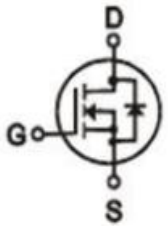
•General Description

The MOSFET LH042N04 has the low $R_{DS(on)}$, low gate charge,fast switching and excellent avalanche characteristics.This device is suitable for fast charge and lighting.



V_{DS}=40V

$R_{DS(ON)}$=4.2mΩ

I_D =55A

TO-220

■ RoHS COMPLIANT

•Features

■Fast switching
■Low $R_{DS(on)}$ to minimize conductive loss
■Low Gate Charge
■100% EAS Guaranteed

•Application

■LED/LCD/PDP TV and monitor Lighting
■Power Supplies
■PD Charger

•Ordering Information:

Part Number	LH042N04
Package	TO-220
Basic Ordering Unit (pcs)	1000
Normal Package Material Ordering Code	LH042N04T-TO220-TU
Halogen Free Ordering Code	LH042N04T-TO220-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	I_D@ T_C = 25°C	55	A
	I_D@ T_C = 75°C	45	A
	I_D@ T_C = 100°C	35	A
Pulsed drain current[1]	I_{DM}	130	A
Single Pulse Avalanche Energy[2]	E_{AS}	72	mJ
Power Dissipation(TC=25℃)	P_D	40	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	40	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	1.2	--	2.2	V
Drain-source On Resistance[3]	$R_{DS(ON)}$	V_{GS} =10V, I_D=15A	--	4.2	5.5	mΩ
		V_{GS} =4.5V, I_D=10A	--	5.0	7.5	
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℃	--	--	5	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20,V_{DS}=0V	--	--	±100	nA
Input Capacitance	Ciss	f = 1.0MHz	--	1070	--	pF
Output Capacitance	Coss		--	450	--	
Reverse transfer Capacitance	Crss		--	48	--	
Turn-On Delay Time	Td(on)	V_{DD} = 20V V_{GS} = 10V R_G=3.0Ω I_D=15A	--	11.3	--	nS
Rise Time	Tr		--	9.0	--	
Turn-Off Delay Time	Td(off)		--	24	--	
Fall Time	Tf		--	15.3	--	
Total Gate Charge	Qg	I_D = 15A, V_{DD} = 20V V_{GS} = 10V	--	19.8	---	nC
Gate-to-Source Charge	Qgs		--	3.6	--	
Gate-to-Drain Charge	Qgd		--	4.8	---	
Continuous Diode Forward Current	I_S	--	--	--	55	A
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=1A V_{GS} =0V	--	--	1.2	V

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	Rth_{JC}	6	℃/W
Thermal Resistance Junction-ambient	Rth_{JA}	65	℃/W
Soldering temperature,wave soldering for 10s	Tsold	265	℃

Notes:

