

● General Description

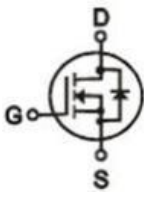
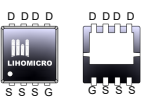
The N-Channel MOSFET LH80N02 has the low $R_{DS(on)}$, low gate charge, fast switching and excellent avalanche characteristics. This device is suitable for fast charge and lighting.

● Features

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

● Application

- Ω Led Driver
- Ω PD Charger
- Ω POL application
- Ω BLDC Motor driver

	$V_{DS} = 20V$ $R_{DS(ON)} = 3.8m\Omega$ $I_D = 80A$
 DFN3*3	■ RoHS COMPLIANT

● Ordering Information:

Part number	LH80N02
Package	DFN3*3
Basic ordering unit (pcs)	5000
Normal Package Material Ordering Code	LH80N02D3-DFN3*3-TAP
Halogen Free Ordering Code	LH80N02D3-DFN3*3-TAP-HF

● Absolute Maximum Ratings ($T_c = 25^\circ C$)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current($T_C = 25^\circ C$)	I_D	80	A
Pulsed Drain Current ¹	I_{DM}	160	A
Total Power Dissipation($T_C = 25^\circ C$)	$P_D @ T_C = 25^\circ C$	50	W
Total Power Dissipation($T_A = 25^\circ C$)	$P_D @ T_A = 25^\circ C$	2.4	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ C$
Storage Temperature	T_{STG}	-55 to 150	$^\circ C$
Single Pulse Avalanche Energy ²	E_{AS}	80	mJ

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	2.5	°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	33	°C/W
Soldering temperature, wavesoldering for 10s	T_{sold}	-	-	265	°C

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	20	-	-	V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	0.4	-	1.2	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$	-	-	1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$	-	-	± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 10A$	-	3.8	4.8	m Ω
		$V_{GS} = 2.5V, I_D = 10A$	-	5.2	7.2	m Ω
Forward Transconductance	g_{FS}	$V_{DS} = 10V, I_D = 10A$	-	12	-	S
Gate Resistance	R_G	$f = 1MHz$	-	1.8	-	Ω
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 1A$	-	-	1.2	V

●Dynamic

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	$f = 1MHz$	-	1860	-	pF
Output capacitance	C_{oss}		-	210	-	
Reverse transfer capacitance	C_{rss}		-	121	-	
Turn-On Delay Time	$T_d(on)$	$V_{DS} = 15V$ $R_G = 3.3\Omega$ $V_{GS} = 10V$	-	16.6	-	nS
Turn-Off Delay Time	$T_d(off)$		-	32.3	-	
Turn-On Rise Time	T_r		-	33	-	
Turn-Off Fall Time	T_f		-	12	-	
Total gate charge	Q_g	$V_{DD} = 15V$ $I_D = 10A$ $V_{GS} = 10V$	-	15	-	nC
Gate - Source charge	Q_{gs}		-	4	-	
Gate - Drain charge	Q_{gd}		-	7	-	

Note:

1. Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$;
2. $I_{AS} = 40A$, $V_{DD} = 15V$, $R_G = 25\Omega$, Starting $T_J = 25^\circ C$

