

●General Description



The N-Channel MOSFET LH12N03 has the low $R_{DS(on)}$, low gate charge, fast switching and excellent avalanche characteristics. This device is suitable for fast charge and lighting.

●Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

●Application

- DC/DC Converters in Computing, Servers
- Isolated DC/DC Converters in Telecom and Industrial
- POL application
- BLDC Motor driver

	$V_{DS} = 30V$ $R_{DS(ON)} = 14m\Omega$ $I_D = 12A$
 SOP-8	■ RoHS COMPLIANT

●Ordering Information:

Part Number	LH12N03
Package	SOP-8
Basic Ordering Unit (pcs)	4000
Normal Package Material Ordering Code	LH12N03S-SOP8-TAP
Halogen Free Ordering Code	LH12N03S-SOP8-TAP-HF

●Absolute Maximum Ratings (TC =25°C)

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ²	$I_D(T_C=25^\circ C)$	12	A
	$I_D(T_C=75^\circ C)$	7.6	
	$I_D(T_C=100^\circ C)$	6.3	
Pulsed drain current ¹	I_{DM}	20	A
Single Pulse Avalanche Energy@L=0.1mH	E_{AS}	31	mJ
Avalanche Current@L=0.1mH	I_{AS}	25	A
Power Dissipation ²	$P_D(T_C=25^\circ C)$	3.4	W
	$P_D(T_A=25^\circ C)$	0.69	
Operating Temperature	T_J	-55~+150	°C
Storage Temperature	T_{STG}	-55~+150	°C

●Electronic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	30	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.2	--	2.5	V
Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 8A$	--	11	14	mΩ
		$V_{GS} = 4.5V, I_D = 6A$	--	16	23	
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V, T_J = 25^\circ C$	--	--	1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	--	--	±100	nA
Forward Transconductance	g_{fs}	$V_{DS} = 10V, I_D = 5A$	--	9	--	S
Input Capacitance	C_{iss}	f=1MHz	--	850	--	pF
Output Capacitance	C_{oss}		--	190	--	
Reverse Transfer Capacitance	C_{rss}		--	100	--	
Total Gate Charge(10V)	Q_g	$V_{GS} = 10V, V_{DS} = 25V, I_D = 8A,$	--	12	--	nC
Gate-to-Source Charge	Q_{gs}		--	4	--	
Gate-to-Drain Charge	Q_{gd}		--	8	--	
Diode Forward Voltage ²	V_{SD}	$T_J = 25^\circ C, I_S = 10A, V_{GS} = 0V$	--	--	1.28	V

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case ²	R_{thJC}	24	°C/W
Thermal Resistance Junction-ambient(≤10s)	R_{thJA}	62.5	°C/W
Soldering temperature, wavesoldering for 10s	T_{sold}	265	°C

Notes:

1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2% ;
2. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.

