

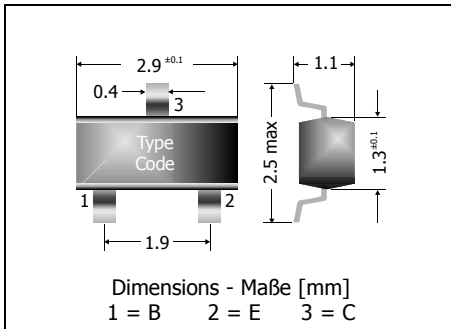
MMBT2369 / MMBT2369A

NPN

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

NPN

Version 2006-06-02



Power dissipation – Verlustleistung

250 mW

Plastic case
Kunststoffgehäuse

SOT-23
(TO-236)

Weight approx. – Gewicht ca.

0.01 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 ($T_A = 25^\circ\text{C}$)

			MMBT2369	MMBT2369A
Collector-Emitter-volt. – Kollektor-Emitter-Spannung	E-B short	V_{CES}	40 V	15 V
Collector-Emitter-volt. – Kollektor-Emitter-Spannung	B open	V_{CEO}	15 V	15 V
Collector-Base-voltage – Kollektor-Basis-Spannung	E open	V_{CBO}	40 V	40 V
Emitter-Base-voltage – Emitter-Basis-Spannung	C open	V_{EBO}	4.5 V	
Power dissipation – Verlustleistung		P_{tot}	250 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 = 10 mA, V _{CE} = 1 V	MMBT2369	h _{FE}	40	–	120
I _C = 100 mA, V _{CE} = 2 V		h _{FE}	20	–	–
I _C = 10 mA, V _{CE} = 1 V	MMBT2369A	h _{FE}	–	–	120
I _C = 10 mA, V _{CE} = 0.35 V		h _{FE}	40	–	–
I _C = 10 mA, V _{CE} = 0.35 V, T _j = -55°C		h _{FE}	20	–	–
I _C = 30 mA, V _{CE} = 0.4 V		h _{FE}	30	–	–
I _C = 100 mA, V _{CE} = 1 V		h _{FE}	20	–	–
Collector-Emitter saturation voltage – Kollektor-Emitter-Sättigungsspg. ²⁾					
I _C = 10 mA, I _B = 1 mA	MMBT2369	V _{CEsat}	–	–	0.25 V
I _C = 10 mA, I _B = 1 mA	MMBT2369A	V _{CEsat}	–	–	0.20 V
I _C = 10 mA, I _B = 1 mA, T _j = 125°C		V _{CEsat}	–	–	0.30 V
I _C = 30 mA, I _B = 3 mA		V _{CEsat}	–	–	0.25 V
I _C = 100 mA, I _B = 10 mA		V _{CEsat}	–	–	0.50 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

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°C)
Kennwerte (T_j = 25°C)

			Min.	Typ.	Max.
Base-Emitter saturation voltage – Basis-Emitter-Sättigungsspannung ²⁾					
I _C = 10 mA, I _B = 1 mA	MMBT2369A	V _{BEsat}	0.7 V	–	0.85 V
I _C = 10 mA, I _B = 1 mA, T _j = -55°C		V _{BEsat}	–	–	1.02 V
I _C = 30 mA, I _B = 3 mA		V _{BEsat}	–	–	1.15 V
I _C = 100 mA, I _B = 10 mA		V _{BEsat}	–	–	1.60 V
Collector-Base cutoff current – Kollektor-Basis-Reststrom					
V _{CB} = 20 V, (E open)		I _{CBO}	–	–	0.4 µA
V _{CB} = 20 V, T _j = 125°C, (E open)		I _{CBO}	–	–	30 µA
Collector-Emitter cutoff current – Kollektor-Emitter-Reststrom					
V _{CE} = 20 V, (B-E short)	MMBT2369A	I _{CES}	–	–	0.4 µA
Collector-Emitter breakdown voltage	I _C = 10 µA	V _{(BR)CES}	40 V	–	–
Collector-Emitter breakdown voltage ²⁾	I _C = 10 mA	V _{(BR)CEO}	15 V	–	–
Collector-Base breakdown voltage	I _C = 10 µA	V _{(BR)CBO}	40 V	–	–
Emitter-Base-breakdown voltage	I _C = 10 µA	V _{(BR)EBO}	4.5 V	–	–
Collector-Base Capacitance – Kollektor-Basis-Kapazität					
V _{CB} = 5 V, I _E = i _e = 0, f = 1 MHz		C _{CBO}	–	–	4 pF
Small signal current gain – Kleinsignal-Stromverstärkung					
V _{CE} = 10 V, I _C = 10 mA, f = 100 MHz		h _{fe}	5	–	–
Switching times – Schaltzeiten					
storage time	I _{B1} = I _{B2} = I _C = 10 mA	t _s	–	5 ns	13 ns
turn-on time	V _{CC} = 3 V, I _C = 10 mA, I _{B1} = 3 mA	t _{on}	–	8 ns	12 ns
turn-off time	V _{CC} = 3 V, I _C = 10 mA I _{B1} = 3 mA, I _{B2} = 1.5 mA	t _{off}	–	10 ns	18 ns
Thermal resistance junction to ambient air Wärmewiderstand Sperrschicht – umgebende Luft		R _{thA}	< 420 K/W ¹⁾		
Marking - Stempelung			MMBT2369 = 1J MMBT2369A = 1JA		

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 (Lötpad) an jedem Anschluss