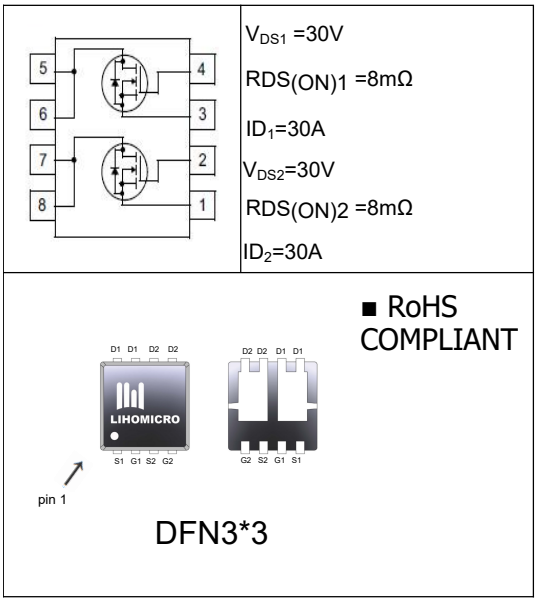
•General Description

The LH3020A uses the advanced trench mos technology and design to provide excellent $R_{DS(on)}$ with low gate charge.This device is suitable for high current load applications.



•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	LH3020A
Package	DFN3*3
Basic Ordering Unit (pcs)	5000
Normal Package Material Ordering Code	LH3020AD3-DFN3*3-TAP
Halogen Free Ordering Code	LH3020AD3-DFN3*3-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}	50	A
Single Pulse Avalanche Energy[1]	E_{AS}	50	mJ
Power Dissipation[3]	P_D(T_A=25℃)	0.65	W
	P_D(T_C=25℃)	31	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	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=10A	--	6	8	mΩ
		V_{GS} =4.5V, I_D=8A	--	9	11	
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=20A	--	65	--	S
Gate Resistance	Rg	V_{DS}=0V,V_{GS}=0V,f=1MHz	--	1.7	--	Ω
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 15V, f = 1.0MHz	--	690	--	pF
Output Capacitance	Coss		--	332	--	
Reverse transfer Capacitance	Crss		--	34	--	
Turn-On Delay Time	$Td_{(on)}$	V_{DD}=20V, V_{GS}=10V, R_G=3.3Ω, ID=1A	--	7.0	--	nS
Turn-Off Delay Time	$Td_{(off)}$		--	17.8	--	
Turn-On Rise Time	T_r		--	19	--	
Turn-Off Fall Time	T_f		--	3.3	--	
Total Gate Charge	Qg	I_D =12A, V_{DS} = 25V, V_{GS} =4.5V	--	7.1	--	nC
Gate-to-Source Charge	Qgs		--	2.2	--	
Gate-to-Drain Charge	Qgd		--	3.1	--	
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=-20A, V_{GS} =0V	--	--	1.2	V

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case[3]	Rth_{JC}	4.6	℃/W
Thermal Resistance Junction-ambient[3]	Rth_{JA}	65	℃/W

Notes:

1.The EAS data shows Max. rating.The Test condition is L=0.1mH,I_{AS}=12A,V_{DD}=25V,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

