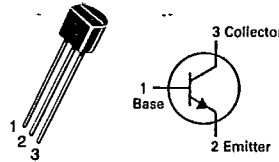


T-31-19

BF374 BF375, C, D

CASE 29-04, STYLE 2
TO-92 (TO-226AA)



VHF TRANSISTORS

NPN SILICON

Refer to MPSH10 for graphs.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CE0}	25	Vdc
Collector-Base Voltage	V_{CB0}	30	Vdc
Emitter-Base Voltage	V_{EB0}	3.0	Vdc
Collector Current - Continuous	I_C	100	mA
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	350 2.8	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0 8.0	Watt mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	125	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C/W}$

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

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 1.0 \text{ mA}$, $I_B = 0$)	$V_{(BR)CEO}$	25			Vdc
Collector-Base Breakdown Voltage ($I_C = 10 \mu\text{A}$, $I_E = 0$)	$V_{(BR)CBO}$	30			Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \mu\text{A}$, $I_C = 0$)	$V_{(BR)EBO}$	3.0			Vdc
Collector Cutoff Current ($V_{CB} = 25 \text{ Vdc}$, $I_E = 0$)	I_{CBO}			100	nA
Emitter Cutoff Current ($V_{EB} = 2.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}			100	nA
ON CHARACTERISTICS					
DC Current Gain ($I_C = 1.0 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$)	h_{FE}				
	BF374	70		250	
	BF375	35		120	
	BF375C	70		120	
	BF375D	35		90	
Collector-Emitter Saturation Voltage ($I_C = 1.0 \text{ mA}$, $I_B = 0.1 \text{ mA}$) ($I_C = 10 \text{ mA}$, $I_B = 1.0 \text{ mA}$)	$V_{CE(sat)}$		50 70		mVdc mVdc
Base-Emitter Saturation Voltage ($I_C = 10 \text{ mA}$, $I_B = 1.0 \text{ mA}$)	$V_{BE(sat)}$		830		mVdc
Base-Emitter On Voltage ($I_C = 1.0 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$) ($I_C = 10 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$)	$V_{BE(on)}$		700 770		mVdc mVdc
SMALL-SIGNAL CHARACTERISTICS					
Current Gain-Bandwidth Product ($I_C = 1.0 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	400	800		MHz
Common Emitter Feedback Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{re}		0.55	0.6	pF
Collector-Base Time Constant ($I_C = 4.0 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$, $f = 31.8 \text{ MHz}$)	τ_{bC}		6		ps
Noise Figure ($I_C = 1.0 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$, $f = 100 \text{ MHz}$, $R_s = 50 \text{ ohms}$)	N_f		4		dB
Common-Emitter Amplifier Power Gain ($I_C = 1.0 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$, $f = 200 \text{ MHz}$)	G_{pe}		20		dB

MOTOROLA SMALL-SIGNAL TRANSISTORS, FETs AND DIODES

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

TYPICAL ADMITTANCE PARAMETERS ($I_C = 1.0\text{ mA}$, $V_{CE} = 10\text{ Vdc}$, frequency as stated)

Symbol	$f = 10.7\text{ MHz}$	$f = 30\text{ MHz}$	$f = 100\text{ MHz}$	Unit
G_{11e}	0.28	0.4	1.4	mmho
B_{11e}	0.6	1.6	5.0	mmho
G_{22e}	6.5	7	20	μmho
B_{22e}	0.1	0.3	1.0	mmho
G_{21e}	36	34	30	mmho
B_{21e}	-0.8	-2.5	-9	mmho
B_{12e}	-52	-150	-500	μmho

FIGURE 1 — INPUT ADMITTANCE (Output short circuit)

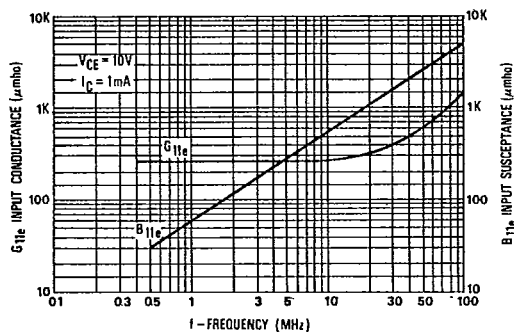


FIGURE 2 — OUTPUT ADMITTANCE (Input short circuit)

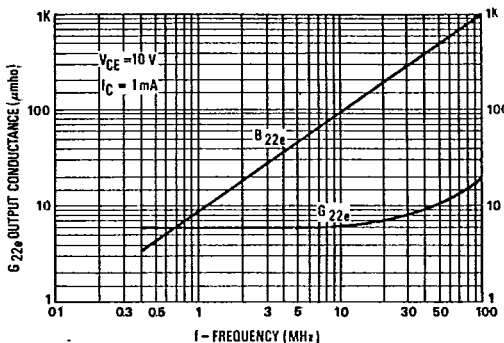


FIGURE 3 — FORWARD TRANSFER ADMITTANCE (Output short circuit)

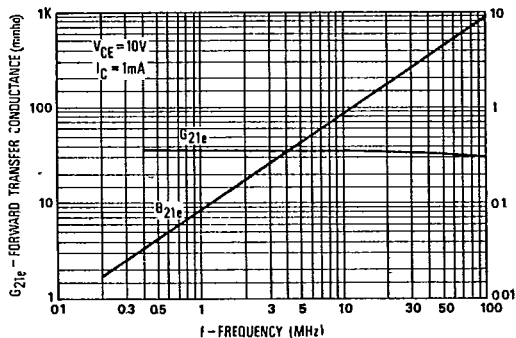


FIGURE 4 — REVERSE TRANSFER ADMITTANCE (Input short circuit)

