

•General Description

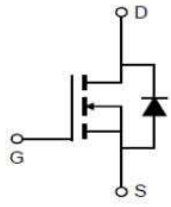
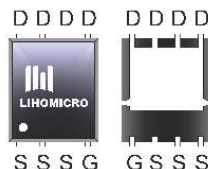
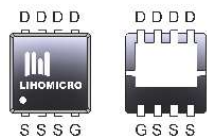
The SGT MOSFET LH03N04 has the low $R_{DS(on)}$, low gate charge, fast switching and excellent avalanche characteristics. This device is suitable for fast charge and lighting.

•Features

- Fast switching
- Low On-Resistance
- Low Miller Charge
- Low Input Capacitance

•Application

- Lighting
- Power Supplies
- PD Fast Charging

	$V_{DS} = 40V$ $R_{DS(ON)} = 3.0m\Omega$ $I_D = 70A$
■ RoHS COMPLIANT	
	
DFN5*6	DFN3*3

•Ordering Information:

Part Number	LH03N04	LH03N04
Package	DFN3*3	DFN5*6
Basic Ordering Unit (pcs)	5000	5000
Normal Package Material Ordering Code	LH03N04D3-DFN3*3-TAP	LH03N04N-DFN5*6-TAP
Halogen Free Ordering Code	LH03N04D3-DFN3*3-TAP-HF	LH03N04N-DFN5*6-TAP-HF

•Absolute Maximum Ratings (TC = 25°C)

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current , $T_C = 25^\circ C$	I_D	70	A
Pulsed drain current ($T_C = 25^\circ C$, t_p limited by T_{jmax}) ¹	I_D pulse	125	A
Avalanche Current	I_{AS}	35	A
Single Pulse Avalanche Energy ²	E_{AS}	110	mJ
Maximum Power Dissipation	$P_D(TC=25^\circ C)$	26.6	W
Operating Temperature	T_J	-55~+150	°C
Storage Temperature	T_{STG}	-55~+150	°C

●Electronic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	40	45	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	--	2.5	V
Drain-source On Resistance ³	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	--	2.2	3.0	mΩ
		$V_{GS}=4.5V, I_D=15A$	--	3.5	4.5	
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=32V, V_{GS}=0V, T_J=25^\circ C$	--	--	10	μA
		$V_{DS}=32V, V_{GS}=0V, T_J=125^\circ C$	--	--	100	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	±100	nA

DYNAMIC CHARACTERISTICS

Input Capacitance	C_{iss}	$V_{GS}=0V,$ $V_{DS}=20V$ $f=1.0MHz$	--	2230	--	pF
Output Capacitance	C_{oss}		--	1056	--	
Reverse transfer Capacitance	C_{rss}		--	108	--	
Turn-on Delay Time	$T_d(on)$	$V_{DD}=20V$ $V_{GS}=10V,$ $I_D=20A$ $R_G=3.0\Omega$	--	11.7	--	ns
Turn-on Rise Time	T_R		--	48.4	--	
Turn -Off Delay Time	$T_d(off)$		--	55.4	--	
Fall Time	T_f		--	41.7	--	

GATE CHARGE CHARACTERISTICS

Total Gate Charge	Q_g	$I_D=20A,$ $V_{DS}=20V$ $V_{GS}=10V$	--	45.1	---	nC
Gate-to-Source Charge	Q_{gs}		--	7.46	--	
Gate-to-Drain Charge	Q_{gd}		--	11.7	---	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

Continuous Diode Forward Current	I_S	--	--	--	70	A
Diode Forward Voltage	V_{SD}	$T_J=25^\circ C, I_S=1A$	--	0.7	1.3	V
Reverse Recovery Time	t_{rr}	$I_f=20A$ $di_f/dt=100A/\mu s$	--	44.5	--	nS
Reverse Recovery Charge	Q_{rr}		--	40.1	--	nC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	R_{thJC}	4.7	°C/W
Thermal Resistance Junction-ambient	R_{thJA}	54.5	°C/W

Notes:

