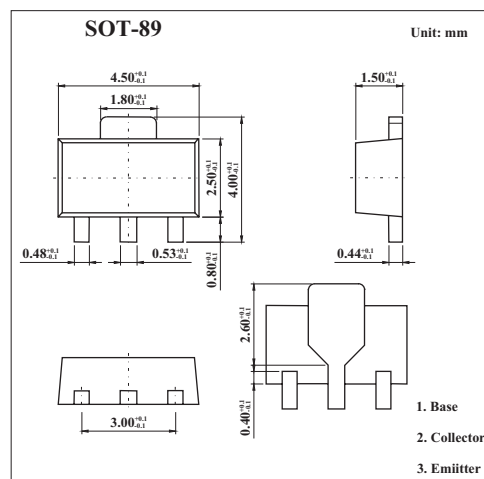


NPN Medium Power Transistors

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 $T_a = 25^\circ\text{C}$

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

* Pulse test: $t_p = 300\text{ }\mu\text{s}; \delta \leq 0.01$.

■ hFE Classification

TYPE	BSR40	BSR41	BSR42	BSR43
Marking	AR1	AR2	AR3	AR4