



- 20 W Pulsed Power Dissipation
- 100 V Capability
- 2 A Continuous Collector Current
- 4 A Peak Collector Current

LP PACKAGE  
(TOP VIEW)



MDTRAB

**absolute maximum ratings at 25°C case temperature (unless otherwise noted)**

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ( $I_E = 0$ )	TIPP115	$V_{CBO}$	-60	V
	TIPP116		-80	
	TIPP117		-100	
Collector-emitter voltage ( $I_B = 0$ )	TIPP115	$V_{CEO}$	-60	V
	TIPP116		-80	
	TIPP117		-100	
Emitter-base voltage		$V_{EBO}$	-5	V
Continuous collector current		$I_C$	-2	A
Peak collector current (see Note 1)		$I_{CM}$	-4	A
Continuous base current		$I_B$	-50	mA
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		$P_{tot}$	0.8	W
Pulsed power dissipation (see Note 3)		$P_T$	20	W
Operating junction temperature range		$T_j$	-55 to +150	°C
Storage temperature range		$T_{stg}$	-55 to +150	°C
Lead temperature 3.2 mm from case for 10 seconds		$T_L$	260	°C

- NOTES: 1. This value applies for  $t_p \leq 0.3$  ms, duty cycle  $\leq 10\%$ .  
 2. Derate linearly to 150°C case temperature at the rate of 0.32 W/°C.  
 3.  $V_{CE} = 20$  V,  $I_C = 1$  A,  $P_W = 10$  ms, duty cycle  $\leq 2\%$ .

**PRODUCT INFORMATION**

**electrical characteristics at 25°C case temperature**

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = -10 \text{ mA}$ (see Note 4)	$I_B = 0$	TIPP115 TIPP116 TIPP117	-60 -80 -100			V
$I_{CEO}$ Collector-emitter cut-off current	$V_{CE} = -30 \text{ V}$ $V_{CE} = -40 \text{ V}$ $V_{CE} = -50 \text{ V}$	$V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$	TIPP115 TIPP116 TIPP117			-2 -2 -2	mA
$I_{CBO}$ Collector-base cut-off current	$V_{CE} = -60 \text{ V}$ $V_{CE} = -80 \text{ V}$ $V_{CE} = -100 \text{ V}$	$I_B = 0$ $I_B = 0$ $I_B = 0$	TIPP115 TIPP116 TIPP117			-1 -1 -1	mA
$I_{EBO}$ Emitter cut-off current	$V_{EB} = -5 \text{ V}$	$I_C = 0$				-2	mA
$h_{FE}$ Forward current transfer ratio	$V_{CE} = -4 \text{ V}$ $V_{CE} = -4 \text{ V}$	$I_C = -1 \text{ A}$ $I_C = -2 \text{ A}$	(see Notes 4 and 5)	1000 500			
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -8 \text{ mA}$	$I_C = -2 \text{ A}$	(see Notes 4 and 5)			-2.5	V
$V_{BE}$ Base-emitter voltage	$V_{CE} = -4 \text{ V}$	$I_C = -2 \text{ A}$	(see Notes 4 and 5)			-2.8	V
$V_{EC}$ Parallel diode forward voltage	$I_E = -4 \text{ A}$	$I_B = 0$	(see Notes 4 and 5)			-3.5	V

NOTES: 4. These parameters must be measured using pulse techniques,  $t_p = 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

