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MAXIMUM RATINGS

Rating	Symbol	BCX 78	BCX 79	Unit
Collector-Emitter Voltage	V _{CEO}	32	45	Vdc
Collector-Base Voltage	V _{CBO}	32	45	Vdc
Emitter-Base Voltage	V _{EBO}	5.0		Vdc
Collector Current - Continuous	I _C	100		mAdc
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	625	5.0	mW mW/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	1.5	12	Watt mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-55 to +150		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	83.3	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	200	°C/W

BCX78,-7,-8,-9,-10
BCX79,-7,-8,-9,-10

CASE 29-04, STYLE 17
TO-92 (TO-226AA)

AMPLIFIER TRANSISTORS

PNP SILICON

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I _C = 10 mAdc, I _B = 0)	BCX78 BCX79	V _{(BR)CEO}	32 45	— —	Vdc
Emitter-Base Breakdown Voltage (I _E = 10 μAdc, I _C = 0)	All	V _{(BR)EBO}	5.0	6.8	Vdc
Collector Cutoff Current (V _{CE} = 32 V)	BCX78	I _{CES}	—	10	nAdc
(V _{CE} = 45 V)	BCX79	I _{CES}	—	10	nAdc
(V _{CE} = 32 V, T _A = 100°C, V _{BE} = 0.2 V)	BCX78	I _{CEx}	—	20	μAdc
(V _{CE} = 45 V, T _A = 100°C, V _{BE} = 0.2 V)	BCX79	I _{CEx}	—	20	μAdc
(V _{CE} = 32 V, T _A = 125°C)	BCX78	I _{CES}	—	2.5	nAdc
(V _{CE} = 45 V, T _A = 125°C)	BCX79	I _{CES}	—	2.5	nAdc
Emitter-Cutoff Current (V _{EBO} = 4.0 V, I _C = 0)		I _{EBO}	—	20	nAdc
ON CHARACTERISTICS					
DC Current Gain (I _C = 10 μAdc, V _{CE} = 5.0 Vdc)	BCX78-7, BCX79-7 BCX78-8, BCX79-8 BCX78-9, BCX79-9 BCX78-10, BCX79-10	h _{FE}	20 40 75 100	140 200 270 340	— — — —
(I _C = 2.0 mAdc, V _{CE} = 5.0 Vdc)	BCX78-7, BCX79-7 BCX78-8, BCX79-8 BCX78-9, BCX79-9 BCX78-10, BCX79-10		120 180 250 380	170 250 350 500	220 310 460 630
(I _C = 10 mAdc, V _{CE} = 1.0 Vdc)	BCX78-7, BCX79-7 BCX78-8, BCX79-8 BCX78-9, BCX79-9 BCX78-10, BCX79-10		80 120 160 240	180 260 360 500	— 400 630 1000
(I _C = 100 mAdc, V _{CE} = 2.0 Vdc)	BCX78-7, BCX79-7 BCX78-8, BCX79-8 BCX78-9, BCX79-9 BCX78-10, BCX79-10		40 45 60 60	— — — —	— — — —
Collector-Emitter Saturation Voltage (I _C = 100 mAdc, I _B = 5.0 mAdc)		V _{CE(sat)}	—	—	0.6 Vdc
Base-Emitter Saturation Voltage (I _C = 100 mA, I _B = 5.0 mAdc)		V _{BE(sat)}	—	—	1.0 Vdc
Base-Emitter On Voltage (I _C = 2.0 mAdc, V _{CE} = 5.0 Vdc)		V _{BE(on)}	0.55	—	0.7 Vdc

