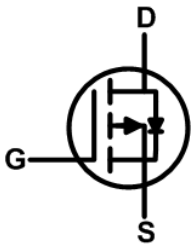
•General Description

The LH02P120 uses trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.This device is suitable for high current load applications.



VDS =-120V

$R_{DS(ON)}$ =400mΩ

ID =-2A

■ RoHS COMPLIANT

SOT-23-3L

•Features

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

•Application

■LED/LCD/PDP TV and monitor Lighting
■Power Supplies

•Ordering Information:

Part Number	LH02P120
Package	SOT-23-3L
Basic Ordering Unit (pcs)	3000
Normal Package Material Ordering Code	LH02P120S23L-SOT23-3L-TAP
Halogen Free Ordering Code	LH02P120S23L-SOT23-3L-TAP-HF

•Absolute Maximum Ratings（TC =25℃）

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	-120	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D (T_A = 25°C)	-2	A
	I_D (T_A = 70°C)	-1.8	A
Pulsed drain current (T_A = 25°C, tp limited by Tjmax)[1]	I_{DM}	-8	A
Power Dissipation(TC=25℃)	P_D(T_A=25℃)	1	W
	P_D(T_A=70℃)	0.8	W
Operating Temperature	T_J	-50~+150	℃
Storage Temperature	T_{STG}	-50~+150	℃

●Electronic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D=250uA	-120	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	-1.0	-1.5	-2.5	V
Drain-source On Resistance	$R_{DS(ON)}$	V_{GS} =-10V, I_D=-1A	--	400	450	mΩ
		V_{GS} =-4.5V, I_D=-1A	--	480	580	
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-80V,V_{GS}=0V,T_J=25℃	--	--	10	uA
		V_{DS}=-80V,V_{GS}=0V,T_J=125℃	--	--	100	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20,V_{DS}=0V	--	--	±100	nA
Dynamic Electrical Characteristics @ T_J=25℃(Unless otherwise stated)						
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = -15V f = 1.0MHz	--	655	--	pF
Output Capacitance	Coss		--	38	--	
Reverse transfer Capacitance	Crss		--	20	--	
Total Gate Charge	Qg	V_{DS}=-15V I_D=-0.5A V_{GS}=-4.5V	--	5.2	--	nC
Gate Source Charge	Qgs		--	1.3	--	
Gate Drain Charge	Qgd		--	3.6	--	
Switching Characteristics						
Turn-on Delay Time	T_d(on)	V_{DD}=-50V, I_D=-0.5A V_{GS}=-10V, R_G=3.3Ω	--	25	--	nS
Turn-on Rise Time	T_r		--	3.2	--	
Turn-Off Delay Time	T_d(off)		--	42	--	
Turn-Off Fall Time	T_f		--	3	--	
Source Drain Diode Characteristics						
Continuous Source Current	I_S	V_G=V_D=0V,Force Current	--	--	-2	A
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=-1.0A V_{GS} =0V	--	-0.84	-1.2	V

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Maximum Junction-ambient	Rth_{JA}	125	℃/W

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.