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

2.IAS =35A, VDD = 20V, RG = 25Ω, Starting TJ = 25°C

3.Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

•Typical Characteristics

Fig1. Output Characteristics

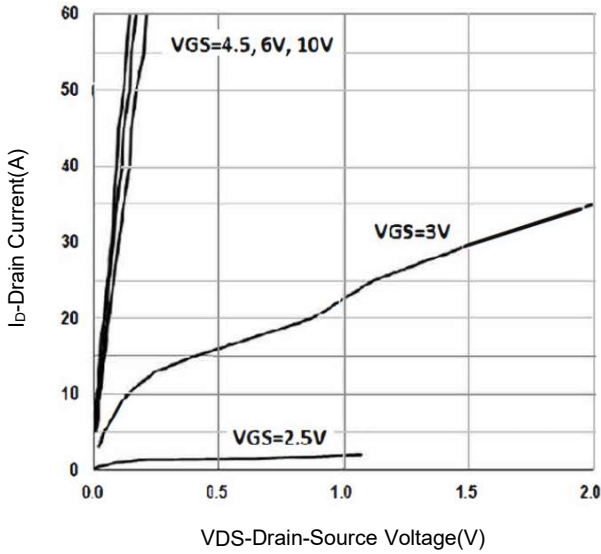


Fig2. Gate Threshold Voltage

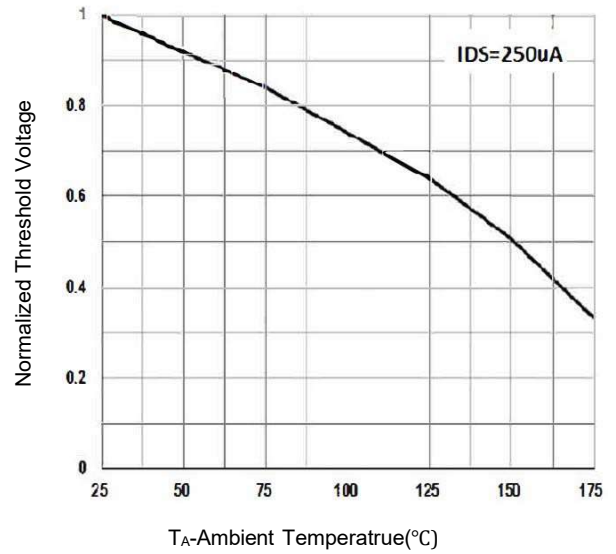


Fig3. Gate-Source On Resistance

