

T-37-17

**1.8W PNP GENERAL PURPOSE  
SMALL SIGNAL TRANSISTORS**

**2N2906  
2N2907**

These transistors are silicon planar epitaxial pnp devices conforming to JEDEC TO-18, BS SO-132A and IEC C7/B11 outlines.

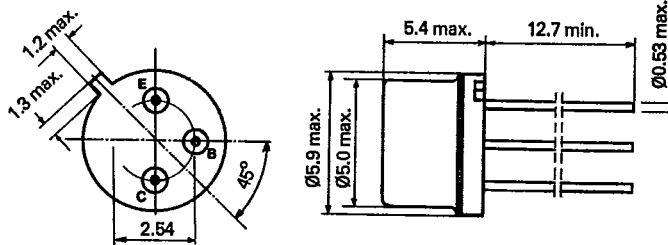
They are designed for high speed saturated switching and general purpose applications.

**QUICK REFERENCE DATA**

	2N2906	2N2907
V <sub>CB0</sub> max.	60V	
V <sub>CE0</sub> max.	40V	
V <sub>CE(sat)</sub> max. at I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA and T <sub>amb</sub> = 25°C	1.6V	
I <sub>C</sub> max.	600mA	
h <sub>FE</sub> min. at V <sub>CE</sub> = 10V, I <sub>C</sub> = 150mA and T <sub>amb</sub> = 25°C	40	100
P <sub>tot</sub> max. at T <sub>amb</sub> = 25°C	0.4W	

**Outline and Dimensions**

JEDEC TO-18  
BS SO-132A  
IEC C7/B11



All dimensions in millimetres  
For detail dimensions see Page 4

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In the interest of improved product design, changes to this specification may be made at any time.



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RATINGS 81C 00120 D

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The ratings quoted are limiting values of operating and environmental conditions and are in accordance with the absolute maximum rating system defined in BS 3494 (Part 1) and IEC Publication 134.

**Voltage Ratings**

V <sub>CB0</sub>	Collector-base voltage at I <sub>E</sub> = 0	60V
V <sub>CE0</sub>	Collector-emitter voltage at I <sub>B</sub> = 0	40V
V <sub>EBO</sub>	Emitter-base voltage at I <sub>C</sub> = 0	5V

**Current Rating**

I <sub>C</sub>	Collector current (continuous)	600mA
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**Power Ratings**

P <sub>tot</sub>	Total power dissipation	
	T <sub>amb</sub> = 25°C	0.4W
	T <sub>case</sub> = 25°C	1.8W

**Thermal Ratings**

T <sub>j</sub>	Operating junction temperature range	-65°C to +200°C
T <sub>stg</sub>	Storage temperature range	-65°C to +200°C

**CHARACTERISTICS****Electrical Characteristics**

	Min.	Typ.	Max.
I <sub>CB0</sub>	Collector-base cut-off current V <sub>CB</sub> = 50V, I <sub>E</sub> = 0 and T <sub>amb</sub> = 25°C V <sub>CB</sub> = 50V, I <sub>E</sub> = 0 and T <sub>amb</sub> = 150°C		20nA 20μA
I <sub>CEX</sub>	Collector-emitter cut-off current at V <sub>CE</sub> = 30V, V <sub>BE</sub> = 0.5V and T <sub>amb</sub> = 25°C		50nA
I <sub>BEX</sub>	Base-emitter cut-off current at V <sub>BE</sub> = 0.5V, V <sub>CE</sub> = 30V and T <sub>amb</sub> = 25°C		50nA
V <sub>CB0</sub>	Collector-base voltage at I <sub>C</sub> = 10μA, I <sub>E</sub> = 0 and T <sub>amb</sub> = 25°C	60V	
V <sub>CE0(sus)</sub>	*Collector-emitter sustaining voltage at I <sub>C</sub> = 10mA, I <sub>B</sub> = 0 and T <sub>amb</sub> = 25°C	40V	
V <sub>EBO</sub>	Emitter-base voltage at I <sub>C</sub> = 0, I <sub>E</sub> = 10μA and T <sub>amb</sub> = 25°C	5V	
V <sub>BE(sat)</sub>	*Base-emitter saturation voltage I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA and T <sub>amb</sub> = 25°C I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA and T <sub>amb</sub> = 25°C		1.3V 2.6V
V <sub>CE(sat)</sub>	*Collector-emitter saturation voltage I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA and T <sub>amb</sub> = 25°C I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA and T <sub>amb</sub> = 25°C		0.4V 1.6V

