

SILICON N-P-N HIGH-VOLTAGE TRANSISTORS

N-P-N high-voltage small-signal transistors

Marking

BSR19 = U35

BSR19A = U36

PACKAGE OUTLINE DETAILS

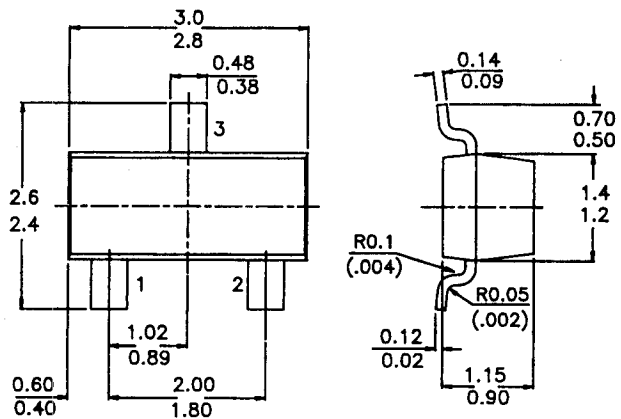
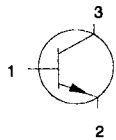
ALL DIMENSIONS IN mm

Pin configuration

1 = BASE

2 = EMITTER

3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

Collector-base voltage (open emitter)
Collector-emitter voltage (open base)
Collector current
Total power dissipation up to $T_{amb} = 25^{\circ}\text{C}$
Junction temperature
Collector-emitter saturation voltage
 $I_C = 50\text{ mA}$; $I_B = 5\text{ mA}$
D.C. current gain
 $I_C = 10\text{ mA}$; $V_{CE} = 5\text{ V}$

		BSR19	BSR19A	
V_{CB0}	max.	160	180	V
V_{CE0}	max.	140	160	V
I_C	max.	600	600	mA
P_{tot}	max.	250	250	mW
T_j	max.	150	150	$^{\circ}\text{C}$
V_{CEsat}	max.	0,25	0,20	V
h_{FE}	min.	60	80	

RATINGS (at $T_A = 25^\circ\text{C}$ unless otherwise specified)

Limiting values

Collector-base voltage (open emitter)	V_{CB0}	max.	160	180	V
Collector-emitter voltage (open base)	V_{CE0}	max.	140	160	V
Emitter-base voltage (open collector)	V_{EB0}	max.	6		V
Collector current	I_C	max.	600		mA
Total power dissipation up to $T_{amb} = 25^\circ\text{C}$	P_{tot}	max.	250		mW
Junction temperature	T_j	max.	150		$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150		$^\circ\text{C}$

THERMAL RESISTANCE

From junction to ambient	$R_{th\ j-a}$	=	500	K/W
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CHARACTERISTICS $T_{amb} = 25^\circ\text{C}$ unless otherwise specified

			BSR19	BSR19A
Collector cut-off current				
$I_E = 0; V_{CB} = 100\text{ V}$	I_{CBO}	max.	100	nA
$I_E = 0; V_{CB} = 120\text{ V}$	I_{CBO}	max.		50 nA
$I_E = 0; V_{CB} = 100\text{ V}; T_{amb} = 100^\circ\text{C}$	I_{CBO}	max.	100	μA
$I_E = 0; V_{CB} = 120\text{ V}; T_{amb} = 100^\circ\text{C}$	I_{CBO}	max.		50 μA
Emitter cut-off current				
$I_C = 0; V_{EB} = 4,0\text{ V}$	I_{EBO}	max.	50	50 nA
Breakdown voltages				
$I_C = 1,0\text{ mA}; I_B = 0$	$V(BR)_{CEO}$	min.	140	160 V
$I_C = 100\text{ }\mu\text{A}; I_E = 0$	$V(BR)_{CBO}$	min.	160	180 V
$I_C = 0; I_E = 10\text{ }\mu\text{A}$	$V(BR)_{EBO}$	min.	6,0	6,0 V
Saturation voltages				
$I_C = 10\text{ mA}; I_B = 1,0\text{ mA}$	V_{CEsat}	max.	0,15	0,15 V
	V_{BEsat}	max.	1,0	1,0 V
$I_C = 50\text{ mA}; I_B = 5,0\text{ mA}$	V_{CEsat}	max.	0,25	0,20 V
	V_{BEsat}	max.	1,2	1,0 V
D.C. current gain				
$I_C = 1,0\text{ mA}; V_{CE} = 5\text{ V}$	h_{FE}	min.	60	80
$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$	h_{FE}	min.	60	80
		max.	250	250
$I_C = 50\text{ mA}; V_{CE} = 5\text{ V}$	h_{FE}	min.	20	30
Small-signal current gain				
$I_C = 1,0\text{ mA}; V_{CE} = 10\text{ V}; f = 1\text{ kHz}$	h_{fe}	min	50	50
		max.	200	200
Output capacitance at $f = 1\text{ MHz}$				
$I_E = 0; V_{CB} = 10\text{ V}$	C_o	max.	6	6 pF

			BSR19	BSR19A	
Input capacitance at f = 1 MHz					
IC = 0; VEB = 0,5 V	Ci	max.	30	30	pF
Transition frequency at f = 100 MHz					
IC = 10 mA; VCE = 10 V	fT	min.	100	100	MHz
		max.	300	300	MHz
Noise figure at RS = 1 kΩ					
IC = 250 μA; VCE = 5 V; f = 10Hz to 15,7 kHz	F	max.	10	8	dB