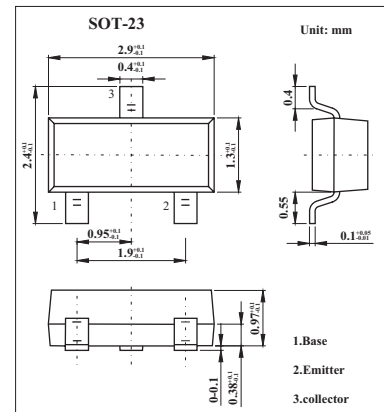


NPN Switching Transistors

BSR13,BSR14

■ Features

- High current (max. 800 mA).
- Low voltage (max. 40 V).

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

Parameter	Symbol	BSR13	BSR14	Unit
Collector-base voltage	V_{CB0}	60	75	V
Collector-emitter voltage	V_{CE0}	30	40	V
Emitter-base voltage	V_{EB0}	5	6	V
Collector current	I_C	800		mA
Peak collector current	I_{CM}	800		mA
Peak base current	I_{BM}	200		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.

BSR13,BSR14

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collector cutoff current	BSR13	IE = 0; VCB = 50 V			30	nA
		IE = 0; VCB = 50 V; Tj = 150 °C			10	μA
	BSR14	IE = 0; VCB = 60 V			10	nA
		IE = 0; VCB = 60 V; Tj = 150 °C			10	μA
Emitter cutoff current	BSR13	IC = 0; VEB = 5 V			30	nA
	BSR14				10	nA
DC current gain *	hFE	IC = 0.1 mA; VCE = 10 V; IC = 1 mA; VCE = 10 V; IC = 10 mA; VCE = 10 V; IC = 150 mA; VCE = 10 V IC = 150 mA; VCE = 1 V;	35			
			50			
			75			
			100		300	
			50			
DC current gain *	BSR13	IC = 500 mA; VCE = 10 V;	30			
	BSR14		40			
collector-emitter saturation voltage	BSR13	IC = 150 mA; IB = 15 mA			400	mV
	BSR14				300	mV
collector-emitter saturation voltage	BSR13	IC = 500 mA; IB = 50 mA			1.6	V
	BSR14				1	V
base-emitter saturation voltage	BSR13	IC = 150 mA; IB = 15 mA			1.3	V
	BSR14		0.6		1.2	V
base-emitter saturation voltage	BSR13	IC = 500 mA; IB = 50 mA			2.6	V
	BSR14				2	V
Collector capacitance	Cc	IE = IB = 0; VCB = 10 V; f = 1 MHz		8		pF
Transition frequency	BSR13	IC = 20 mA; VCE = 20 V; f = 100 MHz	250			MHz
	BSR14		300			MHz
Turn-on time	ton	ICon = 150 mA; IBon = 15 mA; IBoff = -15 mA			35	ns
Delay time	td				15	ns
Rise time	tr				20	ns
Turn-off time	toff				250	ns
Storage time	ts				200	ns
Fall time	tf				60	ns

* Pulse test: tp ≤ 300 μs; d ≤ 0.02.

■ hFE Classification

TYPE	BSR13	BSR14
Marking	U7	U8