● **Typical Characteristics**

Fig.1 On Resistance VS. Junction Temperature

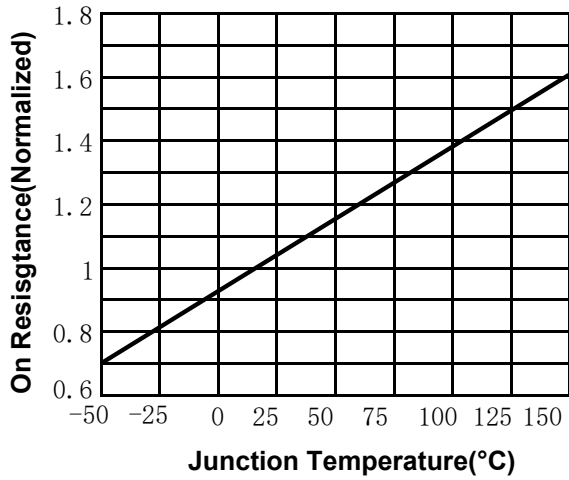


Fig.2 On Resistance VS. Gate to Source Voltage

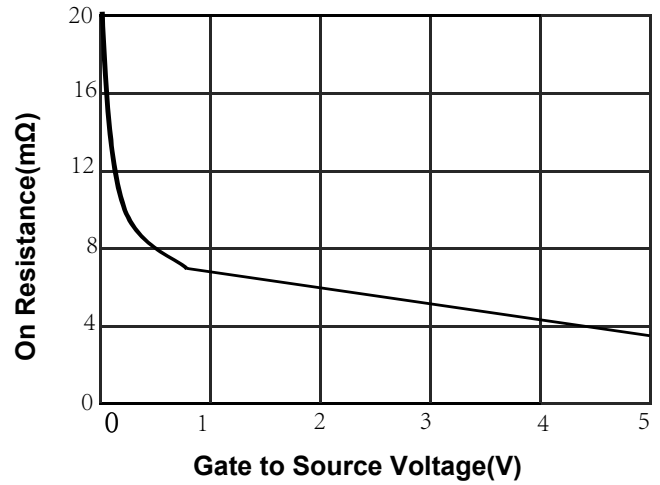


Fig.3 Threshold Voltage VS. Junction Temperature