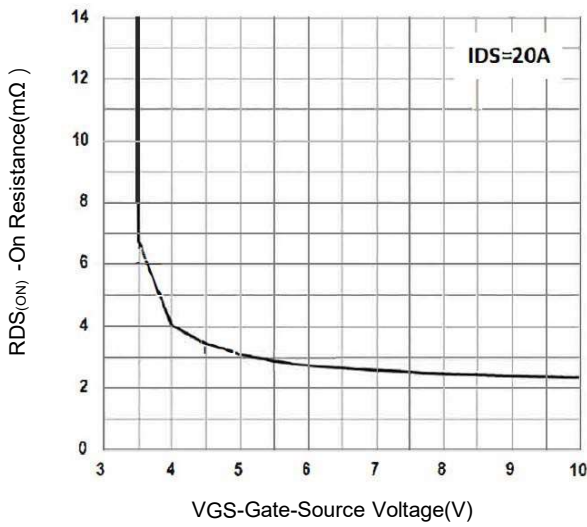


Fig4. Drain-Source On Resistance

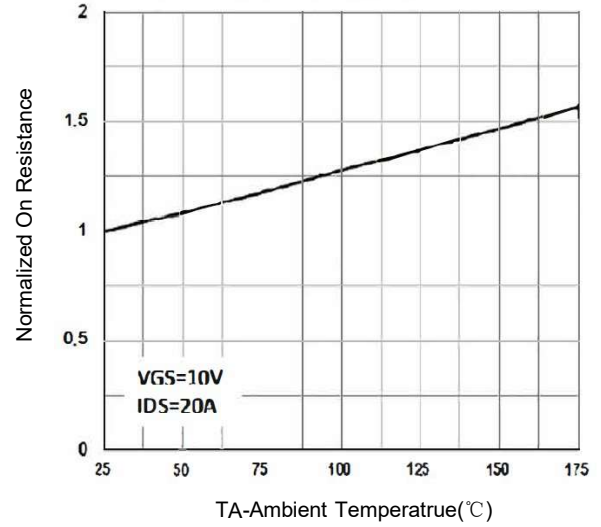


Fig5. Drain-Source On Resistance

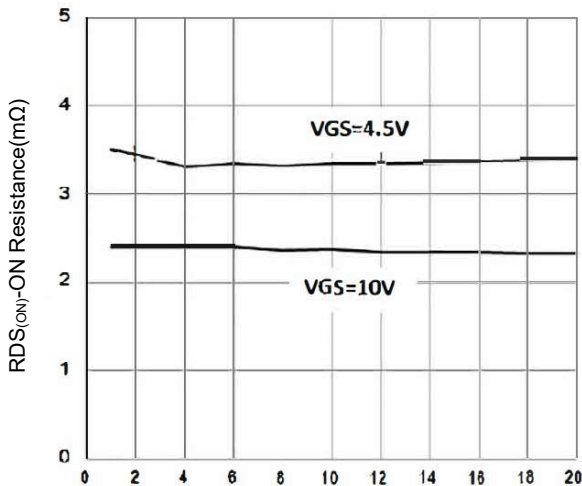
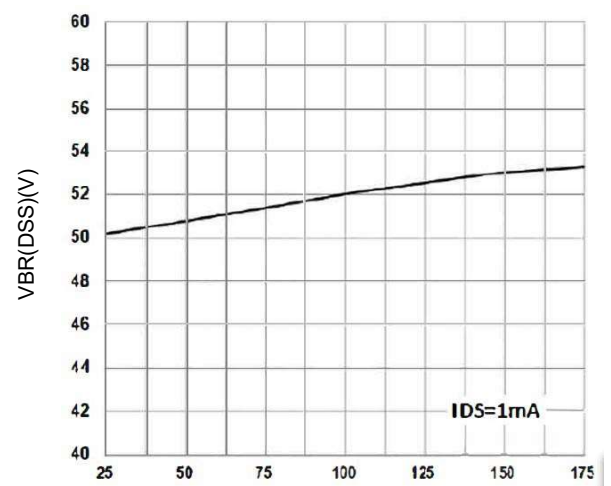


Fig6. Drain-Source Breakdown Voltage



I_D -Drain Current(A)

T_A -Ambient Temperature(°C)

● Typical Characteristics(cont.)

