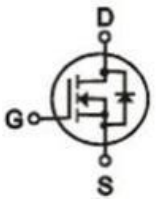
●General Description

The N-Channel SGT MOSFET LH95N100C-A 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 =100V

$R_{DS(ON)}$ =6.0mΩ

ID =95A

TO-220

■ RoHS COMPLIANT

●Features

- ■Optimized for synchronous rectification Low Input Capacitance
- ■Low Miller Charge
- ■Fully Characterized Capacitance and Avalanche

●Application

- ■Battery powered circuits
- ■Half-bridge and full-bridge topologies
- ■Synchronous rectifier applications
- ■Resonant mode power supplies

●Ordering Information:

Part Number	LH95N100C-A
Package	TO-220
Basic Ordering Unit (pcs)	1000
Normal Package Material Ordering Code	LH95N100C-AT-TO220-TU
Halogen Free Ordering Code	LH95N100C-AT-TO220-TU-HF

●Absolute Maximum Ratings（TC =25℃）

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current ,T_C = 25°C	I_D	95	A
Continuous Drain Current ,T_C = 100°C	I_D	61	A
Pulsed drain current [1] T_C = 25°C	I_{DM}	190	A
Single Pulse Avalanche Energy[2]	E_{AS}	196	mJ
Avalanche Current	I_{AS}	28	A
Power Dissipation(TC=25℃)	P_D	135	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	100	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	2.0	--	3.6	V
Drain-source On Resistance	$R_{DS(ON)}$	V_{GS} =10V, I_D=13A	--	6.0	7.8	mΩ
		V_{GS} =4.5V, I_D=11A	--	7.8	10	
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	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V	--	--	±100	nA
Input Capacitance	Ciss	V_{GS}=0V,V_{DS}=50V, f=1MHz	--	2382	--	pF
Output Capacitance	Coss		--	283	--	
Reverse Transfer Capacitance	Crss		--	8	--	
Rise time	tr	V_{GS}=10V,V_{DS}=50V R_G_ext=3.6Ω ,I_D=13A	--	15.4	--	ns
Turn-on delay time	td(on)		--	9.4	--	
Fall time	tf		--	24.2	--	
Turn -Off Delay Time[5]	Td(off)		--	44	--	
Gate-to-Source Charge	Qgs	V_{DD}=50V, I_D=13A, V_{GS}=0 to 10V	--	8.43	--	nC
Gate charge at threshold	Qg(th)		--	8.1	--	
Gate-to-Drain Charge	Qgd		--	14.7	--	
Switching charge	Q_{SW}		--	15	--	
Total Gate Charge	Qg		--	48	--	
Total Gate Charge	Qg	V_{DD}=50V, I_D=13A, V_{GS}=0 to 4.5V	--	26	--	
Gate charge total, sync. FET (Qg- Qgd)	Qg(sync)	V_{DS}=0.1V, V_{GS}=0 to 10V	--	33.3	--	
Gate plateau voltage	Vplateau	V_{DS}=50V, I_D=13A, V_{GS}=0 to 10V	--	3.38	--	V
Gate resistance	R_G	f = 1.0MHz open drain	--	1.7	--	Ω
Forward Transconductance	gfs	V_{DS}=5V, I_D=1A	--	71	--	S
ContinuousDiode Forward Current	I_S	T_C = 25°C	--	--	95	A
Pulsed Diode Forward Current	I_{SM}		--	--	190	
Diode Forward Voltage	V_{SD}	Is=13A,V_{GS} =0V	--	--	1.2	V
Body Diode Reverse Recovery Time	Trr	V_{DD}=50V, I_F=Is, di/dt=100A/μs	--	37	--	nS
Body Diode Recovery Charge	Qrr		--	36	--	nC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	Rth_{JC}	0.93	℃/W
Thermal Resistance Junction-ambient[3]	Rth_{JA}	75	℃/W

Notes:

1. Pulse Test: Pulse Width ≤ 380μs, Duty Cycle ≤ 2%;
2. Limited by TJmax, starting TJ=25℃, L=0.5mH, Rg=50Ω , ID=28A, V_{GS}=10V.
3. The value of RthA is measured with the device mounted on 1 in 2 FR-4 board with 2oz copper,in a Still air environment with Ta=25°C.

