

●General Description

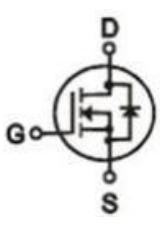
The N-Channel MOSFET LH15N50F has the low $R_{DS(on)}$, low gate charge, fast switching and excellent avalanche characteristics. This device is suitable for switch power and lighting.

●Features

- Low Thermal Resistance
- High Input Resistance
- Fast Switching

●Application

- Lighting
- Switch Mode Power Supply
- High Efficiency SMPS

	$V_{DS} = 500V$ $R_{DS(on)} = 0.34\Omega$ $I_D = 15A$
 TO-220	 TO-220F

■ RoHS COMPLIANT

●Ordering Information:

Part Number	LH15N50F	LH15N50F
Package	TO-220	TO-220F
Basic Ordering Unit (pcs)	1000	1000
Normal Package Material Ordering Code	LH15N50FT-TO220-TU	LH15N50FF-TO220F-TU
Halogen Free Ordering Code	LH15N50FT-TO220-TU-HF	LH15N50FF-TO220F-TU-HF

●Absolute Maximum Ratings (TC = 25°C)

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	500	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current, $T_C = 25^\circ C$	I_D	15	A
	$I_D(T_C=100^\circ C)$	11	
Drain Current-Pulsed ¹	I_{DM}	60	A
Single Pulse Avalanche Energy ²	E_{AS}	1100	mJ
Power Dissipation	P_D	TO-220:225	W
		TO-220F:51	
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}	$V_{GS}=0V, I_D=250\mu A$	500	--	--	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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=13A$	--	340	450	mΩ
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=500V, V_{GS}=0V, T_J=25^\circ C$	--	--	1	uA
		$V_{DS}=400V, V_{GS}=0V, T_J=125^\circ C$	--	--	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}	$V_{GS}=15V, I_D=7.5A$	--	11	--	S
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V, f=1MHz$	--	1840	--	pF
Output Capacitance	C_{oss}		--	148	--	
Reverse Transfer Capacitance	C_{rss}		--	16	--	
Turn -Off Delay Time ³	$T_d(off)$	$V_{GS}=10V, V_{DD}=250V, R_G=25\Omega, I_D=15A$	--	155	--	ns
Total Gate Charge(10V) ³	Q_g	$V_{GS}=10V, I_D=15A, V_{DS}=400V$	--	40	--	nC
Gate-to-Source Charge ³	Q_{gs}		--	9.4	--	
Gate-to-Drain Charge ³	Q_{gd}		--	14	---	
Continuous Diode Forward Current ^{1,5}	I_S	Integral PN-diode in MOSFET	--	--	15	A
Pulsed Source Current[2]	I_{SM}		--	--	60	
Diode Forward Voltage ³	V_{SD}	$I_S=7A, V_{GS}=0V, T_J=25^\circ C$	--	--	1.4	V
Reverse Recovery Time	t_{rr}	$T_J=25^\circ C, I_f=15A, di/dt=100A/\mu s$	--	420	--	ns
Reverse Recovery Charge	Q_{rr}		--	4.9	--	uC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX		UNIT
		TO-220	TO-220F	
Thermal Resistance Junction-case	R_{thJC}	0.56	2.5	$^\circ C/W$
Thermal Resistance Junction-ambient ¹	R_{thJA}	62.5	62.5	$^\circ C/W$

Notes:

1. Repetitive rating: pulse width limited by maximum junction temperature.
2. Starting $T_J=25^\circ C, V_{DD}=50V, L=10mH, R_G=25\Omega, I_{AS}=12A$
3. Pulse width $\leq 380\mu s$, duty cycle $\leq 2\%$.

