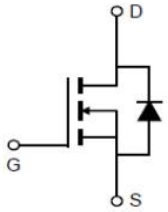
●General Description

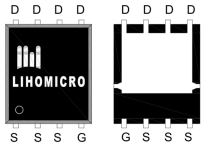
The N-Channel MOSFET LH80N06 has the low $R_{DS(on)}$,low gate charge,fast switching and excellent avalanche characteristics.This device is suitable for fast charge and lighting.



VDS =60V

$R_{DS(ON)}$ =5.0mΩ

ID =80A



DFN5*6

■ RoHS COMPLIANT

●Features

■Improved dv/dt capability
■Fast switching
■100% EAS Guaranteed
■Green Device Available

●Application

■Motor Drives
■UPS
■DC-DC Converter

●Ordering Information:

Part Number	LH80N06
Package	DFN5*6
Basic Ordering Unit (pcs)	5000
Normal Package Material Ordering Code	LH80N06N-DFN5*6-TAP
Halogen Free Ordering Code	LH80N06N-DFN5*6-TAP-HF

●Absolute Maximum Ratings（TC =25℃）

PARAMETER	SYMBOL	Value		UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	60		V
Gate-Source Voltage	V_{GS}	±20		V
Continuous Drain Current ,T_C = 25°C	I_D	80		A
	I_D(T_C=100°C)	50		
Pulsed drain current[1]	I_{DM}	360		A
Avalanche Energy[2]	E_{AS}	144		mJ
Power Dissipation(TC=25℃)	P_D	TO-220:125	TO-252:38	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	60	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	1.8	--	3.0	V
Drain-source On Resistance	$R_{DS(ON)}$	V_{GS} =10V, I_D=30A	--	5.0	7.0	mΩ
		V_{GS} =4.5V, I_D=20A	--	6.0	8.0	
Drain-Source Leakage Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V,T_J=25℃	--	--	1	uA
		V_{DS}=48V,V_{GS}=0V,T_J=125℃	--	--	30	
Gate leakage current, Forward	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
Forward Transconductance	g_{fs}	V_{DS}=5V,I_{DS}=30A	--	92	--	S
Gate resistance	R_G	V_{GS}=0V,V_{DS}=0V, f=1MHz	--	2.95	--	Ω
Input Capacitance	Ciss	V_{GS}=0V, V_{DS}=25V, f=1MHz	--	3752	--	pF
Output Capacitance	Coss		--	269	--	
Reverse Transfer Capacitance	Crss		--	206	--	
Turn -Off Delay Time	Td(off)	V_{GS}=10V, V_{DD}=30V, ID=25A	--	464	--	ns
Fall time	tf		--	140	--	
Turn-on delay time	td(on)		--	16.5	--	
Rise time	tr		--	170	--	
Total Gate Charge	Qg	V_{GS}=10V, V_{DS}=48V, ID=25A, f=1MHz	--	69	--	nC
Gate-to-Source Charge	Qgs		--	11.7	--	
Gate-to-Drain Charge	Qgd		--	13.1	---	
Continuous Diode Forward Current	I_S	--	--	--	110	A
Pulsed Source Current[3]	I_{SM}	--	--	--	360	
Diode Forward Voltage	V_{SD}	Is=20A, V_{GS} =0V,Tj=25℃	--	--	1.2	V
Reverse Recovery Time	trr	If=25A,di_F/dt=100A/μs, Tj=25℃	--	26.8	--	ns
Reverse Recovery Charge	Qrr		--	29	--	uC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX		UNIT
		TO-220	TO-252	
Thermal Resistance Junction-case	Rth_{JC}	1.0	3.3	℃/W
Thermal Resistance Junction-ambient	Rth_{JA}	62.5	62.5	℃/W

Notes:

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

2: V_{DD}=25V, V_{GS}=10V, L=0.5mH, I_{AS}=24A, R_G=25Ω, Starting T_J=25℃.

3: Pulse Test：Pulse Width ≤300uS, Duty Cycle≤2%.

