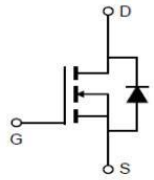
The N-Channel Power Mosfet LH9N90 with a low resistance package to provide extremely low RDS(ON).This device is ideal forload switch andbattery protectionapplications.



V_{DS} =900V

$R_{DS(ON)}$=0.9Ω

I_D =9.0A

TO-247

TO-220

■ RoHS COMPLIANT

● Features

■Low thermal resistance

■Fast switching

■High input resistance

■RoHS compliant

●Application

■DC-DC Convertor

■Electronic transformer

■Switch mode power supply

●Ordering Information:

Part number	LH9N90	LH9N90
Package	TO-247	TO-220
Basic ordering unit (pcs)	450	1000
Normal Package Material Ordering Code	LH9N90T2-TO247-TU	LH9N90T-TO220-TU
Halogen Free Ordering Code	LH9N90T2-TO247-TU-HF	LH9N90T-TO220-TU-HF

●Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	900	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current T_C = 25°C	I_D	9.0	A
Continuous Drain Current TC = 100°C	I_D	5.6	A
Pulsed drain current [1]	I_{DM}	36	A
Single Pulse Avalanche Energy[2]	E_{AS}	324	mJ
Total Power Dissipation(TC=25℃)	Ptot	110	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	900			V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta Tj$	I_D=250uA, Referenced to 25°C		0.93		V/°C
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250μA	3.0		5.0	V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =900V, V_{GS} =0V, Tj=25°C			1	uA
		V_{DS} =720V, 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=4.5A		0.9	1.2	Ω
Transconductance	gfs	V_{DS} =40V, I_D=4.5A		9.0		S

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	V_{GS} = 0V, V_{DS} = 25V F = 1.0MHZ		3260		pF
Output capacitance	Coss			200		
Reverse transfer capacitance	Crss			28		
Turn -Off Delay Time[3]	Td(off)	V_{DD}=400V, I_D =9.0A R_G=25Ω		90		ns
Total Gate Charge[3]	Qg	I_D =9.0A, V_{DS} = 720V V_{GS} = 10V		59		nC
Gate-to-Source Charge[3]	Qgs			12		
Gate-to-Drain Charge[3]	Qgd			19		
Diode Forward Voltage[3]	V_{SD}	Tj=25°C, Is=9.0A V_{GS} =0V			1.4	V
Body Diode Reverse Recovery Time[3]	Trr	Tj=25°C,If=10.0A di/dt=100A/μs		730		ns
Body Diode Reverse Recovery Charge[3]				10.9		nC
Continuous Source Current (body diode)	I_S				9.0	A

•Thermal resistance

Parameter	Symbol	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	1.13	°C/W
Thermal resistance, junction - ambient	R_{thJA}	62.5	°C/W

Notes:

1. Repetitive rating: Pulse width limited by maximum junction temperature
2. Starting Tj=25ºC, VDD =50V, L=8mH, RG =25Ω, IAS=9.0A
3. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