●Typical Characteristics

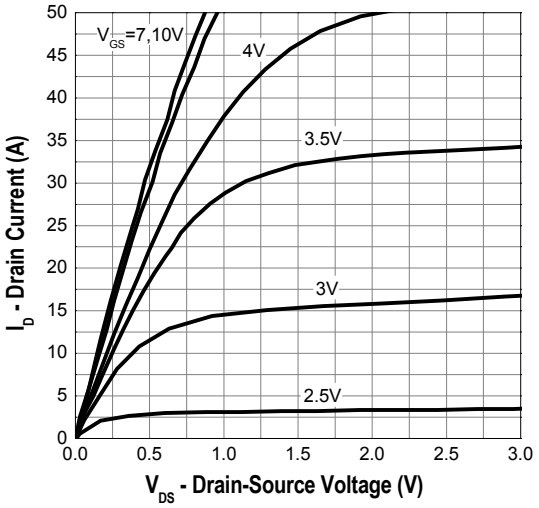


Fig.1 Output Characteristics

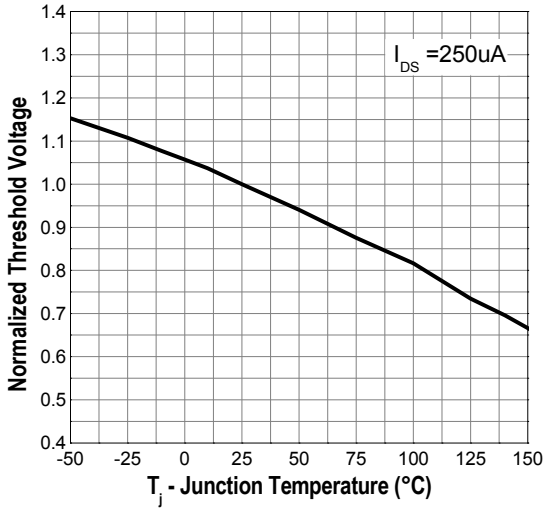


Fig.2 Gate Threshold Voltage

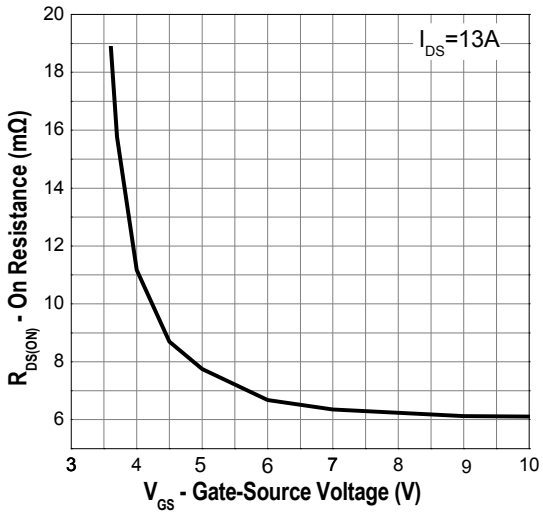


Fig.3 Gate-Source On Resistance

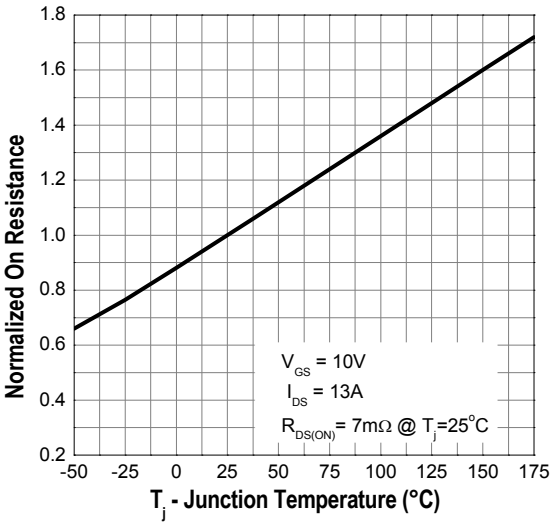


Fig.4 Drain-Source On Resistance

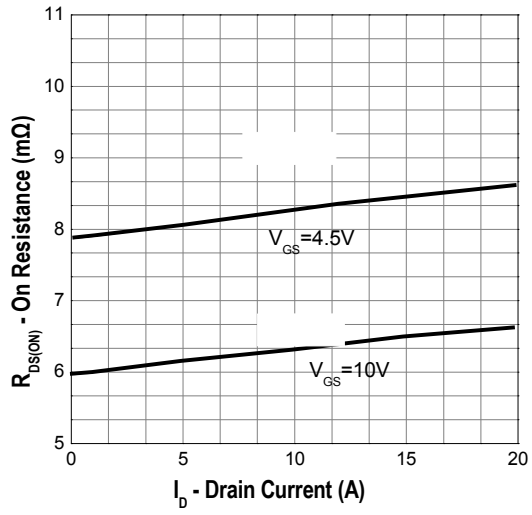


Fig.5 Drain-Source On Resistance

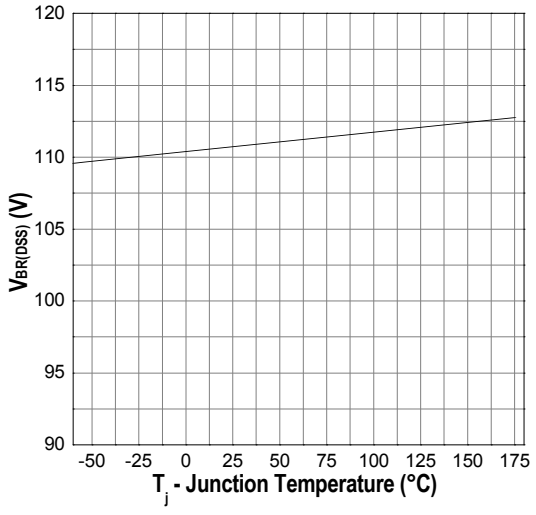


Fig.6 Drain-Source Breakdown Voltage

● Typical Characteristics(cont.)