●Typical Characteristics

Figure 1. Typ. Output Characteristics

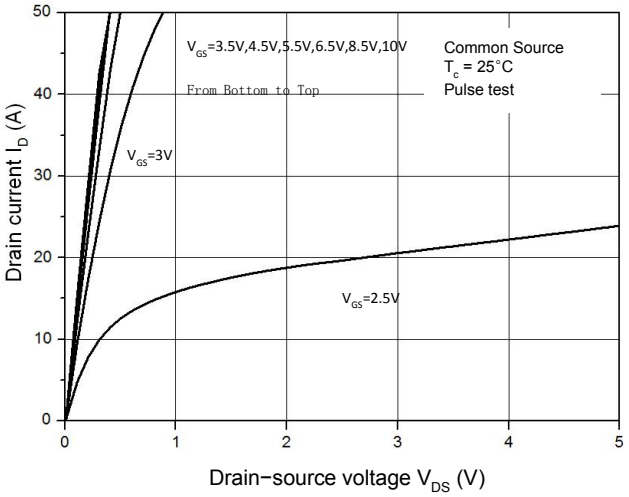


Figure 2. Transfer Characteristics

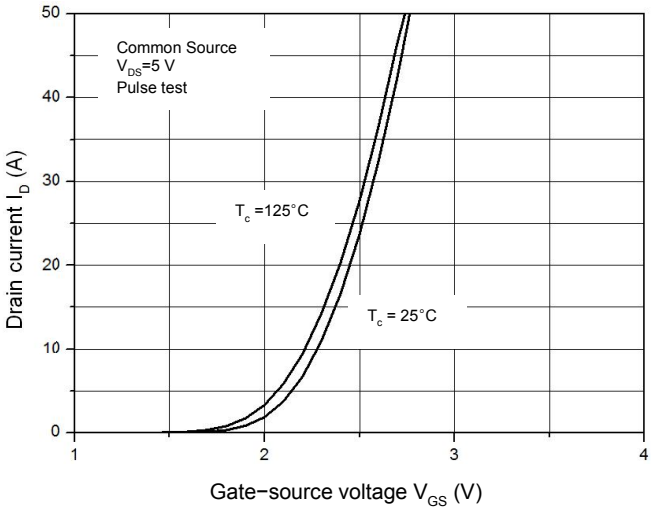


Figure 3. Capacitance Characteristics

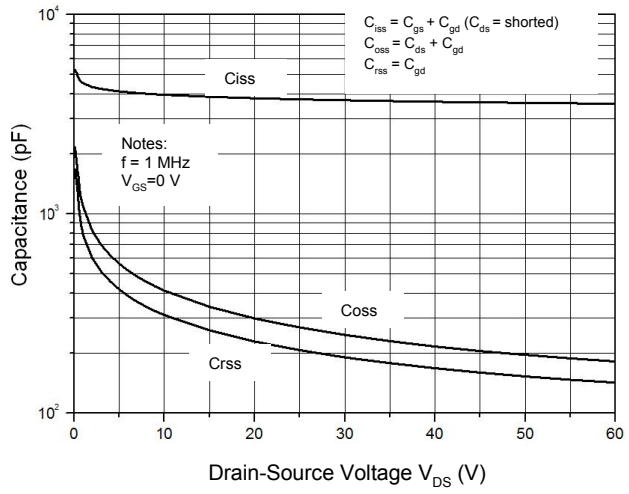


Figure 4. Gate Charge Waveform

