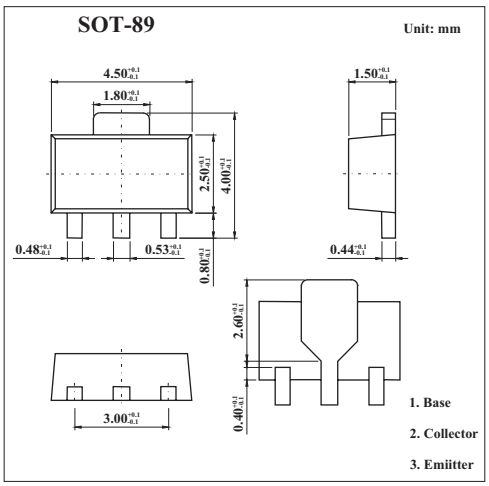
NPN Medium Power Transistors

BSR40; BSR41; BSR42; BSR43



■ Features

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

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Collector-base voltage (open emitter) BSR40,BSR41	V_{CBO}	70	V
BSR42,BSR43		90	V
Collector-emitter voltage (open base) BSR40,BSR41	V_{CEO}	60	V
BSR42,BSR43		80	V
Emitter-base voltage (open collector)	V_{EBO}	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 $T_{amb} \leqslant 25$ ℃;	P_{tot}	1.35	W
Storage temperature	T_{stg}	-65 to +150	℃
Junction temperature	T_j	150	℃
Operating ambient temperature	R_{amb}	-65 to +150	℃
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℃

Parameter		Symbol	Testconditons	Min	Typ	Max	Unit
Collector cutoff current		I_{CBO}	I_E = 0; V_{CB} = 60 V			100	nA
			I_E = 0; V_{CB} = 60 V; T_j = 150 ℃			50	μA
Emitter cutoff current		I_{EBO}	I_C = 0; V_{EB} = 5 V			100	nA
DC current gain *	BSR40,BSR42	h_{FE}	I_C = 100 mA; V_{CE} = 5 V;	10			
	BSR41,BSR43			30			
DC current gain *	BSR40,BSR42	h_{FE}	I_C = 100 mA; V_{CE} = 5 V	40		120	
	BSR41,BSR43			100		300	
DC current gain *	BSR40,BSR42	h_{FE}	I_C = 500 mA; V_{CE} = 5 V;	30			
	BSR41,BSR43			50			
collector-emitter saturation voltage *		V_{CEsat}	I_C = 150 mA; I_B = 15 mA			250	mV
			I_C = 500 mA; I_B = 50 mA			500	mV
base-emitter saturation voltage *		V_{BEsat}	I_C = 150 mA; I_B = 15 mA			1	V
			I_C = 500 mA; I_B = 50 mA			1.2	V
Collector capacitance		C_c	I_E = ie = 0; V_{CB} = 10 V; f = 1 MHz			12	pF
Emitter capacitance		C_e	I_C = ic = 0; V_{EB} = 0.5 V; f = 1 MHz			90	pF
Transition frequency		f_T	I_C = 50 mA; V_{CE} = 10 V; f = 100 MHz	100			MHz
Turn-on time		t_{on}	I_{Con} = 100 mA; I_{Bon} = 5 mA; I_{Boff} = -5 mA			250	ns
Turn-off time		t_{off}				1	μs

* Pulse test: tp = 300 μs; δ ≤ 0.01.

■ h_{FE} Classification

TYPE	BSR40	BSR41	BSR42	BSR43
Marking	AR1	AR2	AR3	AR4