●Typical Characteristics

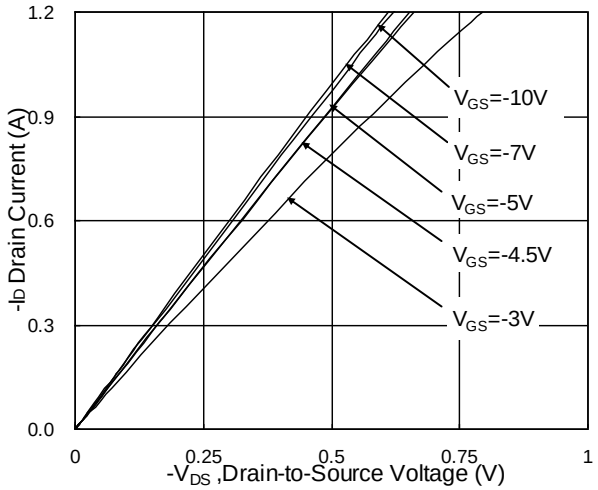


Fig.1 Typical Output Characteristics

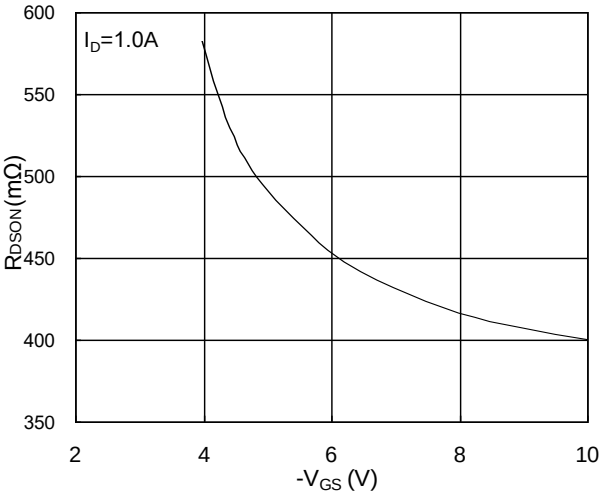


Fig.2 On-Resistance vs. Gate-Source

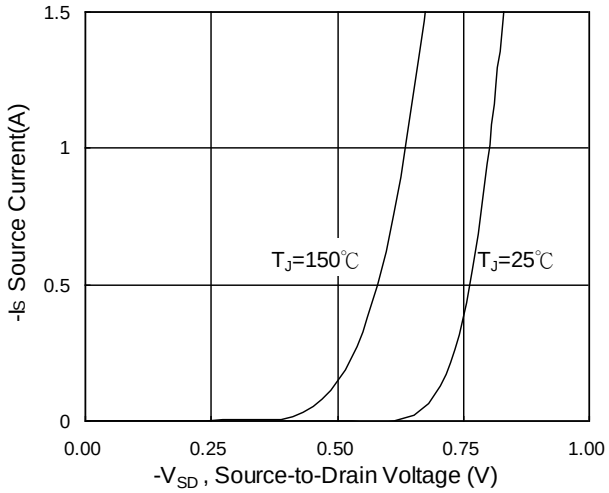


Fig.3 Forward Characteristics Of Reverse