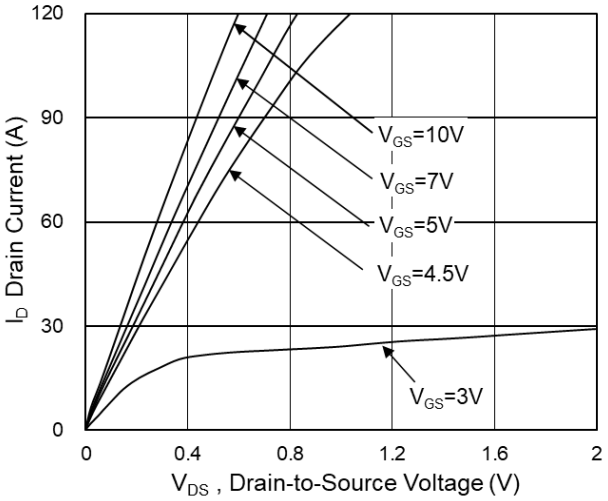


Fig.2 On-Resistance vs G-S Voltage

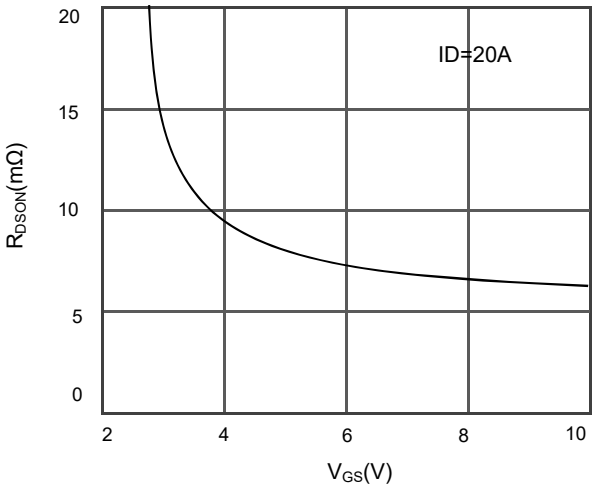


Fig.3 Source Drain Forward Charteristics

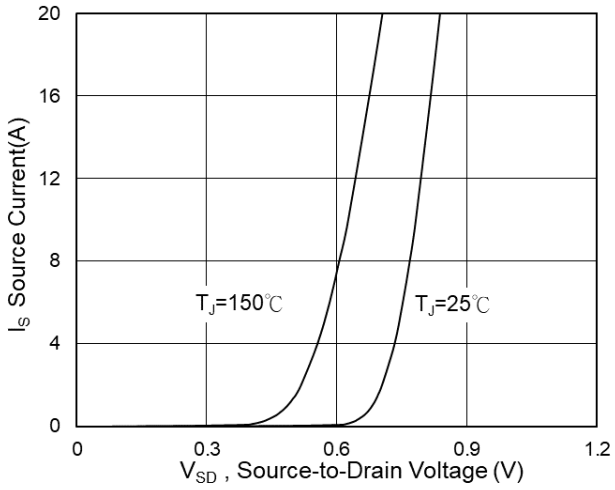


Fig.4 Gate-Charge Characteristics

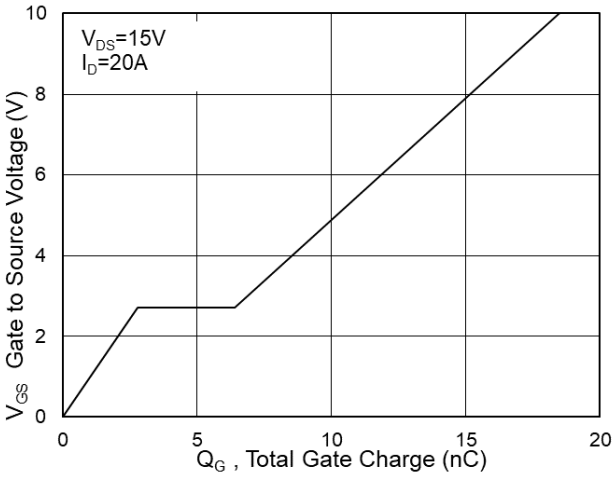


Fig.5 Normalized $V_{GS(th)}$ vs T_J

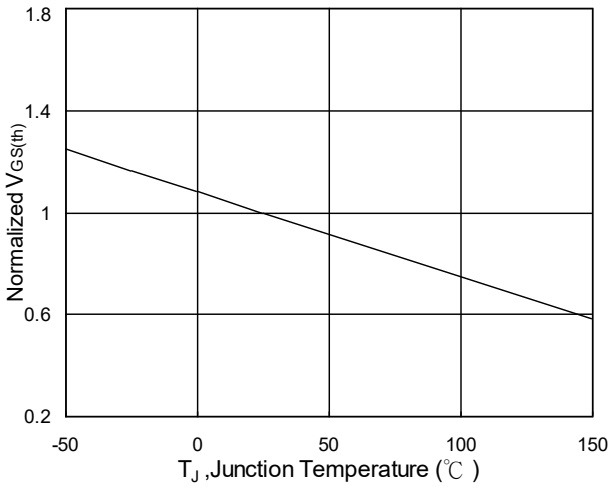
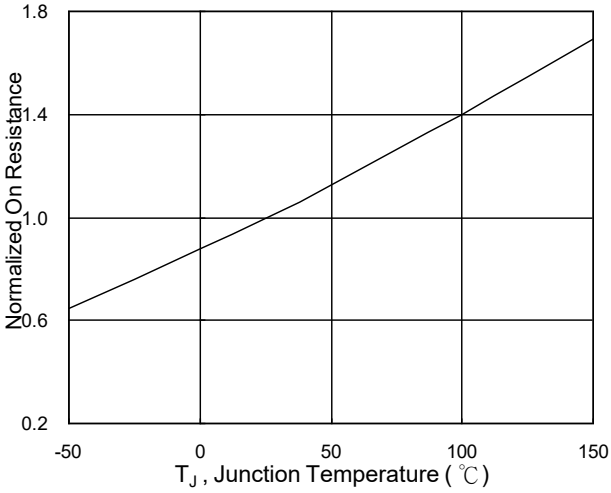


Fig.6 Normalized R_{DSON} vs T_J



●Typical Characteristics(cont.)