•Typical Characteristics

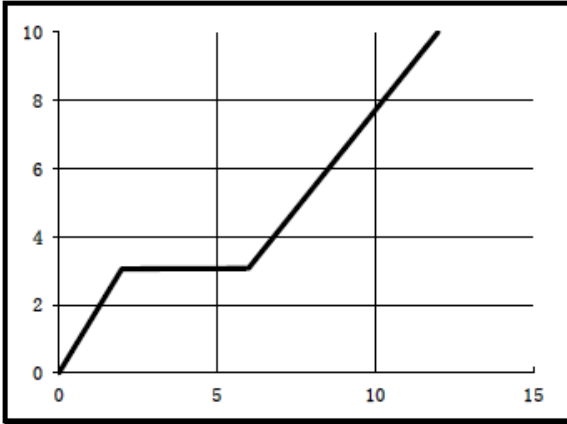


Fig.1 Gate-Charge Characteristics

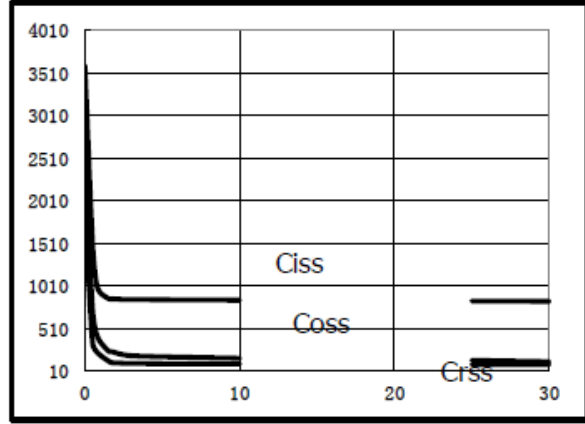


Fig.2 Capacitance Characteristics

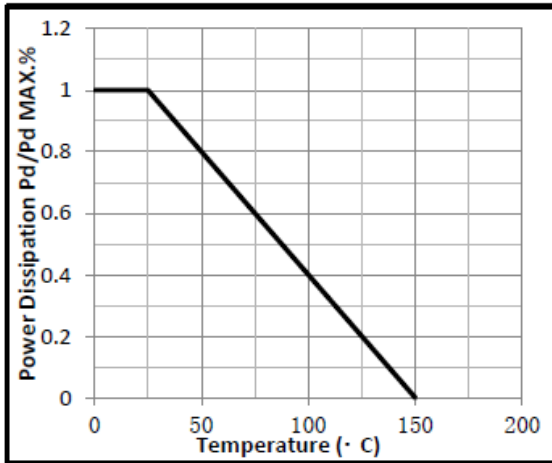


Fig.3 Power Dissipation Derating Curve

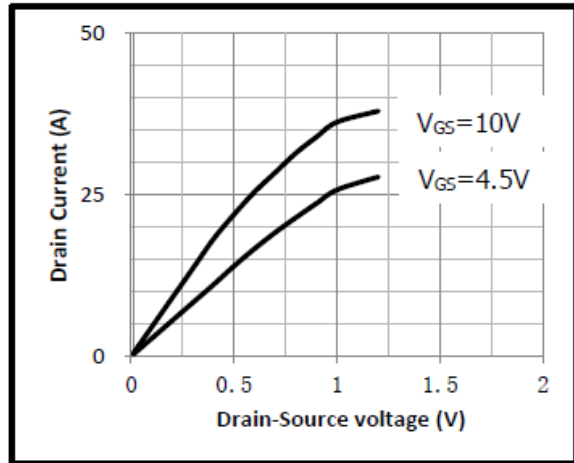


Fig.4 Typical output Characteristics

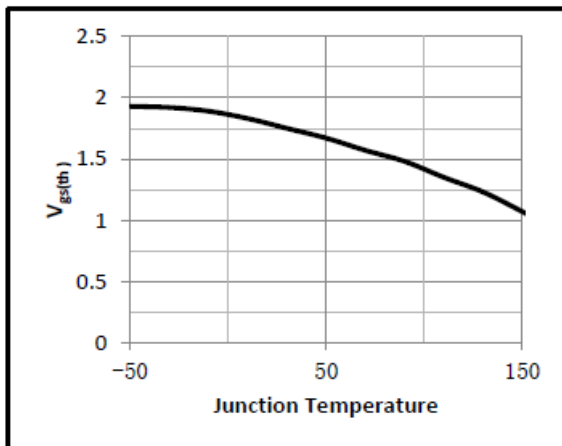


Fig.5 Threshold Voltage V.S Junction Temperature

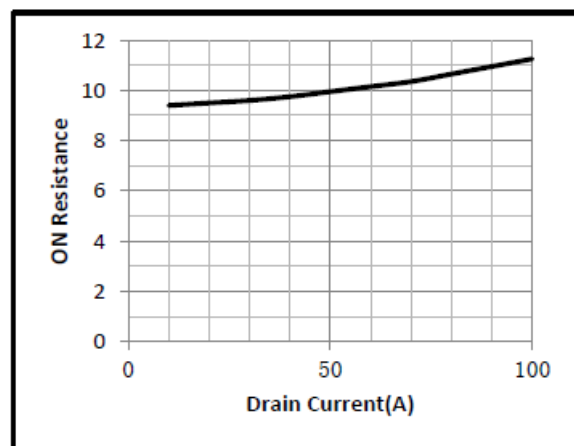


Fig.6 Resistance V.S Drain Current

•Typical Characteristics(Cont.)