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SMALL SIGNAL TRANSISTORS**

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2N2907

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**Electrical Characteristics (continued)**

		Min.	Typ.	Max.	
hFE	Static value of common emitter forward current transfer ratio VCE = 10V, IC = 0.1mA and Tamb = 25°C				
		2N2906	20		
		2N2907	35		
		VCE = 10V, IC = 1.0mA and Tamb = 25°C	2N2906	25	
			2N2907	50	
		VCE = 10V, IC = 10mA and Tamb = 25°C	2N2906	35	
			2N2907	75	
		VCE = 10V, IC = 150mA* and Tamb = 25°C	2N2906	40	120
			2N2907	100	300
		VCE = 10V, IC = 500mA* and Tamb = 25°C	2N2906	20	
			2N2907	30	
		fT	Transition frequency at VCE = 20V, IC = 50mA, f = 100MHz and Tamb = 25°C		200MHz
CEBO	Emitter-base capacitance at VEB = 2V, IC = 0, f = 100 kHz and Tamb = 25°C			30pF	
CCBO	Collector-base capacitance at VCB = 10V, IE = 0, f = 100 kHz and Tamb = 25°C			8pF	

\*Pulsed; tp = 300 μs; duty cycle 1%

**Switching Times**

(IC = 150mA, IB1 = -IB2 = 15mA, VCC = 30V (td and tr) or 6V (ts and tf) and Tamb = 25°C)

		Min.	Typ.	Max.
td	Delay time			10ns
tr	Rise time			40ns
ts	Storage time			80ns
tf	Fall time			30ns

**Thermal Characteristics**

		Min.	Typ.	Max.
Rth(j-case)	Thermal resistance (junction to case)			97.3 deg C/W
Rth(j-amb)	Thermal resistance (junction to ambient)			437.5 deg C/W

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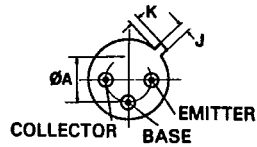
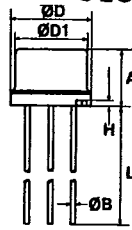
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**MECHANICAL DETAILS**  
**Outline and Dimensions**

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Ref.	Millimetres		Inches		Notes
	Min.	Max.	Min.	Max.	
A	4.32	5.33	0.170	0.210	
ØA	2.54 nom.		0.100 nom.		
ØB	0.41	0.53	0.016	0.021	
ØD	5.31	5.84	0.209	0.230	
ØD1	4.52	4.95	0.178	0.195	
H	0.13	0.76	0.005	0.030	
J	0.92	1.16	0.036	0.046	
K	0.71	1.21	0.028	0.048	
L	12.7	—	0.500	—	

**Notes**

- The transistors conform to BS SO-132A, IEC C7/B11 and JEDEC TO-18 outlines.
- The millimetre dimensions are derived from the inch dimensions.

Weight 0.3 gramme.

**INSTALLATION NOTES**

The emitter, base and collector leads are identified on the transistor outline.  
 Note the collector is connected also to the case.

The leads must not be bent within 0.06in (1.5mm) of the seals.

When soldering, a thermal shunt should be used to protect the transistor.

The transistor leads may be dip-soldered at a temperature of 240°C for 10 seconds up to a point 0.04in (1mm) from the seals.

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