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

2.I_{AS} =35A, V_{DD} = 20V,L=0.1Mh, R_G = 25Ω, Starting T_J = 25°C

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

●Typical Characteristics

Figure 1. Typ. output characteristics

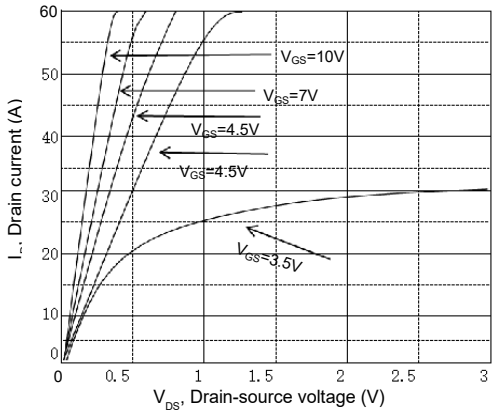


Figure 2. Typ. transfer characteristics

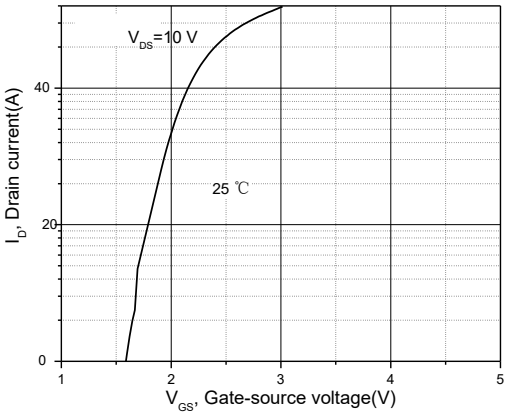


Figure 3. Typ. capacitances

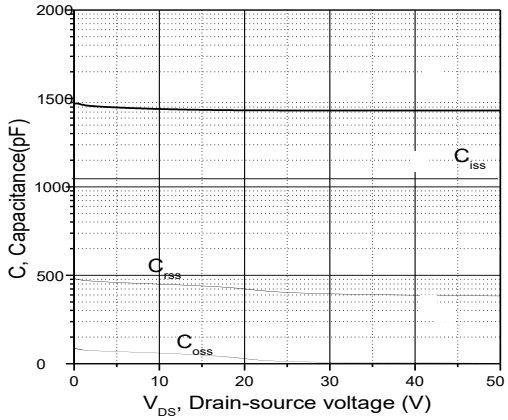


Figure 4.Typ. gate charge

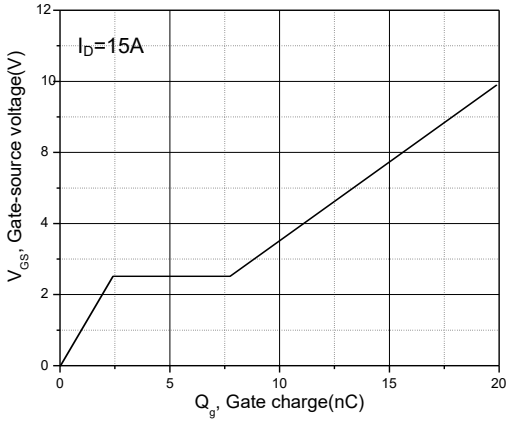


Figure 5. Source Drain Foward Charateristics

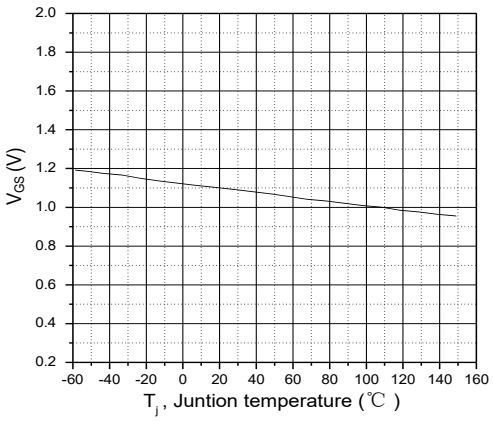
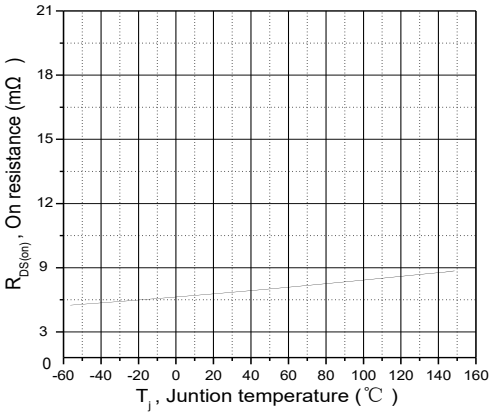


Figure 6. Drain-source on-state resistance



●Typical Characteristics(Cont.)