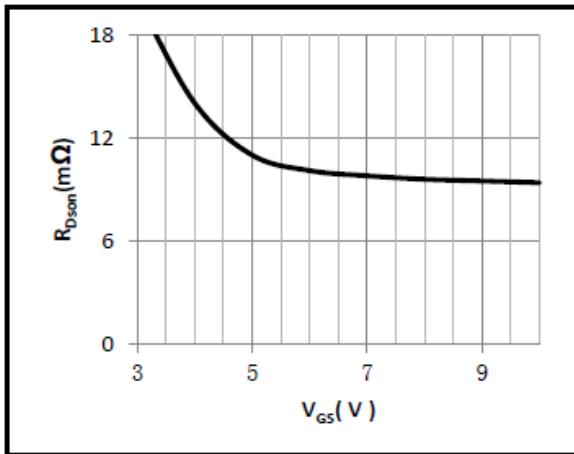


Fig.7 On-Resistance VS Gate Source Voltage

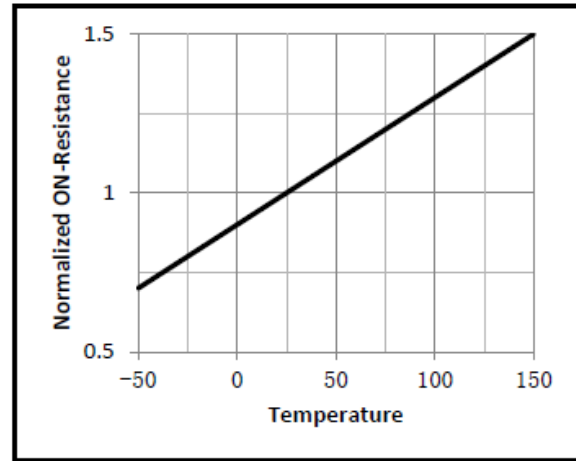


Fig.8 On-Resistance V.S Junction Temperature

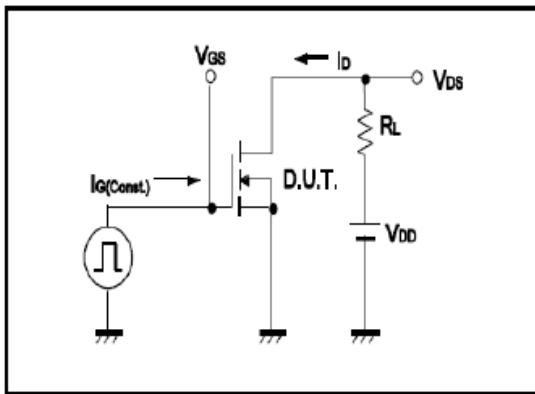


Fig.9 Switching Time Measurement Circuit

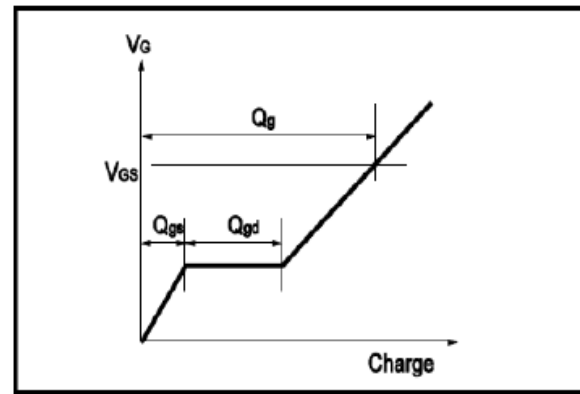


Fig.10 Gate Charge Waveform

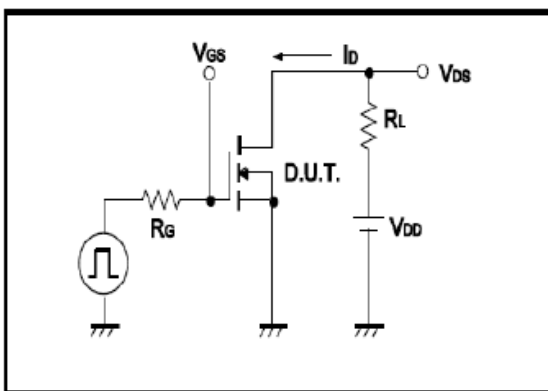


Fig.11 Switching Time Measurement Circuit

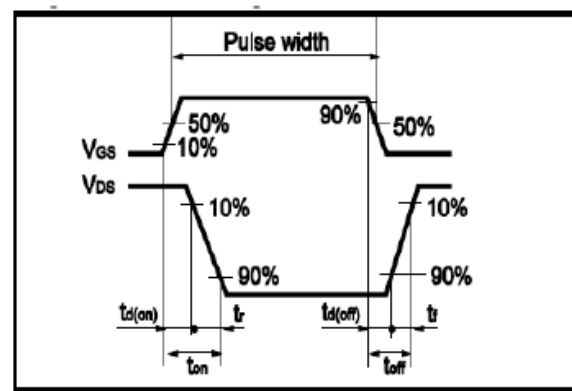


Fig.12 Gate Charge Waveform

•Dimensions (SOP-8)

UNIT:mm

SYMBOL	min	max	SYMBOL	min	max
A	1.30	1.60	e	1.27BSC	
A1	1.35	1.85	L	0.40	1.30
b	0.30	0.60			
C	0.15	0.35			
D	4.60	5.20			
E	3.70	4.10			
E1	5.70	6.30			

