operating Area
TO-220F



●Test Circuit and Waveform

Figure A：Gate Charge Test Circuit and Waveform

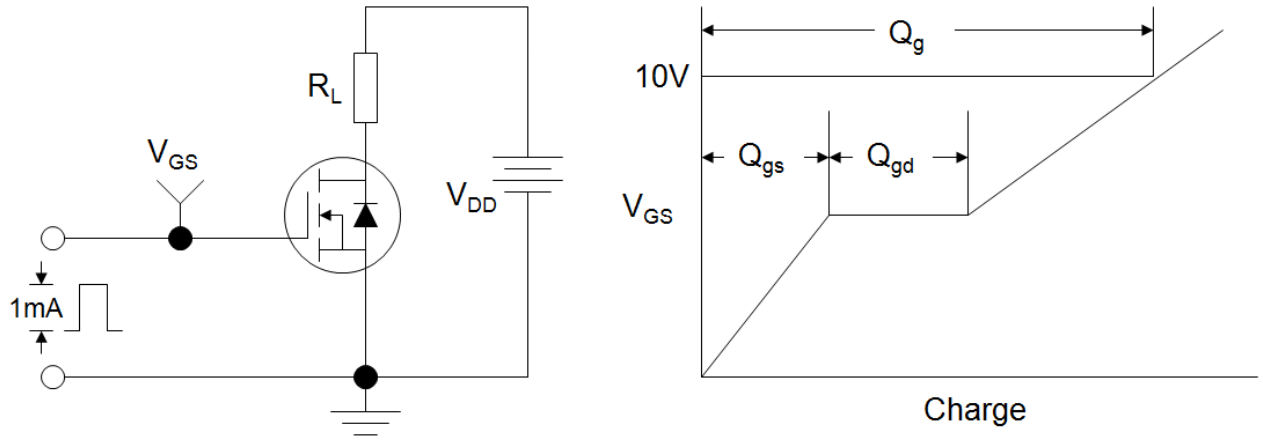


Figure B：Resistive Switching Test Circuit and Waveform

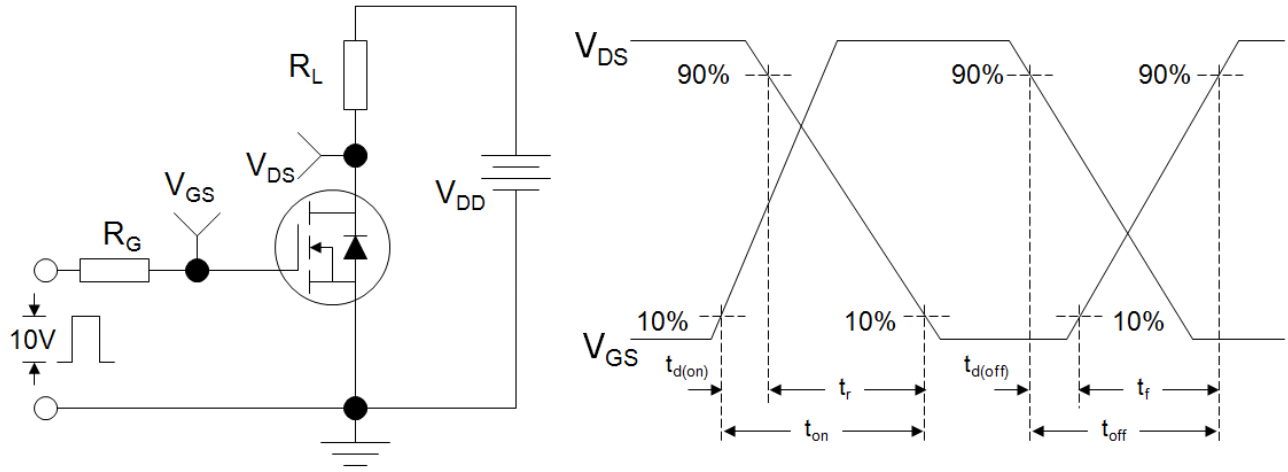
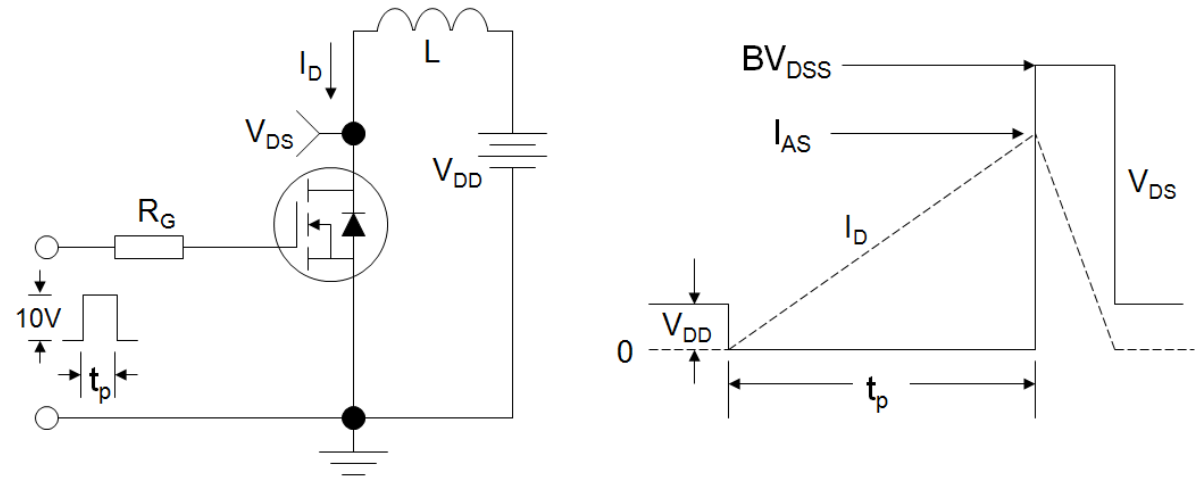


