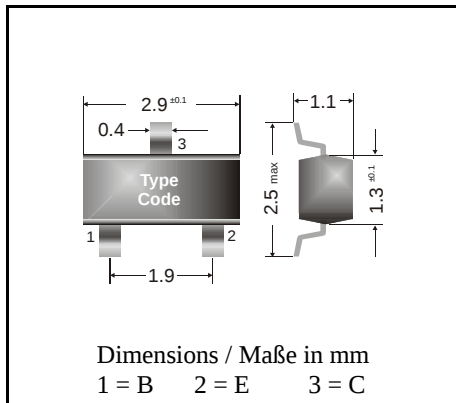


PNP

Surface mount Si-Epitaxial Planar Transistors
Si-Epitaxial Planar Transistoren für die Oberflächenmontage

PNP

Version 2004-05-04



Power dissipation – Verlustleistung 250 mW

Plastic case SOT-23
Kunststoffgehäuse (TO-236)

Weight approx. – Gewicht ca. 0.01 g

Plastic material has UL classification 94V-0
Gehäusematerial UL94V-0 klassifiziertStandard packaging taped and reeled
Standard Lieferform gegurtet auf Rolle**Maximum ratings ($T_A = 25^\circ\text{C}$)****Grenzwerte ($T_A = 25^\circ\text{C}$)**

			MMBT2907	MMBT2907A
Collector-Emitter-voltage	B open	- V_{CE0}	40 V	60 V
Collector-Base-voltage	E open	- V_{CB0}	60 V	
Emitter-Base-voltage	C open	- V_{EB0}	5 V	
Power dissipation – Verlustleistung		P_{tot}	250 mW ¹⁾	
Collector current – Kollektorstrom (dc)		- I_C	600 mA	
Peak Collector current – Kollektor-Spitzenstrom		- I_{CM}	800 mA	
Junction temp. – Sperrschichttemperatur		T_j	150°C	
Storage temperature – Lagerungstemperatur		T_S	- 65...+ 150°C	

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

			Min.	Typ.	Max.
Collector-Base cutoff current – Kollektorreststrom					
$I_E = 0$, - $V_{CB} = 50\text{ V}$	MMBT2709	- I_{CB0}	—	—	20 nA
	MMBT2709A	- I_{CB0}	—	—	10 nA
$I_E = 0$, - $V_{CB} = 50\text{ V}$, $T_j = 150^\circ\text{C}$		- I_{CB0}	—	—	20 μA
Collector saturation volt. – Kollektor-Sättigungsspg. ¹⁾					
$- I_C = 150\text{ mA}$, - $I_B = 15\text{ mA}$		- V_{CEsat}	—	—	400 mV
$- I_C = 500\text{ mA}$, - $I_B = 50\text{ mA}$		- V_{CEsat}	—	—	1.6 V
Base saturation voltage – Basis-Sättigungsspannung ¹⁾					
$- I_C = 150\text{ mA}$, - $I_B = 15\text{ mA}$		- V_{BEsat}	—	—	1.3 V
$- I_C = 500\text{ mA}$, - $I_B = 50\text{ mA}$		- V_{BEsat}	—	—	2.6 V

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

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

			Min.	Typ.	Max.
DC current gain – Kollektor-Basis-Stromverhältnis ¹⁾					
- V _{CE} = 10 V, - I _C = 0.1 mA	MMBT2709	h _{FE}	35	–	–
	MMBT2709A	h _{FE}	75	–	–
- V _{CE} = 10 V, - I _C = 1 mA	MMBT2709	h _{FE}	50	–	–
	MMBT2709A	h _{FE}	100	–	–
- V _{CE} = 10 V, - I _C = 10 mA	MMBT2709	h _{FE}	75	–	–
	MMBT2709A	h _{FE}	100	–	–
- V _{CE} = 10 V, - I _C = 500 mA	MMBT2709	h _{FE}	30	–	–
	MMBT2709A	h _{FE}	50	–	–
- V _{CE} = 10 V, - I _C = 150 mA		h _{FE}	100	–	300
Gain-Bandwidth Product – Transistfrequenz					
- V _{CE} = 20 V, - I _C = 50 mA, f = 100 MHz		f _T	200 MHz	–	–
Collector-Base Capacitance – Kollektor-Basis-Kapazität					
- V _{CB} = 10 V, I _E = i _e = 0, f = 1 MHz		C _{CB0}	–	–	8 pF
Emitter-Base Capacitance – Emitter-Basis-Kapazität					
- V _{EB} = 2 V, I _C = i _c = 0, f = 1 MHz		C _{EB0}	–	–	30 pF
Noise figure – Rauschzahl					
- V _{CE} = 10 V, - I _C = 100 µA, R _S = 1 kΩ, f = 10 Hz...15.7 kHz		F	–	4 dB	–
Switching times – Schaltzeiten					
turn-on time	- V _{CC} = 30 V, - V _{BE} = 1.5 V - I _C = 150 mA, - I _{B1} = 15 mA	t _{on}	–	–	45 ns
delay time		t _d	–	–	10 ns
rise time		t _r	–	–	40 ns
turn-off time	- V _{CC} = 30 V, - I _C = 150 mA - I _{B1} = - I _{B2} =15 mA	t _{off}	–	–	100 ns
storage time		t _s	–	–	80 ns
fall time		t _f	–	–	30 ns
Thermal resistance junction to ambient air Wärmewiderstand Sperrschicht – umgebende Luft			R _{thA}	420 K/W ²⁾	
Recommended complementary NPN transistors Empfohlene komplementäre NPN-Transistoren			MMBT2222, MMBT2222A		

¹⁾ 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 $\leq 2\%$

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