• Typical Characteristics

Fig1 Typical Output Characteristics, Tc=25℃

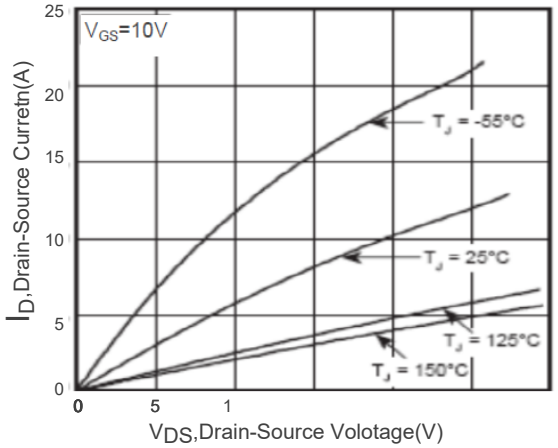


Fig2 On-Resistance Vs.Drain Current and Gate Voltage

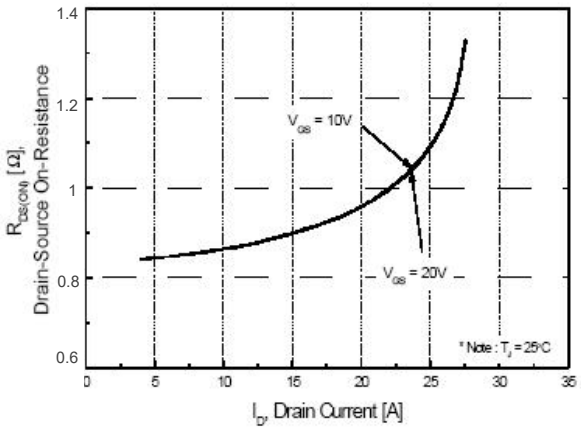
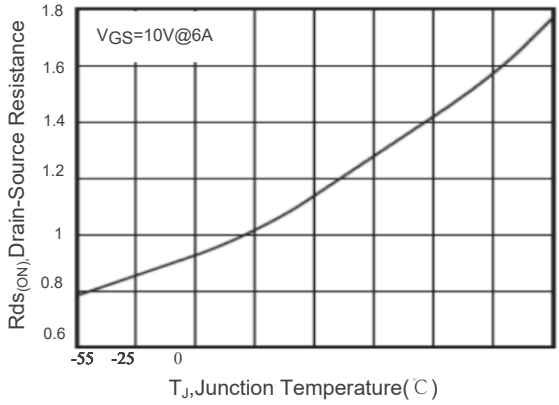


Fig3 Normalized On-Resistance Vs.Temperature



ig4 Typical Source-Drain Diode Forward Voltage

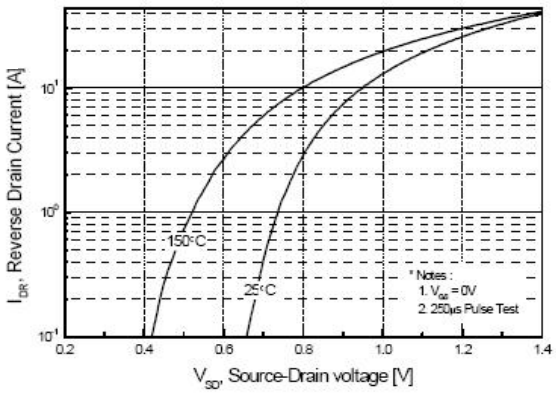


Fig5 Maximum Drain Current Vs.Case Temperature

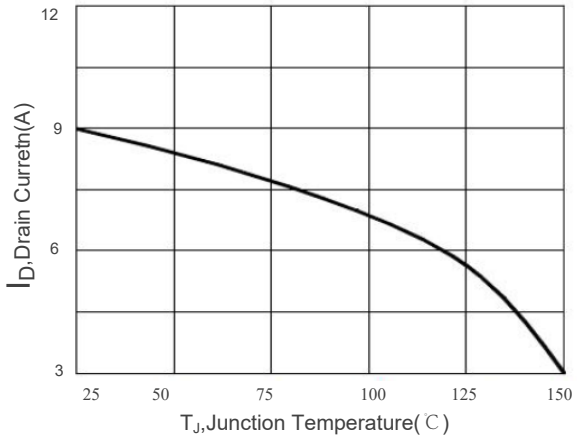
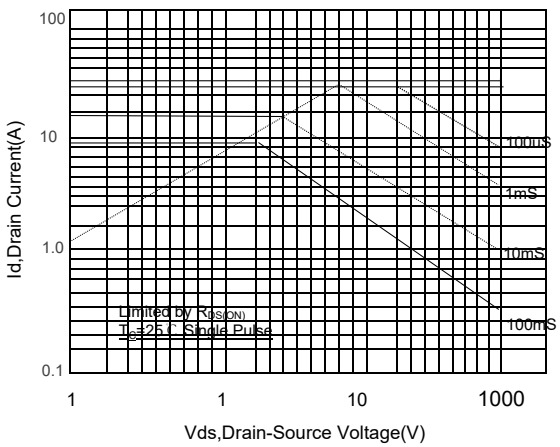


Fig6 Maximum Safe Operating Area



- Typical Characteristics(cont.)

