



T-27-23

NPN SMALL-SIGNAL TRANSISTORS

NPN small-signal transistors, in TO-92 envelopes. They are recommended for general purpose amplifier applications.

The complementary types are the JA100 and the JA101 respectively.

QUICK REFERENCE DATA

			JC500	JC501
Collector-emitter voltage	V_{CES}	max.	30	50 V
Collector-emitter voltage (open base)	V_{CEO}	max.	25	45 V
Collector current (DC)	I_C	max.	100	mA
DC current gain			90 to 600	
$I_C = 1 \text{ mA}; V_{CE} = 5 \text{ V}$	h_{FE}			
Total power dissipation up to $T_{amb} = 25^\circ\text{C}$	P_{tot}	max.	500	mW

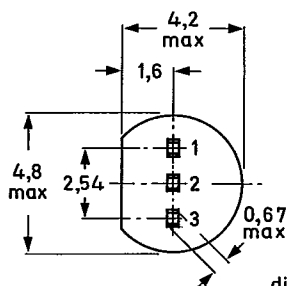
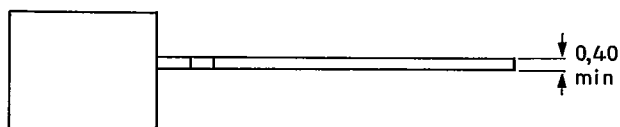
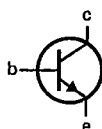
MECHANICAL DATA

Dimensions in mm

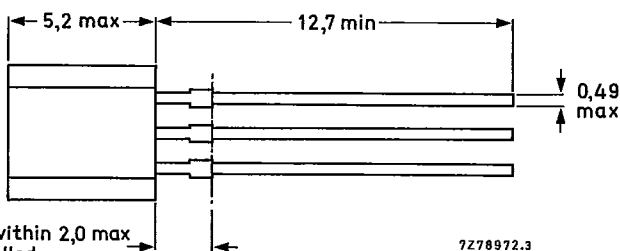
Fig. 1 TO-92.

Pinning:

- 1 = base
- 2 = collector
- 3 = emitter



diameter within 2,0 max
is uncontrolled



7278972.3

JC500
JC501

PHILIPS INTERNATIONAL

56E D ■ 7110826 0042459 683 ■ PHIN

RATINGS

T-27-23

Limiting values in accordance with the Absolute Maximum System (IEC 134)

			JC500	JC501
Collector-emitter voltage	V_{CES}	max.	30	50 V
Collector-emitter voltage (open base)	V_{CEO}	max.	25	45 V
Emitter-base voltage (open collector)	V_{EBO}	max.	6.0	V
Collector current (DC)	I_C	max.	100	mA
Collector current (peak)	I_{CM}	max.	200	mA
Base current (DC)	I_B	max.	50	mA
Total power dissipation up to $T_{amb} = 25\text{ }^{\circ}\text{C}$	P_{tot}	max.	500	mW
Storage temperature range	T_{stg}		-55 to + 150	$^{\circ}\text{C}$
Junction temperature	T_j	max.	150	$^{\circ}\text{C}$

THERMAL RESISTANCE

From junction to ambient in free air

$R_{th\ j-a}$	=	250	K/W
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CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

			JC500	JC501
Collector-emitter breakdown voltage $I_{CEO} = 2\text{ mA}$	$V_{(BR)CEO}$	>	25	45 V
Emitter-base breakdown voltage $I_{EBO} = 1\text{ }\mu\text{A}$	$V_{(BR)EBO}$	>	6.0	6.0 V
Collector cut-off current $V_{CE} = 25\text{ V}$	I_{CES}	<	15	— nA
$V_{CE} = 45\text{ V}$	I_{CES}	<	—	15 nA
$V_{CE} = 25\text{ V}; T_j = 125\text{ }^{\circ}\text{C}$	I_{CES}	<	4.0	— μA
$V_{CE} = 45\text{ V}; T_j = 125\text{ }^{\circ}\text{C}$	I_{CES}	<	—	4.0 μA
Emitter-base cut-off current $V_{EB} = 6\text{ V}$	I_{EBO}	<	1.0	μA
DC current gain * $I_C = 1\text{ mA}; V_{CE} = 5\text{ V}$	h_{FE}		90 to 600	
Collector-emitter saturation voltage $I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	$V_{CE\ sat}$	<	0.2	V
$I_C = 100\text{ mA}; I_B = 5\text{ mA}$	$V_{CE\ sat}$	<	0.6	V
Base-emitter saturation voltage $I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	$V_{BE\ sat}$	<	0.83	V
$I_C = 100\text{ mA}; I_B = 5\text{ mA}$	$V_{BE\ sat}$	<	1.06	V
Base-emitter voltage $I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	V_{BE}		0.55 to 0.7	V

* Group	O	P	Q	R
Range	90 - 180	135 - 270	200 - 400	300 - 600

NPN small-signal transistors

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JC500

JC501

PHILIPS INTERNATIONAL

56E D

7110826

0042460

3T5

PHIN

Transition frequency at $f = 100$ MHz;

$I_C = 10$ mA; $V_{CE} = 5$ V

f_T

typ.

130

MHz

Collector-base capacitance

$V_{CBO} = 10$ V; $f = 1$ MHz

C_{cb}

<

6.0

pF

Emitter-base capacitance

$V_{EBO} = 0.5$ V; $f = 1$ MHz

C_{eb}

typ.

8.0

pF

Noise figure at $R_S = 2$ k Ω ; $f = 1$ kHz;

$I_C = 200$ μ A; $-V_{CE} = 5$ V

F

<

10

dB