

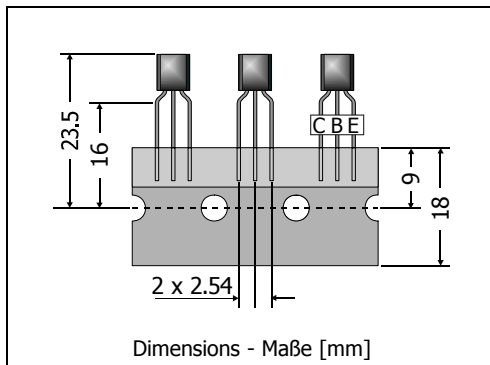
2N4403

PNP

General Purpose Si-Epitaxial Planar Transistors
Si-Epitaxial Planar-Transistoren für universellen Einsatz

PNP

Version 2006-10-17



Power dissipation
Verlustleistung

625 mW

Plastic case
Kunststoffgehäuse

TO-92
(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 gegurtet in Ammo-Pack

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

			2N4403
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_{EB0}	5 V
Power dissipation – Verlustleistung		P_{tot}	625 mW ¹⁾
Collector current – Kollektorstrom (dc)		- I_C	600 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}	30	–	–
- $I_C = 1\text{ mA}$, - $V_{CE} = 1\text{ V}$	h_{FE}	60	–	–
- $I_C = 10\text{ mA}$, - $V_{CE} = 1\text{ V}$	h_{FE}	100	–	–
- $I_C = 150\text{ mA}$, - $V_{CE} = 2\text{ V}$	h_{FE}	100	–	300
- $I_C = 500\text{ mA}$, - $V_{CE} = 2\text{ V}$	h_{FE}	20	–	–
h-Parameters at/bei - $V_{CE} = 10\text{ V}$, - $I_C = 1\text{ mA}$, $f = 1\text{ kHz}$				
Small signal current gain – Kleinsignal-Stromverstärkung	h_{fe}	60	–	500
Input impedance – Eingangs-Impedanz	h_{ie}	1.5 kΩ	–	15 kΩ
Output admittance – Ausgangs-Leitwert	h_{oe}	1 μS	–	30 μS
Reverse voltage transfer ratio – Spannungsrückwirkung	h_{re}	$0.1 \cdot 10^{-4}$	–	$8 \cdot 10^{-4}$

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 $t_p = 300\text{ μs}$, duty cycle $\leq 2\%$ – Gemessen mit Impulsen $t_p = 300\text{ μs}$, Schaltverhältnis $\leq 2\%$

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

		Min.	Typ.	Max.
Collector-Emitter saturation voltage – Kollektor-Emitter-Sättigungsspg. ²⁾				
- I _C = 150 mA, - I _B = 15 mA	- V _{CEsat}	–	–	0.40 V
- I _C = 500 mA, - I _B = 50 mA	- V _{CEsat}	–	–	0.75 V
Base-Emitter saturation voltage – Basis-Emitter-Sättigungsspannung ²⁾				
- I _C = 150 mA, - I _B = 15 mA	- V _{BEsat}	0.75 V	–	0.95 V
- I _C = 500 mA, - I _B = 50 mA	- V _{BEsat}	–	–	1.3 V
Collector-Emitter cutoff current – Kollektor-Emitter-Reststrom				
- V _{CE} = 35 V, - V _{EB} = 0,4 V	- I _{CEX}	–	–	100 nA
Emitter-Base cutoff current – Emitter-Basis-Reststrom				
- V _{CE} = 35 V, - V _{EB} = 0,4 V	- I _{EBV}	–	–	100 nA
Gain-Bandwidth Product – Transitfrequenz				
- I _C = 20 mA, - V _{CE} = 10 V, f = 100 MHz	f _T	200 MHz	–	–
Collector-Base Capacitance – Kollektor-Basis-Kapazität				
- V _{CB} = 5 V, I _E = i _e = 0, f = 1 MHz	C _{CBO}	–	–	8.5 pF
Emitter-Base Capacitance – Emitter-Basis-Kapazität				
- V _{EB} = 0.5 V, I _C = i _c = 0, f = 1 MHz	C _{EBO}	–	–	30 pf
Switching times – Schaltzeiten (between 10% and 90% levels)				
delay time	t _d	–	–	15 ns
rise time	t _r	–	–	20 ns
storage time	t _s	–	–	225 ns
fall time	t _f	–	–	30 ns
Thermal resistance junction to ambient air Wärmewiderstand Sperrschicht – umgebende Luft		R _{thA}	< 420 K/W ¹⁾	
Recommended complementary NPN transistors Empfohlene komplementäre NPN-Transistoren		2N4401		

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 $\leq 2\%$

¹⁾ Mounted on P.C. board with 3 mm^2 copper pad at each terminal
Montage auf Leiterplatte mit 3 mm^2 Kupferbelag (Löt pad) an jedem Anschluss