•Typical Characteristics

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

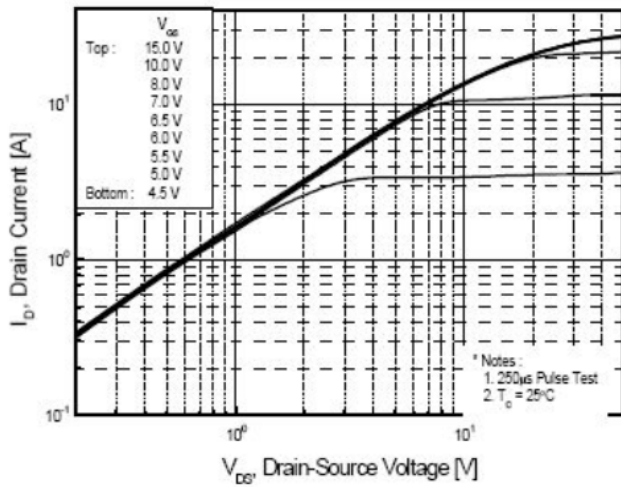


Fig2 On-Resistance Vs. Drain Current and Gate Voltage

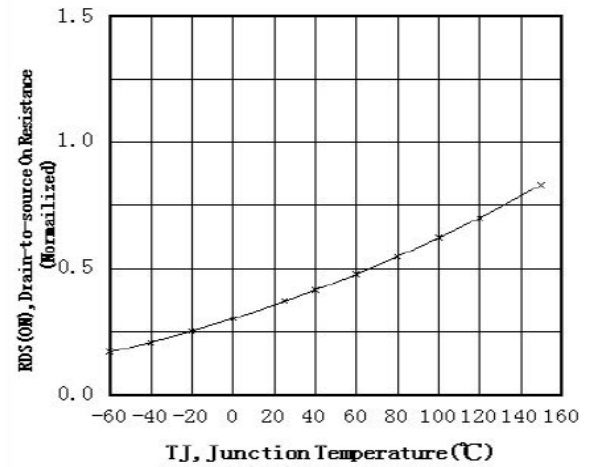


Fig3 Normalized On-Resistance Vs. Temperature

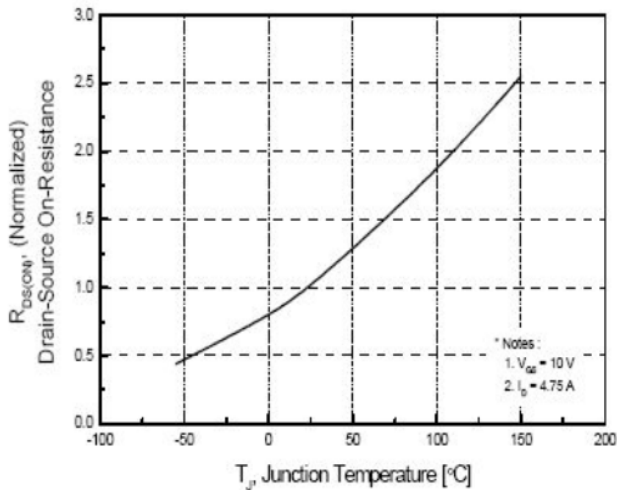


Fig4 Typical Source-Drain Diode Forward Voltage

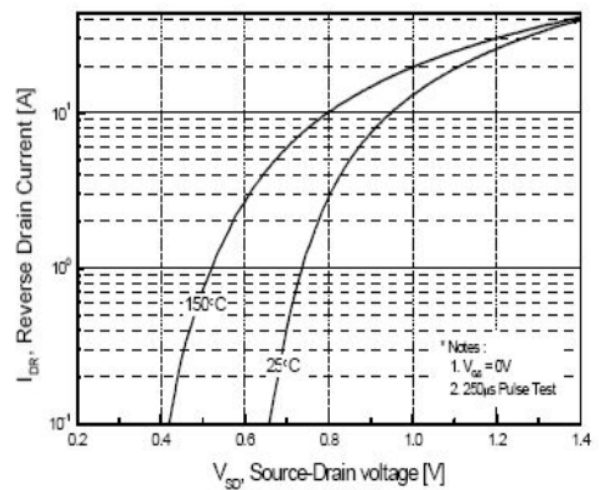


Fig5 Maximum Drain Current Vs. Case Temperature

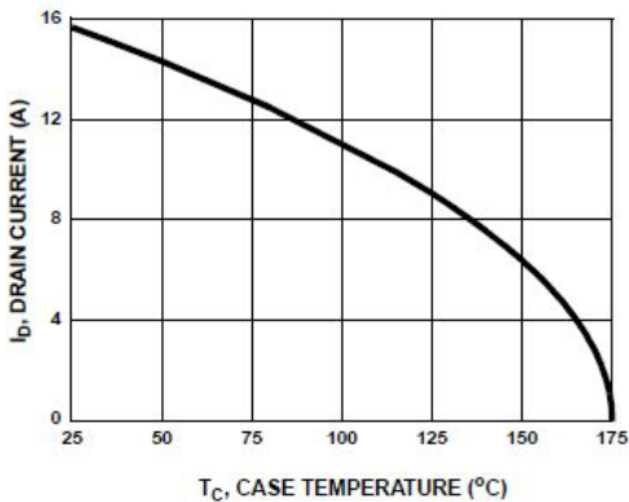
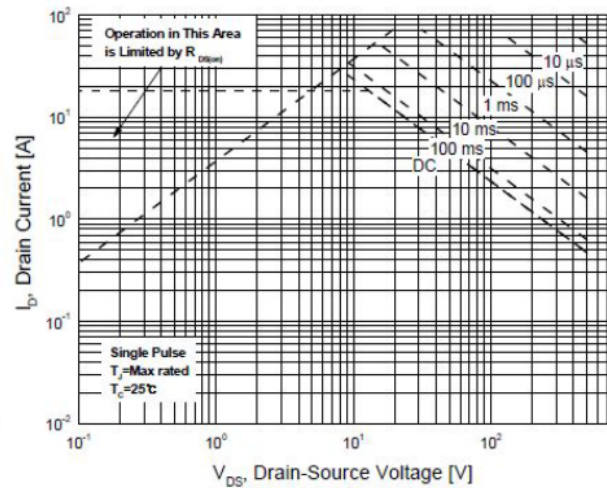