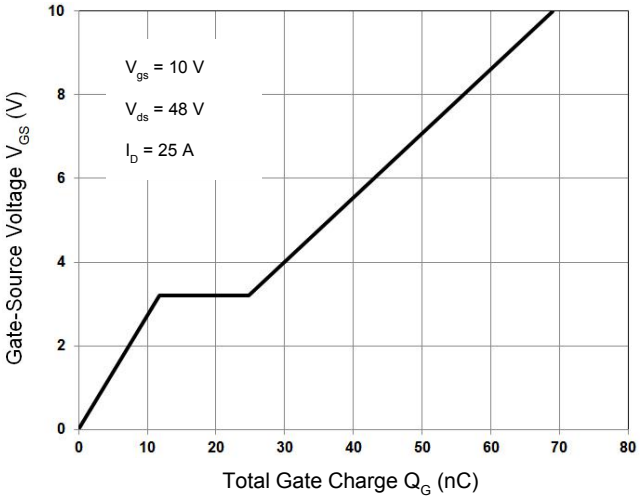


Figure 5. Body-Diode Characteristics

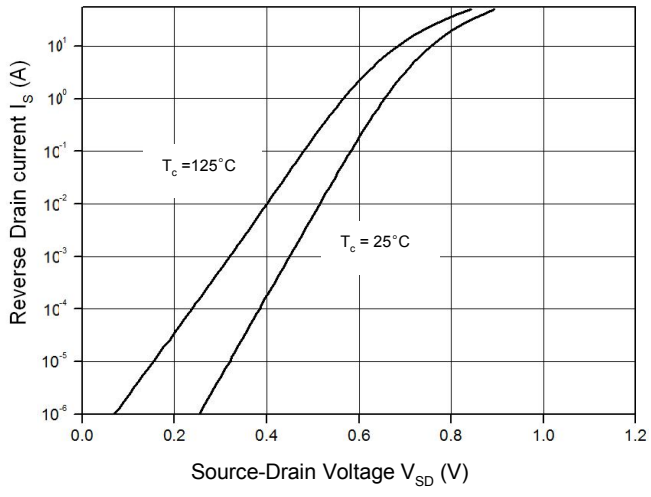
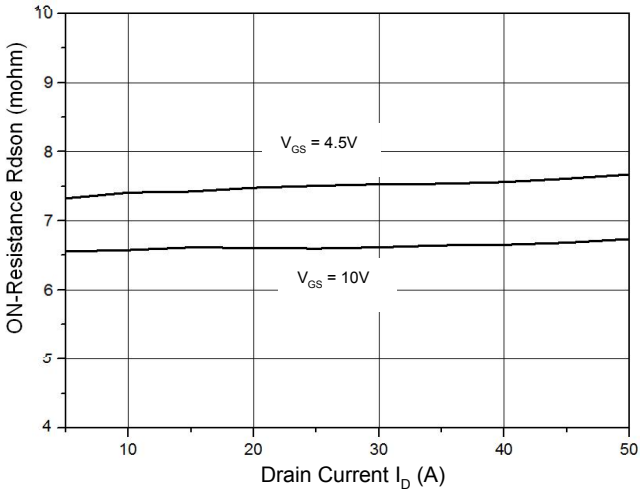


Figure 6. Rdson-Drain Current



●Typical Characteristics(cont.)

Figure 7. Rdson-Junction Temperature(℃)