Fig7 Capacitance vs Drain-Source Voltage

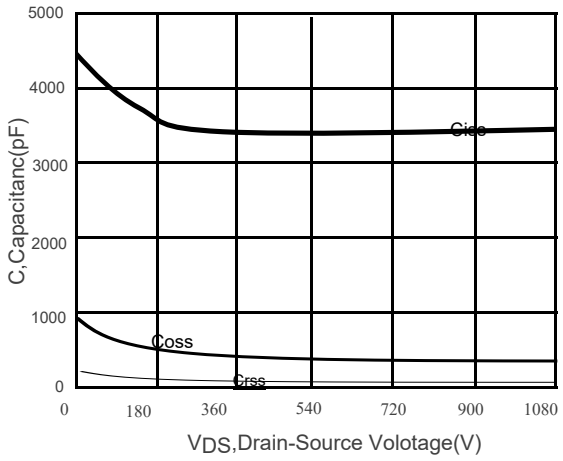


Fig8 Gate Charge vs Gate-Source Voltage

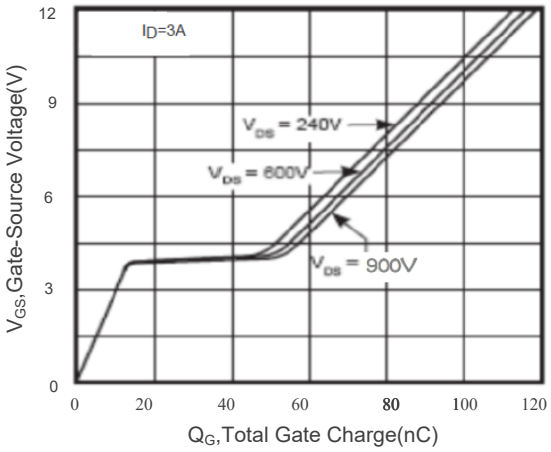
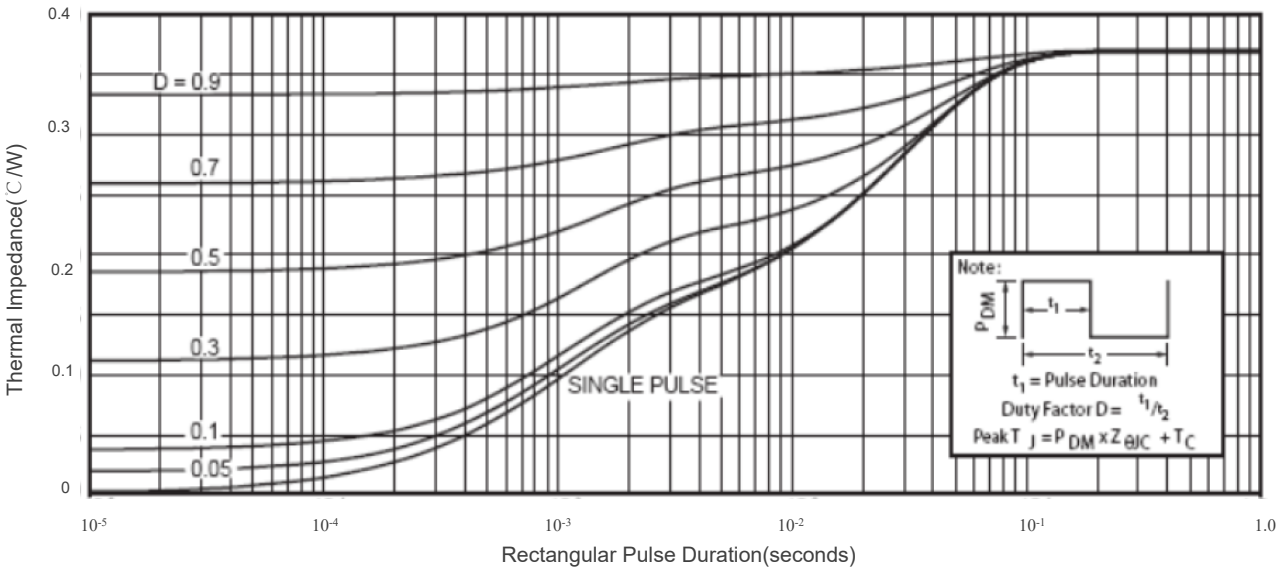


