

● General Description

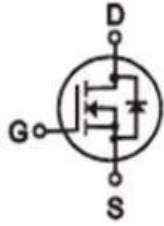
The LH80N04 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

● 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

- PD Fast Charging
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

	$V_{DS}=40V$ $R_{DS(ON)}=5.5m\Omega$ $I_D=80A$
 TO-252	

■ RoHS COMPLIANT

● Ordering Information:

Part Number	LH80N04
Package	TO-252
Basic ordering unit (pcs)	2500
Normal Package Material Ordering Code	LH80N04T5-TO252-TAP
Halogen Free Ordering Code	LH80N04T5-TO252-TAP-HF

● Absolute Maximum Ratings ($T_C=25^{\circ}C$)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_D@T_C=25^{\circ}C$	80	A
	$I_D@T_C=75^{\circ}C$	53.2	
	$I_D@T_C=100^{\circ}C$	44.1	
Pulsed Drain Current ¹	I_{DM}	180	A
Total Power Dissipation($T_C=25^{\circ}C$)	P_D	60	W
Total Power Dissipation($T_A=25^{\circ}C$)	P_D	2.2	W
Operating Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55-150	$^{\circ}C$
Single Pulse Avalanche Energy ²	E_{AS}	280	mJ

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Transconductance	gfs	$V_{DS} = 25V, I_D = 10A$	-	12	-	S
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 12A$	-	8	10	mΩ
		$V_{GS} = 10V, I_D = 24A$	-	5.5	8	
Gate- Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V$	-	-	1.0	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	1.2	-	2.5	V
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	40	-	-	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	$f = 1MHz$	-	2000	-	pF
Output capacitance	C_{oss}		-	600	-	
Reverse transfer capacitance	C_{rss}		-	500	-	
Total Gate Charge	Q_g	$V_{DD} = 20V$ $I_D = 8A$ $V_{GS} = 10V$	-	35	-	nC
Gate-to-Source Charge	Q_{gs}		-	4.6	-	
Gate-to-Drain Charge	Q_{gd}		-	7.5	-	
Diode Forward Voltage	V_{SD}	$I_S = 24A$	-	-	1.28	V

● Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal resistance, junction - case	R_{thJC}	3.1	°C/W
Thermal resistance, junction - ambient	R_{thJA}	83.3	°C/W
Soldering temperature, wave soldering for 10s	T_{sold}	265	°C

Notes:

1. Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. $V_{DD} = 25V, I_D = 20A, T_j = 25^\circ C$