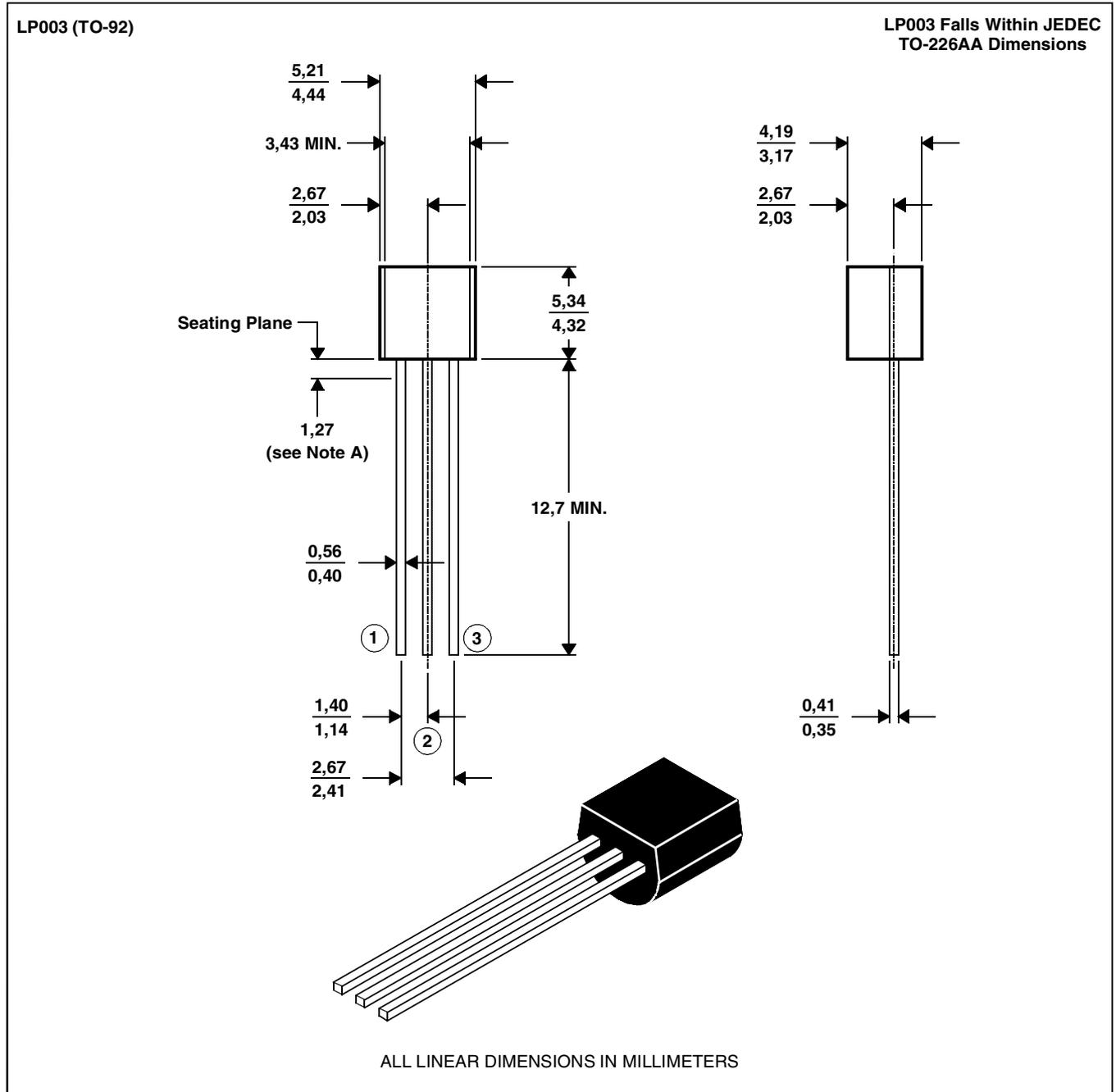
5. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

**MECHANICAL DATA**

**LP003 (TO-92)**

**3-pin cylindrical plastic package**

This single-in-line package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high humidity conditions. Leads require no additional cleaning or processing when used in soldered assembly.



NOTE A: Lead dimensions are not controlled in this area.