Fig7. Power Dissipation

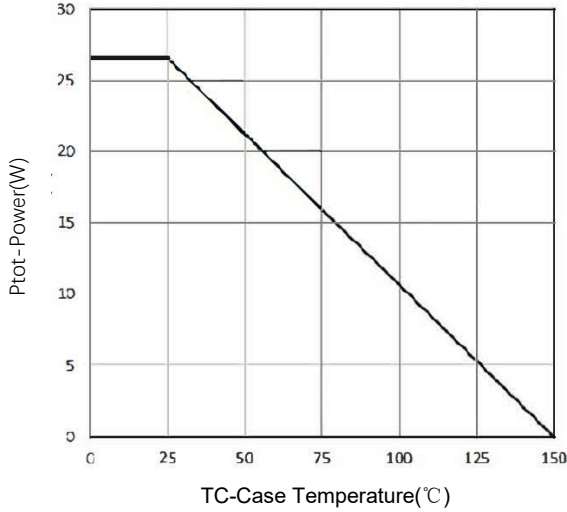


Fig8. Drain Current

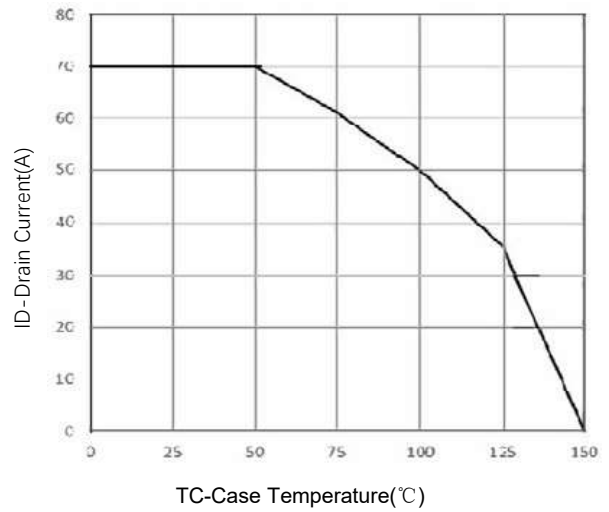


Fig9. Safe Operation Area

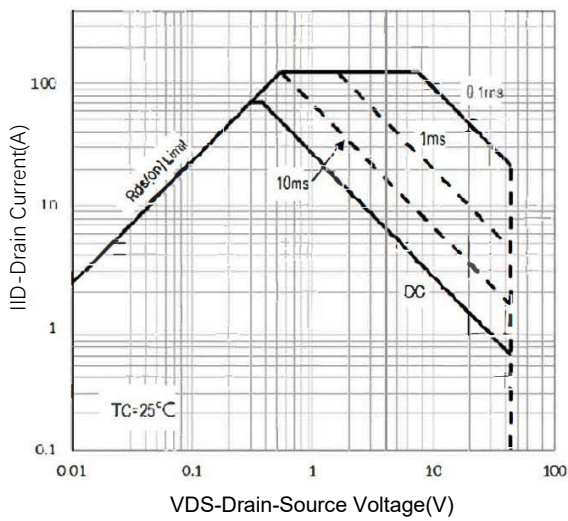


Fig10. Transient Thermal Impedance

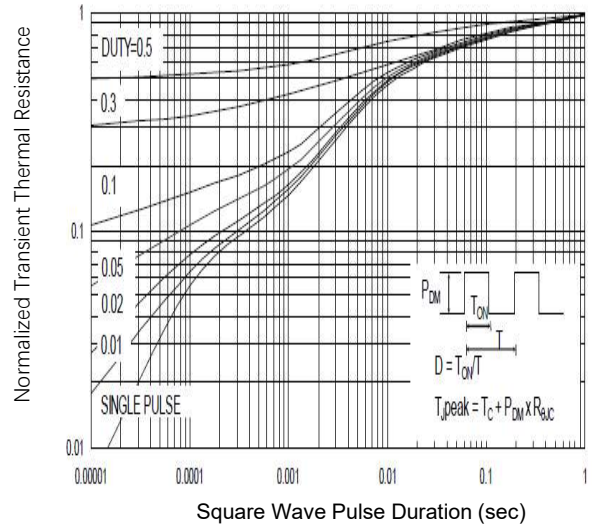


Fig11. Capacitance

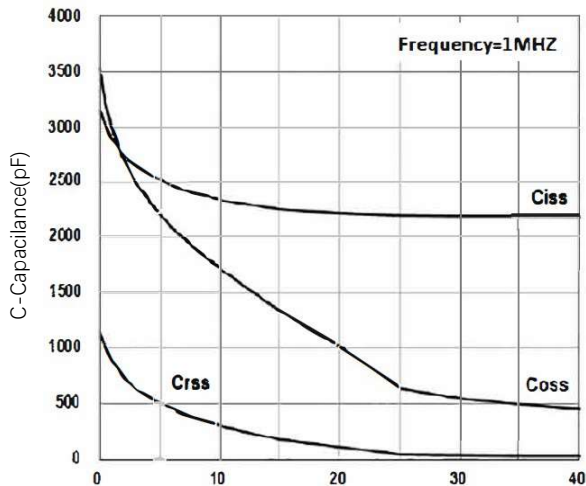
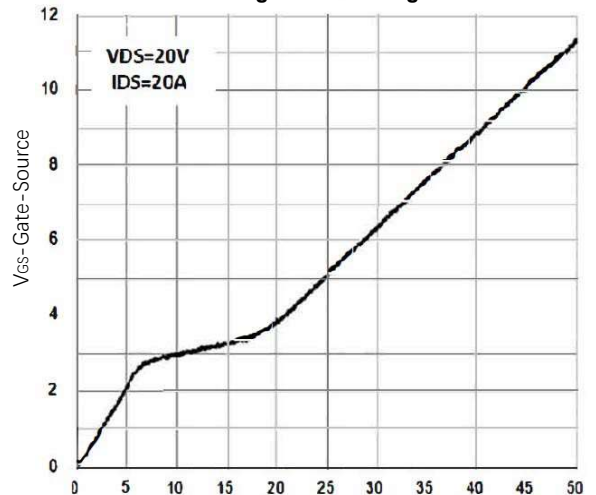