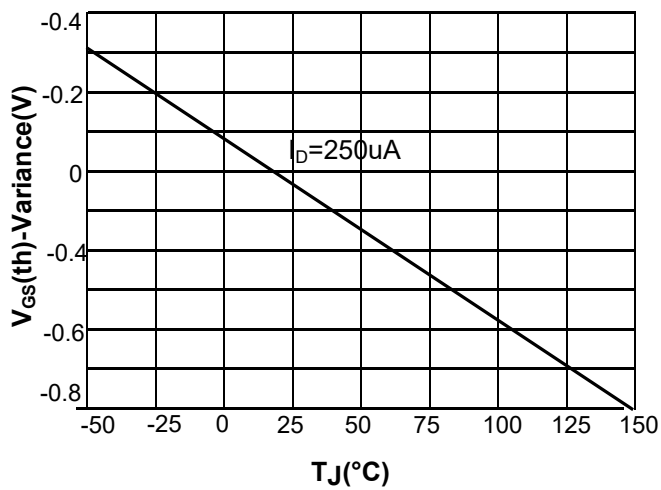


Fig.4 Resistance VS. Drain Current

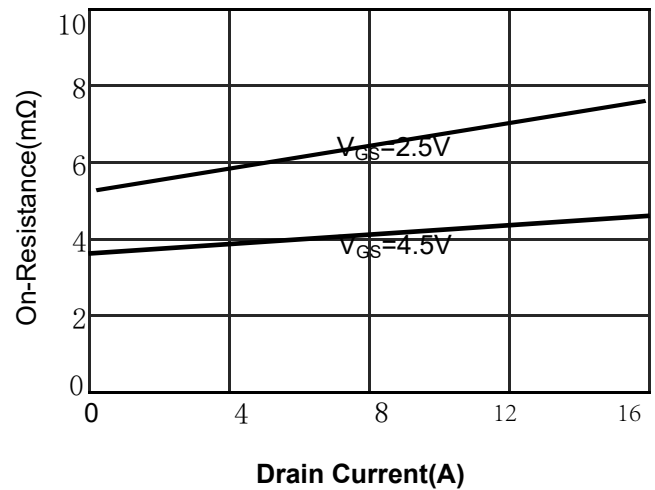


Fig.5 Capacitance

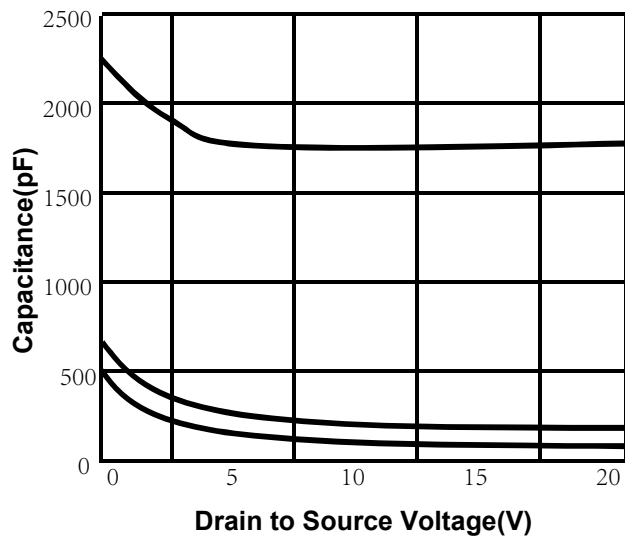
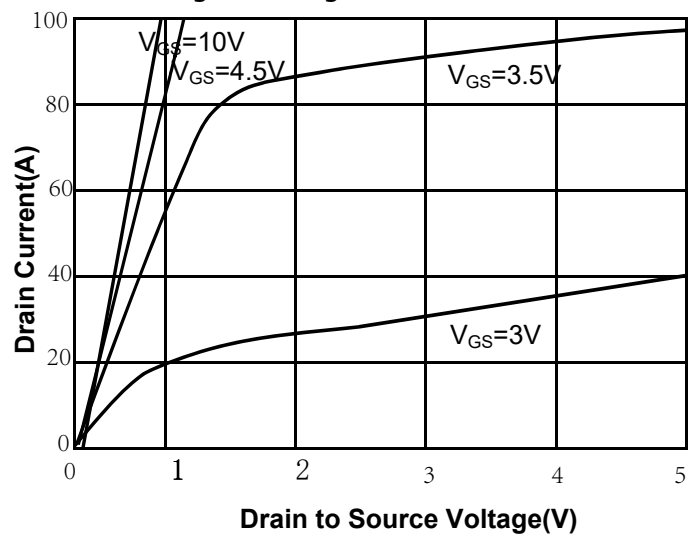


