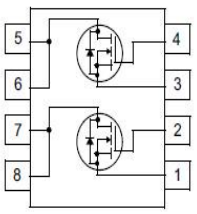
•General Description

The LH3020 uses trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.This device is suitable for high current load applications.



V_{DS1} =30V

RDS(ON)1 =8mΩ

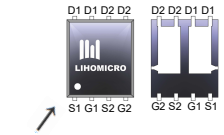
ID_1=30A

V_{DS2}=30V

RDS(ON)2 =8mΩ

ID_2=30A

■ RoHS COMPLIANT



pin 1

DFN5*6

•Features

■Advance high cell density trench technology
■Low RDS(ON) to minimize conductive loss
■Low Gate Charge for fast switching

•Application

■Lighting
■Power Supplies
■PD Fast Charging

•Ordering Information:

Part Number	LH3020
Package	DFN5*6
Basic Ordering Unit (pcs)	5000
Normal Package Material Ordering Code	LH3020N-DFN5*6-TAP
Halogen Free Ordering Code	LH3020N-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	30	A
Pulsed drain current (T_C = 25°C, tp limited by Tjmax)	I_{DM}	36	A
Single Pulse Avalanche Energy[1]	E_{AS}	65	mJ
Power Dissipation[3]	P_D(T_C=25℃)	20	W
	P_D(T_A=25℃)	0.65	W
Avalanche Current	I_{AS}	12	A
Storage Temperature	T_{STG}/T_J	-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
BVDSS Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25℃,I_D=1mA	--	0.034	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	1.0	--	3.0	V
Drain-source On Resistance[2]	$R_{DS(ON)}$	V_{GS} =10V, I_D=15A	--	8	11	mΩ
		V_{GS} =4.5V, I_D=15A	--	10	13	
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=55℃	--	--	5	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20,V_{DS}=0V	--	--	±100	nA
Forward Transconductance	G_{FS}	V_{DS} =5V, I_D=12A	--	4	--	S
Gate Resistance	Rg	V_{DS}=0V,V_{GS}=0V,f=1MHz	--	0.9	--	Ω
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 15V, f = 1.0MHz	--	700	--	pF
Output Capacitance	Coss		--	120	--	
Reverse transfer Capacitance	Crss		--	35	--	
Turn-On Delay Time	$Td_{(on)}$	V_{DD}=15V, V_{GS}=10V, R_G=3.0Ω, ID=1A	--	14	--	nS
Turn-Off Delay Time	$Td_{(off)}$		--	43	--	
Turn-On Rise Time	T_r		--	12	--	
Turn-Off Fall Time	T_f		--	4	--	
Total Gate Charge	Qg	I_D =10A, V_{DS} = 15V, V_{GS} =4.5V	--	11	--	nC
Gate-to-Source Charge	Qgs		--	5	--	
Gate-to-Drain Charge	Qgd		--	5	--	
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=1A, V_{GS} =0V	--	--	1.2	V

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case[3]	Rth_{JC}	6.25	℃/W
Thermal Resistance Junction-ambient[3]	Rth_{JA}	62	℃/W

Notes:

1.The EAS data shows Max. rating.The Test condition is L=0.5mH,R_G=25Ω,V_{DD}=15V,V_{GS}=10V;

2.The data tested by Pulsed,Pulse width ≤ 300μs, Duty cycle ≤ 2%;

3.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper;

