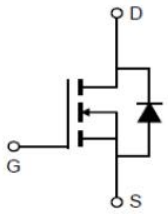
•General Description

The MOSFET LH100N03 has the low $R_{DS(on)}$, low gate charge,fast switching and excellent avalanche characteristics.This device is suitable for fast charge and lighting.

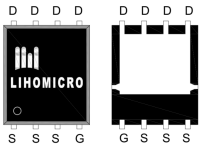


VDS =30V

$R_{DS(ON)}$ =2.9mΩ

ID =100A

■ RoHS COMPLIANT



DFN5*6

•Features

■Fast switching

■Low $R_{DS(on)}$ & FOM

■Low Miller Capacitance

•Application

■LED/LCD/PDP TV and monitor Lighting

■Power Supplies

■PD Charger

•Ordering Information:

Part Number	LH100N03
Package	DFN5*6
Basic Ordering Unit (pcs)	5000
Normal Package Material Ordering Code	LH100N03N-DFN5*6-TAP
Halogen Free Ordering Code	LH100N03N-DFN5*6-TAP-HF

•Absolute Maximum Ratings（TC =25℃）

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current ,T_C = 25°C	I_D	100	A
Pulsed drain current (TC = 25°C, tp limited by Tjmax)[1]	I_D pulse	300	A
Single Pulse Avalanche Energy[2]	E_{AS}	560	mJ
Power Dissipation(TC=25℃)	P_D	80	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	30	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	1.0	--	3.0	V
Drain-source On Resistance[3]	$R_{DS(ON)}$	V_{GS} =10V, I_D=40A	--	2.9	3.4	mΩ
		V_{GS} =4.5V, I_D=30A	--	4.8	6.3	
Drain-Source Leakage Current	I_{DSS}	V_{DS}=30V,V_{GS}=0V,T_J=25℃	--	--	1	uA
		V_{DS}=30V,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} = 25V f = 1.0MHz	--	2890	--	pF
Output Capacitance	Coss		--	312	--	
Reverse transfer Capacitance	Crss		--	277	--	
Turn-on Delay Time	Td(on)	V_{DD}=15V V_{GS}=10V, I_D =30.0A R_G=2.4Ω	--	30	--	ns
Turn-on Rise Time	T_R		--	--	--	
Turn -Off Delay Time	Td(off)		--	58	--	
Fall Time	Tf		--	19.5	--	
Total Gate Charge	Qg	I_D = 30A, V_{DS} = 24V V_{GS} = 4.5V	--	32.4	---	nC
Gate-to-Source Charge	Qgs		--	12.5	--	
Gate-to-Drain Charge	Qgd		--	17	---	
Continuous Diode Forward Current	I_S	--	--	--	100	A
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=10.0A V_{GS} =0V	--	--	1.2	V

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	Rth_{JC}	2.5	℃/W
Thermal Resistance Junction-ambient	Rth_{JA}	40	℃/W

Notes:

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

2.I_{AS} =40A, L=0.5Mh,V_{DD} = 15V, R_G = 25Ω, Starting T_J = 25°C

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

●Typical Characteristics

Fig.1 Power Dissipation

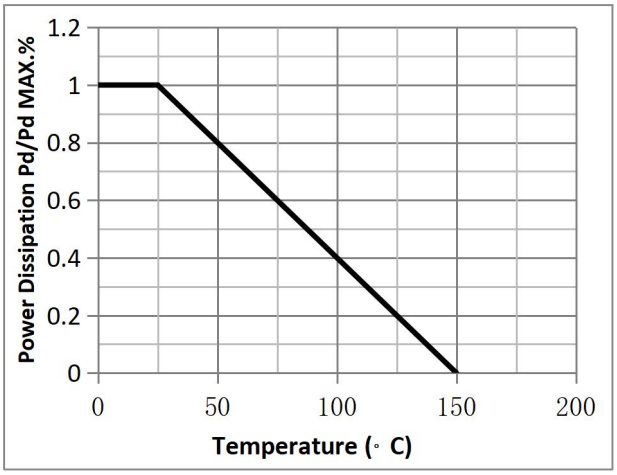


Fig.2 Typical output Characteristics

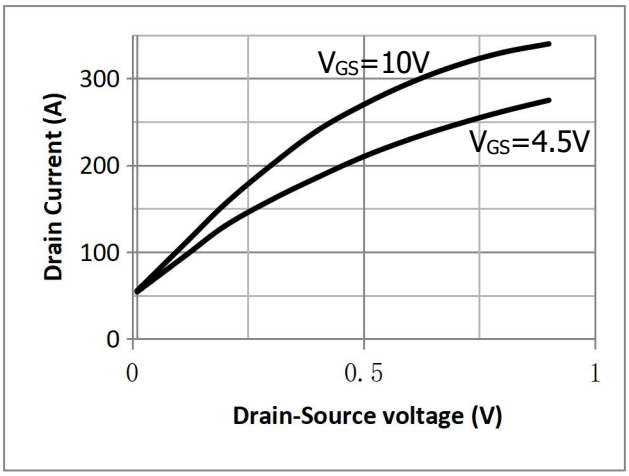


Fig.3 Threshold Voltage V.S Junction Temperature

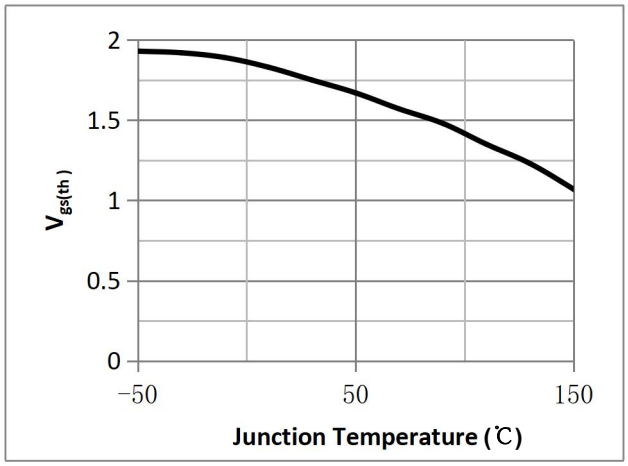


Fig.4 Resistance V.S Drain Current

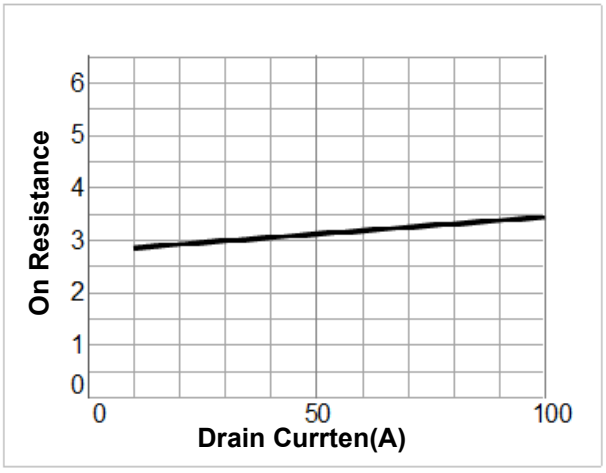


Fig.5 On-Resistance VS Gate Source Voltage

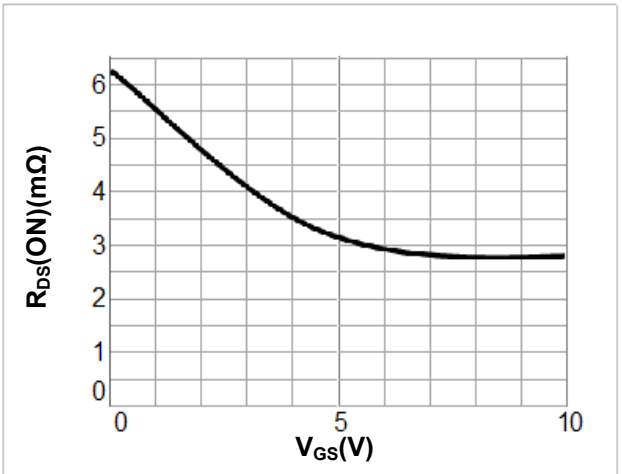
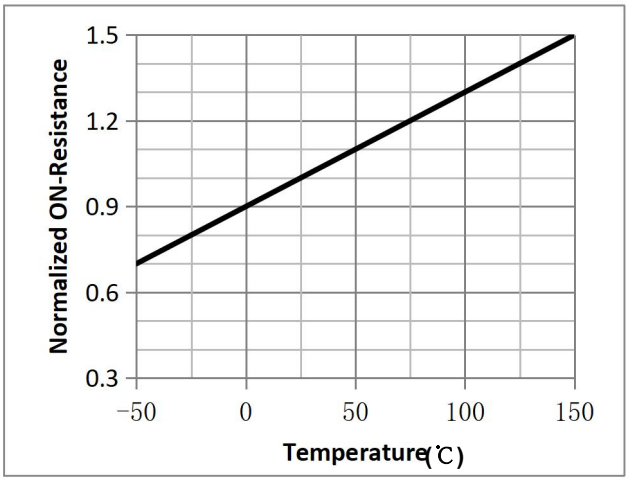


