

20V N-Channel Enhancement-Mode MOSFET

$V_{DS} = 20V$

$R_{DS(ON)}, V_{GS}@4.5V, I_{DS}@2.8A = 60m\Omega$

$R_{DS(ON)}, V_{GS}@2.5V, I_{DS}@2.0A = 115m\Omega$

Features

High Density Cell Design For Ultra Low On-Resistance

Improved Shoot-Through FOM

LN2302LT1G

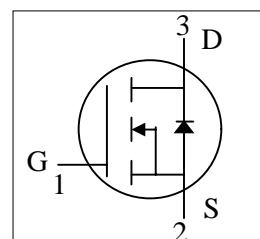


SOT-23 (TO-236AB)

▼ High Density Cell Design For Ultra Low On - Resistance

Improved Shoot-Through FOM

▼ Pb-Free package is available



Maximum Ratings and Thermal Characteristics ($T_A = 25^\circ C$ 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	P_D	0.9	W
		0.57	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ C$
Junction-to-Case Thermal Resistance	R_{qJC}		$^\circ C/W$
Junction-to-Ambient Thermal Resistance (PCB mounted) ²⁾	R_{qJA}	145	

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

2. 1-in² 2oz Cu PCB board

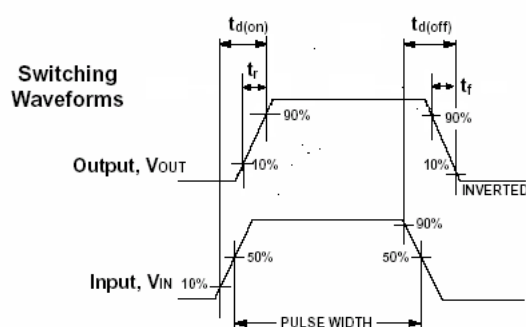
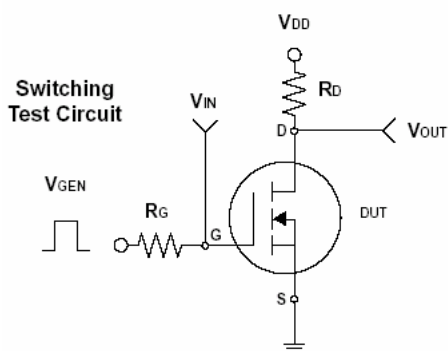
3. Guaranteed by design; not subject to production testing

LN2302LT1G

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V _{GS} = 0V, I _D = -10uA	20	-	-	V
Drain-Source On-State Resistance	R_{DS(on)}	V _{GS} = 4.5V, I _D = 2.8A		40	60	mΩ
Drain-Source On-State Resistance	R_{DS(on)}	V _{GS} = 2.5V, I _D = 2.0A		50	115	
Gate Threshold Voltage	V_{GS(th)}	V _{DS} =V _{GS} , I _D = 250uA	0.65	0.95	1.20	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	R_g					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		3.69		nC
Gate-Source Charge	Q_{gs}			0.70		
Gate-Drain Charge	Q_{gd}			1.06		
Turn-On Delay Time	t_{d(on)}	V _{DD} = 6V, R _L = 6Ω I _D = 1A, V _{GEN} = 4.5V R _G = 6Ω		6.16		ns
Turn-On Rise Time	t_r			7.56		
Turn-Off Delay Time	t_{d(off)}			16.61		
Turn-Off Fall Time	t_f			4.07		
Input Capacitance	C_{iss}	V _{DS} = 6V, V _{GS} = 0V f = 1.0 MHz		427.12		pF
Output Capacitance	C_{oss}			80.56		
Reverse Transfer Capacitance	C_{rss}			57.00		
Source-Drain Diode						
Max. Diode Forward Current	I_S					A
Diode Forward Voltage	V_{SD}	I _S = -1.6A, V _{GS} = 0V				V

Note: Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

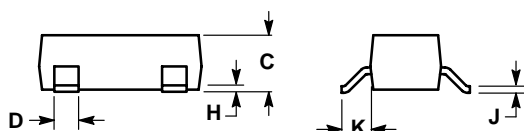
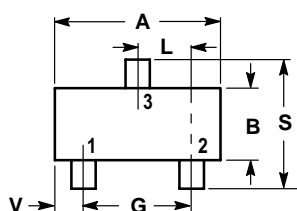


LN2302LT1G

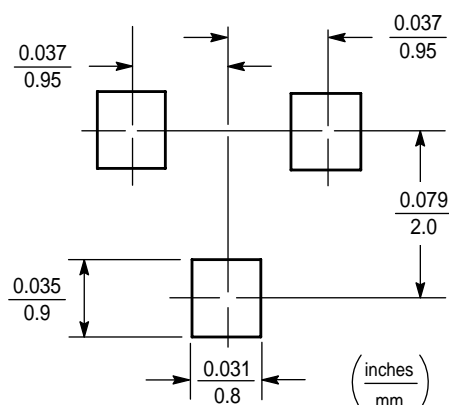
SOT-23

NOTES:

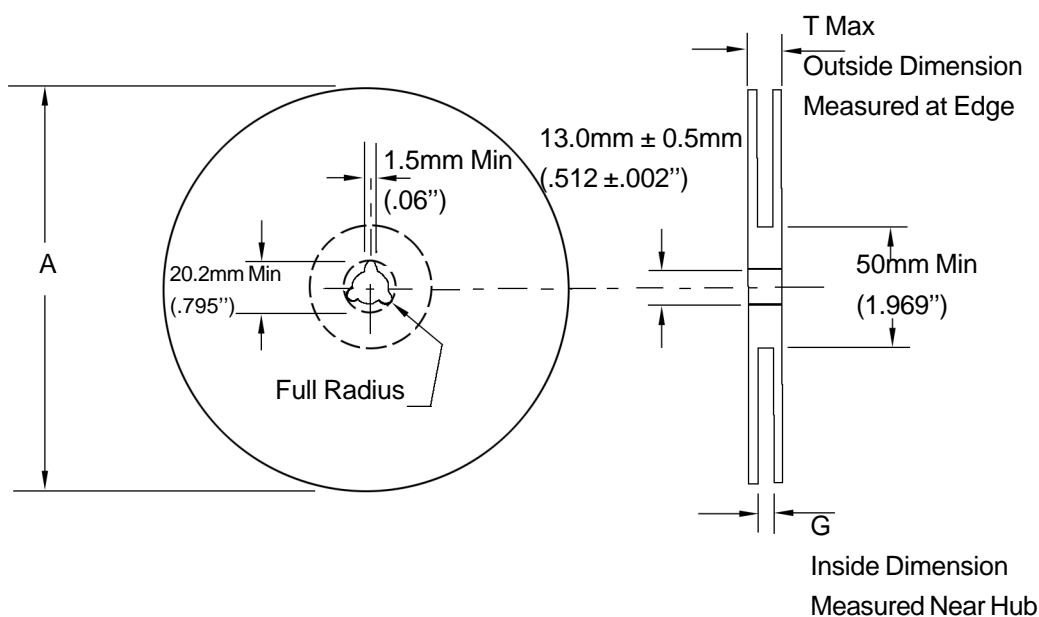
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.



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")
12mm	330mm (12.992")	12.4mm+2.0mm, -0.0 (.49 "+.079", -0.00)	18.4mm (.72")
16mm	360mm (14.173")	16.4mm+2.0mm, -0.0 (.646"+.078", -0.00)	22.4mm (.882")
24 mm	360mm (14.173")	24.4mm+2.0mm, -0.0 (.961"+.070", -0.00)	30.4mm (1.197")

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