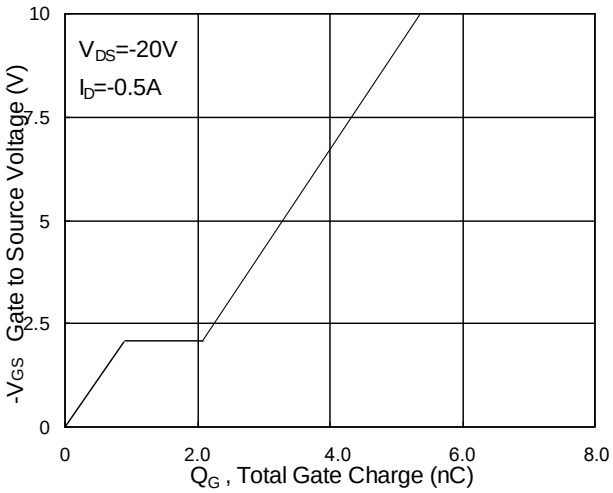


Fig.4 Gate-Charge Characteristics

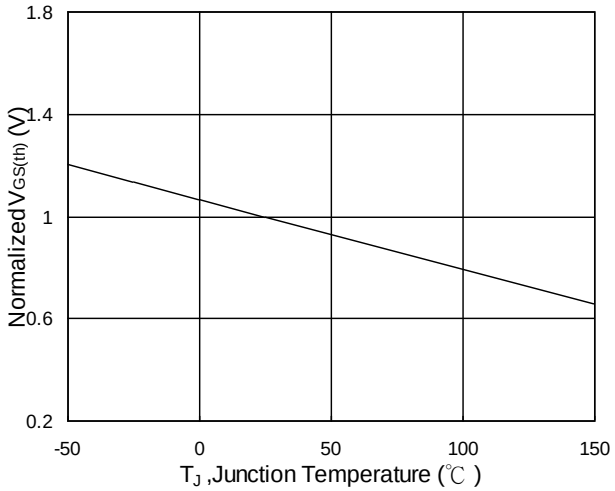


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

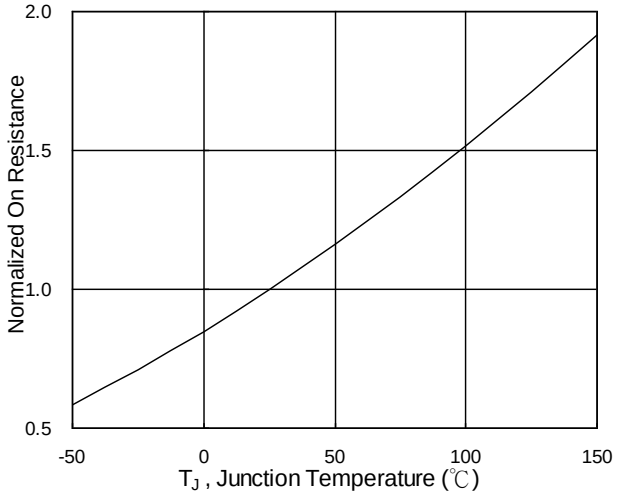


Fig.6 Normalized R_{DSON} vs. T_J

●Typical Characteristics(cont.)

