

NTE16002

Silicon NPN Transistor

RF Power Output, $P_O = 13.5W$, 175MHz

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}	40V
Collector–Base Voltage, V_{CB}	65V
Emitter–Base Voltage, V_{EB}	4V
Collector Current, I_C	3A
Total Device Dissipation ($T_C = +25^\circ C$), P_D	23W
Derate Above $25^\circ C$	131mW/ $^\circ C$
Operating Junction Temperature Range, T_J	-65° to $+200^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ C$

Electrical Characteristics: ($T_A = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage	$V_{(BR)CEO(sus)}$	$I_C = 200mA$, $I_B = 0$, Note 1	40	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 0.25mA$, $I_C = 0$	4	–	–	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 30V$, $I_B = 0$	–	–	0.25	mA
	I_{CEX}	$V_{CE} = 30V$, $V_{BE(off)} = 1.5V$, $T_C = +200^\circ C$	–	–	10	mA
		$V_{CE} = 65V$, $V_{BE(off)} = 1.5V$	–	–	5	mA
	I_{CBO}	$V_{CB} = 65V$, $I_E = 0$	–	–	1	mA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 4V$, $I_C = 0$	–	–	0.25	mA
ON Characteristics						
DC Current Gain	h_{FE}	$V_{CE} = 5V$, $I_C = 1A$	5	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 500mA$, $I_B = 100mA$	–	–	1.0	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 1A$, $I_B = 5A$	–	–	1.5	V
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_T	$V_{CE} = 28V$, $I_C = 150mA$, $f = 100MHz$	–	400	–	MHz
Output Capacitance	C_{ob}	$V_{CB} = 30V$, $I_E = 0$, $f = 100kHz$	–	16	20	pF

Note 1. Pulsed through 25mH inductor.

Electrical Characteristics (Cont'd): ($T_A = +25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Functional Tests						
Power Input	P_{in}	$V_{CE} = 28\text{V}$, $P_{out} = 2.5\text{W}$, $f = 175\text{MHz}$	–	–	0.25	W
Common-Emitter Amplifier Power Gain	G_{pe}		10	–	–	dB
Collector Efficiency	η		50	–	–	%



