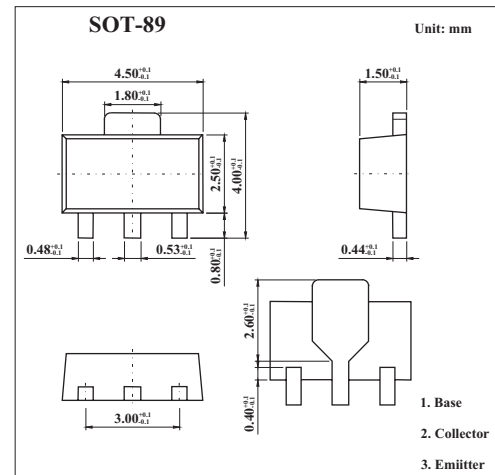


## NPN Medium Power Transistors

## BSR40; BSR41; BSR42; BSR43

## ■ Features

- High current (max. 1 A)
- Low voltage (max. 80 V).

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

Parameter	Symbol	Rating	Unit
Collector-base voltage (open emitter) BSR40,BSR41 BSR42,BSR43	$V_{CB0}$	70	V
		90	V
Collector-emitter voltage (open base) BSR40,BSR41 BSR42,BSR43	$V_{CE0}$	60	V
		80	V
Emitter-base voltage (open collector)	$V_{EB0}$	5	V
Collector current	$I_C$	1	A
Peak collector current	$I_{CM}$	2	A
Peak base current	$I_{BM}$	0.2	A
Total power dissipation $T_{amb} \leq 25^\circ\text{C}$ ;	$P_{tot}$	1.35	W
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	$R_{th(j-a)}$	93	K/W
Thermal resistance from junction to soldering point	$R_{th(j-s)}$	13	K/W

**BSR40; BSR41; BSR42; BSR43**

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit	
Collector cutoff current	IcBO	I <sub>E</sub> = 0; V <sub>CB</sub> = 60 V			100	nA	
		I <sub>E</sub> = 0; V <sub>CB</sub> = 60 V; T <sub>j</sub> = 150 °C			50	μA	
Emitter cutoff current	I <sub>EBO</sub>	I <sub>C</sub> = 0; V <sub>EB</sub> = 5 V			100	nA	
DC current gain *	BSR40,BSR42 BSR41,BSR43	h <sub>FE</sub>	I <sub>C</sub> = 100 mA; V <sub>CE</sub> = 5 V;	10			
				30			
DC current gain *	BSR40,BSR42 BSR41,BSR43	h <sub>FE</sub>	I <sub>C</sub> = 100 mA; V <sub>CE</sub> = 5 V	40		120	
				100		300	
DC current gain *	BSR40,BSR42 BSR41,BSR43	h <sub>FE</sub>	I <sub>C</sub> = 500 mA; V <sub>CE</sub> = 5 V;	30			
				50			
collector-emitter saturation voltage *	V <sub>CEsat</sub>	I <sub>C</sub> = 150 mA; I <sub>B</sub> = 15 mA			250	mV	
		I <sub>C</sub> = 500 mA; I <sub>B</sub> = 50 mA			500	mV	
base-emitter saturation voltage *	V <sub>BEsat</sub>	I <sub>C</sub> = 150 mA; I <sub>B</sub> = 15 mA			1	V	
		I <sub>C</sub> = 500 mA; I <sub>B</sub> = 50 mA			1.2	V	
Collector capacitance	C <sub>c</sub>	I <sub>E</sub> = i <sub>e</sub> = 0; V <sub>CB</sub> = 10 V; f = 1 MHz			12	pF	
Emitter capacitance	C <sub>e</sub>	I <sub>C</sub> = i <sub>c</sub> = 0; V <sub>EB</sub> = 0.5 V; f = 1 MHz			90	pF	
Transition frequency	f <sub>T</sub>	I <sub>C</sub> = 50 mA; V <sub>CE</sub> = 10 V; f = 100 MHz	100			MHz	
Turn-on time	t <sub>on</sub>	I <sub>Con</sub> = 100 mA; I <sub>Bon</sub> = 5 mA;			250	ns	
Turn-off time	t <sub>off</sub>	I <sub>Boff</sub> = -5 mA			1	μs	

\* Pulse test: t<sub>p</sub> = 300 μs; δ ≤ 0.01.

## ■ hFE Classification

TYPE	BSR40	BSR41	BSR42	BSR43
Marking	AR1	AR2	AR3	AR4