Fig.6 On-Resistance V.S Junction Temperature



• Test Circuits & Waveforms

Fig.7 Switching Time Measurement Circuit

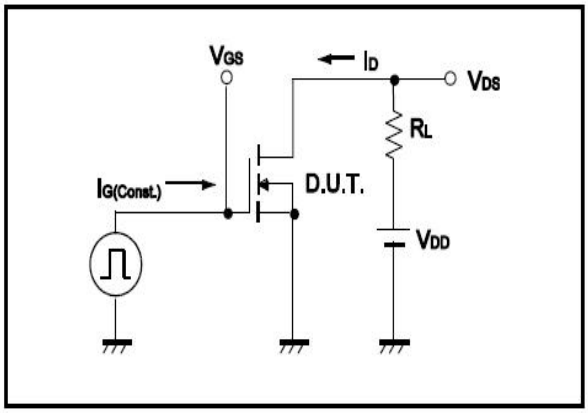


Fig.8 Gate Charge Waveform

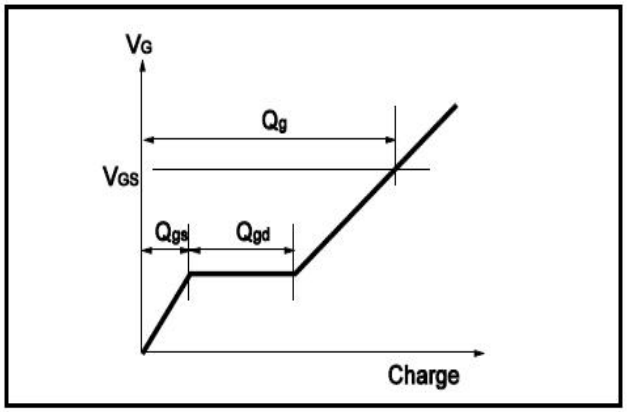


Fig.9 Switching Time Measurement Circuit

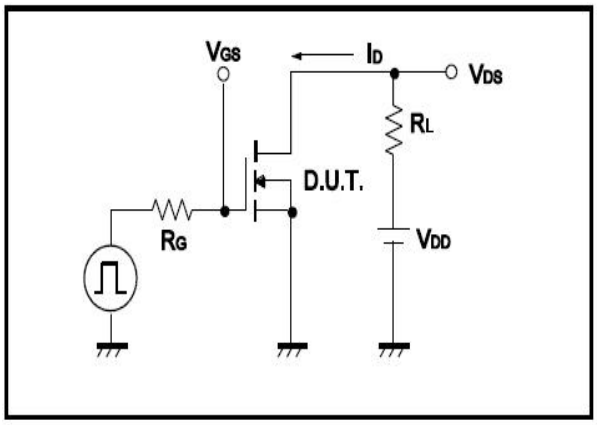


Fig.10 Gate Charge Waveform

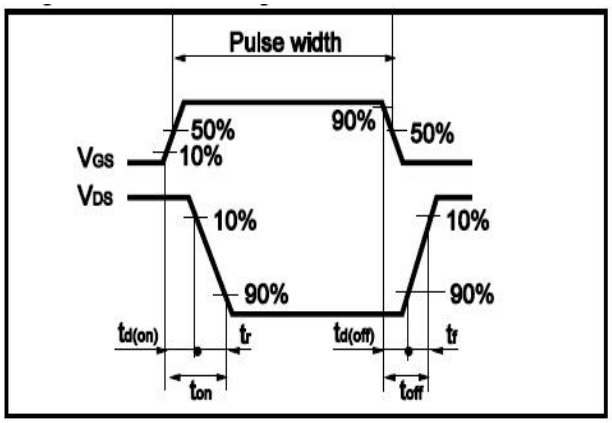


Fig.11 Avalanche Measurement Circuit

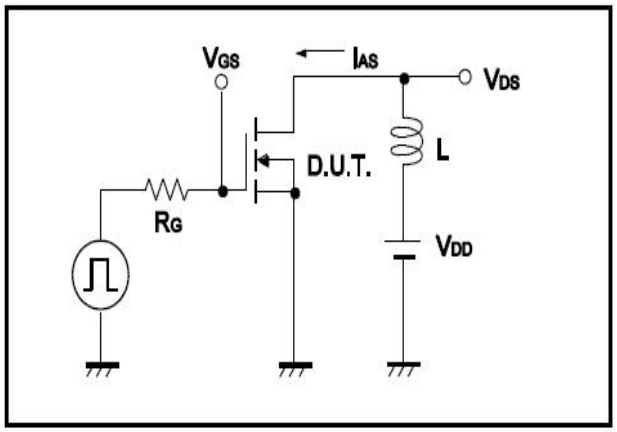
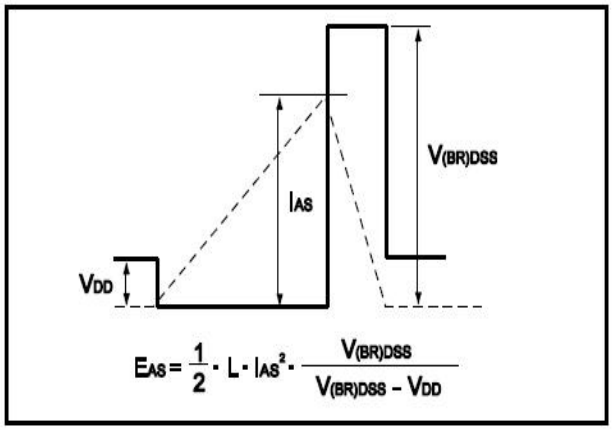