MDXXAX

**PRODUCT INFORMATION**

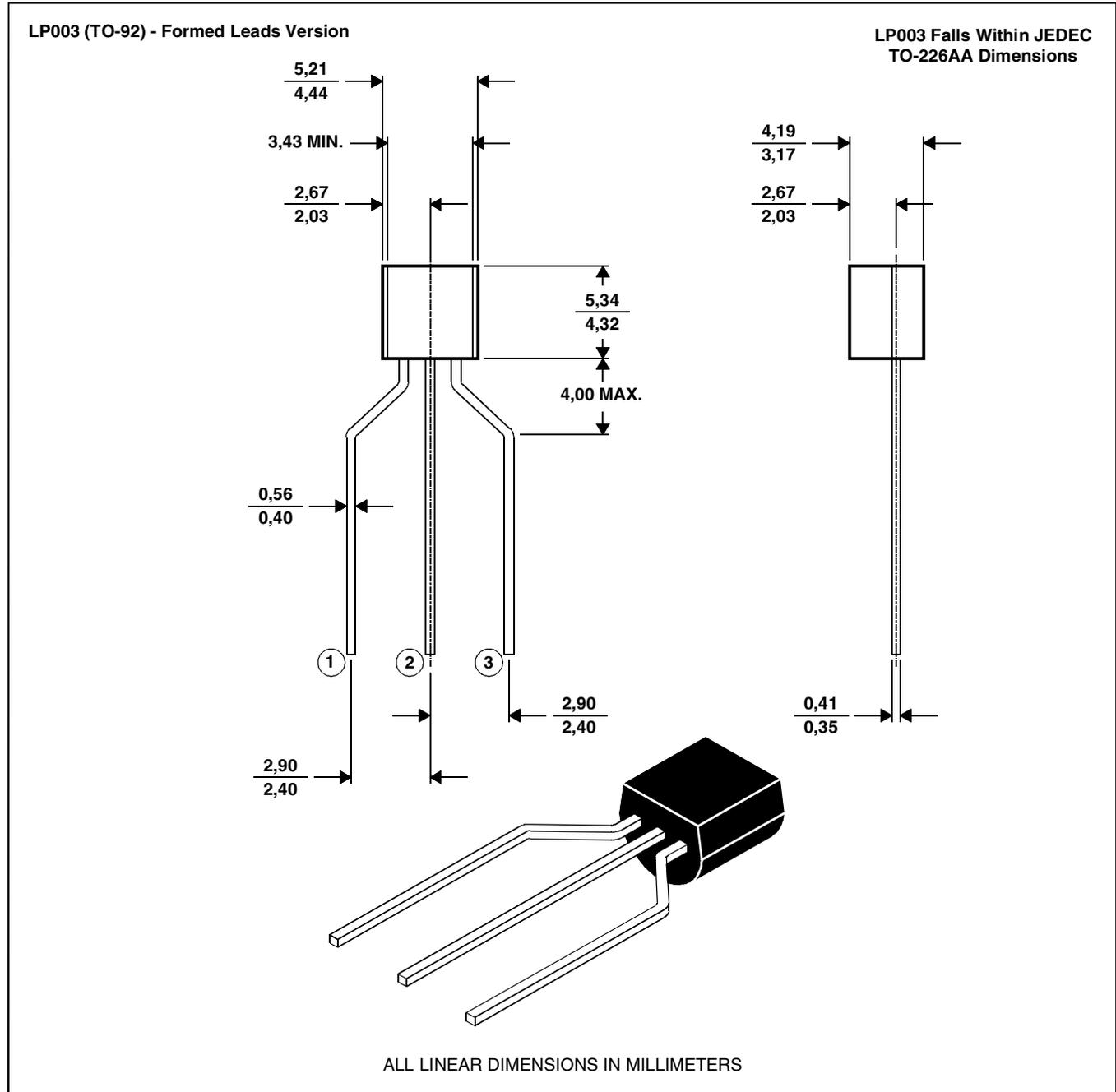
MAY 1989 - REVISED SEPTEMBER 2002  
Specifications are subject to change without notice.

