

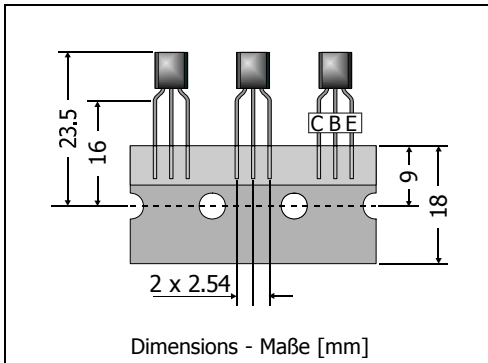
2N3906

PNP

Si-Epitaxial-Planar Switching Transistors
Si-Epitaxial-Planar Schalttransistoren

PNP

Version 2006-09-12



Power dissipation

625 mW

Verlustleistung

Plastic case

TO-92

Kunststoffgehäuse

(10D3)

Weight approx. – Gewicht ca.

0.18 g

Plastic material has UL classification 94V-0

Gehäusematerial UL94V-0 klassifiziert

Standard packaging taped in ammo pack

Standard Lieferform getupet in Ammo-Pack

Maximum ratings ($T_A = 25^\circ\text{C}$)Grenzwerte ($T_A = 25^\circ\text{C}$)

			2N3906
Collector-Emitter-volt. – Kollektor-Emitter-Spannung	B open	- V_{CEO}	40 V
Collector-Base-voltage – Kollektor-Basis-Spannung	E open	- V_{CBO}	40 V
Emitter-Base-voltage – Emitter-Basis-Spannung	C open	- V_{EBO}	5 V
Power dissipation – Verlustleistung		P_{tot}	625 mW ¹⁾
Collector current – Kollektorstrom (dc)		- I_C	200 mA
Junction temperature – Sperrschichttemperatur		T_j	-55...+150°C
Storage temperature – Lagerungstemperatur		T_s	-55...+150°C

Characteristics ($T_j = 25^\circ\text{C}$)Kennwerte ($T_j = 25^\circ\text{C}$)

		Min.	Typ.	Max.
DC current gain – Kollektor-Basis-Stromverhältnis ²⁾				
- $I_C = 0.1\text{ mA}$, - $V_{CE} = 1\text{ V}$	h_{FE}	60	–	–
- $I_C = 1\text{ mA}$, - $V_{CE} = 1\text{ V}$	h_{FE}	80	–	–
- $I_C = 10\text{ mA}$, - $V_{CE} = 1\text{ V}$	h_{FE}	100	–	300
- $I_C = 50\text{ mA}$, - $V_{CE} = 1\text{ V}$	h_{FE}	60	–	–
- $I_C = 100\text{ mA}$, - $V_{CE} = 1\text{ V}$	h_{FE}	30	–	–
Collector-Emitter saturation voltage – Kollektor-Emitter-Sättigungsspg. ²⁾				
- $I_C = 10\text{ mA}$, - $I_B = 1\text{ mA}$	- V_{CEsat}	–	–	0.25 V
- $I_C = 50\text{ mA}$, - $I_B = 5\text{ mA}$	- V_{CEsat}	–	–	0.40 V
Base-Emitter saturation voltage – Basis-Emitter-Sättigungsspannung ²⁾				
- $I_C = 10\text{ mA}$, - $I_B = 1\text{ mA}$	- V_{BEsat}	0.65 V	–	0.85 V
- $I_C = 50\text{ mA}$, - $I_B = 5\text{ mA}$	- V_{BEsat}	–	–	0.95 V

1 Mounted on P.C. board with 3 mm² copper pad at each terminal
 Montage auf Leiterplatte mit 3 mm² Kupferbelag (Lötpad) an jedem Anschluss

2 Tested with pulses $t_p = 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$ – Gemessen mit Impulsen $t_p = 300\text{ }\mu\text{s}$, Schaltverhältnis $\leq 2\%$

Characteristics ($T_j = 25^\circ\text{C}$)Kennwerte ($T_j = 25^\circ\text{C}$)

		Min.	Typ.	Max.
Collector-Emitter cutoff current – Kollektor-Emitter-Reststrom - $V_{CE} = 30\text{ V}$, - $V_{EB} = 3\text{ V}$	- I_{CBX}	–	–	50 nA
Emitter-Base cutoff current – Emitter-Basis-Reststrom - $V_{CE} = 30\text{ V}$, - $V_{EB} = 3\text{ V}$	- I_{EBV}	–	–	50 nA
Gain-Bandwidth Product – Transitfrequenz - $I_C = 10\text{ mA}$, - $V_{CE} = 20\text{ V}$, $f = 100\text{ MHz}$	f_T	250 MHz	–	–
Collector-Base Capacitance – Kollektor-Basis-Kapazität - $V_{CB} = 5\text{ V}$, $I_E = i_e = 0$, $f = 1\text{ MHz}$	C_{CBO}	–	–	4.5 pF
Emitter-Base Capacitance – Emitter-Basis-Kapazität - $V_{EB} = 0.5\text{ V}$, $I_C = i_c = 0$, $f = 1\text{ MHz}$	C_{EBO}	–	–	10 pF
Noise figure – Rauschzahl - $V_{CE} = 5\text{ V}$, - $I_C = 100\text{ }\mu\text{A}$, $R_G = 1\text{ k}\Omega$, $f = 1\text{ kHz}$	F	–	–	4 dB
Switching times – Schaltzeiten (between 10% and 90% levels)				
delay time - $V_{CC} = 3\text{ V}$, - $V_{BE} = 0.5\text{ V}$	t_d	–	–	35 ns
rise time - $I_C = 10\text{ mA}$, - $I_{B1} = 1\text{ mA}$	t_r	–	–	35 ns
storage time - $V_{CC} = 3\text{ V}$, - $I_C = 10\text{ mA}$,	t_s	–	–	225 ns
fall time - $I_{B1} = -I_{B2} = 1\text{ mA}$	t_f	–	–	75 ns
Thermal resistance junction to ambient air Wärmewiderstand Sperrschicht – umgebende Luft	R_{thA}	< 200 K/W ¹⁾		
Recommended complementary NPN transistors Empfohlene komplementäre NPN-Transistoren		2N3904		

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Montage auf Leiterplatte mit 3 mm² Kupferbelag (Löt-pad) an jedem Anschluss