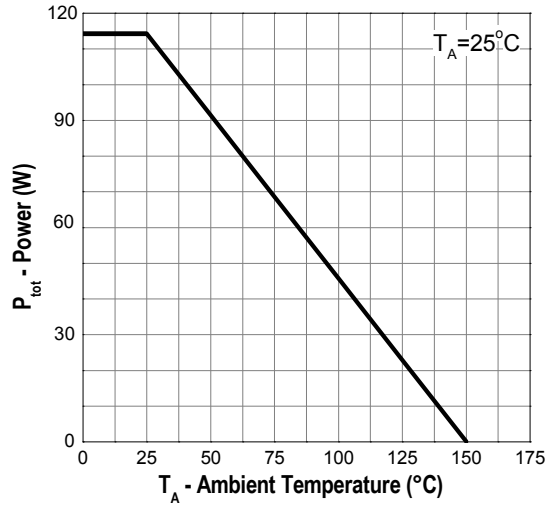


Fig.7 Power Dissipation

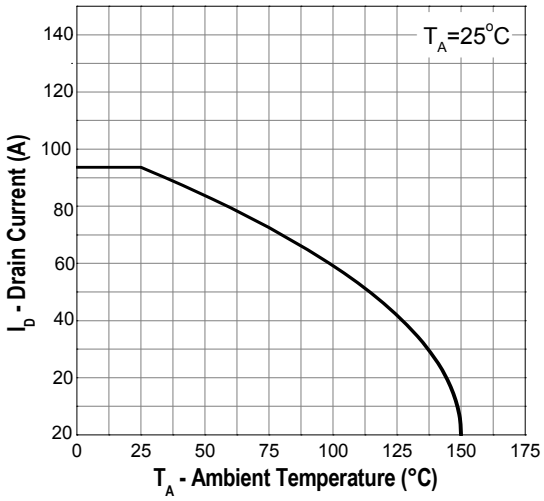


Fig.8 Drain Current

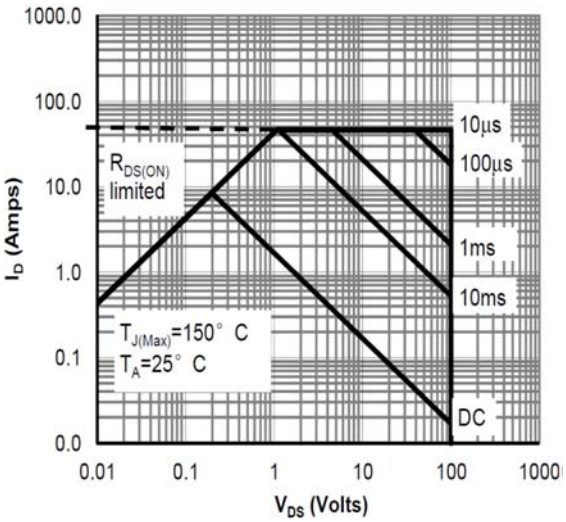


Fig.9 Safe Operation Area

