

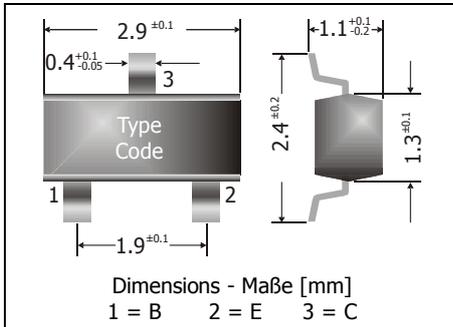
MMBT2222A

NPN

Surface Mount Si-Epi-Planar Switching Transistors
Si-Epi-Planar Schalttransistoren für die Oberflächenmontage

NPN

Version 2015-05-12



Power dissipation – Verlustleistung

250 mW

Plastic case
KunststoffgehäuseSOT-23
(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 getupet auf Rolle

Maximum ratings (T_A = 25°C)

Grenzwerte (T_A = 25°C)

			MMBT2222A
Collector-Emitter-volt. – Kollektor-Emitter-Spannung	B open	V _{CEO}	40 V
Collector-Base-voltage – Kollektor-Basis-Spannung	E open	V _{CB0}	75 V
Emitter-Base-voltage – Emitter-Basis-Spannung	C open	V _{EB0}	6 V
Power dissipation – Verlustleistung		P _{tot}	250 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°C)

Kennwerte (T_j = 25°C)

			Min.	Typ.	Max.
DC current gain – Kollektor-Basis-Stromverhältnis ²⁾					
I _C = 0.1 mA, V _{CE} = 10 V		h _{FE}	35	–	–
I _C = 1 mA, V _{CE} = 10 V		h _{FE}	50	–	–
I _C = 10 mA, V _{CE} = 10 V		h _{FE}	75	–	–
I _C = 150 mA, V _{CE} = 10 V		h _{FE}	100	–	300
I _C = 500 mA, V _{CE} = 10 V ²⁾	MMBT2222A	h _{FE}	40	–	–
h-Parameters at/bei V _{CE} = 10 V, f = 1 kHz, I _C = 1 mA / 10 mA					
Small signal current gain Kleinsignal-Stromverstärkung	MMBT2222A	h _{fe}	75	–	375
Input impedance – Eingangs-Impedanz	MMBT2222A	h _{ie}	0.25 kΩ	–	1.25 kΩ
Output admittance – Ausgangs-Leitwert	MMBT2222A	h _{oe}	25 μS	–	200 μS

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

2 Tested with pulses t_p = 300 μs, duty cycle ≤ 2% – Gemessen mit Impulsen t_p = 300 μs, Schaltverhältnis ≤ 2%

Characteristics (T_j = 25°C)**Kennwerte (T_j = 25°C)**

			Min.	Typ.	Max.
Collector-Emitter saturation voltage – Kollektor-Sättigungsspannung ²⁾					
I _C = 150 mA, I _B = 15 mA	MMBT2222A	V _{CEsat}	–	–	0.3 V
I _C = 500 mA, I _B = 50 mA	MMBT2222A	V _{CEsat}	–	–	1.0 V
Base-Emitter saturation voltage – Basis-Sättigungsspannung ²⁾					
I _C = 150 mA, I _B = 15 mA	MMBT2222A	V _{BEsat}	0.65 V	–	1.2 V
I _C = 500 mA, I _B = 50 mA	MMBT2222A	V _{BEsat}	–	–	2.0 V
Collector-Base cutoff current – Kollektor-Basis-Reststrom					
V _{CB} = 60 V, (E open)	MMBT2222A	I _{CBO}	–	–	10 nA
V _{CB} = 60 V, T _j = 125°C, (E open)	MMBT2222A	I _{CBO}	–	–	10 µA
Emitter-Base cutoff current – Emitter-Basis-Reststrom					
V _{EB} = 3 V, (C open)	MMBT2222A	I _{EB0}	–	–	100 nA
Gain-Bandwidth Product – Transitfrequenz					
V _{CE} = 20 V, I _C = 20 mA, f = 100 MHz		f _T	250 MHz	–	–
Collector-Base Capacitance – Kollektor-Basis-Kapazität					
V _{CB} = 10 V, I _E = i _e = 0, f = 1 MHz		C _{CBO}	–	–	8 pF
Emitter-Base Capacitance – Emitter-Basis-Kapazität					
V _{EB} = 0.5 V, I _C = i _c = 0, f = 1 MHz		C _{EBO}	–	–	25 pF
Noise figure – Rauschzahl					
V _{CE} = 10 V, I _C = 100 µA, R _G = 1 kΩ, f = 1 kHz	MMBT2222A	F	–	–	4 dB
Switching times – Schaltzeiten (between 10% and 90% levels)					
delay time	V _{CC} = 3 V, V _{BE} = 0.5 V	t _d	–	–	10 ns
rise time	I _C = 150 mA, I _{B1} = 15 mA	t _r	–	–	25 ns
storage time	V _{CC} = 3 V, I _C = 150 mA,	t _s	–	–	225 ns
fall time	I _{B1} = I _{B2} = 15 mA	t _f	–	–	60 ns
Thermal resistance junction to ambient air Wärmewiderstand Sperrschicht – umgebende Luft			R _{thA}	< 420 K/W ¹⁾	
Recommended complementary PNP transistors Empfohlene komplementäre PNP-Transistoren			MMBT2709A		
Marking - Stempelung			MMBT2222A = 1P		

²⁾ Tested with pulses t_p = 300 µs, duty cycle ≤ 2% – Gemessen mit Impulsen t_p = 300 µs, Schaltverhältnis ≤ 2%

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