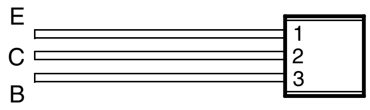
TIPP31, TIPP31A, TIPP31B, TIPP31C
NPN SILICON POWER TRANSISTORS

BOURNS®

- **20 W Pulsed Power Dissipation**
- **100 V Capability**
- **2 A Continuous Collector Current**
- **4 A Peak Collector Current**
- **Customer-Specified Selections Available**

LP PACKAGE
(TOP VIEW)



MDTRAB

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

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	TIPP31	V_{CBO}	40	V
	TIPP31A		60	
	TIPP31B		80	
	TIPP31C		100	
Collector-emitter voltage ($I_B = 0$)	TIPP31	V_{CEO}	40	V
	TIPP31A		60	
	TIPP31B		80	
	TIPP31C		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	1	A
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 ≤ 10%.
2. Derate linearly to 150°C case temperature at the rate of 6.4 mW/°C.
3. $V_{CE} = 20$ V, $I_C = 1$ A, $t_p = 10$ ms, duty cycle ≤ 2%.

electrical characteristics at 25°C case temperature

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_C = 5 mA (see Note 4)	I_B = 0	TIPP31	40			V
				TIPP31A	60			
				TIPP31B	80			
				TIPP31C	100			
I_{CES}	Collector-emitter cut-off current	V_{CE} = 40 V	V_{BE} = 0	TIPP31			0.2	mA
		V_{CE} = 60 V	V_{BE} = 0	TIPP31A			0.2	
		V_{CE} = 80 V	V_{BE} = 0	TIPP31B			0.2	
		V_{CE} = 100 V	V_{BE} = 0	TIPP31C			0.2	
I_{CEO}	Collector cut-off current	V_{CE} = 30 V	I_B = 0	TIPP31/31A			0.3	mA
		V_{CE} = 60 V	I_B = 0	TIPP31B/31C			0.3	
I_{EBO}	Emitter cut-off current	V_{EB} = 5 V	I_C = 0				1	mA
h_{FE}	Forward current transfer ratio	V_{CE} = 4 V	I_C = 1 A	(see Notes 4 and 5)	20			
		V_{CE} = 4 V	I_C = 2 A		10			
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_B = 375 mA	I_C = 2A	(see Notes 4 and 5)			1	V
V_{BE}	Base-emitter voltage	V_{CE} = 4 V	I_C = 2 A	(see Notes 4 and 5)			1.5	V
h_{fe}	Small signal forward current transfer ratio	V_{CE} = 10 V	I_C = 0.5 A	f = 1 kHz	20			
$\|h_{fe}\|$	Small signal forward current transfer ratio	V_{CE} = 10 V	I_C = 0.5 A	f = 1 MHz	3			

NOTES: 4. These parameters must be measured using pulse techniques, t_p = 300 µs, duty cycle ≤ 2%.

