



BSX 19

BSX 20

NPN SILICON PLANAR EPITAXIAL TRANSISTORS



CASE T0-18

THE BSX19 AND BSX20 ARE NPN SILICON PLANAR EPITAXIAL TRANSISTORS DESIGNED FOR VERY HIGH SPEED SATURATED SWITCHING APPLICATIONS.



CBE

ABSOLUTE MAXIMUM RATINGS

Collector-Base Voltage	VCBO	40V
Collector-Emitter Voltage ($V_{BE}=0$)	VCES	40V
Collector-Emitter Voltage ($I_B=0$)	VCEO	15V
Emitter-Base Voltage	VEBO	4.5V
Collector Peak Current	ICM	500mA
Total Power Dissipation @ $T_A=25^\circ\text{C}$	P_{tot}	360mW
Operating Junction & Storage Temperature	T_j, T_{stg}	-65 to 200°C

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	BSX19		BSX20		UNIT	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
Collector-Emitter Breakdown Voltage	BVCEO	15	15			V	$I_C=10\text{mA}$ $I_B=0$
Collector-Emitter Breakdown Voltage	BVCER	20	20			V	$I_C=10\text{mA}$ $R_{BE}=10\Omega$
Collector Cutoff Current	ICBO	400	400	nA	$V_{CB}=20\text{V}$ $I_E=0$		
		30	30	μA	$V_{CB}=20\text{V}$ $I_E=0$		$T_j=150^\circ\text{C}$
Collector Cutoff Current	ICES	0.4	0.4	μA	$V_{CE}=15\text{V}$ $V_{BE}=0$		
		1	1	μA	$V_{CE}=40\text{V}$ $V_{BE}=0$		
Collector Cutoff Current	ICEV	0.6	0.6	μA	$V_{CE}=15\text{V}$ $V_{BE}=-3\text{V}$		$T_j=55^\circ\text{C}$
Emitter Cutoff Current	IEBO	10	10	μA	$V_{EB}=4.5\text{V}$ $I_C=0$		
Collector-Emitter Saturation Voltage	VCE(sat)	0.25	0.25	V	$I_C=10\text{mA}$ $I_B=1\text{mA}$		
		0.3		V	$I_C=10\text{mA}$ $I_B=0.6\text{mA}$		
			0.3	V	$I_C=10\text{mA}$ $I_B=0.3\text{mA}$		
		0.6	0.6	V	$I_C=100\text{mA}$ $I_B=10\text{mA}$		

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1-2-8MP

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PARAMETER	SYMBOL	BSX19		BSX20		UNIT	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
Base-Emitter Saturation Voltage	VBE(sat)	0.7	0.85	0.7	0.85	V	IC=10mA IB=1mA
			1.5		1.5	V	IC=100mA IB=10mA
Base-Emitter Voltage	VBE	0.35		0.35		V	IC=30uA VCE=20V Tj=100°C
D.C. Current Gain	HFE	20	60	40	120		IC=10mA VCE=1V
		10		20			IC=10mA VCE=1V Tj=-55°C
		10		20			IC=100mA VCE=2V
Current Gain-Bandwidth Product	fT	400		500		MHz	IC=10mA VCE=10V
Collector-Base Capacitance	Ccb		4		4	pF	VCE=5V IE=0 f=1MHz
Emitter-Base Capacitance	Ceb		4.5		4.5	pF	VBE=1V IC=0 f=1MHz
Turn-On Time	ton		12		12	nS	IC=10mA Vcc=3V IB1=3mA
			7		7	nS	IC=100mA Vcc=6V IB1=40mA
Turn-Off Time	toff		15		18	nS	IC=10mA Vcc=3V IB1=3mA -IB2=1.5mA
			18		21	nS	IC=100mA IB1=40mA -IB2=20mA
			10		13	nS	IC=10mA Vcc=10V IB1=-IB2=10mA