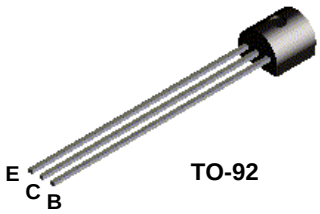
FAIRCHILD SEMICONDUCTOR™

Discrete POWER & Signal Technologies

2N3663



TO-92

NPN RF Transistor

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	12	V
V_{CBO}	Collector-Base Voltage	30	V
V_{EBO}	Emitter-Base Voltage	3.0	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
		2N3663	
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

Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	I_C = 1.0 mA, I_B = 0	12		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 = 100 µA, I_C = 0	3.0		V
I_{CBO}	Collector-Cutoff Current	V_{CB} = 15 V, I_E = 0		0.5	µA
I_{EBO}	Emitter-Cutoff Current	V_{EB} = 2.0 V, I_C = 0		0.5	µA
ON CHARACTERISTICS*					
h_{FE}	DC Current Gain	V_{CE} = 10 V, I_C = 8.0 mA	20		
SMALL SIGNAL CHARACTERISTICS					
f_T	Current Gain - Bandwidth Product	I_C = 5.0 mA, V_{CE} = 10 V, f = 100 MHz	700	2100	MHz
C_{ob}	Output Capacitance	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz	0.8	1.7	pF
$rb'C_C$	Collector Base Time Constant	I_C = 8.0 mA, V_{CE} = 10 V, f = 79.8 MHz		80	pS
FUNCTIONAL TEST					
NF	Noise Figure	I_C = 1.0 mA, V_{CE} = 6.0 V, f = 60 MHz, Rg = 400 Ω		6.5	dB
G_{pe}	Amplifier Power Gain	I_C = 6.0 mA, V_{CE} = 12 V, f = 200 MHz	1.5		dB

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