6367254 MOTOROLA SC (XSTRS/R F)

96D 81726 D

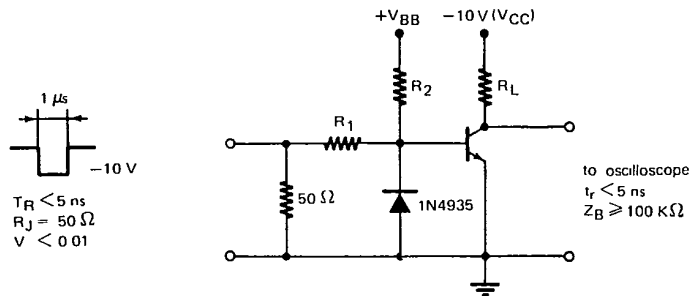
BCX78,-7,-8,-9,-10, BCX79,-7,-8,-9,-10

T-29-21

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

Characteristic	Symbol	Min	Typ	Max	Unit
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain Bandwidth Product ($I_C = 10 \text{ mA}, V_{CE} = 5.0 \text{ V}, f = 100 \text{ MHz}$)	f_T	—	200	—	MHz
Output Capacitance ($V_{CE} = 10 \text{ Vdc}, I_C = 0, f = 1.0 \text{ MHz}$)	C_{ob}	—	2.6	4.5	pF
Input Capacitance ($V_{BE} = 0.5 \text{ V}, I_C = 0, f = 1.0 \text{ MHz}$)	C_{ib}	—	8.5	15	pF
Small-Signal Current Gain ($I_C = 2.0 \text{ mA}, V_{CE} = 5.0 \text{ Vdc}, f = 1.0 \text{ kHz}$)	h_{fe}	125 175 250 350	200 260 330 520	250 350 500 700	—
Noise Figure ($I_C = 0.2 \text{ mA}, V_{CE} = 5.0 \text{ Vdc}, R_G = 2.0 \text{ kohms}, f = 1.0 \text{ kHz}$)	NF	—	1.0	6.0	dB
($I_C = 10 \text{ mA}, I_{B1} = 1.0 \text{ mA}, I_{B2} = 1.0 \text{ mA}$) ($V_{BB} = 3.6 \text{ V}, R_1 = R_2 = 5.0 \text{ k}\Omega$) ($R_L = 999 \text{ ohms}$) *See test circuit	T_d	—	17	—	nS
	T_r	—	27	—	
	T_{on}	—	44	150	
	T_s	—	400	—	
	T_f	—	60	—	
($I_C = 100 \text{ mA}, I_{B1} = 10 \text{ mA}, I_{B2} = 10 \text{ mA}$) ($V_{BB} = 5.0 \text{ V}, R_1 = 500 \Omega, R_2 = 700 \Omega$) ($R_L = 98 \text{ ohms}$) *See test circuit	t_d	—	5.0	—	ns
	t_r	—	20	—	
	t_{on}	—	25	150	
	t_s	—	130	—	
	t_f	—	40	—	
	t_{off}	—	170	800	

TEST CIRCUIT



6367254 MOTOROLA SC (XSTRS/R F)

96D 81727 D

BCX78,-7,-8,-9,-10, BCX79,-7,-8,-9,-10

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FIGURE 1 - NORMALIZED DC CURRENT GAIN

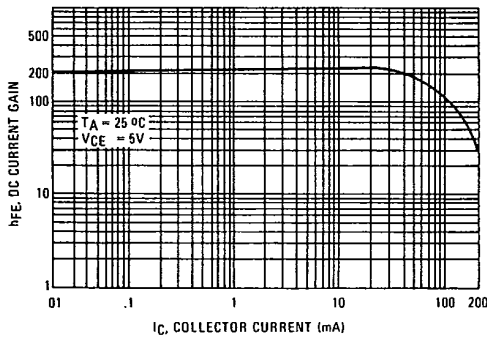


FIGURE 2 - "SATURATION" AND "ON" VOLTAGES

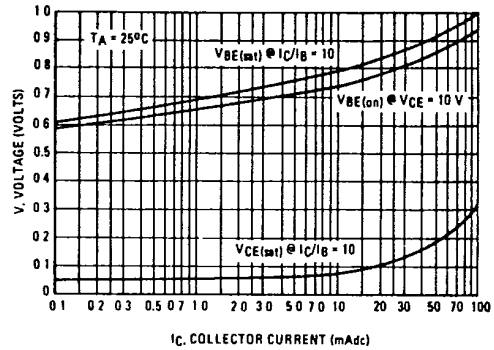


FIGURE 3 - COLLECTOR SATURATION REGION

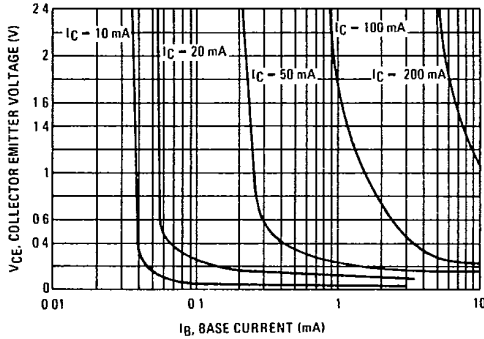


FIGURE 4 - BASE EMITTER TEMPERATURE COEFFICIENT

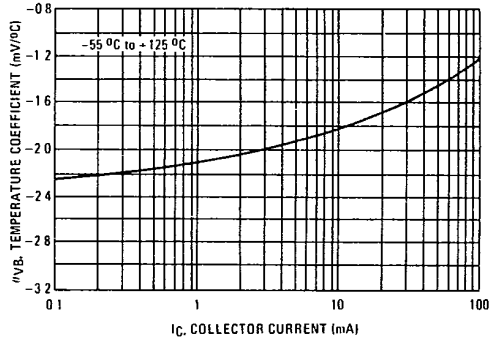


FIGURE 5 - CAPACITANCES

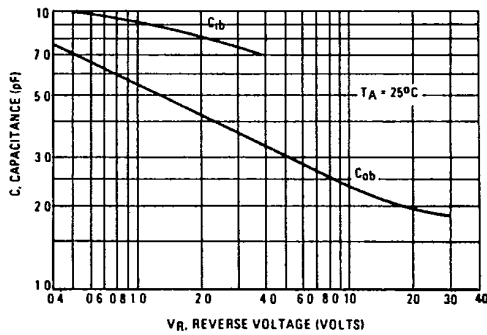


FIGURE 6 - CURRENT GAIN-BANDWIDTH PRODUCT