Typical characteristics

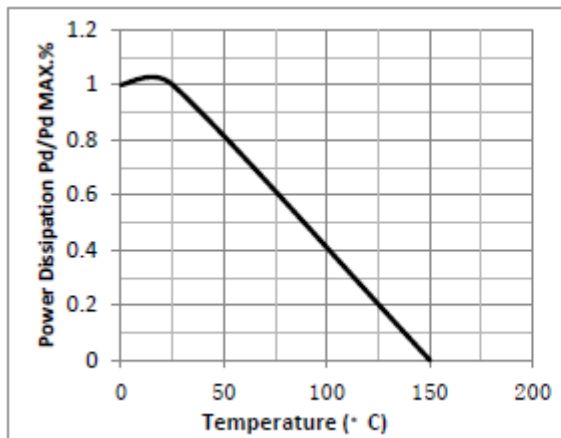


Fig.1 Power Dissipation

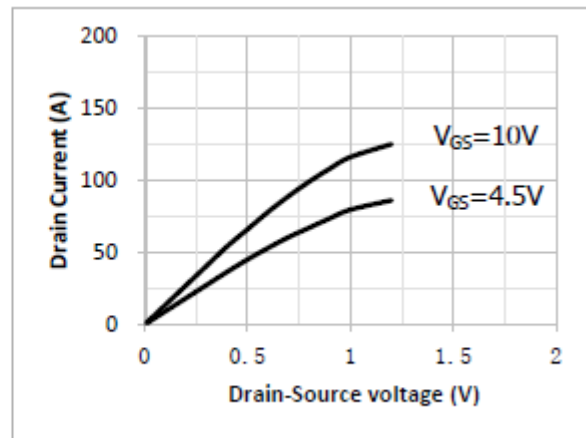


Fig.2 Typical output Characteristics

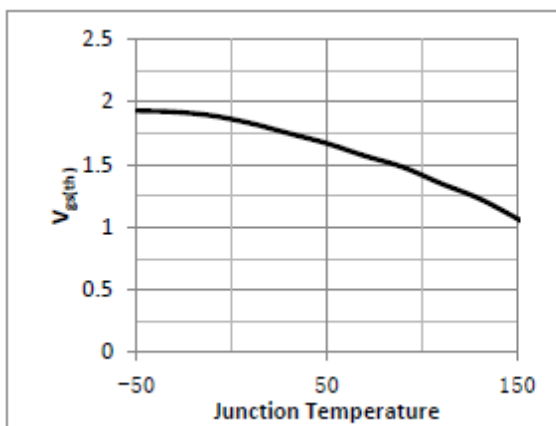


Fig.3 Threshold Voltage V.S Junction Temperature

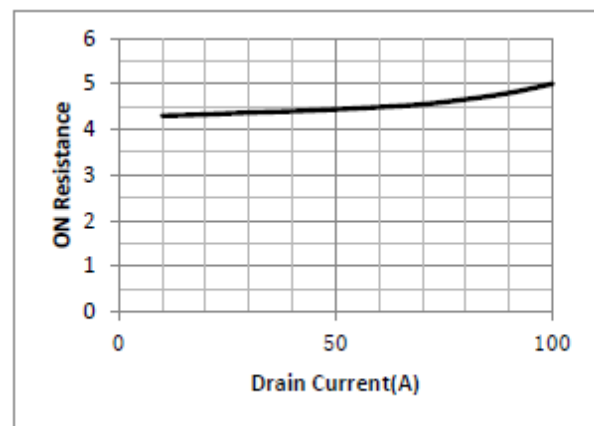


Fig.4 Resistance V.S Drain Current

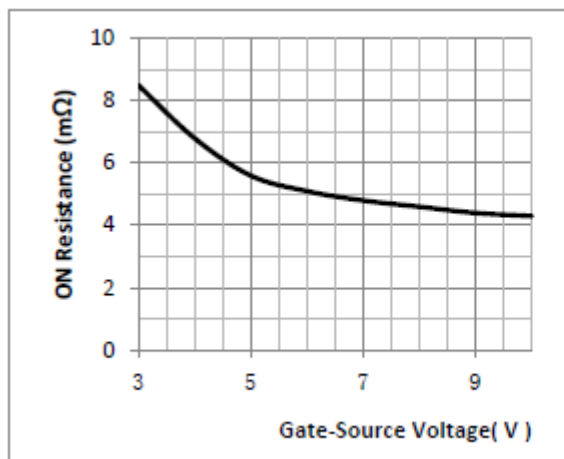


Fig.5 On-Resistance VS Gate Source Voltage

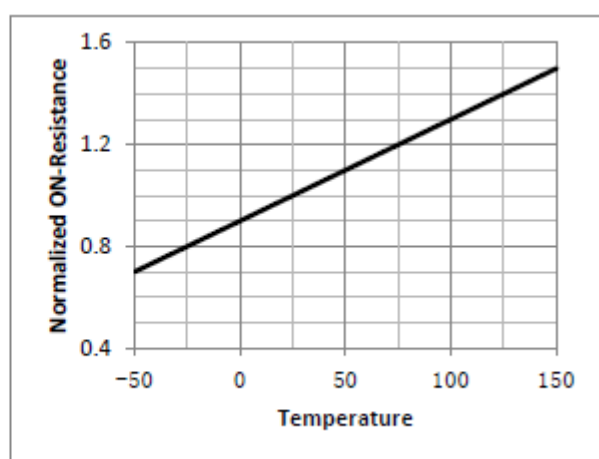


Fig.6 On-Resistance V.S Junction Temperature

Typical characteristics(cont.)

