

20V N-Channel Enhancement-Mode MOSFET

● APPLICATIONS

- 1)Advanced trench process technology
- 2)High Density Cell Design For Ultra Low On-Resistance
- 3)We declare that the material of product compliant with RoHS requirements and Halogen Free

● FEATURES

- 1) $V_{DS} = 20V$
- 2) $R_{DS(ON)}, V_{GS}@4.5V, I_{DS}@5.0A = 41m\Omega$
- 3) $R_{DS(ON)}, V_{GS}@2.5V, I_{DS}@4.5A = 47m\Omega$

● DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LN2312LT1G	N12	3000/Tape&Reel
LN2312LT3G	N12	10000/Tape&Reel

● MAXIMUM RATINGS($T_a = 25^\circ C$)

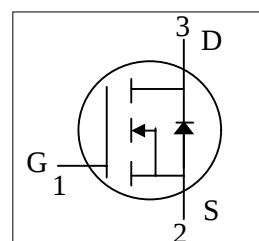
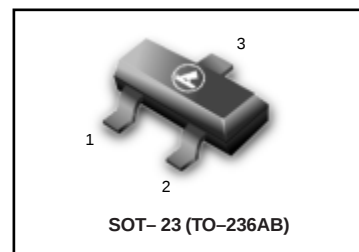
Parameter	Symbol	Limits	Unit
Drain-to-Source Voltage	V_{DSS}	20	V
Gate-to-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current (Note 3), $V_{GS}@4.5V$	$T_A=25^\circ C$	I_D 4.9	A
	$T_A=70^\circ C$	3.4	
Pulsed Drain Current (Note1,2)	I_{DM}	15	A
Maximum Power Dissipation	P_D	0.75	W
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ C$

● THERMAL DATA

Parameter	Symbol	Limits	Unit
Thermal Resistance Junction-ambient(Note 3)	R_{thj-a}	140	$^\circ C/W$

1. Pulse width limited by the Maximum junction temperature
2. 1-in² 2oz Cu PCB board
3. Surface mounted on 1 in² copper PCB board

LN2312LT1G



LN2312LT1G

● ELECTRICAL CHARACTERISTICS (Ta= 25°C)

STATIC

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Drain-to-Source Breakdown Voltage	V(BR)DSS	20	—	—	V	VGS = 0 V, ID = 250 μ A
Gate Threshold Voltage	VGS(TH)	0.4	0.6	1	V	VGS = VDS, ID = 250 μ A
Zero Gate Voltage Drain Current	IDSS	—	—	-1	μ A	VDS=20V, VGS=0V
Gate-to-Source Leakage Current	IGSS	—	—	± 100	nA	VDS = 0 V, VGS = ± 8 V
Drain-to-Source On Resistance	RDS(on)	—	31	57	m Ω	VGS = 1.8 V, ID = 4 A
		—	24	47		VGS = 2.5 V, ID = 4.5 A
		—	21	41		VGS = 4.5 V, ID = 5 A
Forward Diode Voltage	VSD	—	—	1.2	V	VGS = 0 V, ISD = 1.7A
Forward Transconductance	gFS	—	40	—	S	VDS = 10 V, ID = 5 A

DYNAMIC

Input Capacitance	Ciss	—	500	—	pF	VGS = 0 V, f = 1.0 MHz, VDS= 8 V
Output Capacitance	Coss	—	300	—		
Reverse Transfer Capacitance	Crss	—	140	—		
Total Gate Charge	QG	—	11.2	—	nC	VGS = 4.5 V, VDS = 10 V ID = 5 A
Gate-to-Source Gate Charge	QGS	—	1.4	—		
Gate-to-Drain Charge	QGD	—	2.2	—		
Turn-On Delay Time	td(on)	—	15	25	ns	VDD = 10V, ID = 1A, VGEN = 4.5V, RG = 6 Ω
Rise Time	tr	—	40	60		
Turn-Off Delay Time	td(off)	—	48	70		
Fall Time	tf	—	31	45		