Figure 7. Forward characteristic of body diode

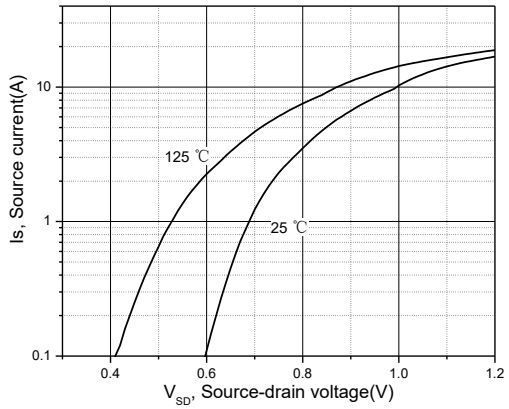


Figure 8. Drain-source on-state resistance

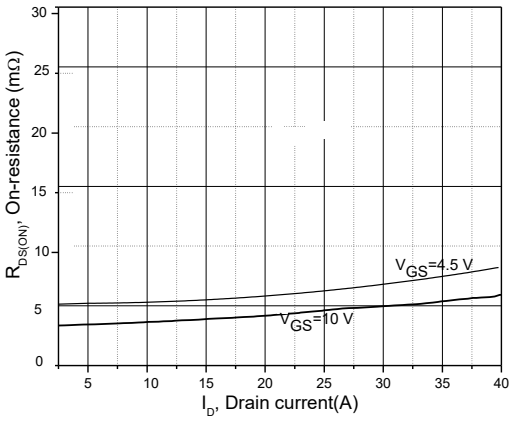


Figure 9. Safe operation area T_C=25 ℃

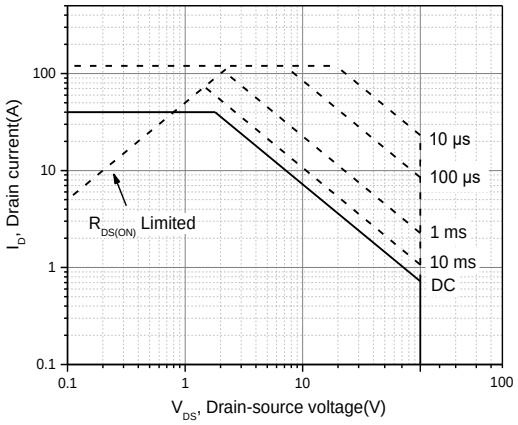
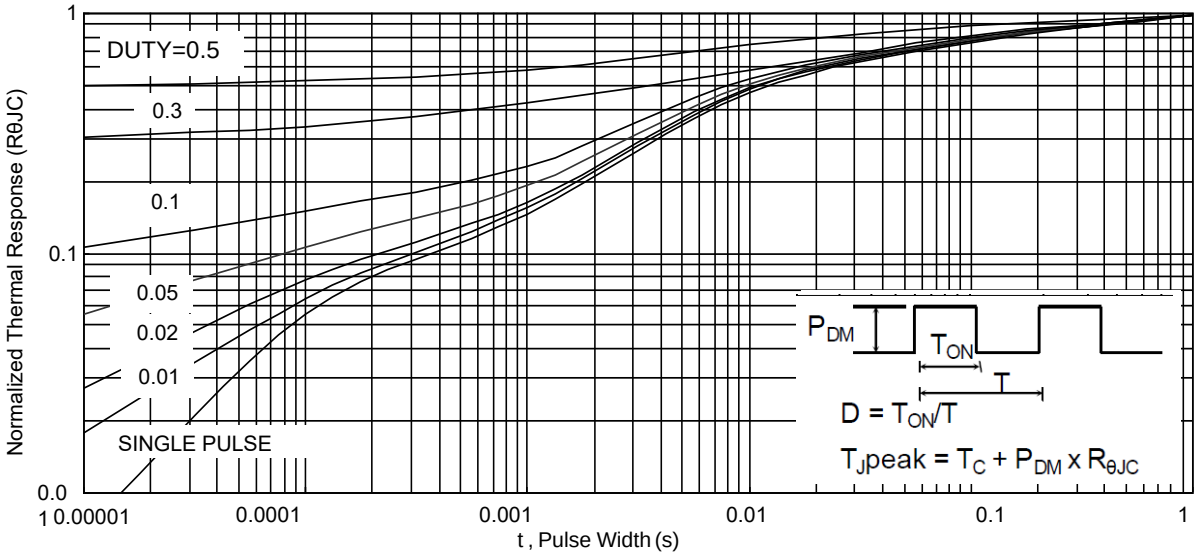


Fig.9 Normalized Maximum Transient Thermal Impedance



●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