●Typical Characteristics

Fig.1 Typical Output Characteristics

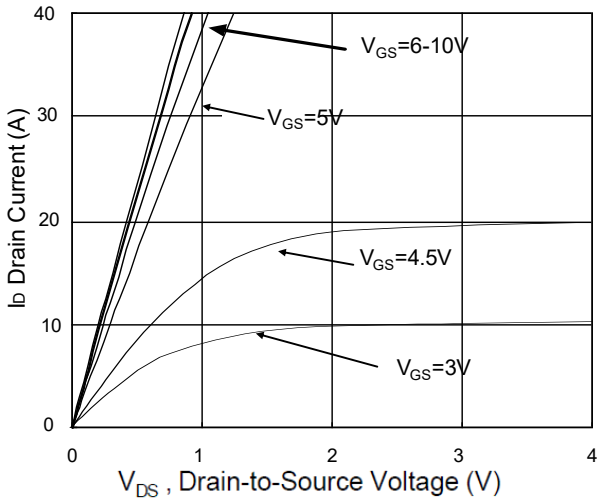


Fig.2 On-Resistance vs G-S Voltage

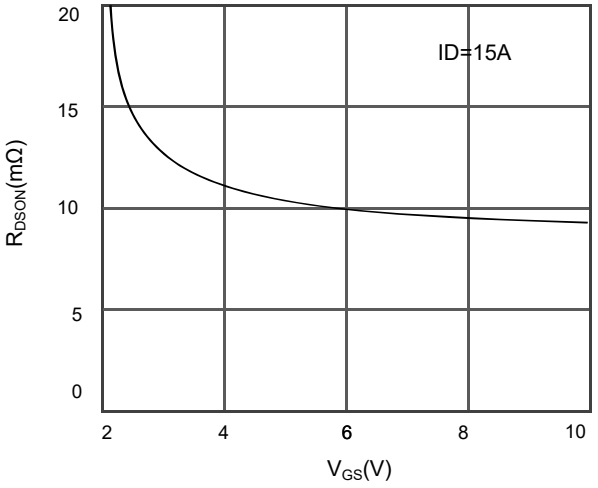


Fig.3 Source Drain Forward Charteristics

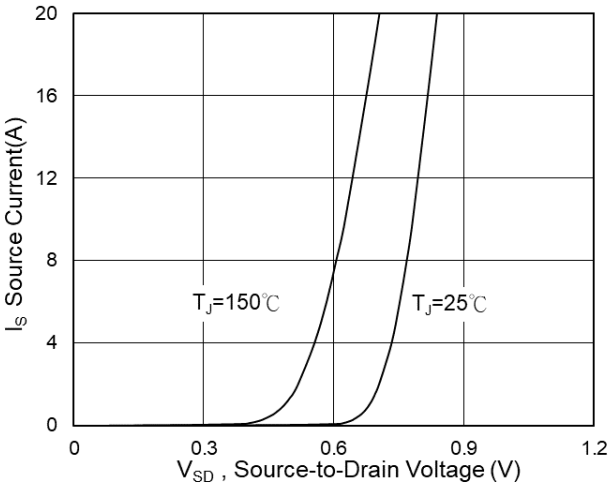


Fig.4 Gate-Charge Characteristics

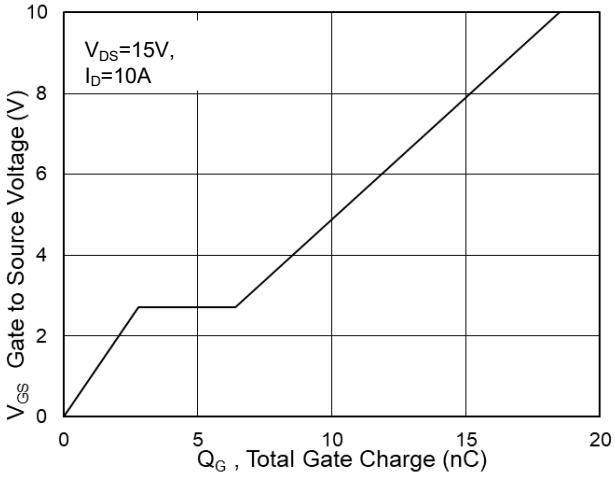


Fig.5 Normalized VGS(th) vs TJ

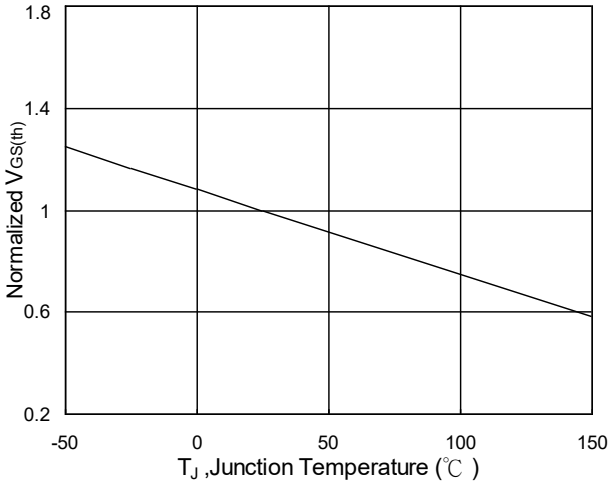
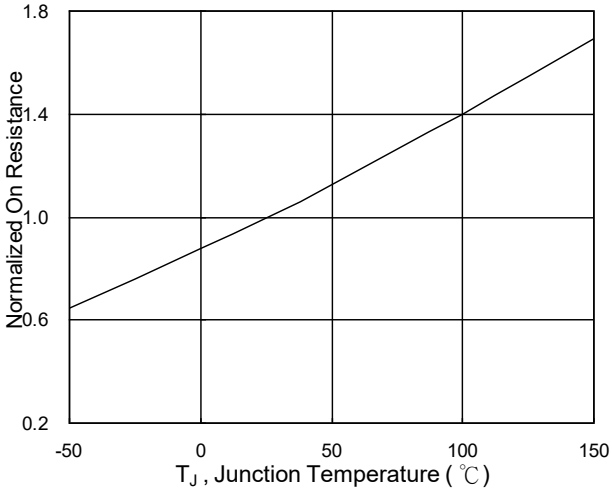


Fig.6 Normalized RDSON vs TJ



• Typical Characteristics(cont.)