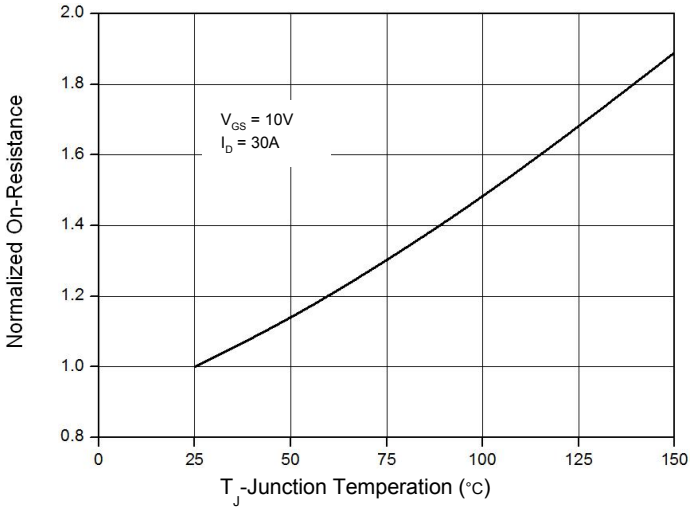


Figure 8-1 Maximum Safe Operating Area For TO-220

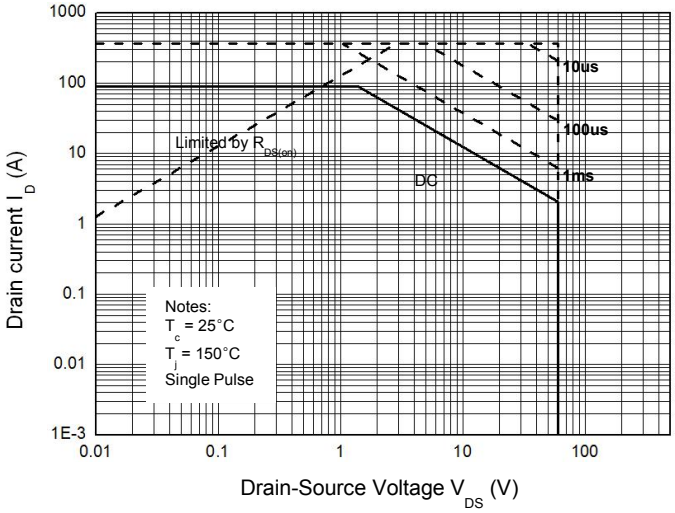


Figure 8-2 Maximum Safe Operating Area For TO-252

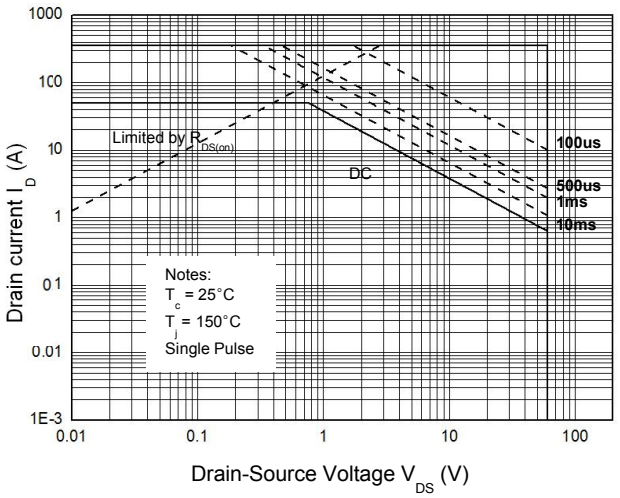


Figure 9-1. Normalized Maximum Transient Thermal Impedance (RthJC) For TO-220

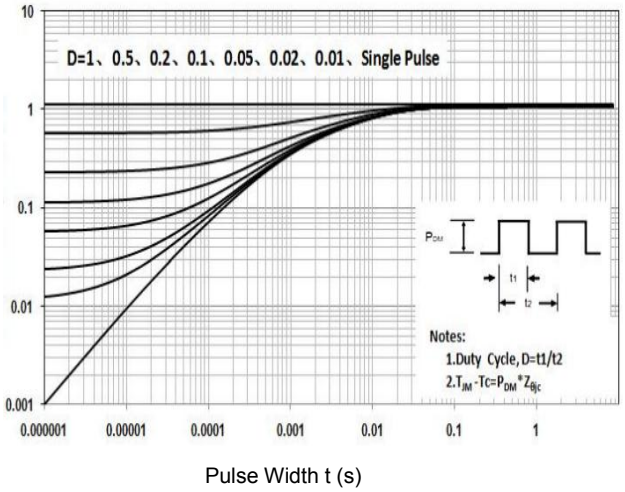
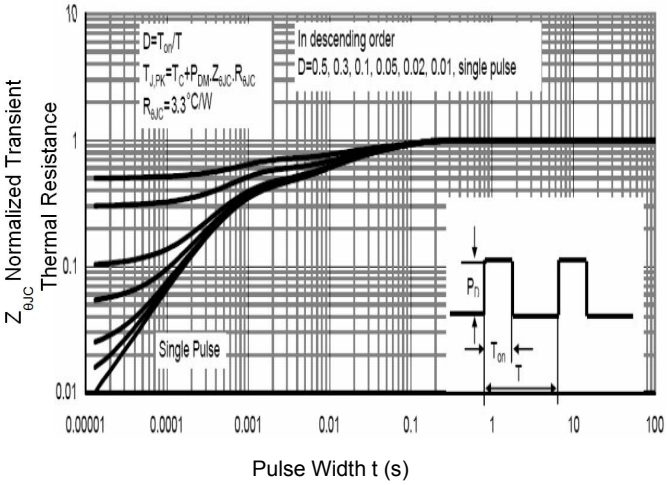


