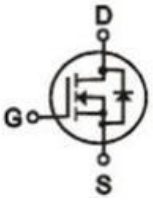
•General Description

The MOSFET LH021N04 has the low $R_{DS(on)}$, low gate charge,fast switching and excellent avalanche characteristics.This device is suitable for fast charge and lighting.



VDS =40V

$R_{DS(ON)}$ =2.1mΩ

ID =150A

TO-251

■ RoHS COMPLIANT

•Features

■Fast switching
■Low On-Resistance
■Low Miller Charge
■Low Input Capacitance

•Application

■Lighting
■Power Supplies
■PD Fast Charging

•Ordering Information:

Part Number	LH021N04
Package	TO-251
Basic Ordering Unit (pcs)	4000
Normal Package Material Ordering Code	LH021N04T1-TO251-TU
Halogen Free Ordering Code	LH021N04T1-TO251-TU -HF

•Absolute Maximum Ratings（TC =25℃）

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current ,T_C = 25°C	I_D	150	A
Pulsed drain current (TC = 25°C, tp limited by Tjmax)[1]	I_D pulse	480	A
Avalanche Current	I_{AS}	63.5	A
Single Pulse Avalanche Energy[2]	E_{AS}	280	mJ
Maximum Power Dissipation	$P_{D(TC=25℃)}$	53	W
	$P_{D(TC=70℃)}$	83	
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	40	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	1.0	--	2.5	V
Drain-source On Resistance[3]	$R_{DS(ON)}$	V_{GS} =10V, I_D=20A	--	1.7	2.1	mΩ
		V_{GS} =4.5V, I_D=15A	--	2.2	3.0	
Drain-Source Leakage Current	I_{DSS}	V_{DS}=40V,V_{GS}=0V,T_J=25℃	--	--	1	uA
		V_{DS}=40V,V_{GS}=0V,T_J=85℃	--	--	10	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20,V_{DS}=0V	--	--	±100	nA
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 20V f = 1.0MHz	--	4264	--	pF
Output Capacitance	Coss		--	897	--	
Reverse transfer Capacitance	Crss		--	401	--	
Turn-on Delay Time	Td(on)	V_{DD}=20V V_{GS}=10V, I_D =30A R_G=3.0Ω	--	22	--	ns
Turn-on Rise Time	T_R		--	7	--	
Turn -Off Delay Time	Td(off)		--	99	--	
Fall Time	Tf		--	18	--	
Total Gate Charge	Qg	I_D = 30A, V_{DS} = 20V V_{GS} = 10V	--	79.5	---	nC
Gate-to-Source Charge	Qgs		--	23.2	--	
Gate-to-Drain Charge	Qgd		--	4.89	---	
Continuous Diode Forward Current	I_S	--	--	--	150	A
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=1A V_{GS} =0V	--	--	1.3	V
Reverse Recovery Time	trr	If=30A di_F/dt=100A/μs	--	33	--	nS
Reverse Recovery Charge	Qrr		--	122	--	nC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	Rth_{JC}	1.5	℃/W
Thermal Resistance Junction-ambient	Rth_{JA}	62	℃/W

Notes:

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

2.I_{AS} =63.5A, V_{DD} = 20V, R_G = 25Ω, Starting T_J = 25°C

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

●Typical Characteristics

Fig1.Output Characteristics

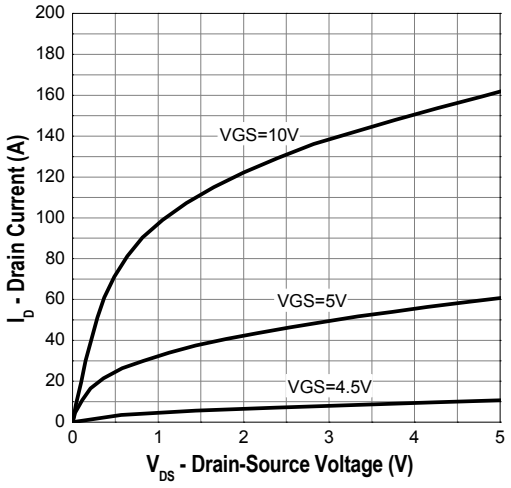


Fig2.Threshold Voltage

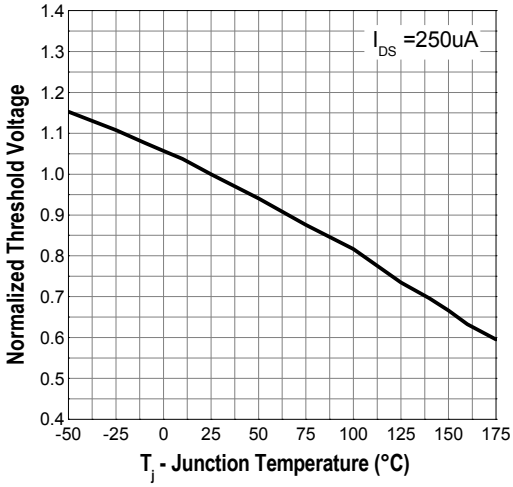


Fig3.Gate-Source On Resistance

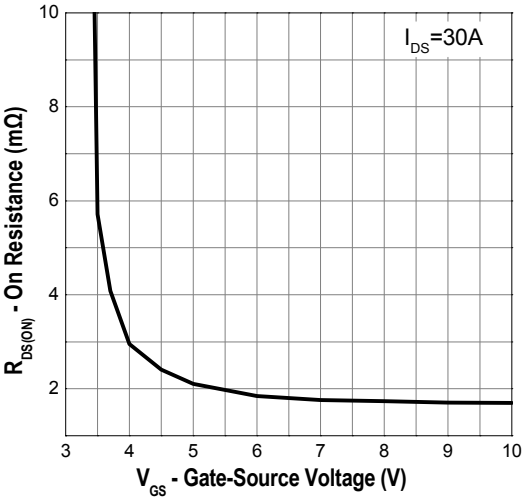


Fig4.Drain-Source On Resistance

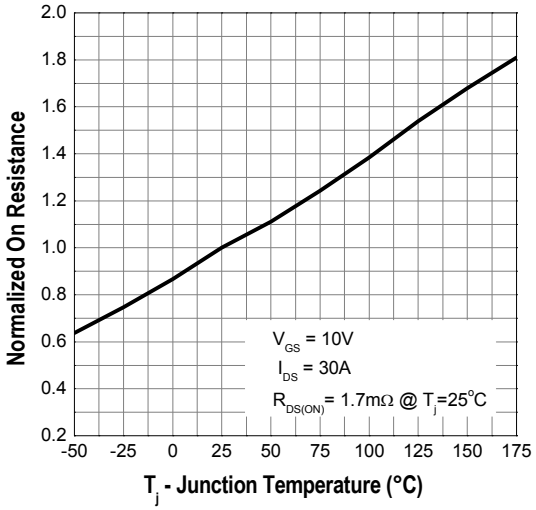


Fig5.Drain-Source On Resistance

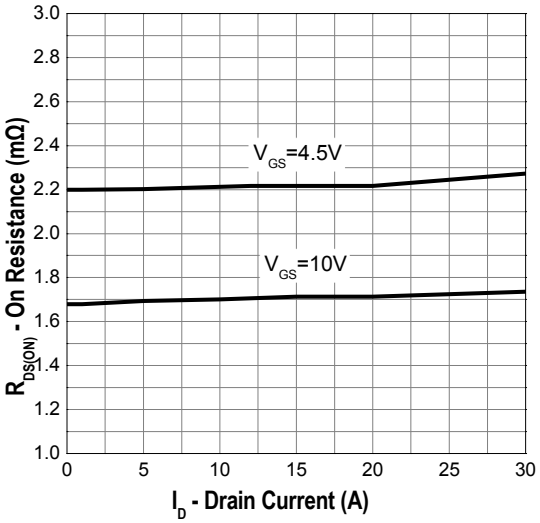
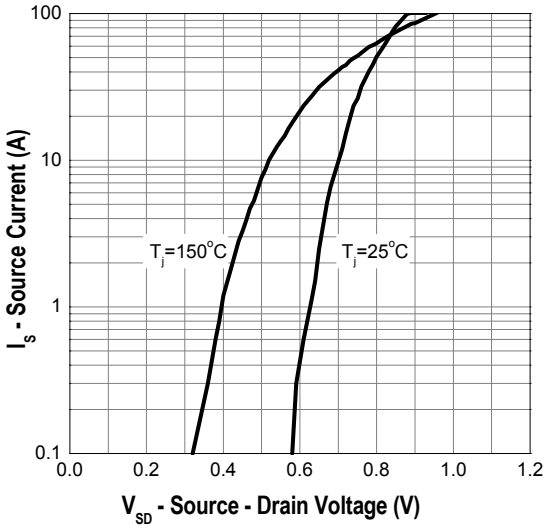


Fig6.Source-Drain Diode Forward



●Typical Characteristics(cont,)