Fig.7 Capacitance

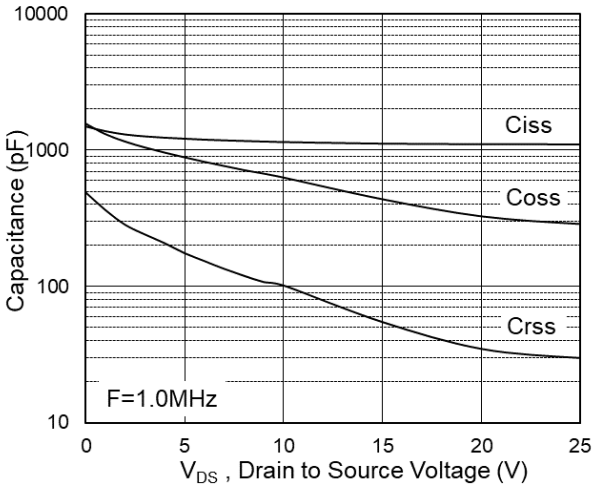


Fig.8 Safe Operating Area

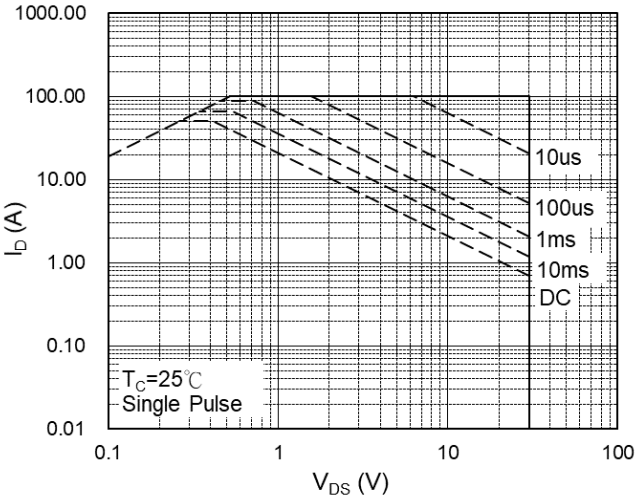
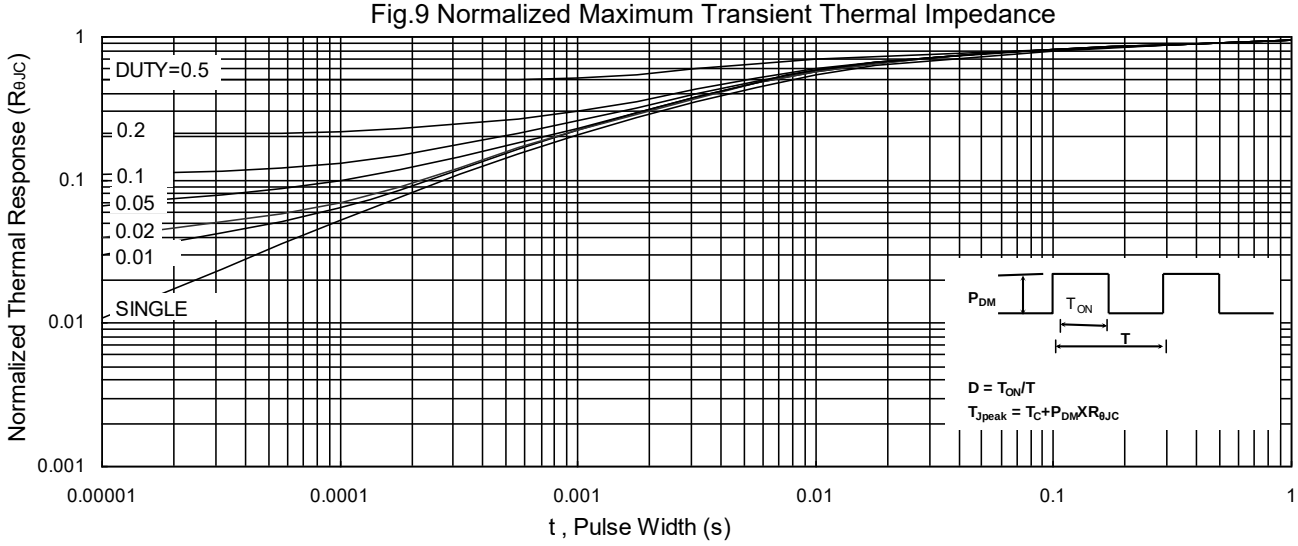


