NPN diffused silicon planar transistor

BSV 91

High speed saturated switch

The BSV 91 is an NPN planar epitaxial transistor designed specifically for high - speed saturated switching applications.

ELECTRICAL CHARACTERISTICS

(25°C free air temperature unless otherwise noted)

Symbol	Characteristic and test conditions		Min.	Typ.	Max.	Unit
h_{FE}	DC Current Gain (5)					
	I_C = 10 mA	V_{CE} = 1V	40	60	270	
	I_C = 50 mA	V_{CE} = 1V		55		
	I_C = 100 mA	V_{CE} = 1V	25	45		
	I_C = 30 mA	V_{CE} = 1V	35	55		
$V_{BE\ sat}$	Base Saturation Voltage (5)					
	I_C = 10 mA	I_B = 1 mA		0.77	0.85	V
	I_C = 100 mA	I_B = 10 mA		0.97	1.6	V
$V_{CE\ sat}$	Collector Saturation Voltage (5)					
	I_C = 10 mA	I_B = 1 mA		0.15	0.25	V
	I_C = 100 mA	I_B = 10 mA		0.35	1	V
I_{CES}	Collector Reverse Current					
	V_{CE} = 20V	V_{EB} = 0		5	200	nA
$I_{CES\ (125°C)}$	Collector Reverse Current					
	V_{CE} = 20V	V_{EB} = 0		2	70	μA
BV_{CES}	Collector to Emitter Breakdown Voltage					
	I_C = 10 μA	V_{EB} = 0	40			V
BV_{EBO}	Emitter to Base Breakdown Voltage					
	I_E = 10 μA	I_C = 0	5			V
LV_{CEO}	Collector to Emitter Sustaining Voltage (4 and 5)					
	I_C = 10 mA	I_B = 0	15			V
h_{fe}	High Freq. Current Gain (f= 100 MHz)					
	I_C = 10 mA	V_{CE} = 10V	4	6		
C_{TE}	Emitter Transition Capacitance					
	I_C = 0	V_{EB} = 0.5V		4		pF
C_{obo}	Base - Collector Capacitance					
	I_E = 0	V_{CB} = 5V		2	4	pF
τ_s	Charge Storage Time Constant					
	$I_C \sim I_{B1} \sim I_{B2} \sim 10$ mA				13	ns
t_{on}	Turn On Time					
	$I_C \sim 10$ mA	$I_{B1} \sim 3$ mA			12	ns
t_{off}	Turn Off Time					
	$I_C \sim 10$ mA	$I_{B1} \sim 3$ mA			18	ns
		$I_{B1} \sim 1.5$ mA				

ABSOLUTE MAXIMUM RATINGS (1)

(T_A = 25°C unless otherwise noted)

Voltages

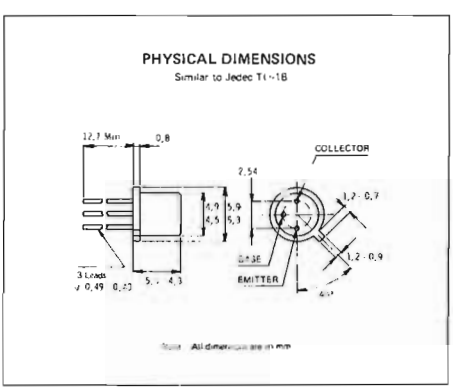
Collector Emitter (4)	V_{CEO}	15 V
Collector to Emitter	V_{CES}	40 V
Emitter to Base	V_{EBO}	5 V

Temperatures

Storage Temperature	T_{STG}	-55°C to 200°C
Junction Temperature	T_J	200°C
Lead Temperature (Soldering 10 sec.)	T_L	260°C

Power (2 - 3)

Dissipation at 25°C Case Temperature	P_D	1 W
Dissipation at 25°C Ambient Temperature	P_D	0.36 W



NOTES:

(1) These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
(2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
(3) These ratings give a maximum junction temperature of 200°C and junction - to - case thermal resistance of 175°C/W (derating factor of 5.7 mW/°C); junction - to - ambient thermal resistance of 486°C/W (derating factor of 2.1 mW. C).
(4) These ratings refer to a high - current point where collector - to - emitter voltage is lowest. For more information send for SGS - AR 5.
(5) Measured under pulse conditions: pulse length = 300 μsec; duty cycle = 1%.