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

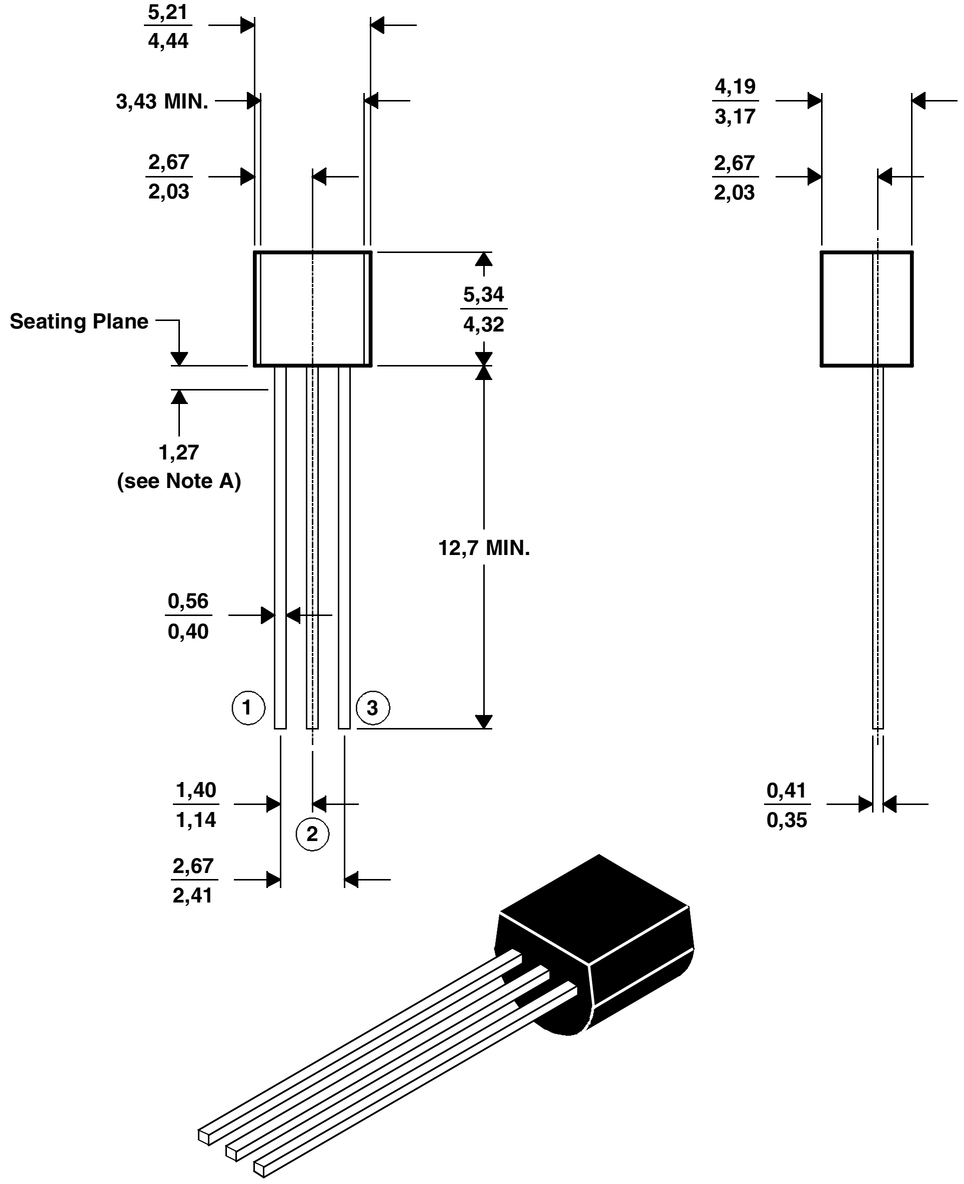
MECHANICAL DATA

LP003 (TO-92)
3-pin cylindical 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.

LP003 (TO-92)

LP003 Falls Within JEDEC TO-226AA Dimensions



ALL LINEAR DIMENSIONS IN MILLIMETERS

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

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MECHANICAL DATA

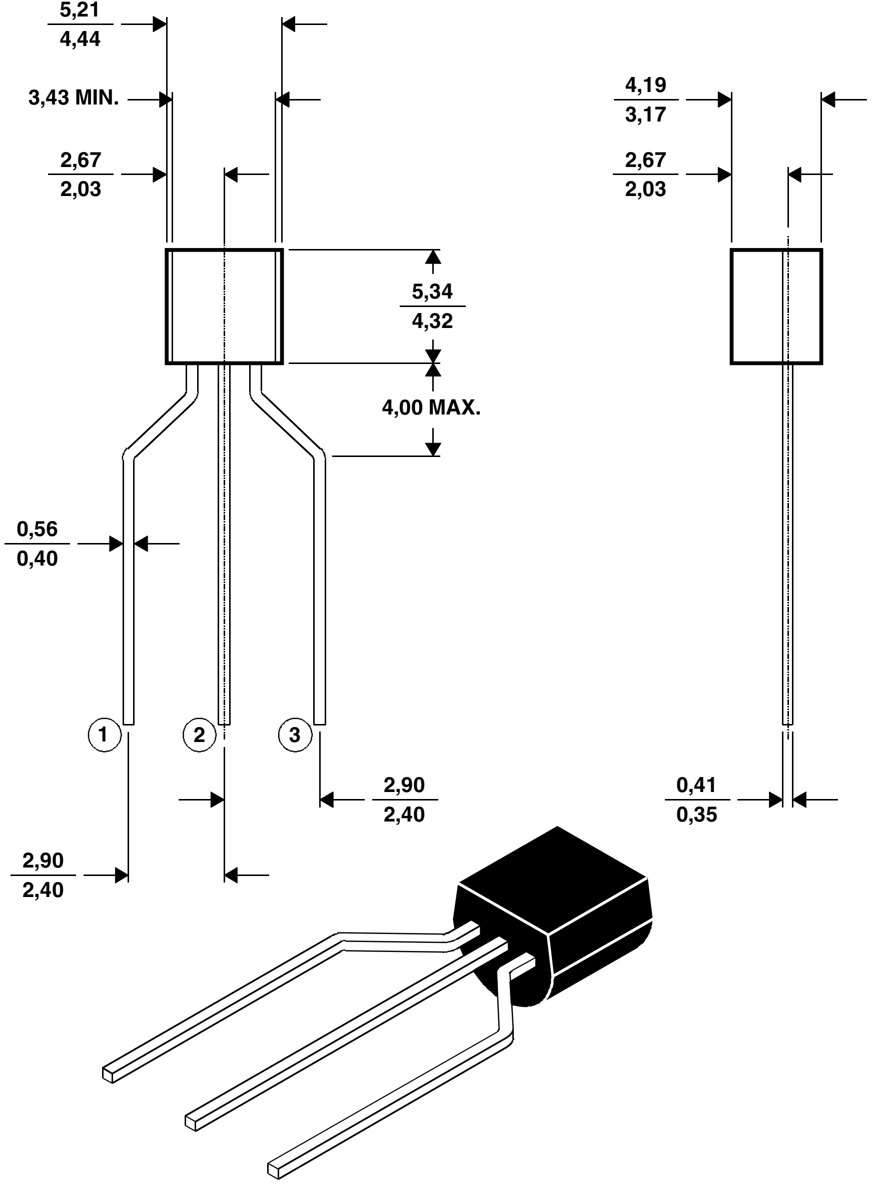
LP003 (TO-92)

3-pin cylindical 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.