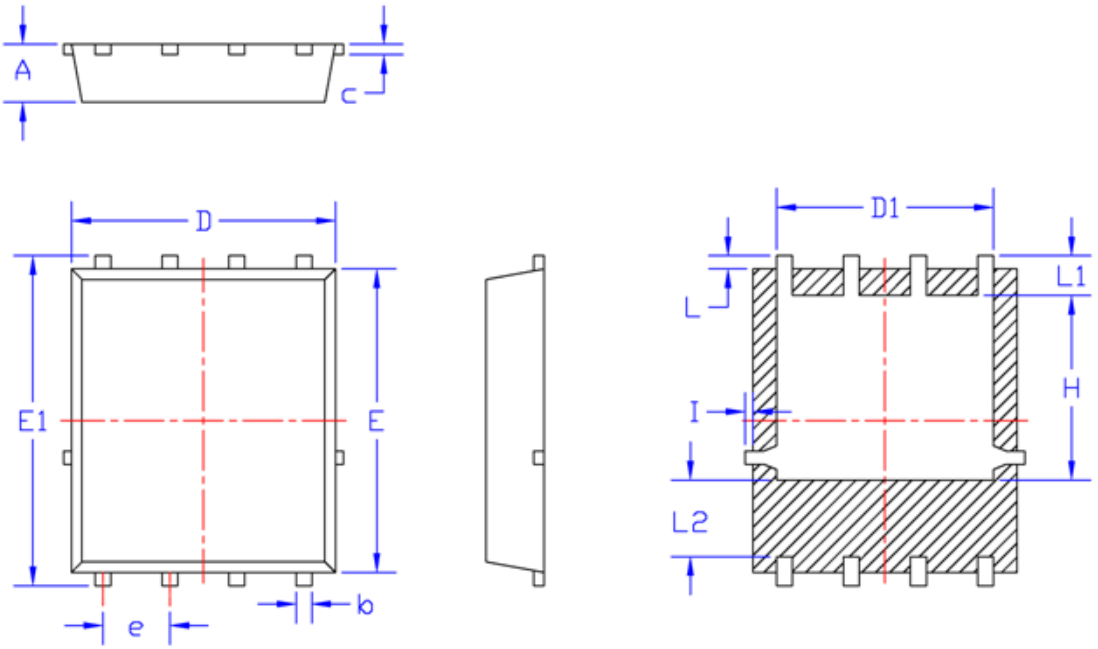
Fig.12 Avalanche Waveform



- **Dimensions（DFN5*6)**

Unit：mm

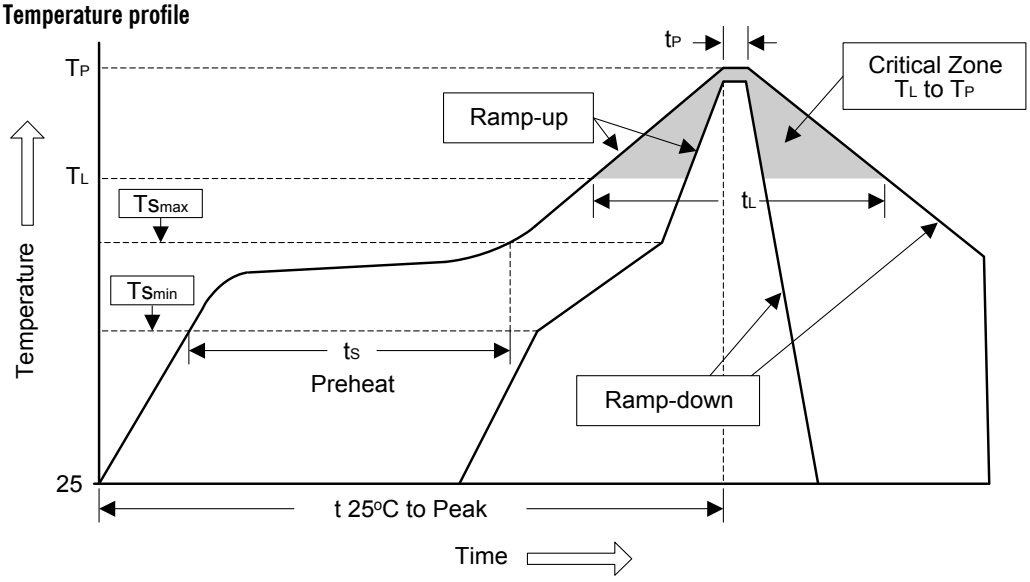
SYMBOL	min	max	SYMBOL	min	max
A	1.00	1.20	e	1.27BSC	
b	0.30	0.50	L	0.05	0.30
c	0.20	0.30	L1	0.40	0.80
D	4.80	5.20	L2	1.20	2.00
D1	3.90	4.30	H	3.30	3.80
E	5.50	5.90	I	-	0.18
E1	5.90	6.40			



• Soldering Methods for Silicongear's Products

1. Storage environment: Temperature=10°C to 35°C Humidity=65%±15%
2. Reflow soldering of surface-mount devices

Figure 1: Temperature profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/sec
Preheat - Temperature Min (Ts_{min}) - Temperature Max (Ts_{max}) - Time (min to max) (ts)	 100°C 150°C 60 to 120 sec	 150°C 200°C 60 to 180 sec
Tsmax to T_L - Ramp-up Rate	 <3°C/sec	 <3°C/sec
Time maintained above: - Temperature (T_L) - Time (t_L)	 183°C 60 to 150 sec	 217°C 60 to 150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_P)	10 to 30 sec	20 to 40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes

3. Flow (wave) soldering (solder dipping)

Products	Peak Temperature	Dipping Time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec