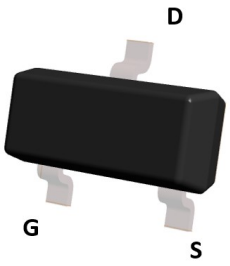
Leading Circuit Protection
Products and Solutions

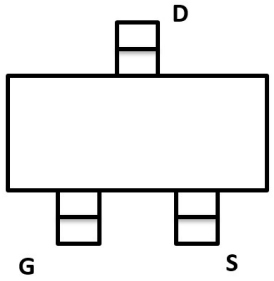
LX23T5N100C
N-Channel Enhancement Mode MOSFET

Description

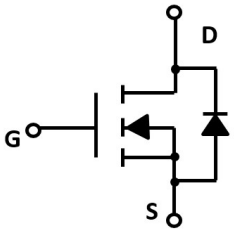
- V_{DS} 100V
- I_D 5A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜140 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜300 mohm



Top View



SOT-23-3L top view



General Features

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Application

- DC-DC Converters
- Power management functions

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_A=25℃	I_D	5	A
	T_A=70℃		2.4	
Pulsed Drain Current A		I_{DM}	12	A
Avalanche energy B		E_{AS}	8	mJ
Total Power Dissipation C	T_A=25℃	P_D	1.2	W
	T_A=70℃		0.8	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient[D]	t≤10S	$R_{\theta JA}$	82	104	℃/W
Thermal Resistance Junction-to-Ambient[DE]	Steady-State		111	140	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JL}$	43	52	

Thermal resistance

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
LX23T5N100C	F2	G1003A	3000	45000	180000	7”Ree

Thermal resistance

Paramete	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.0	1.8	3.0	V
StaticDrain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=3A		110	140	mΩ
		V_{GS}= 4.5V, I_D=2A		160	300	mΩ
Diode Forward Voltage	V_{SD}	I_S=3A,V_{GS}=0V			1.3	V
Maximum Body-Diode Continuous Current	I_S				5	A
Gate resistance	R_G	f= 1 MHz, Open drain		8		Ω
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=50V,V_{GS}=0V,f=100KHZ		206		pF
Output Capacitance	C_{oss}			28.9		
Reverse Transfer Capacitance	C_{rss}			1.4		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=50V,I_D=5A		4.3		nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			1.1		
Reverse Recovery Chrage	Q_{rr}	I_F=5A, di/dt=100A/us		39.4		nC
Reverse Recovery Time	t_{rr}			32.1		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V,V_{DD}=50V,I_D=5A R_{GEN}=2Ω		14.7		ns
Turn-on Rise Time	t_r			3.5		
Turn-off Delay Time	$t_{D(off)}$			20.9		
Turn-off fall Time	t_f			2.7		

A. Repetitive rating; pulse width limited by max. junction temperature.

B. V_{DD}=50V, R_G=25Ω, L=0.5mH.

C. Pd is based on max. junction temperature, using ≤10us junction-to-ambient thermal resistance.

D. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C. The value in any given application depends on the user's specific board design.

E. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead RθJL and lead to ambient