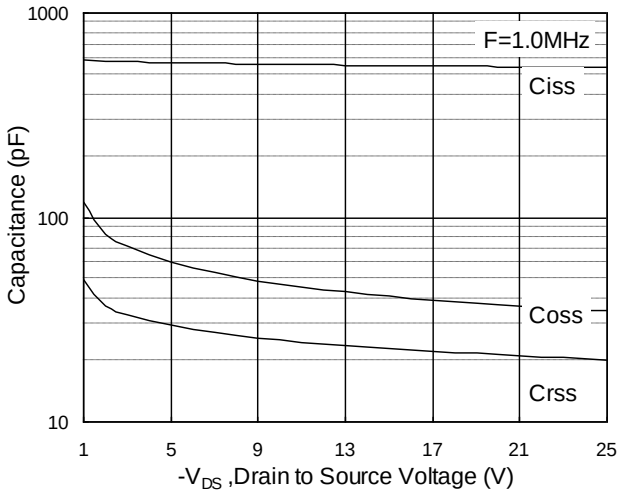


Fig.7 Capacitance

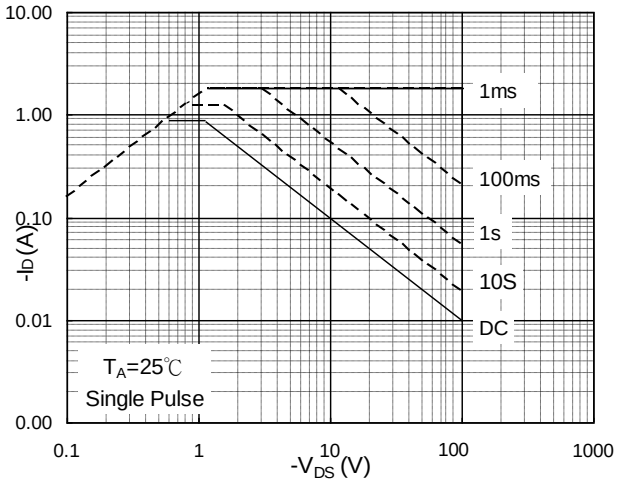


Fig.8 Safe Operating Area

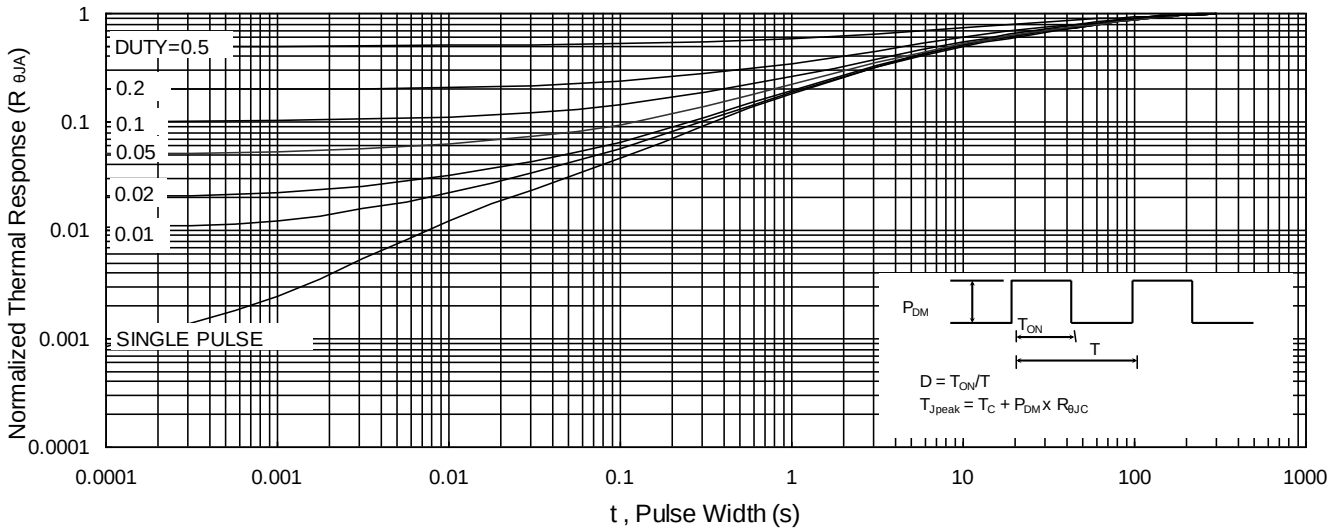


Fig.9 Normalized Maximum Transient Thermal Impedance

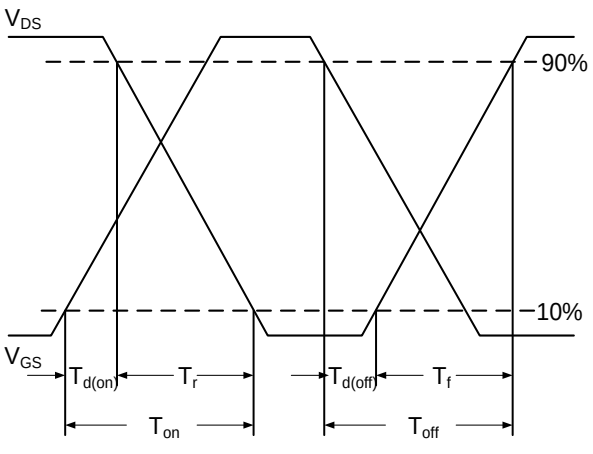


Fig.10 Switching Time Waveform

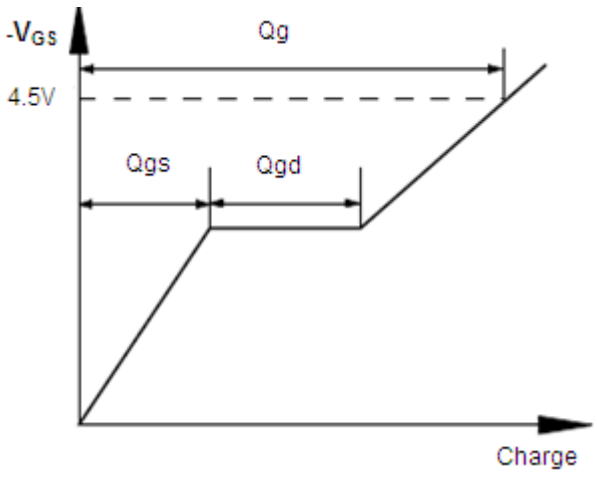