Fig.9 Normalized Maximum Transient Thermal Impedance



●Test Circuits & Waveforms

Fig.10 Gate Charge Test Circuit & Waveforms

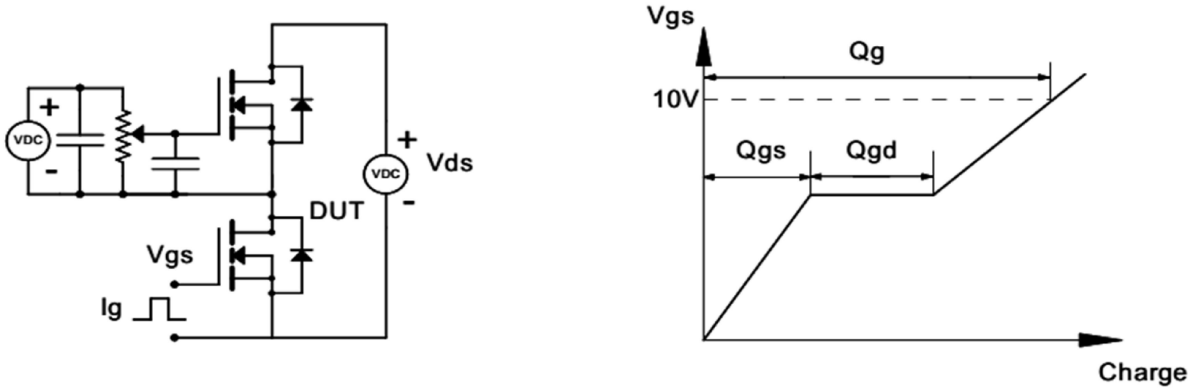
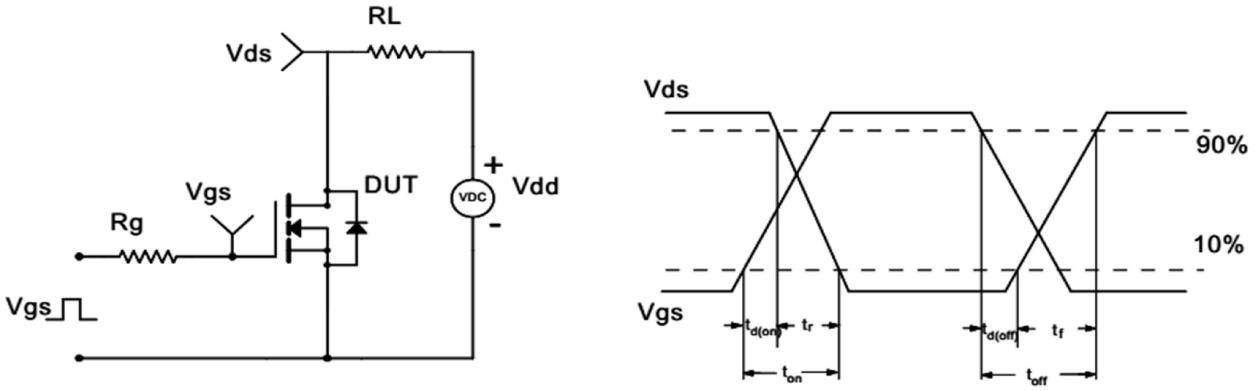


Fig.11 Resistive Switching Test Circuit & Waveforms



●Dimensions（DFN3*3)

Unit：mm

SYMBOL	min	max	SYMBOL	min	max
A	0.68	0.88	E1	3.15	3.55
b	0.27	0.47	e	0.65BSC	
c	0.15	0.35	L1	1.55	1.95
D	3.05	3.25	L2	0.5	0.9
D1	2.25	2.65	I	3.10	3.50
D2	0. 90	1. 10			
E	3.05	3.25