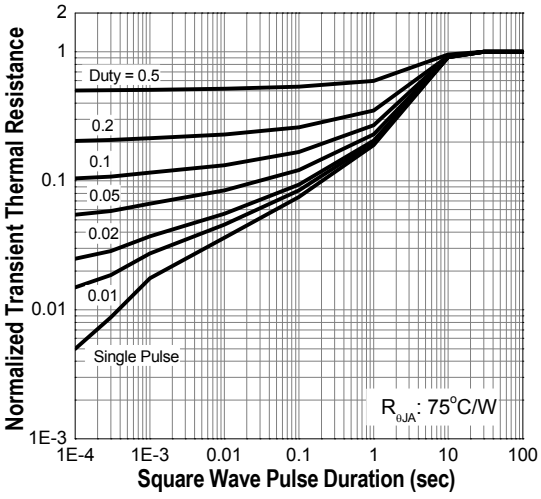


Fig.10 Transient Thermal Impedance

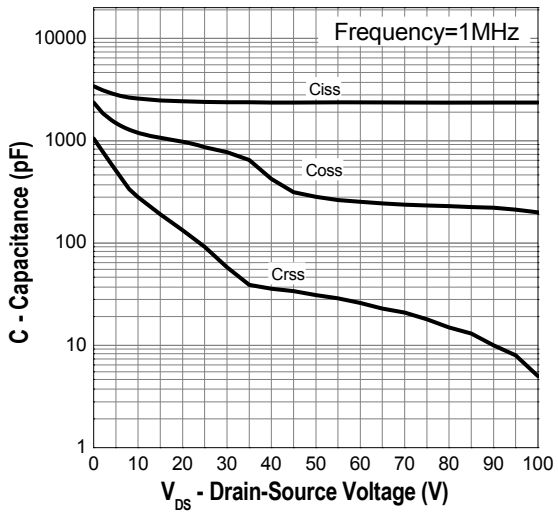


Fig.11 Gapacitance

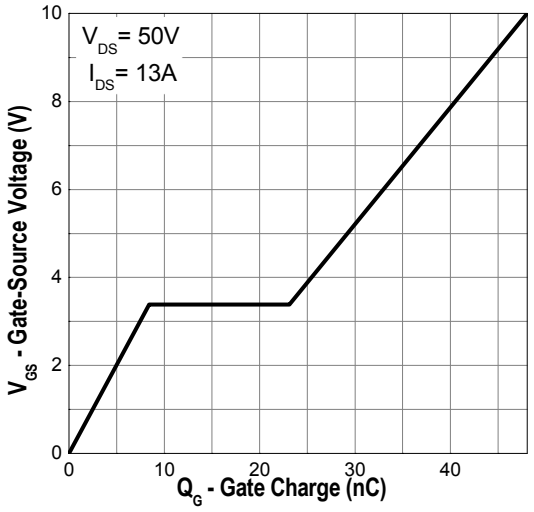
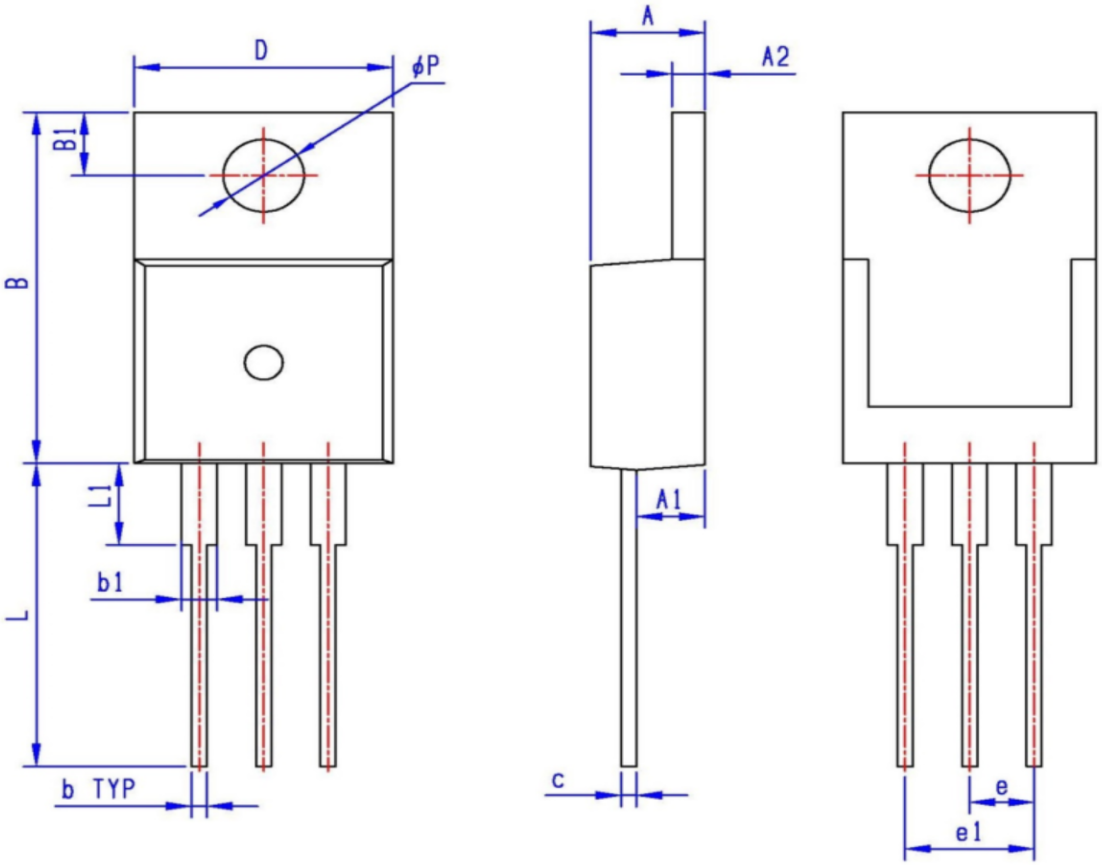