LN2312LT1G

ELECTRICAL CHARACTERISTIC CURVES

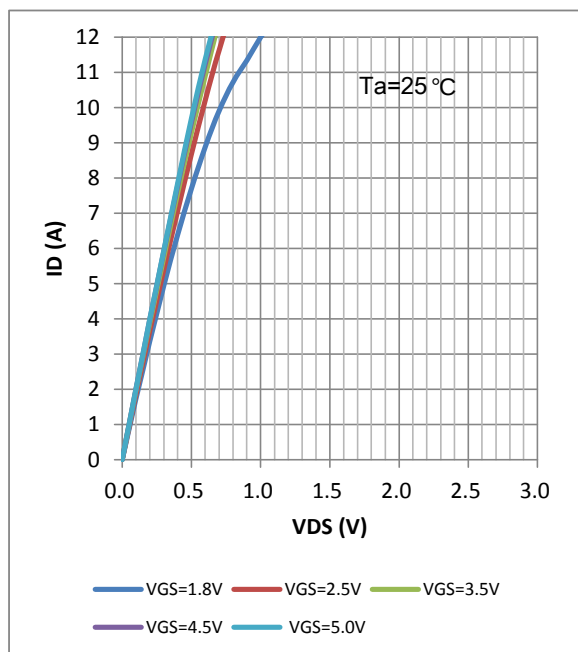


FIG.1 Typical Output Characteristics

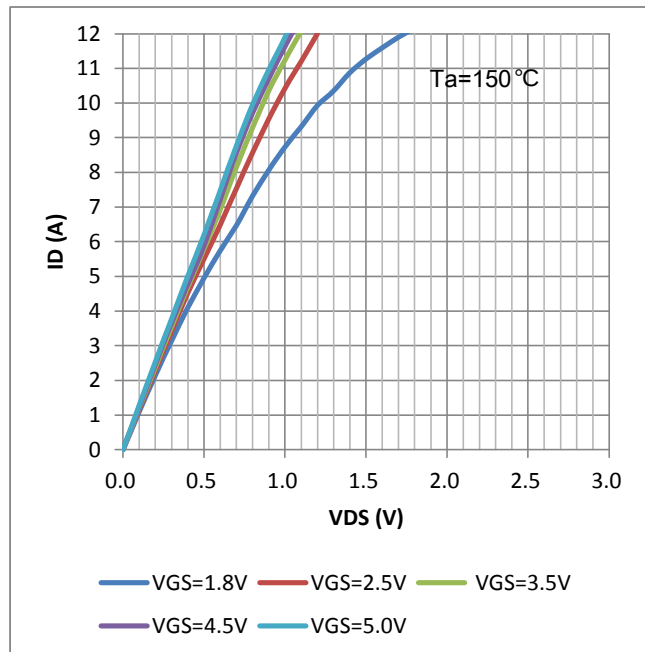


FIG.2 Typical Output Characteristics

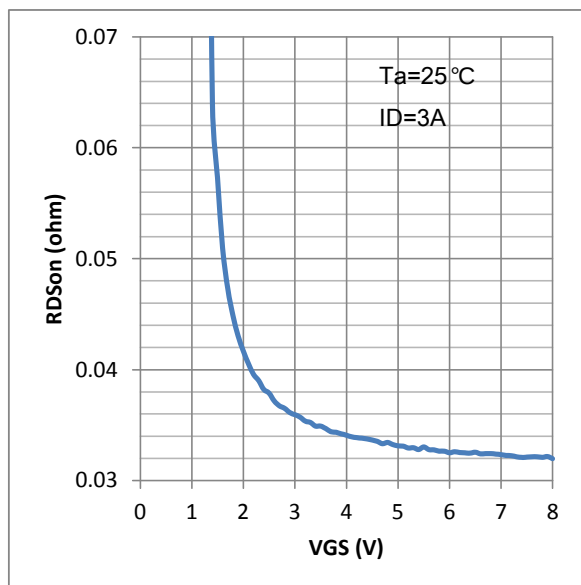


FIG.3 On-Resistance vs. Gate Voltage

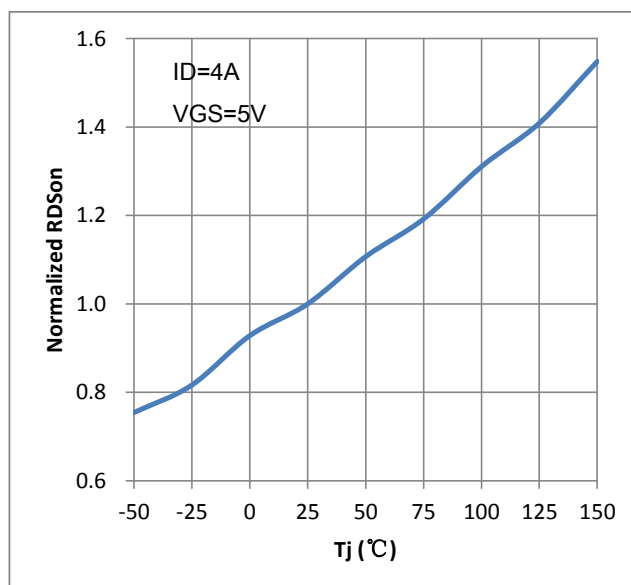


FIG.4 Normalized On-Resistance vs. Junction Temperature

LN2312LT1G

ELECTRICAL CHARACTERISTIC CURVES

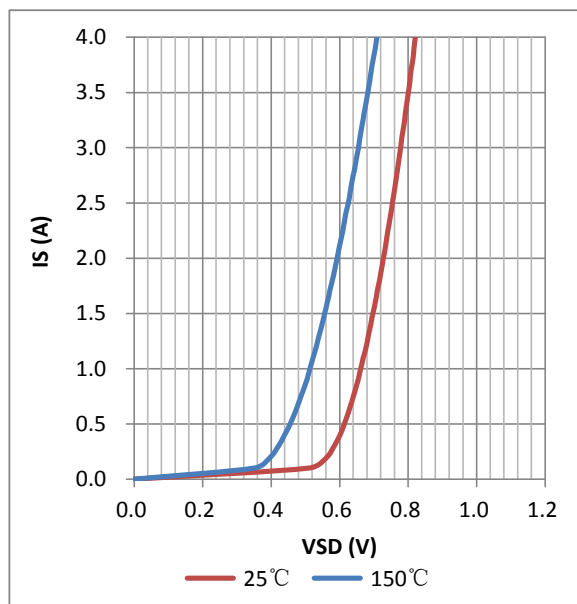