Fig7.Power Dissipation

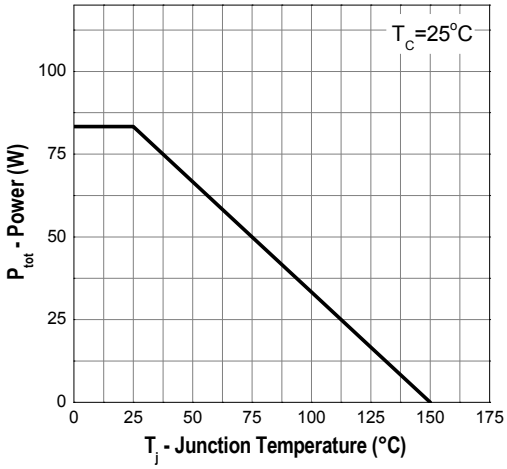


Fig8.Drain Current

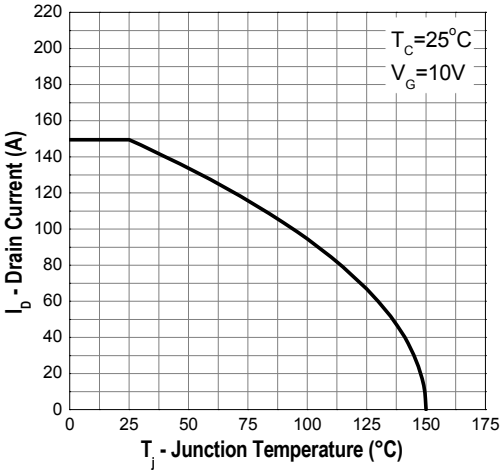


Fig9.Safe Operation Area

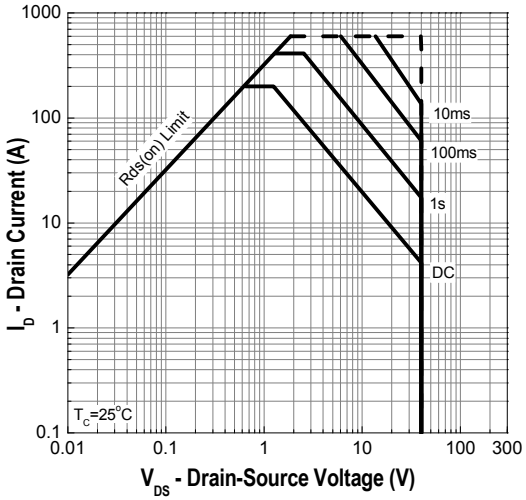


Fig10.Transient Thermal Impedance

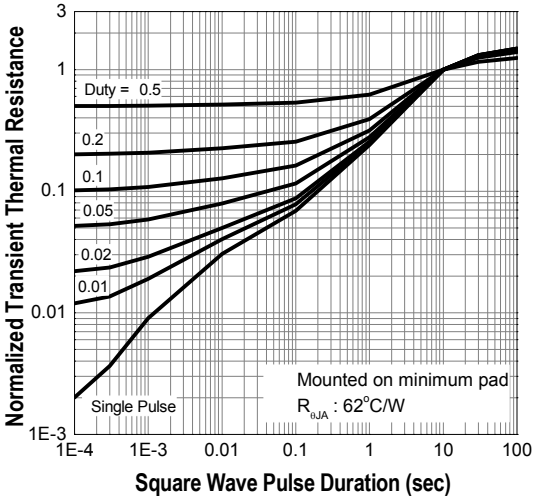


Fig11.Capacitance

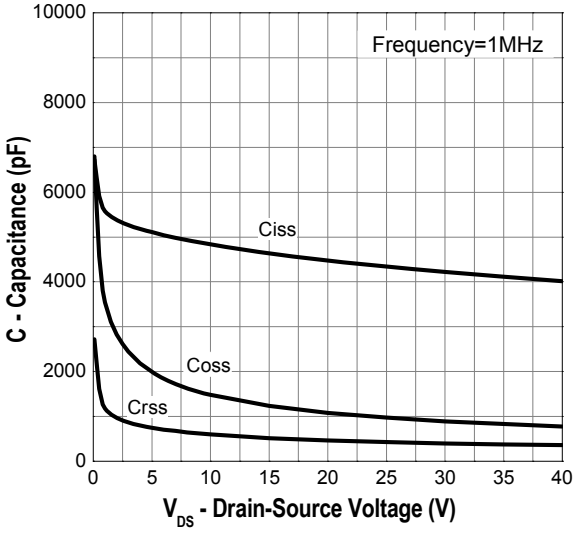
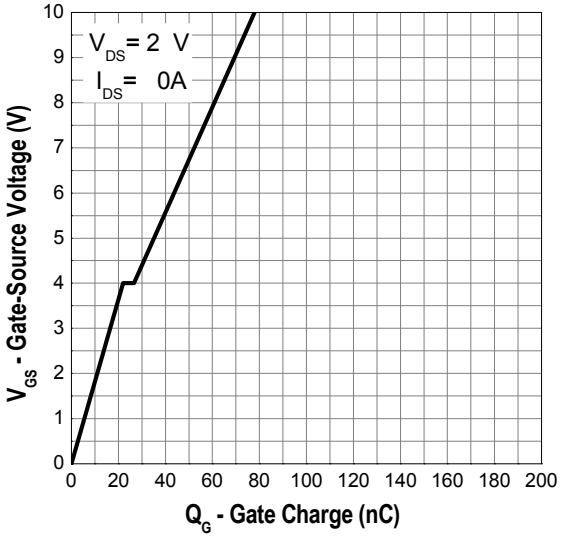


Fig12.Gate Charge



●Dimensions（TO-251)

UNIT:mm

SYMBOL	min	max	SYMBOL	min	max
A	2.10	2.50	B	0.80	1.30
b	0.50	0.90	C	0.40	0.70
b1	0.70	1.20	D1	5.10	5.60
b2	0.40	0.70	e1	2.10	2.45
D	6.20	6.80	e2	4.40	4.80
E	5.80	6.40			
L	3.60	9.80			
L1	0.80	1.60