20V P-Channel Enhancement-Mode MOSFET

V_{DS}= -20V

$R_{DS(ON)}$, Vgs@-4.5V, Ids@-2.8A = 100 mΩ

$R_{DS(ON)}$, Vgs@-2.5V, Ids@-2.0A = 150 mΩ

LP2301LT1G

SOT– 23 (TO–236AB)

Features

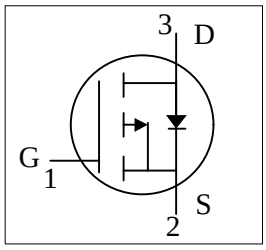
Advanced trench process technology

High Density Cell Design For Ultra Low On-Resistance

Fully Characterized Avalanche Voltage and Current

Improved Shoot-Through FOM

- **Simple Drive Requirement**
- **Small Package Outline**
- **Surface Mount Device**
- **Pb-Free package is available**



Maximum Ratings and Thermal Characteristics (T_A = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 8	
Continuous Drain Current		I_D	-2.3	A
Pulsed Drain Current 1)		I_{DM}	-8	
Maximum Power Dissipation	TA = 25°C	P_D	0.9	W
	TA = 75°C		0.57	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Junction-to-Case Thermal Resistance		R_{qJC}		°C/W
Junction-to-Ambient Thermal Resistance (PCB mounted) 2)		R_{qJA}	140	

Note: 1. Repetitive Rating: Pulse width limited by the Maximum junction temperation

2. 1-in^2 2oz Cu PCB board

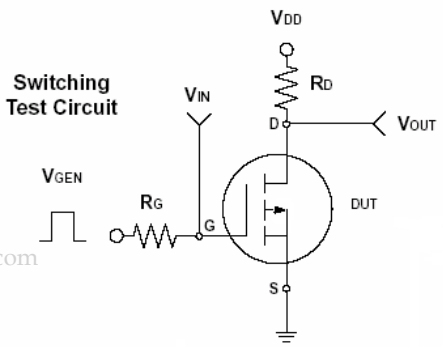
3. Guaranteed by design; not subject to production testing

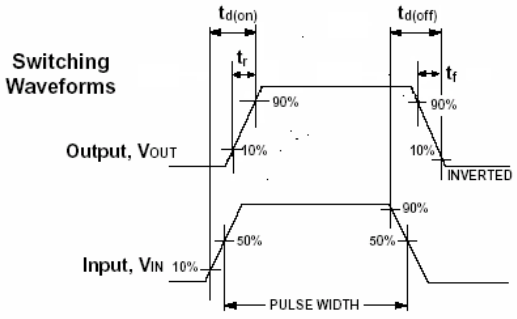
LP2301LT1G

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250uA	-20	-	-	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -2.8A		69	100	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = -2.5V, I_D = -2.0A		83	150	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D = -250uA	-0.45		-0.95	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -9.6V, V_{GS} = 0V			-1	uA
Gate Body Leakage	I_{GSS}	V_{GS} = ±8V, V_{DS} = 0V			±100	nA
Gate Resistance	Rg					Ω
Forward Transconductance	g_{fs}	V_{DS} = -5V, I_D = -4.0A		6.5		S
Dynamic [3)]						
Total Gate Charge	Q_g	V_{DS} = -6V, I_D = -2.8A V_{GS} = -4.5V		15.23		nC
Gate-Source Charge	Q_{gs}			5.49		
Gate-Drain Charge	Q_{gd}			2.74		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -6V, R_L = 6Ω I_D = −1A, V_{GEN} = -4.5V R_G = 6Ω		17.28		ns
Turn-On Rise Time	t_r			3.73		
Turn-Off Delay Time	$t_{d(off)}$			36.05		
Turn-Off Fall Time	t_f			6.19		
Input Capacitance	C_{iss}	V_{DS} = -6V, V_{GS} = 0V f = 1.0 MHz		882.51		pF
Output Capacitance	C_{oss}			145.54		
Reverse Transfer Capacitance	C_{rss}			97.26		
Source-Drain Diode						
Max. Diode Forward Current	I_S				-2.4	A
Diode Forward Voltage	V_{SD}	I_S = -0.75A, V_{GS} = 0V		-0.8	-1.2	V

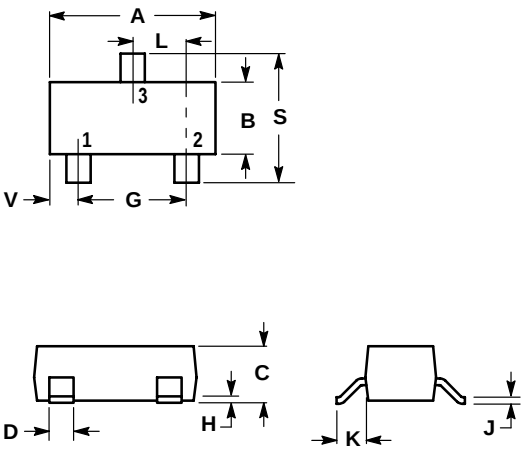
Note: Pulse test: pulse width <= 300us, duty cycle<= 2%