**MECHANICAL DATA**

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MDXXAR

**PRODUCT INFORMATION**

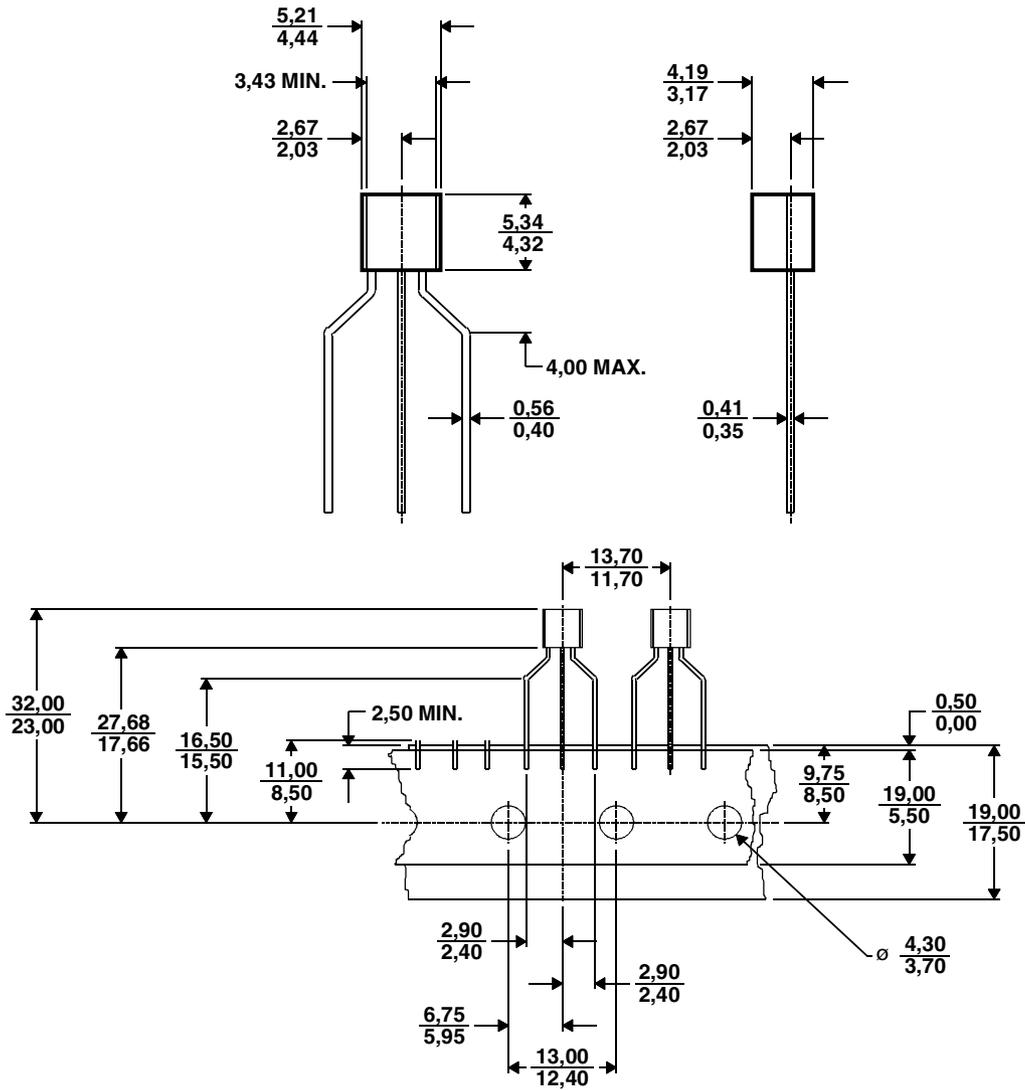
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**MECHANICAL DATA**

LPR

tape dimensions

LP Package (TO-92) Tape (Formed Lead Version)



ALL LINEAR DIMENSIONS IN MILLIMETERS

MDXXAS

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