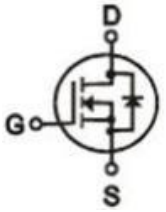
LH4N90F

N-Channel POWER MOSFET

●General Description

The N-Channel MOSFET LH4N90F has the low $R_{DS(on)}$,low gate charge,fast switching and excellent avalanche characteristics.This device is suitable for switch power and lighting.



V DS =900V

$R_{DS(ON)}$ =4.0Ω

I D =4A

■ RoHS COMPLIANT

TO-220F

●Features

■Low Thermal Resistance
■High Input Resistance
■Fast Switching

●Application

■Lighting
■Switch Mode Power Supply
■High Efficiency SMPS

●Ordering Information:

Part Number	LH4N90F
Package	TO-220F
Basic Ordering Unit (pcs)	1000
Normal Package Material Ordering Code	LH4N90FF-TO220F-TU
Halogen Free Ordering Code	LH4N90FF-TO220F-TU-HF

●Absolute Maximum Ratings（TC =25℃）

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	900	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current ,T_C = 25°C	I_D	4.0	A
	I_D(T_C=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	℃
Storage Temperature	T_{STG}	-55~+150	℃

●Electronic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D=250uA	900	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS},I_D=250uA	2.0	--	4.0	V
Drain-source On Resistance[2]	$R_{DS(ON)}$	V_{GS} =10V, I_D=13A	--	4.0	5.0	Ω
Drain-Source Leakage Current	I_{DSS}	V_{DS}=900V,V_{GS}=0V,T_J=25℃	--	--	1	uA
		V_{DS}=640V,V_{GS}=0V,T_J=125℃	--	--	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	Ciss	V_{GS}=0V, V_{DS}=25V, f=1MHz	--	780	--	pF
Output Capacitance	Coss		--	56	--	
Reverse Transfer Capacitance	Crss		--	14	--	
Turn -Off Delay Time[3]	Td(off)	V_{DD}=400V, RG=25Ω,ID=4A	--	35	--	ns
Total Gate Charge(10V)[3]	Qg	V_{GS}=10V, ID=4A, V_{DS}=640V	--	19	--	nC
Gate-to-Source Charge[3]	Qgs		--	4.2	--	
Gate-to-Drain Charge[3]	Qgd		--	9.1	---	
Continuous Diode Forward Current[1,5]	I_S	Integral PN-diode in MOSFET	--	--	4	A
Diode Forward Voltage[3]	V_{SD}	Is=7A,V_{GS} =0V,T_J=25℃	--	--	1.4	V
Reverse Recovery Time	trr	T_J=25℃,If=4A, di/dt=100A/μs	--	570	--	ns
Reverse Recovery Charge	Qrr		--	3.6	--	uC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	Rth_{JC}	2.5	℃/W
Thermal Resistance Junction-ambient[1]	Rth_{JA}	83.3	℃/W

Notes:

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

2. Starting T_J=25℃,V_{DD}=50V,L=30mH,R_G=25Ω,I_{AS}=4A

3. Pulse width≤380us,duty cycle≤2%.

●Typical Characteristics

Fig1 Typical Output Characteristics, Tc=25℃

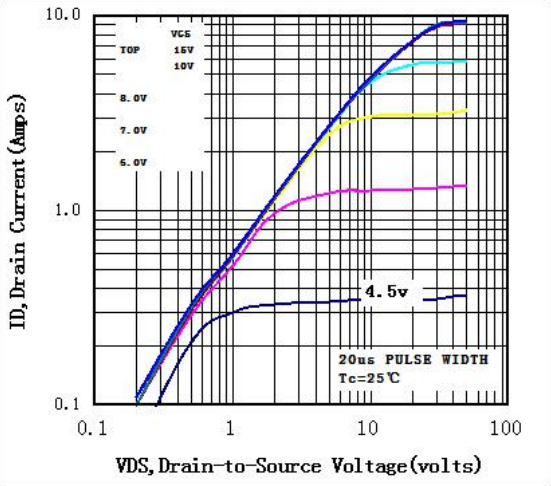


Fig2 Typical Output Characteristics, Tc=150℃

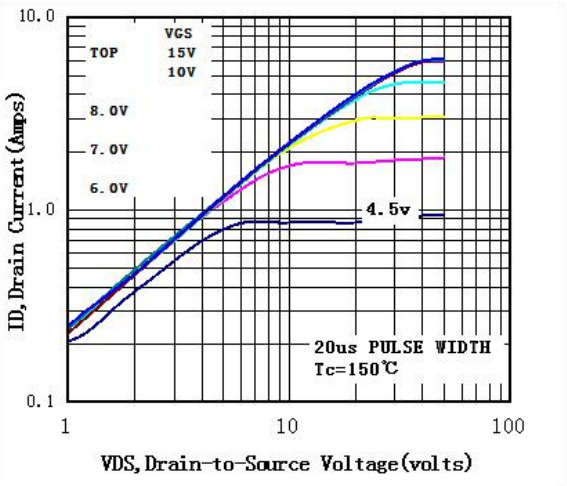


Fig3 Normalized On-Resistance Vs.Temperatu

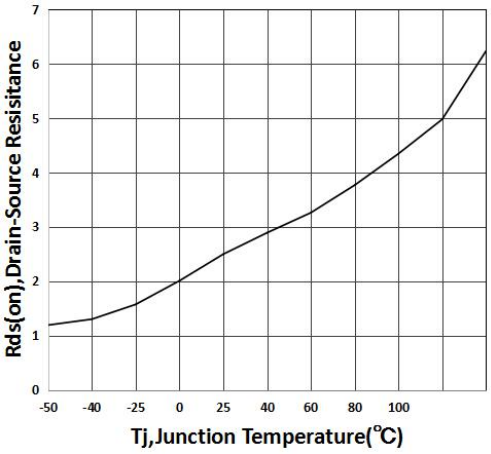


Fig4 Typical Source-Drain Diode Forward Voltage

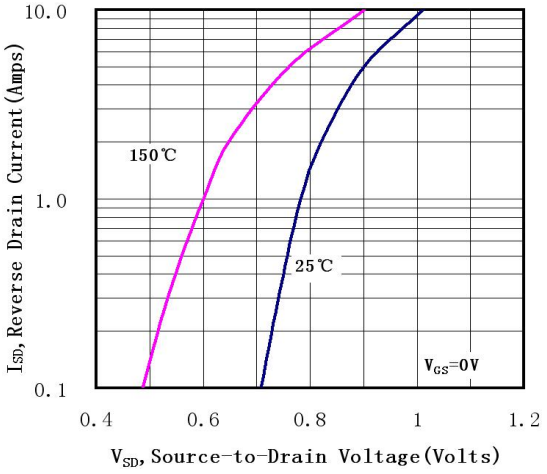


Fig5 Maximum Drain Current Vs.Case Temperature

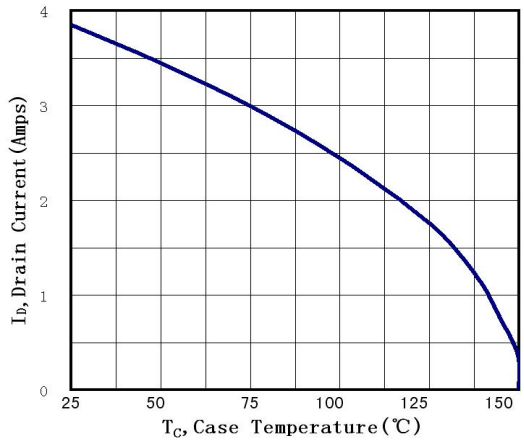
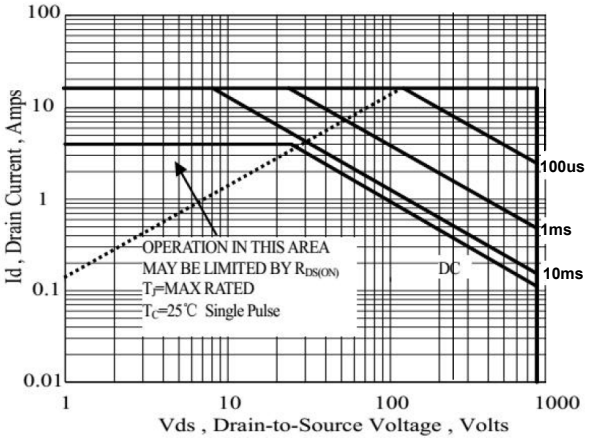


Fig6 Maximum Safe Operating Area



●Dimensions（TO-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	⌀P	2.90	3.50
E	14.60	15.60