Figure 9-2. Normalized Maximum Transient Thermal Impedance (RthJC) For TO-252



• Test Circiuts& Waveforms

Figure 1. Gate Charge Test Circuit & Waveform

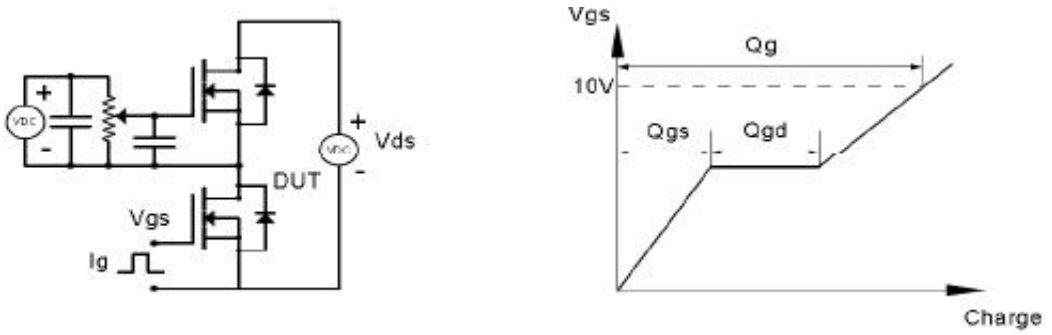


Figure 2. Resistive Switching Test Circuit & Waveforms

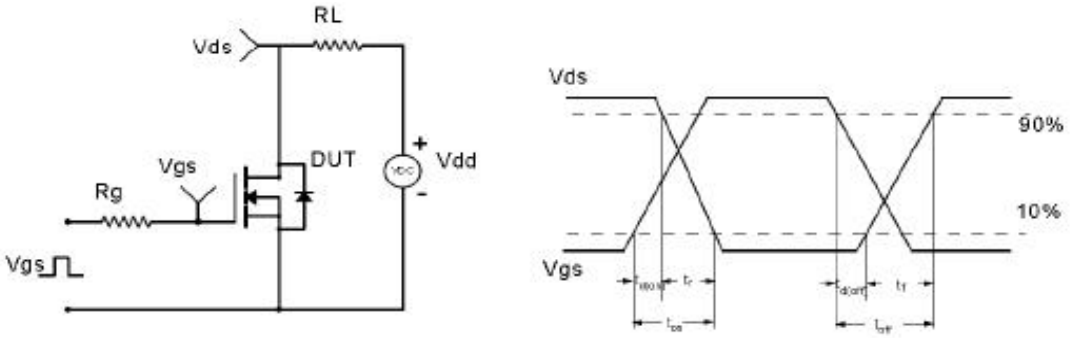


Figure 3. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

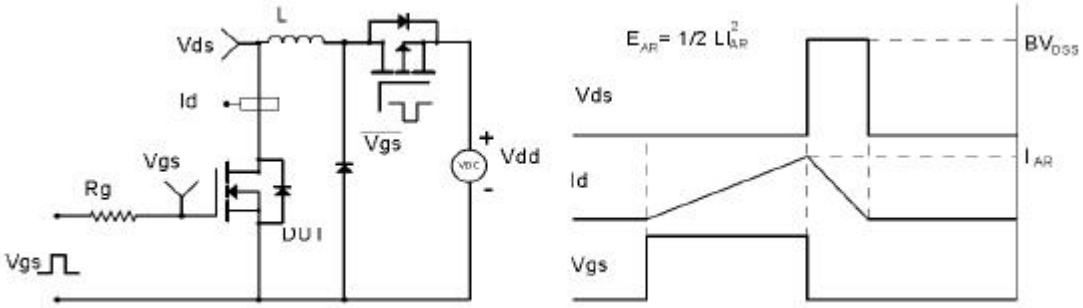
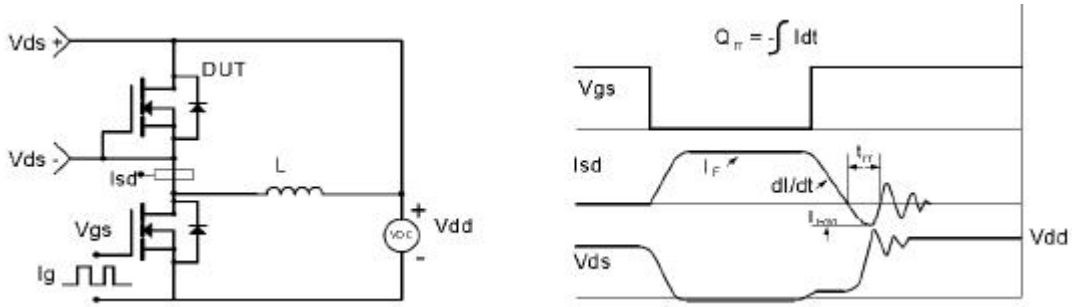


Figure 4. Diode Recovery Circuit & Waveform



●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