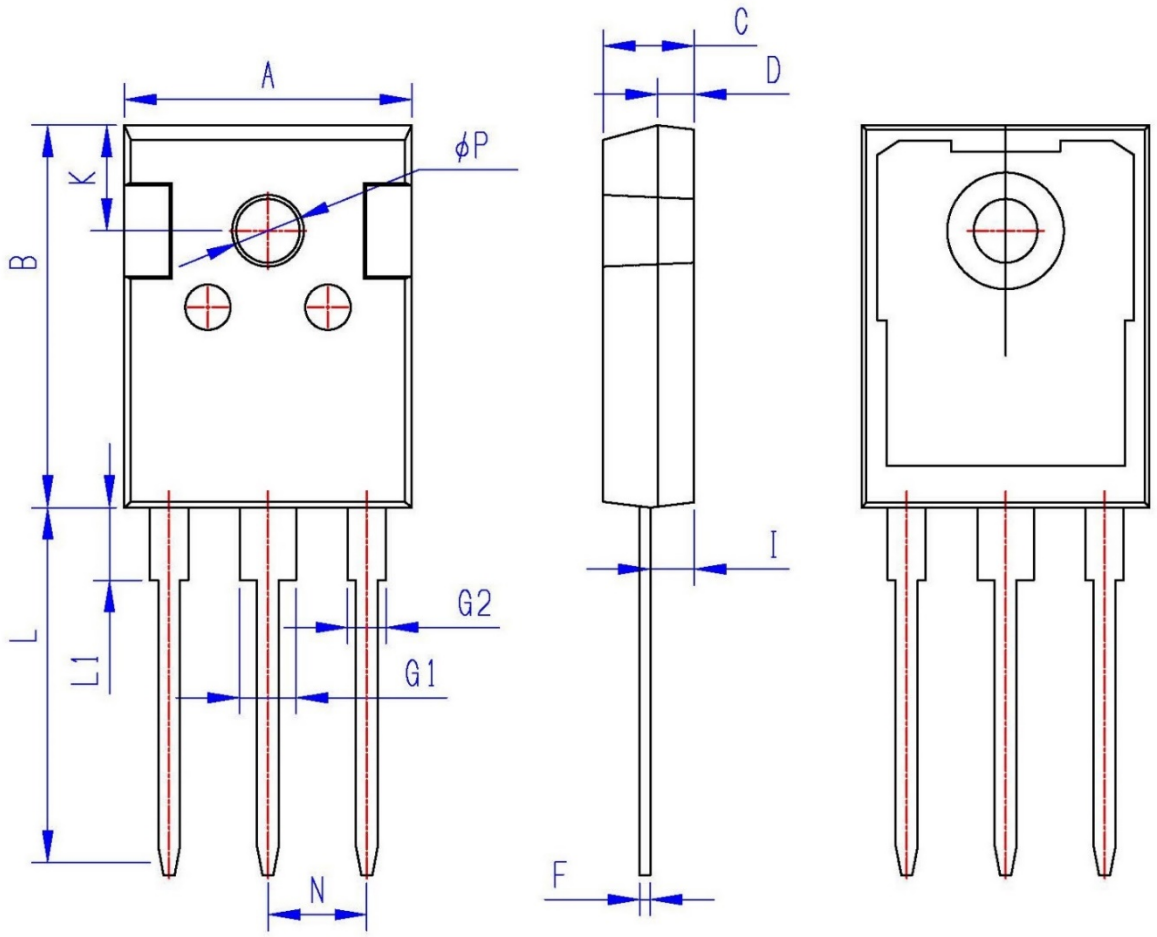
Fig9 Maximum Transient Thermal Impedance



●Dimensions (TO-247)

UNIT:mm

SYMBOL	min	max	SYMBOL	min	max
A	15.60	16.00	G2	1.95	2.25
B	20.80	21.20	N	5.25	5.65
C	4.85	5.15	L1	4.00	4.30
D	1.85	2.15	L	19.60	20.40
E	1.00	1.40	I	2.30	2.50
F	0.50	0.70	ΦP	3.30	3.70
G1	3.00	3.30			



●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	12.40	14.20
b1	1.10	1.70	L1	2.40	3.40
c	0.40	0.70	⌀P	3.50	3.90
D	9.80	10.60			
B	15.20	16.20