Fig.12 Gate Charge

- **Dimensions（TO-220)**

UNIT：mm

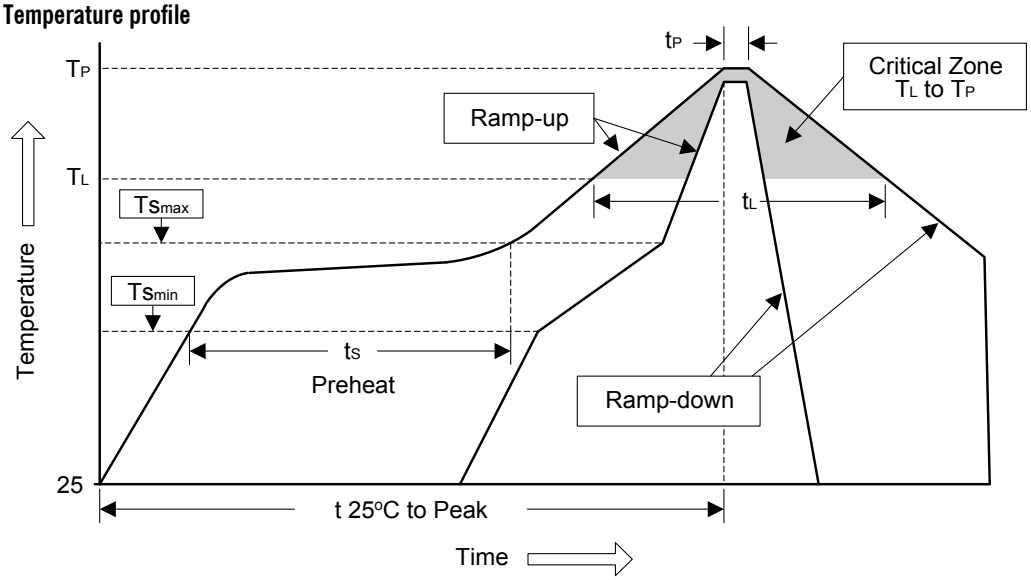
SYMBOL	min	max	SYMBOL	min	max
A	4.25	4.85	B1	2.60	3.00
A1	2.30	3.00	e	2.40	2.70
A2	1.20	1.40	e1	4.95	5.25
b	0.60	0.90	L	12.60	14.40
b1	1.10	1.70	L1	2.40	4.00
c	0.40	0.70	øP	3.50	3.90
D	9.80	10.60			
B	15.20	16.20			



• Soldering Methods for Lihomicro's Products

1. Storage environment: Temperature=10°C to 35°C Humidity=65%±15%
2. Reflow soldering of surface-mount devices

Figure 1: Temperature profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/sec
Preheat - Temperature Min (Ts_{min}) - Temperature Max (Ts_{max}) - Time (min to max) (ts)	 100°C 150°C 60 to 120 sec	 150°C 200°C 60 to 180 sec
Tsmax to T_L - Ramp-up Rate	 <3°C/sec	 <3°C/sec
Time maintained above: - Temperature (T_L) - Time (t_L)	 183°C 60 to 150 sec	 217°C 60 to 150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_P)	10 to 30 sec	20 to 40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes

3. Flow (wave) soldering (solder dipping)

Products	Peak Temperature	Dipping Time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec