

SILICON N-P-N HIGH-VOLTAGE TRANSISTORS

N-P-N high-voltage small-signal transistors for general purposes and especially telephony applications and encapsulated in a SOT-23 package.

P-N-P complements are BSR20 and BSR20A.

QUICK REFERENCE DATA

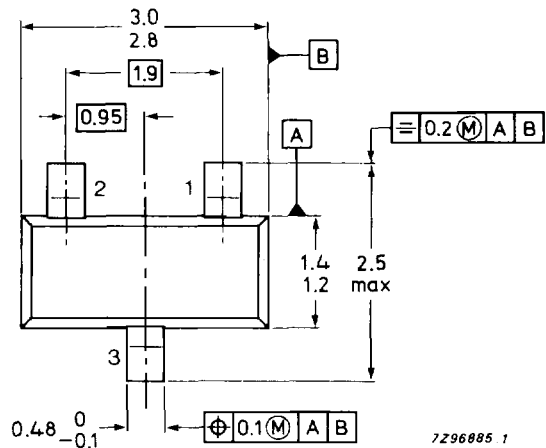
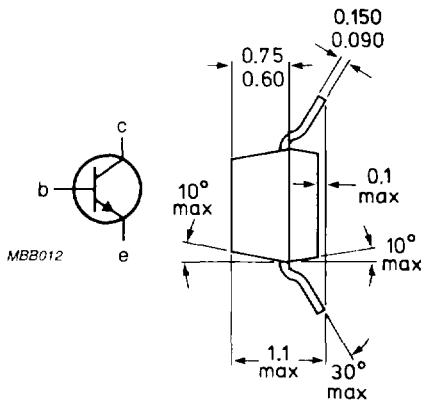
		BSR19	BSR19A
Collector-base voltage (open emitter)	V_{CB0} max.	160	180 V
Collector-emitter voltage (open base)	V_{CEO} max.	140	160 V
Collector current	I_C max.	600	600 mA
Total power dissipation up to $T_{amb} = 25\text{ }^\circ\text{C}$	P_{tot} max.	250	250 mW
Junction temperature	T_j max.	150	150 $^\circ\text{C}$
Collector-emitter saturation voltage $I_C = 50\text{ mA}; I_B = 5\text{ mA}$	V_{CEsat} max.	0,25	0,20 V
D.C. current gain $I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$	h_{FE} min.	60	80

MECHANICAL DATA

Fig. 1 SOT-23.

Pinning:

- 1 = base
- 2 = emitter
- 3 = collector



TOP VIEW

Dimensions in mm

Marking code

BSR19 = U35

BSR19A = U36

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

			BSR19	BSR19A
Collector-base voltage (open emitter)	V _{CBO}	max.	160	180 V
Collector-emitter voltage (open base)	V _{CEO}	max.	140	160 V
Emitter-base voltage (open collector)	V _{EBO}	max.	6	V
Collector current	I _C	max.	600	mA
Total power dissipation up to T _{amb} = 25 °C	P _{tot}	max.	250	mW
Junction temperature	T _j	max.	150	°C
Storage temperature	T _{stg}		-65 to + 150	°C
THERMAL RESISTANCE				
From junction to ambient*	R _{th j-a}	=	500	K/W

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified

			BSR19	BSR19A
Collector cut-off current				
I _E = 0; V _{CB} = 100 V	I _{CBO}	max.	100	nA
I _E = 0; V _{CB} = 120 V	I _{CBO}	max.		50 nA
I _E = 0; V _{CB} = 100 V; T _{amb} = 100 °C	I _{CBO}	max.	100	μA
I _E = 0; V _{CB} = 120 V; T _{amb} = 100 °C	I _{CBO}	max.		50 μA
Emitter cut-off current				
I _C = 0; V _{EB} = 4,0 V	I _{EBO}	max.	50	50 nA
Breakdown voltages				
I _C = 1,0 mA; I _B = 0	V _{(BR)CEO}	min.	140	160 V
I _C = 100 μA; I _E = 0	V _{(BR)CBO}	min.	160	180 V
I _C = 0; I _E = 10 μA	V _{(BR)EBO}	min.	6,0	6,0 V
Saturation voltages				
I _C = 10 mA; I _B = 1,0 mA	V _{CEsat}	max.	0,15	0,15 V
	V _{BEsat}	max.	1,0	1,0 V
I _C = 50 mA; I _B = 5,0 mA	V _{CEsat}	max.	0,25	0,20 V
	V _{BEsat}	max.	1,2	1,0 V
D.C. current gain				
I _C = 1,0 mA; V _{CE} = 5 V	h _{FE}	min.	60	80
I _C = 10 mA; V _{CE} = 5 V	h _{FE}	min.	60	80
	h _{FE}	max.	250	250
I _C = 50 mA; V _{CE} = 5 V	h _{FE}	min.	20	30
Small-signal current gain				
I _C = 1,0 mA; V _{CE} = 10 V; f = 1 kHz	h _{fe}	min.	50	50
	h _{fe}	max.	200	200
Output capacitance at f = 1 MHz				
I _E = 0; V _{CB} = 10 V	C _c	max.	6	6 pF

* Mounted on an FR4 printed-circuit board 8 mm x 10 mm x 0.7 mm.

			BSR19	BSR19A
Input capacitance at $f = 1$ MHz $I_C = 0$; $V_{EB} = 0,5$ V	C_i	max.	30	30 pF
Transition frequency at $f = 100$ MHz $I_C = 10$ mA; $V_{CE} = 10$ V	f_T	min. max.	100 300	100 MHz 300 MHz
Noise figure at $R_S = 1$ k Ω $I_C = 250$ μ A; $V_{CE} = 5$ V; $f = 10$ Hz to 15,7 kHz	F	max.	10	8 dB