Fig.7 Capacitance

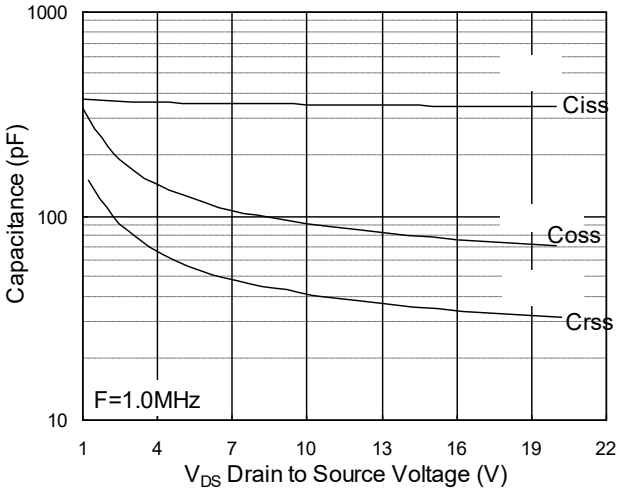


Fig.8 Safe Operating Area

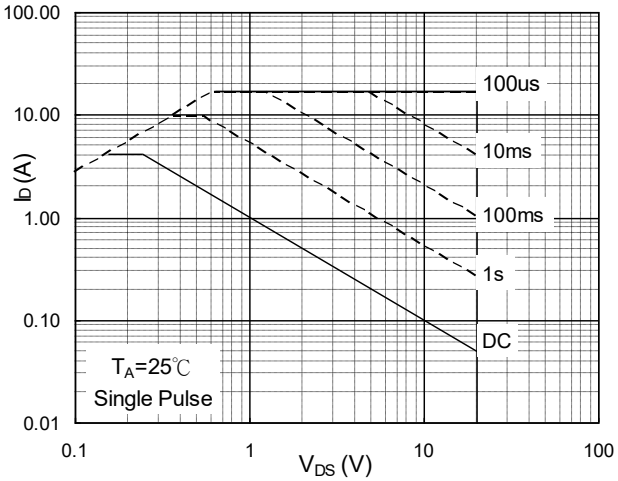


Fig.9 Normalized Maximum Transient Thermal Impedance

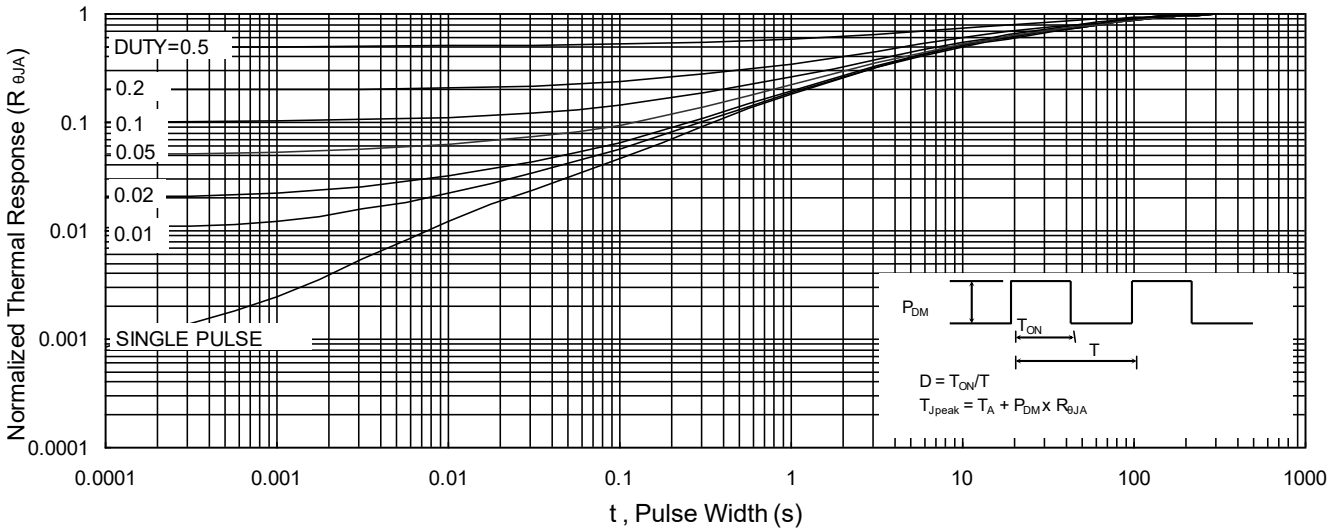


Fig.10 Switching Time Waveform

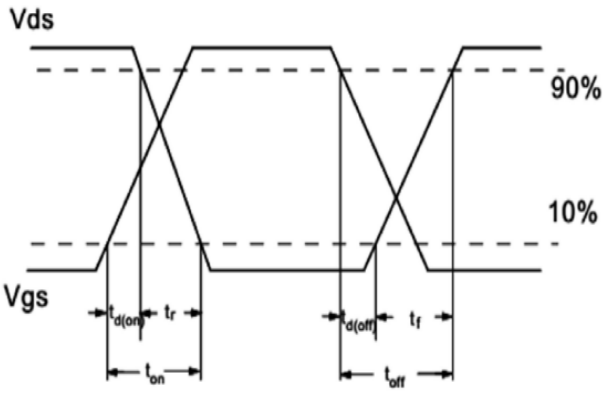
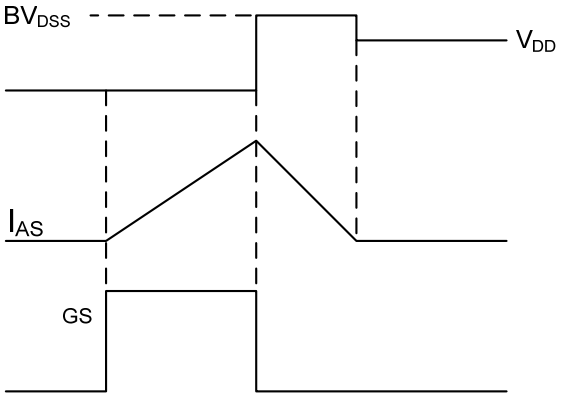


Fig.11 Unclamped Inductive Waveform

$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS}-V_{DD}}$$



• Dimensions (DFN5*6)

Unit：mm

SYMBOL	min	max	SYMBOL	min	max
A	1.00	1.20	E1	5.90	6.40
b	0.30	0.50	e	1.27BSC	
c	0.20	0.30	L	0.05	0.30
D	4.80	5.20	L1	0.40	0.80
D1	3.90	4.30	L2	1.20	2.00
D2	1.50	1.90	H	3.30	3.80
D3	0.40	0.80	I	-	0.18
E	5.50	5.90