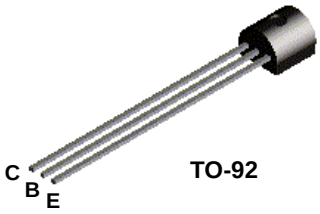
FAIRCHILD SEMICONDUCTOR TM

Discrete POWER & Signal Technologies

PN3563



TO-92

NPN RF Amplifier

This device is designed for use as RF amplifiers, oscillators and multipliers with collector currents in the 1.0 mA to 30 mA range. Sourced from Process 43. See PN918 for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	15	V
V_{CBO}	Collector-Base Voltage	30	V
V_{EBO}	Emitter-Base Voltage	2.0	V
I_C	Collector Current - Continuous	50	mA
T_J, T_{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:
1) These ratings are based on a maximum junction temperature of 150 degrees C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		PN3563	
P_D	Total Device Dissipation Derate above 25°C	350 2.8	mW mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	125	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	°C/W

NPN RF Amplifier
(continued)

Electrical Characteristics
TA= 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage*	I_C = 3.0 mA, I_B = 0	15		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 100 µA, I_E = 0	30		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 µA, I_C = 0	2.0		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 15 V, I_E = 0 V_{CB} = 15 V, T_A = 150°C		0.05 5.0	µA nA
ON CHARACTERISTICS*					
h_{FE}	DC Current Gain	I_C = 8.0 mA, V_{CE} = 10 V	20	200	
SMALL SIGNAL CHARACTERISTICS					
f_T	Current Gain - Bandwidth Product	I_C = 8.0 mA, V_{CE} = 10 V, f = 100 MHz	600	1500	MHz
C_{obo}	Output Capacitance	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz V_{CB} = 0, I_E = 0, f = 1.0 MHz		1.7 3.0	pF pF
C_{ibo}	Input Capacitance	V_{BE} = 0.5 V, I_C = 0, f = 140 MHz		2.0	pF
h_{fe}	Small-Signal Current Gain	I_C = 8.0 mA, V_{CE} = 10 V, f = 1.0 kHz	20	250	
$rb'C_C$	Collector Base Time Constant	I_C = 8.0 mA, V_{CE} = 10 V, f = 79.8 MHz	8.0	25	pS
FUNCTIONAL TEST					
G_{pe}	Amplifier Power Gain	I_C = 8.0 mA, V_{CB} = 10 V, f = 200 MHz	14	26	dB

*Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 2.0%