

**BSX 19****BSX 20**

NPN SILICON PLANAR EPITAXIAL TRANSISTORS

MICRO ELECTRONICS

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 MIN MAX	BSX20 MIN MAX	UNIT	TEST CONDITIONS
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	$V_{CE}=15\text{V}$ $V_{BE}=0$ $T_j=55^\circ\text{C}$
		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-BMP

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PARAMETER	SYMBOL	BSX19 MIN MAX	BSX20 MIN MAX	UNIT	TEST CONDITIONS
Base-Emitter Saturation Voltage	V _{BE(sat)}	0.7 0.85 1.5	0.7 0.85 1.5	V V	I _C =10mA I _B =1mA I _C =100mA I _B =10mA
Base-Emitter Voltage	V _{BE}	0.35	0.35	V	I _C =30mA V _{CE} =20V T _j =100°C
D.C. Current Gain	H _{FE}	20 60 10	40 120 20		I _C =10mA V _{CE} =1V I _C =10mA V _{CE} =1V T _j =-55°C I _C =100mA V _{CE} =2V
Current Gain-Bandwidth Product	f _T	400	500	MHz	I _C =10mA V _{CE} =10V
Collector-Base Capacitance	C _{cb}	4	4	pF	V _{CB} =5V I _E =0 f=1MHz
Emitter-Base Capacitance	C _{eb}	4.5	4.5	pF	V _{EB} =1V I _C =0 f=1MHz
Turn-On Time	t _{on}	12	12	nS	I _C =10mA V _{CC} =3V I _{B1} =3mA
		7	7	nS	I _C =100mA V _{CC} =6V I _{B1} =40mA
Turn-Off Time	t _{off}	15	18	nS	I _C =10mA V _{CC} =3V I _{B1} =3mA -I _{B2} =1.5mA
		18	21	nS	I _C =100mA I _{B1} =40mA -I _{B2} =20mA
Storage Time	t _s	10	13	nS	I _C =10mA V _{CC} =10V I _{B1} =-I _{B2} =10mA