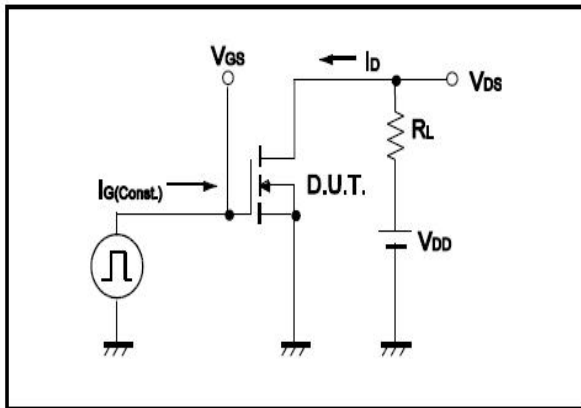


Fig.7 Switching Time Measurement Circuit

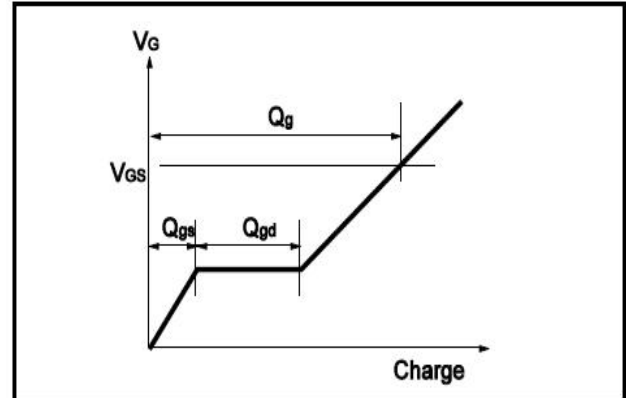


Fig.8 Gate Charge Waveform

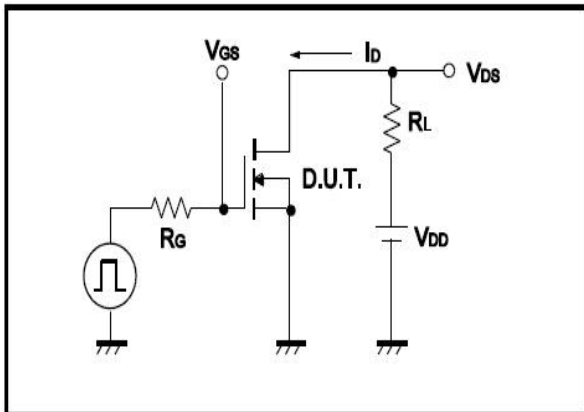


Fig.9 Switching Time Measurement Circuit

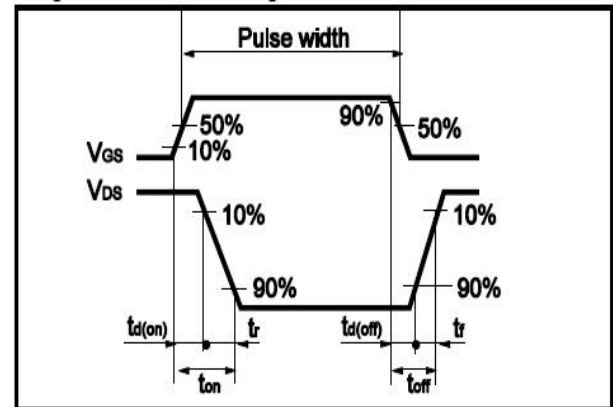


Fig.10 Gate Charge Waveform

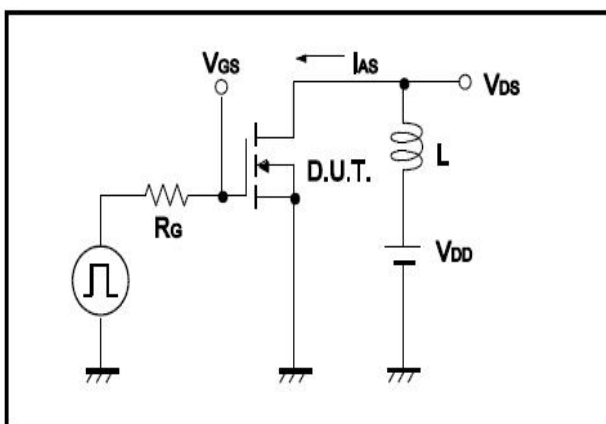


Fig.11 Avalanche Measurement Circuit

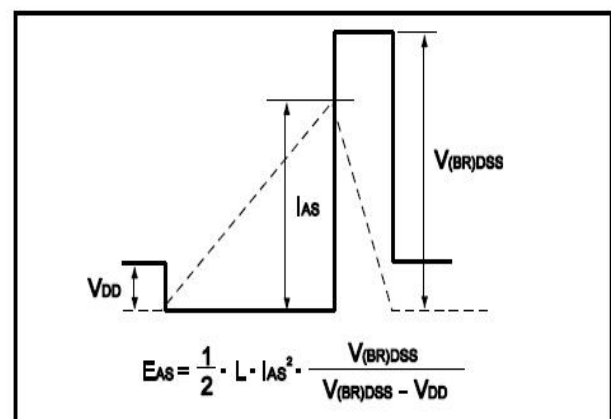


Fig.12 Avalanche Waveform

• **Dimensions (TO-252)**

Unit:mm

SYMBOL	min	max	SYMBOL	min	max
A	2.10	2.50	L2	0.60	1.20
b	0.50	0.90	L3	1.20	1.80
b1	0.70	1.20	B	0.80	1.30
b2	0.40	0.70	C	0.40	0.70
D	6.20	6.80	D1	5.10	5.60
E	5.80	6.40	e1	2.10	2.45
L	3.60	4.60	e2	4.40	4.80
L1	0.80	1.60			