LP2301LT1G

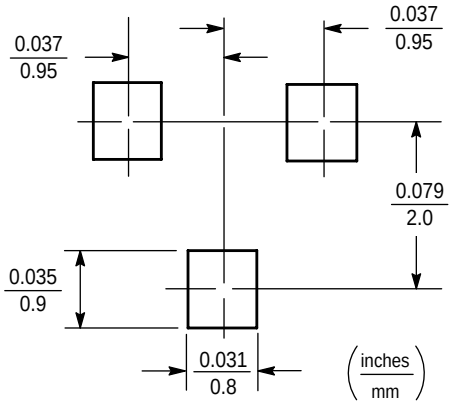
SOT–23



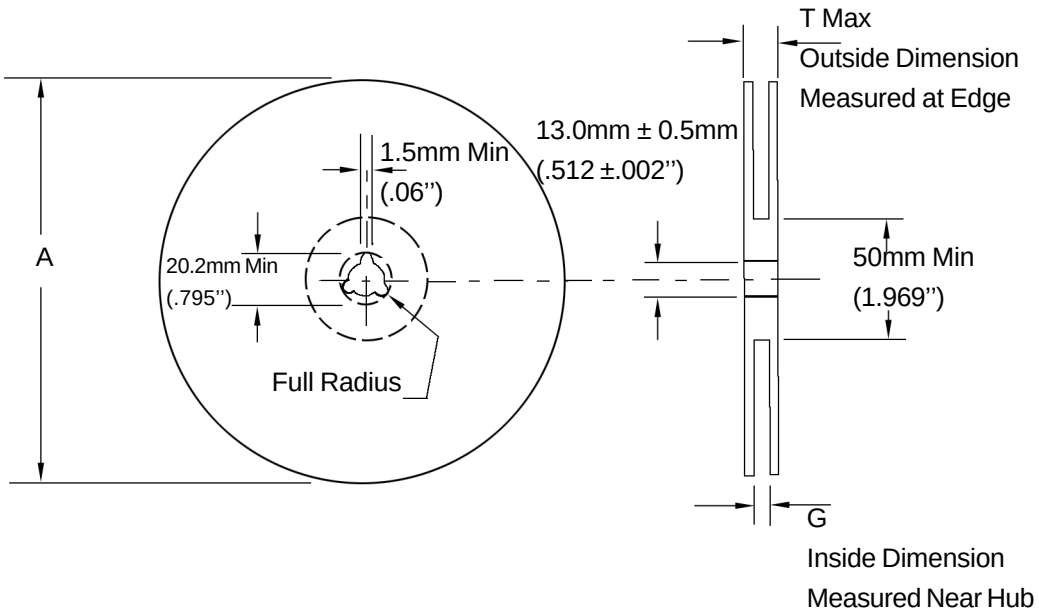
NOTES:

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



EMBOSSED TAPE AND REEL DATA
FOR DISCRETES



Size	A Max	G	T Max
8 mm	330mm (12.992")	8.4mm+1.5mm, -0.0 (.33"+.059", -0.00)	14.4mm (.56")

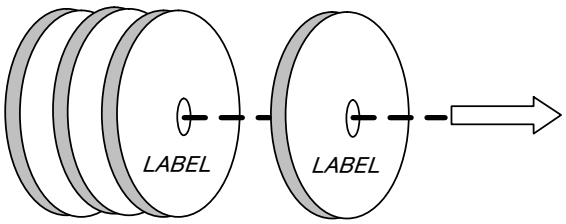
Reel Dimensions

Metric Dimensions Govern — English are in parentheses for reference only

Storage Conditions

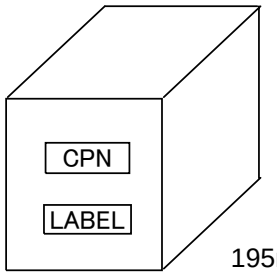
Temperature: 5 to 40 Deg.C (20 to 30 Deg. C is preferred)
Humidity: 30 to 80 RH (40 to 60 is preferred)
Recommended Period: One year after manufacturing
(This recommended period is for the soldering condition only. The characteristics and reliabilities of the products are not restricted to this limitation)

Shipment Specification



10 Reel

3000PCS/Reel
8000PCS/Reel (SOT-723,SOD-723)



Dim(Unit:mm)

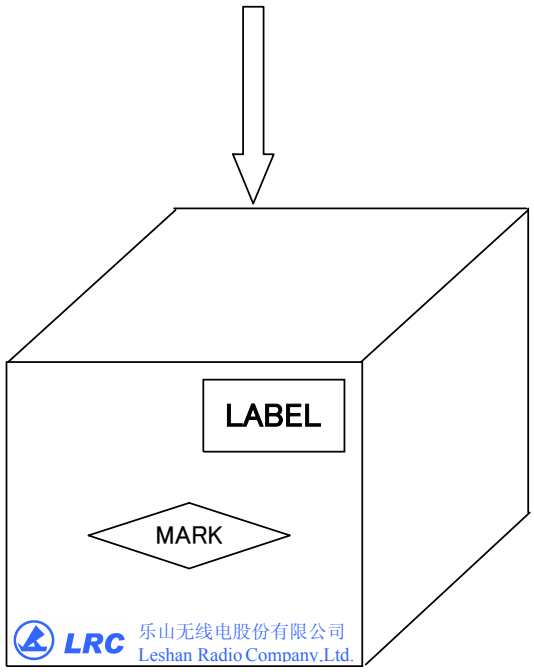
195mm*195mm*150mm

10Reel/Inner Box

30KPCS/Inner Box
80KPCS/Inner Box (SOT-723,SOD-723)

Dim(Unit:mm)

460mm*400mm*420mm



12 Inner Box/Carton

360KPCS/Carton
960KPCS/Carton (SOT-723,SOD-723)