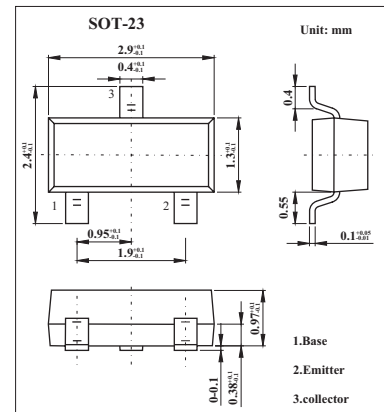


## NPN Switching Transistors

## BSR17A

## ■ Features

- High current (max. 100 mA).
- Low voltage (max. 40 V).

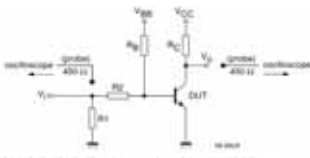
■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Rating	Unit
Collector-base voltage	$V_{CB0}$	60	V
Collector-emitter voltage	$V_{CE0}$	40	V
Emitter-base voltage	$V_{EB0}$	6	V
Collector current	$I_C$	100	mA
Peak collector current	$I_{CM}$	200	mA
Peak base current	$I_{BM}$	100	mA
Total power dissipation	$P_{tot}$	250	mW
Storage temperature	$T_{stg}$	-65 to +150	$^\circ\text{C}$
Junction temperature	$T_j$	150	$^\circ\text{C}$
Operating ambient temperature	$R_{amb}$	-65 to +150	$^\circ\text{C}$
Thermal resistance from junction to ambient *	$R_{th\ j-a}$	500	K/W

\* Transistor mounted on an FR4 printed-circuit board.

## BSR17A

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit	
Collector cutoff current	I <sub>CBO</sub>	I <sub>E</sub> = 0 A; V <sub>CB</sub> = 30 V			50	nA	
		I <sub>E</sub> = 0 A; V <sub>CB</sub> = 30 V; T <sub>j</sub> = 150 °C			5	μA	
Emitter cutoff current	I <sub>EBO</sub>	I <sub>C</sub> = 0 A; V <sub>EB</sub> = 6 V			50	nA	
DC current gain *	h <sub>FE</sub>	I <sub>C</sub> = 10 mA V <sub>CE</sub> = 1 V;	100		300		
collector-emitter saturation voltage *	V <sub>CEsat</sub>	I <sub>C</sub> = 10 mA; I <sub>B</sub> = 1 mA;			200	mV	
		I <sub>C</sub> = 50 mA; I <sub>B</sub> = 5 mA;			200	mV	
base-emitter saturation voltage *	V <sub>BEsat</sub>	I <sub>C</sub> = 10 mA; I <sub>B</sub> = 1 mA;	650		850	mV	
		I <sub>C</sub> = 50 mA; I <sub>B</sub> = 5 mA;			950	mV	
Collector capacitance	C <sub>c</sub>	I <sub>E</sub> = i <sub>e</sub> = 0 A; V <sub>CB</sub> = 5 V; f = 1 MHz			4	pF	
Emitter capacitance	C <sub>e</sub>	I <sub>C</sub> = i <sub>c</sub> = 0 A; V <sub>EB</sub> = 500 mV; f = 1 MHz			8	pF	
Transition frequency	f <sub>T</sub>	I <sub>C</sub> = 10 mA; V <sub>CE</sub> = 20 V; f = 100 MHz	300			MHz	
Noise figure	NF	I <sub>C</sub> = 100 μA; V <sub>CE</sub> = 5 V; R <sub>S</sub> = 1 kΩ; f = 10 Hz to 15.7 kHz			5	dB	
Turn-on time	t <sub>on</sub>	I <sub>Con</sub> = 10 mA; I <sub>Bon</sub> = 1 mA; I <sub>Boff</sub> = -1 mA			65	ns	
Delay time	t <sub>d</sub>	 <p> <math>V_i = 5\text{ V}</math>; <math>T = 500\ \mu\text{s}</math>; <math>t_p = 10\ \mu\text{s}</math>; <math>t_r = t_f \leq 3\ \text{ns}</math>.  <math>R_1 = 56\ \Omega</math>; <math>R_2 = 2.5\ \text{k}\Omega</math>; <math>R_B = 3.9\ \text{k}\Omega</math>; <math>R_C = 270\ \Omega</math>.  <math>V_{BE} = -1.9\ \text{V}</math>; <math>V_{CC} = 3\ \text{V}</math>.            Oscilloscope input impedance <math>Z_i = 50\ \Omega</math>.         </p>			35	ns	
Rise time	t <sub>r</sub>					35	ns
Turn-off time	t <sub>off</sub>					240	ns
Storage time	t <sub>s</sub>					200	ns
Fall time	t <sub>f</sub>					50	ns

\* Pulse test:  $t_p \leq 300\ \mu\text{s}$ ;  $d \leq 0.02$ .

## ■ Marking

Marking	U92 OR 54
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