Fig.6 On-Region Characteristics



•Test Circuits & Waveforms

Fig.7 Switching Time Measurement Circuit

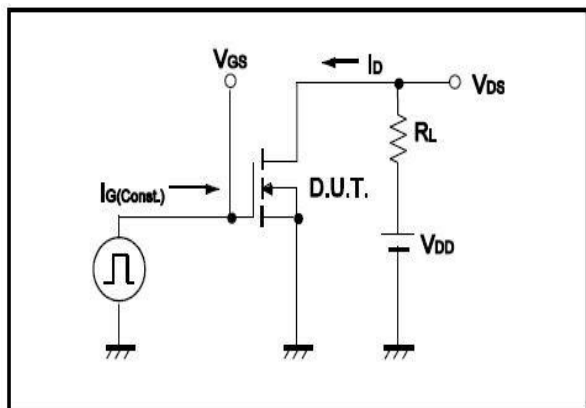


Fig.8 Gate Charge Waveform

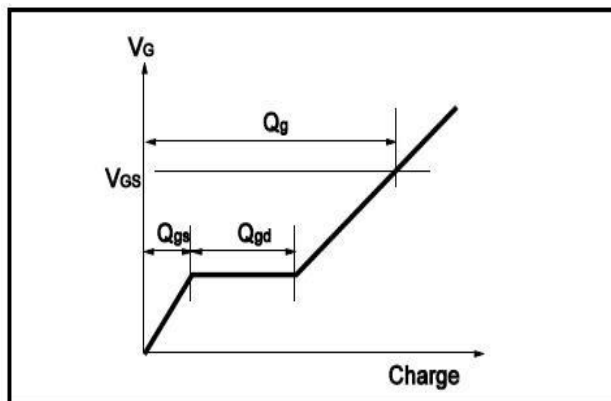


Fig.9 Switching Time Measurement Circuit

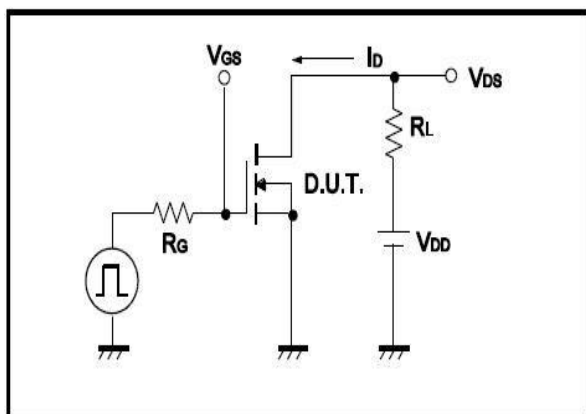


Fig.10 Gate Charge Waveform

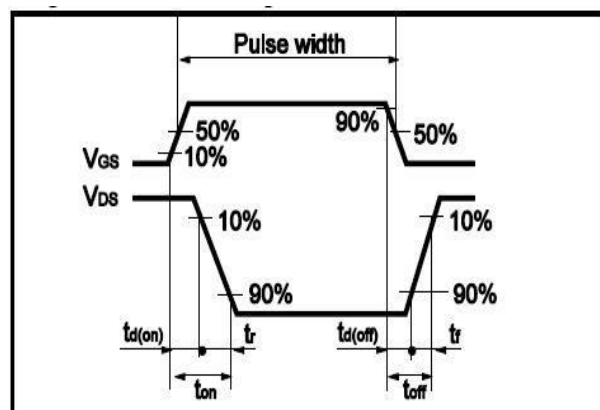


Fig.11 Avalanche Measurement Circuit

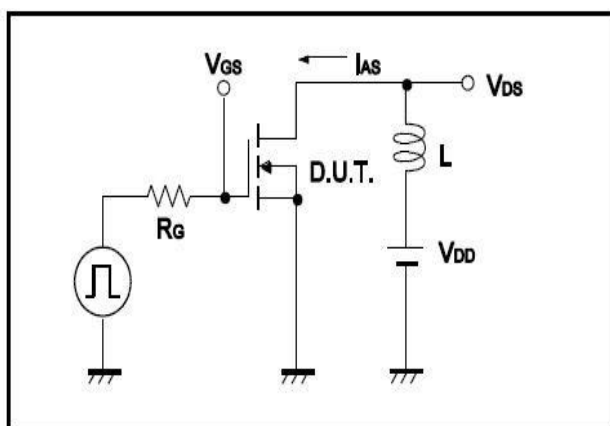
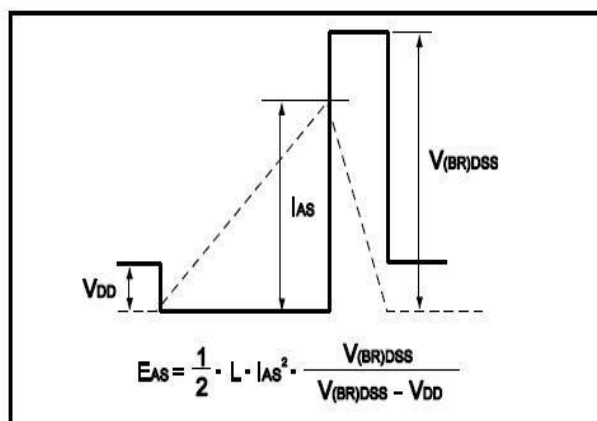


Fig.12 Avalanche Waveform



• Dimensions (DFN3*3)

Unit: mm

SYMBOL	min	max	SYMBOL	min	max
A	0.68	0.88	e	0.65BSC	
b	0.27	0.47	L1	1.55	1.95
c	0.15	0.35	L2	0.5	0.9
D	3.05	3.25	I	3.10	3.50
D1	2.25	2.65			
E	3.05	3.25			
E1	3.15	3.55			

