

2N3663



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_{CE0}	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	mW
		2.8	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 Transistor

(continued)

2N3663

Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
--------	-----------	-----------------	-----	-----	-------

OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 1.0 \text{ mA}, I_B = 0$	12		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \text{ } \mu\text{A}, I_E = 0$	30		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100 \text{ } \mu\text{A}, I_C = 0$	3.0		V
I_{CBO}	Collector-Cutoff Current	$V_{CB} = 15 \text{ V}, I_E = 0$		0.5	μA
I_{EBO}	Emitter-Cutoff Current	$V_{EB} = 2.0 \text{ V}, I_C = 0$		0.5	μA

ON CHARACTERISTICS*

h_{FE}	DC Current Gain	$V_{CE} = 10 \text{ V}, I_C = 8.0 \text{ mA}$	20		
----------	-----------------	---	----	--	--

SMALL SIGNAL CHARACTERISTICS

f_T	Current Gain - Bandwidth Product	$I_C = 5.0 \text{ mA}, V_{CE} = 10 \text{ V},$ $f = 100 \text{ MHz}$	700	2100	MHz
C_{ob}	Output Capacitance	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$	0.8	1.7	pF
$rb'C_C$	Collector Base Time Constant	$I_C = 8.0 \text{ mA}, V_{CE} = 10 \text{ V},$ $f = 79.8 \text{ MHz}$		80	pS

FUNCTIONAL TEST

NF	Noise Figure	$I_C = 1.0 \text{ mA}, V_{CE} = 6.0 \text{ V},$ $f = 60 \text{ MHz}, R_g = 400 \text{ } \Omega$		6.5	dB
G_{pe}	Amplifier Power Gain	$I_C = 6.0 \text{ mA}, V_{CE} = 12 \text{ V},$ $f = 200 \text{ MHz}$	1.5		dB

*Pulse Test: Pulse Width $\leq 300 \text{ } \mu\text{s}$, Duty Cycle $\leq 2.0\%$