LP003 (TO-92) - Formed Leads Version

LP003 Falls Within JEDEC
TO-226AA Dimensions



ALL LINEAR DIMENSIONS IN MILLIMETERS

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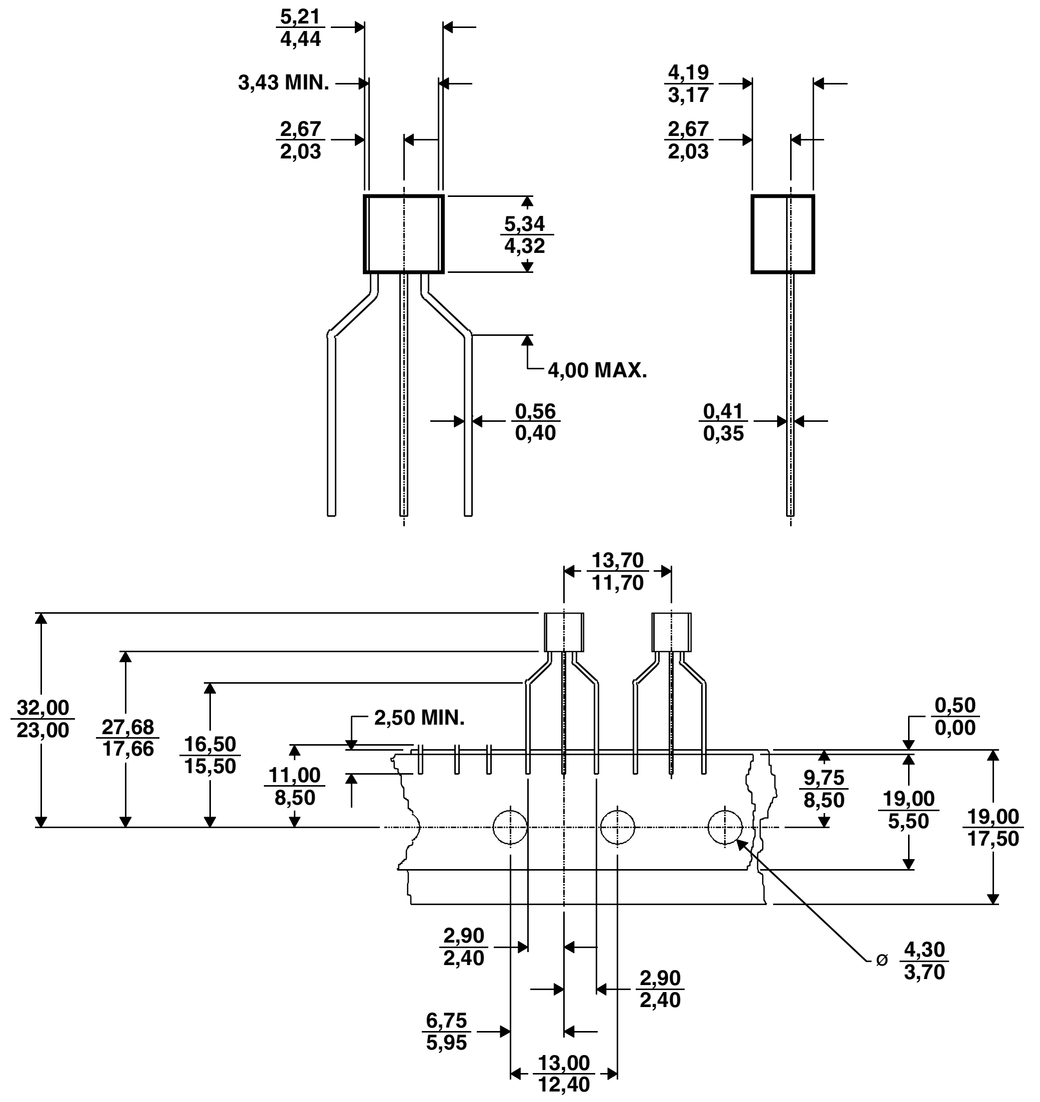
MECHANICAL DATA

LPR

tape dimensions

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



ALL LINEAR DIMENSIONS IN MILLIMETERS

MDXXAS