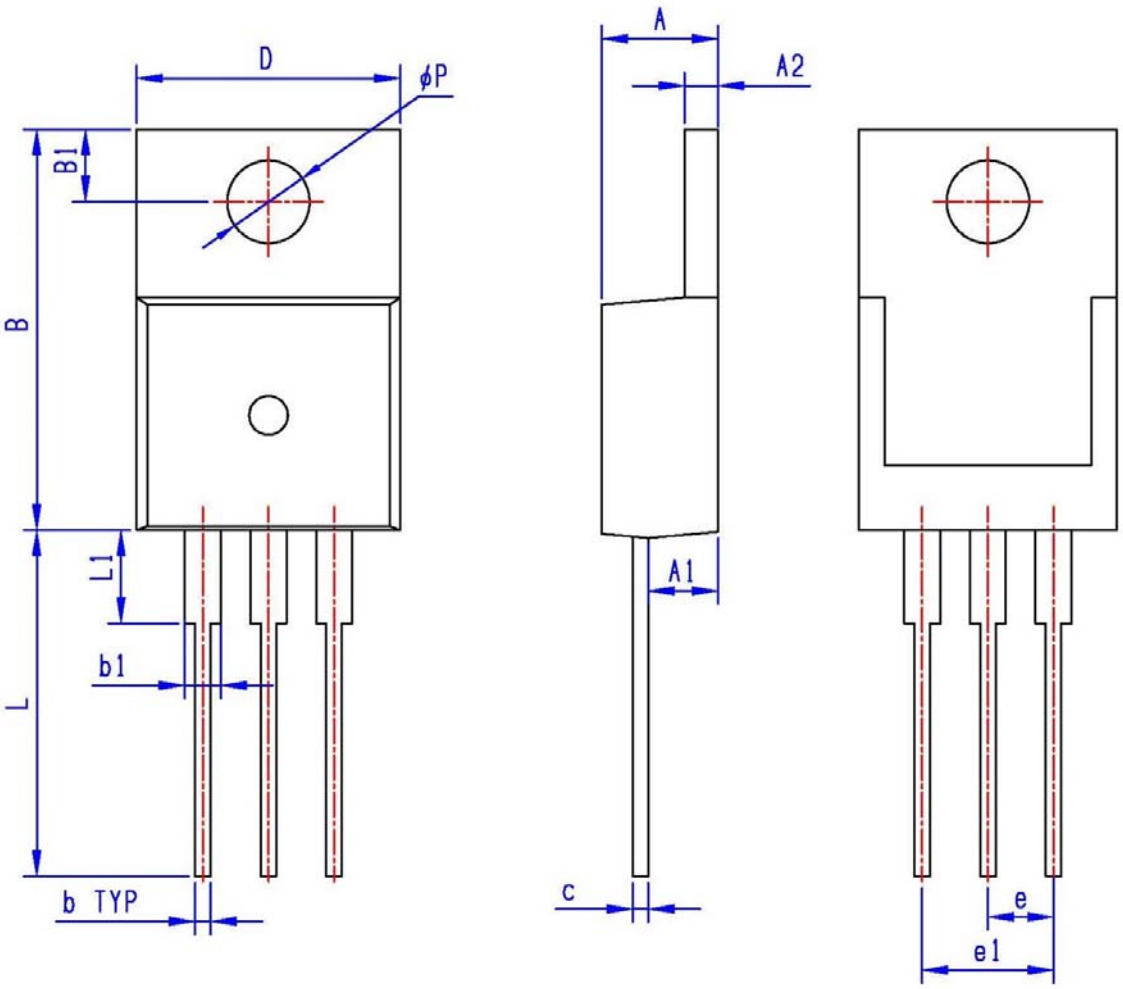
Figure C：Unclamped Inductive Switching Test Circuit and Waveform



●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			



●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