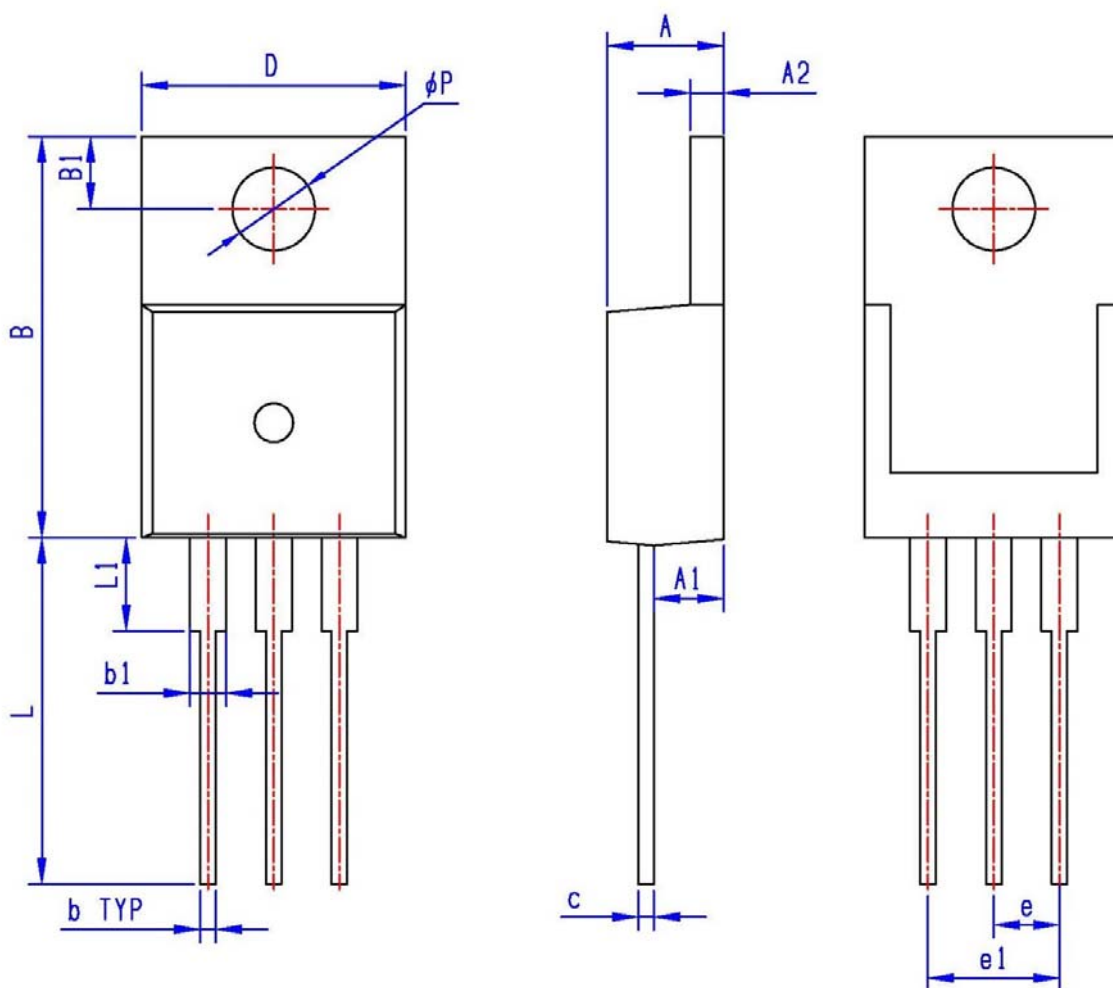
Fig6 Maximum Safe Operating Area



•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	∅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			