Typical Performance Characteristics

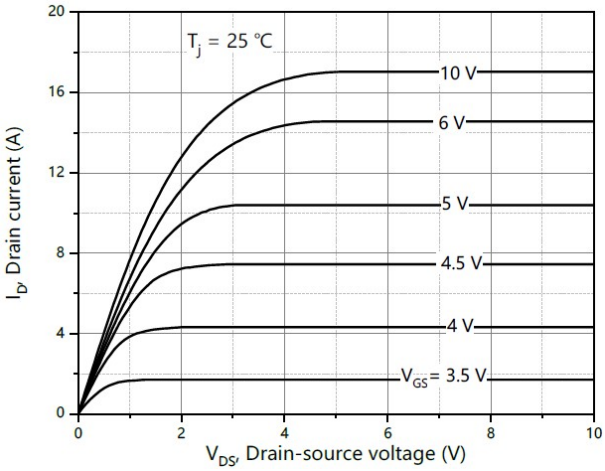


Figure1. Output Characteristics

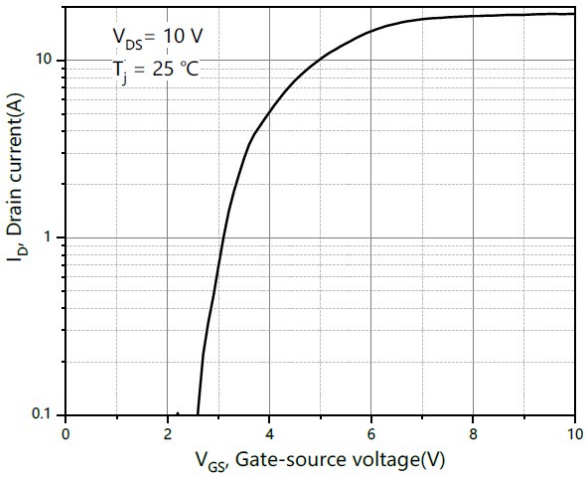


Figure2. Transfer Characteristics

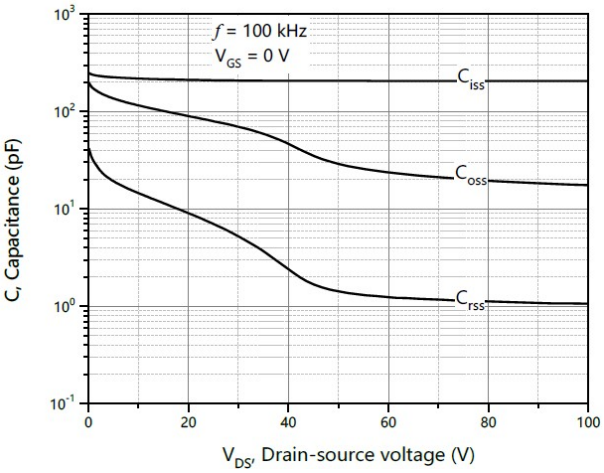


Figure3. Capacitance Characteristics

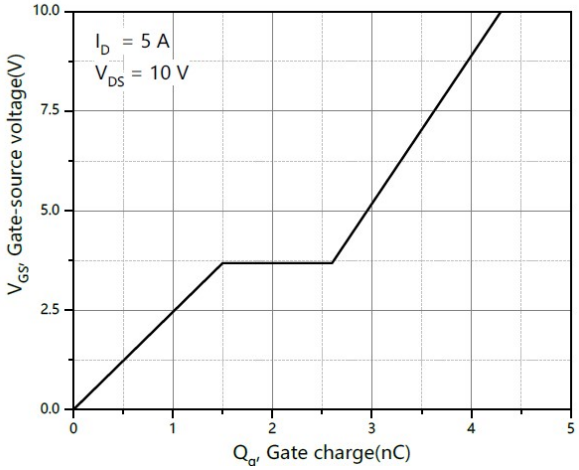


Figure4. Gate Charge

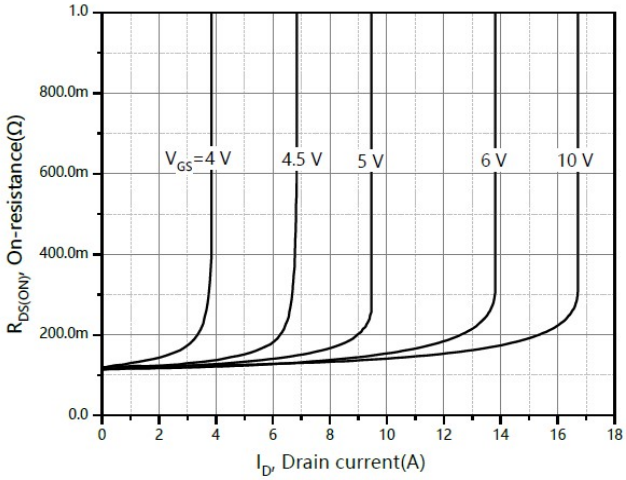


Figure5. : On-Resistance vs. Drain Current and Gate Voltage

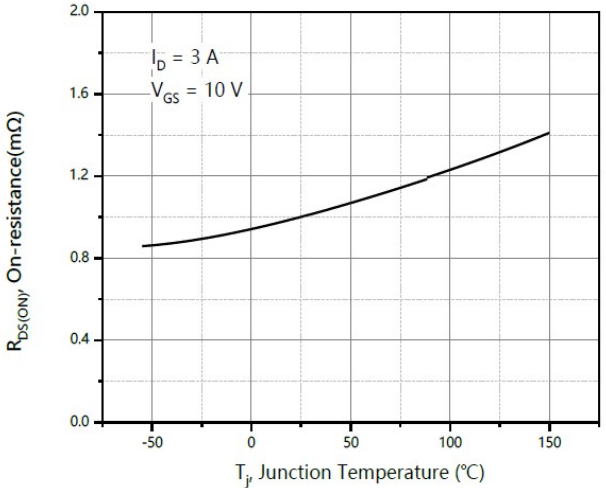