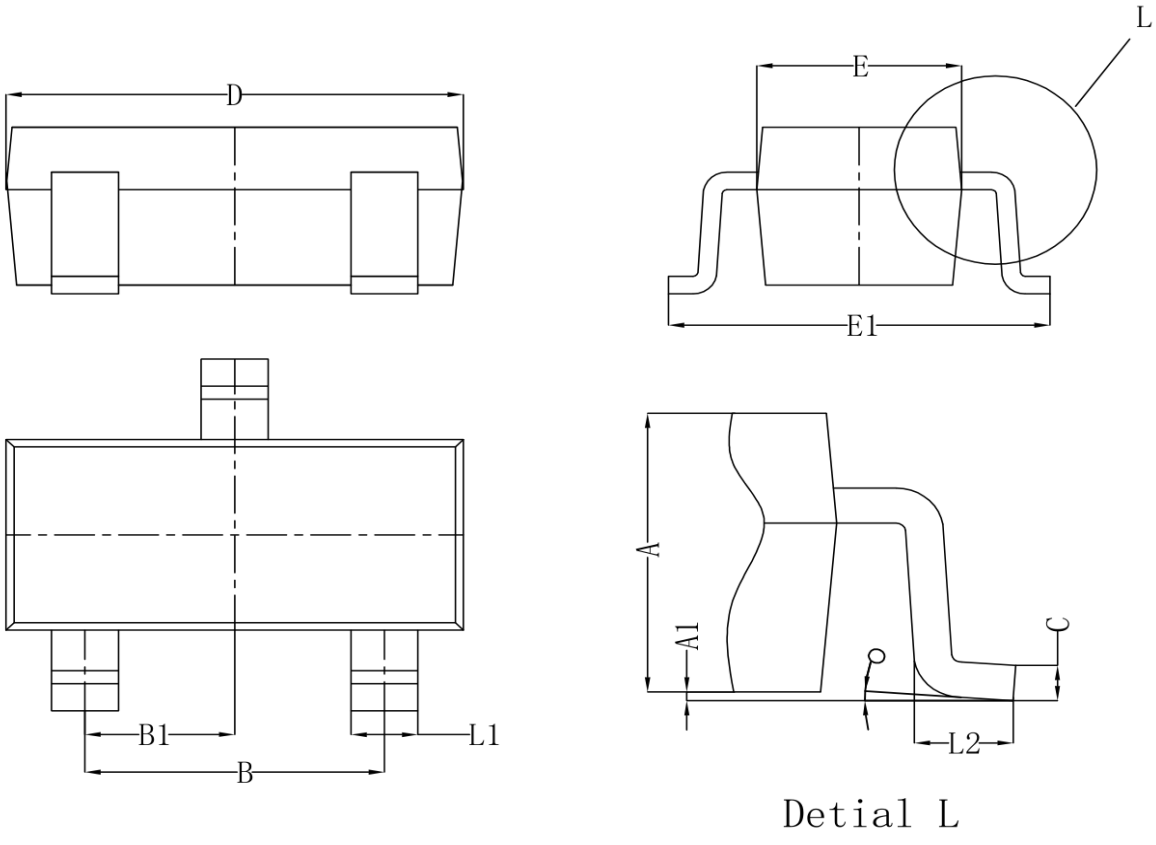


Fig.11 Gate Charge Waveform

●**Dimensions(SOT-23-3L)**

Symbol	Dim in mm		
	Min	Nor	Max
A	1.050	1.100	1.150
A1	0.000	0.050	0.100
L1	0.300	0.400	0.500
C	0.100	0.150	0.200
D	2.820	2.920	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
B	1.800	1.900	2.000
B1	0.950 TYP		
L2	0.300	0.450	0.600
o	0°	4°	8°