FIG.5 Forward Characteristic of Reverse Diode

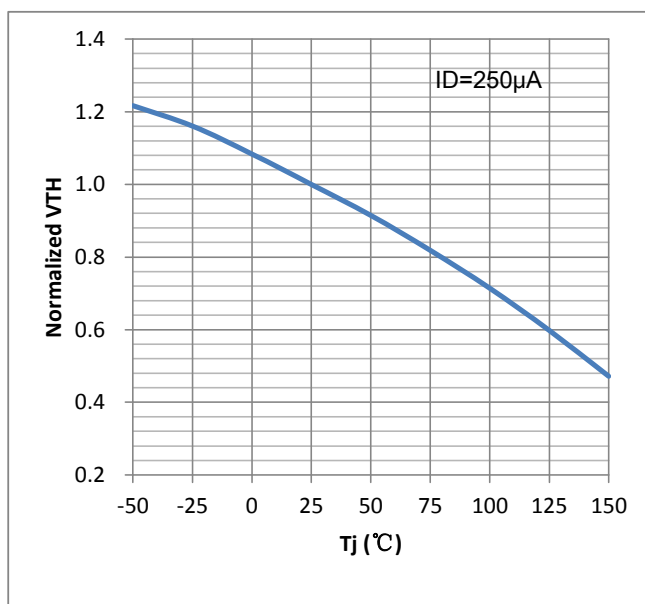


FIG.6 Normalized Gate Threshold Voltage vs. Junction Temperature

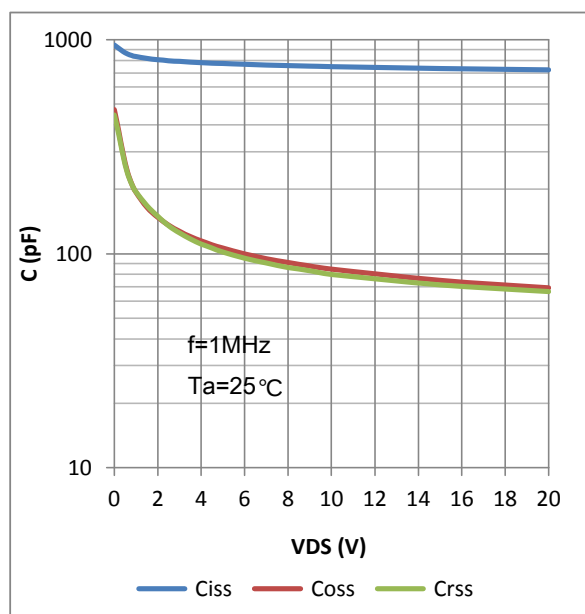


FIG.7 Typical Capacitance Characteristics

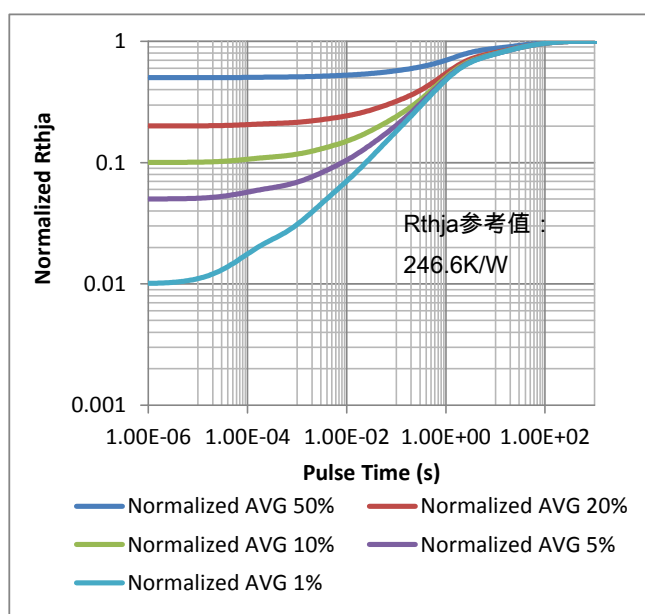


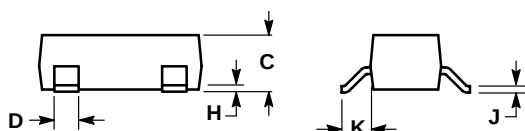
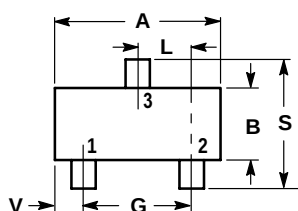
FIG.8 Normalized Effective Transient Thermal Impedance

LN2312LT1G

SOT-23

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