Fig12. Gate Charge



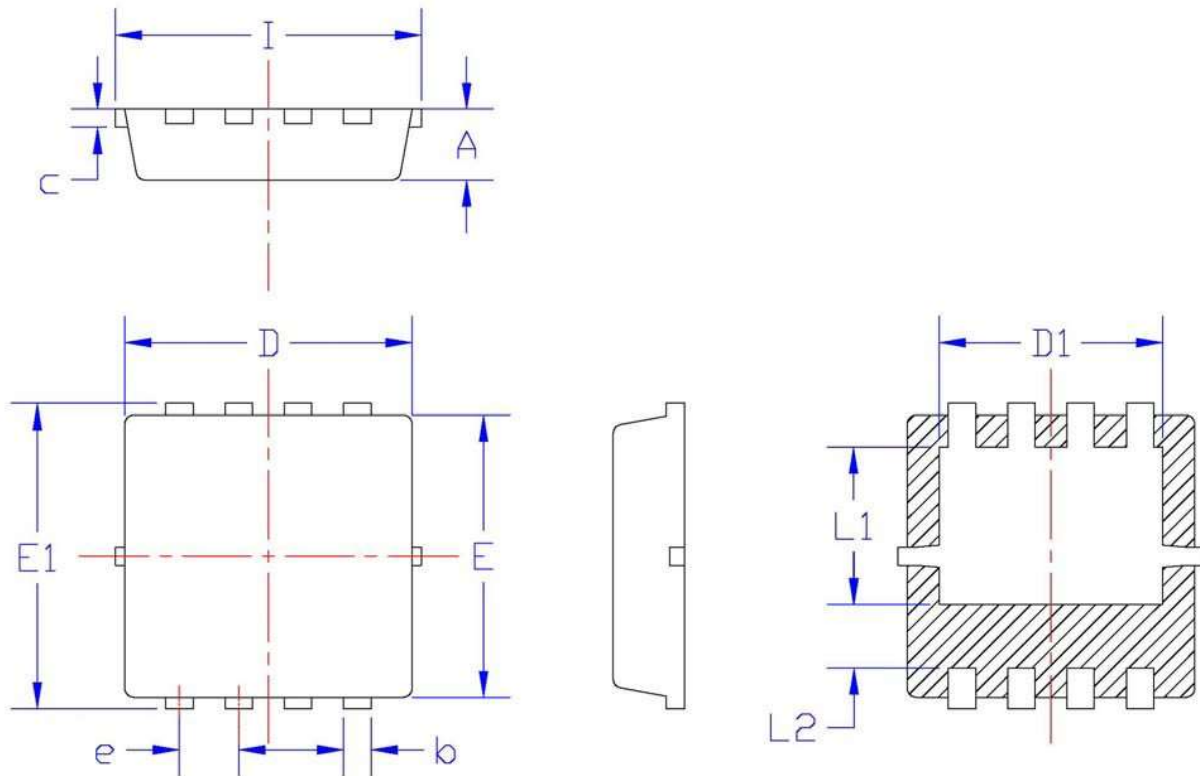
VDS-Drain-Source Voltage(V)

QG-Gate Charge(nC)

•Dimensions (DFN3*3)

Unit: mm

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



●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			