Figure6.Normalized On-Resistance

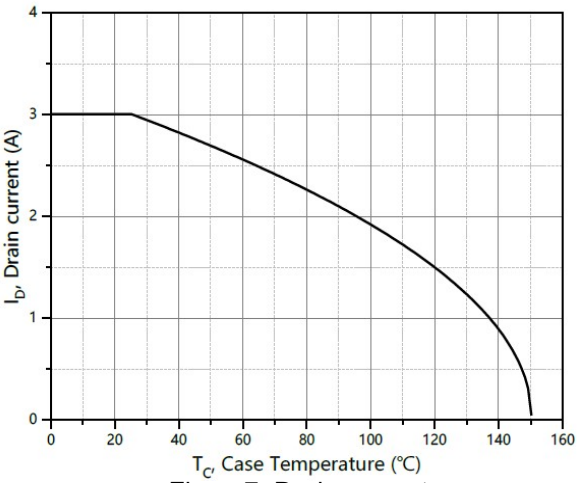


Figure7. Drain current

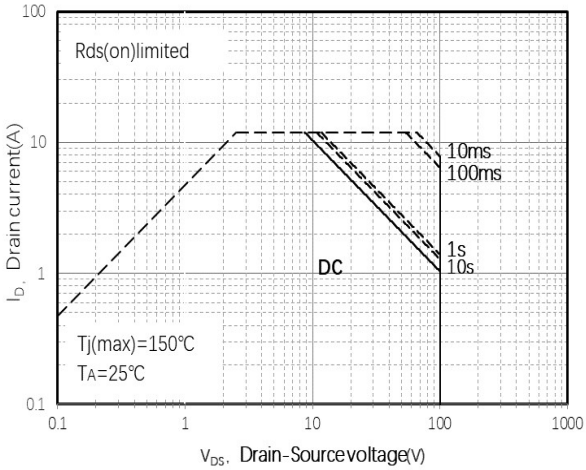


Figure8.Safe Operation Area

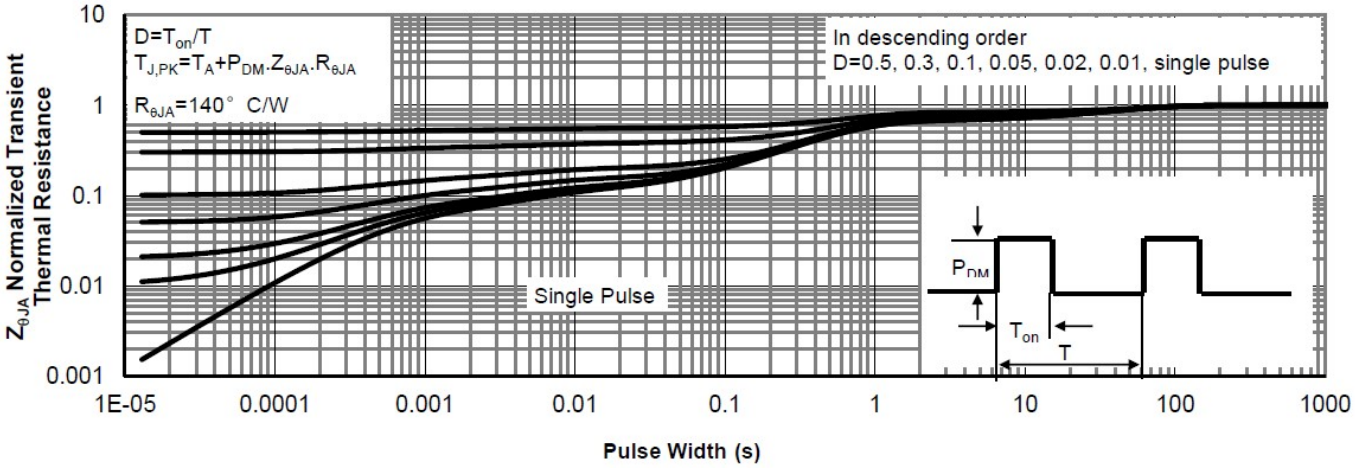
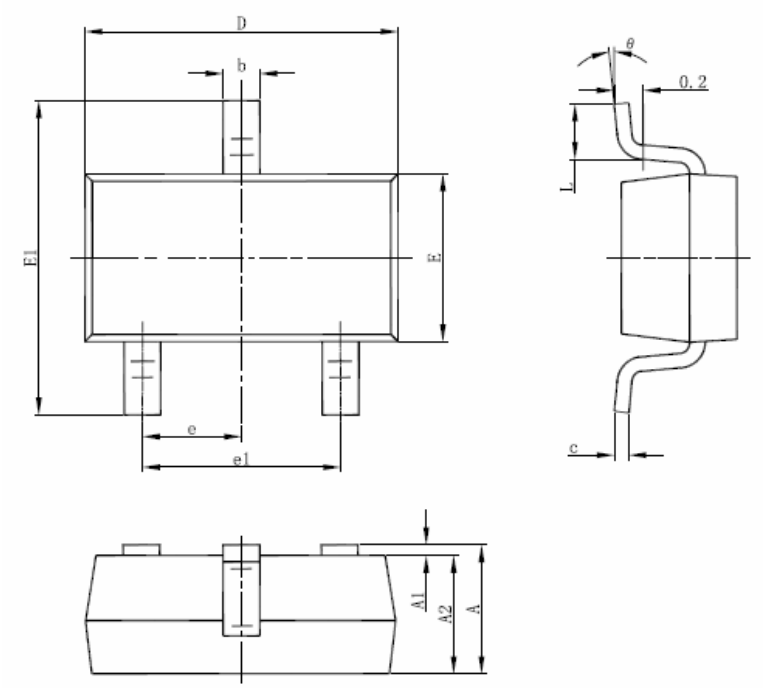


Figure9.Normalized Maximum Transient thermal impedance

SOT-23-3L Package information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Notes

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.