

## NTE311 Silicon NPN Transistor Frequency Multiplier, Driver, VHF/UHF

### Absolute Maximum Ratings:

Collector–Emitter Voltage, $V_{CEO}$ .....	30V
Collector–Base Voltage, $V_{CBO}$ .....	55V
Emitter–Base Voltage, $V_{EBO}$ .....	3.5V
Continuous Collector Current, $I_C$ .....	400mA
Total Device Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	5W
Derate Above $25^\circ\text{C}$ .....	28.6mW/ $^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+200^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector–Emitter Breakdown Voltage	$V_{CER(sus)}$	$I_C = 5\text{mA}$ , $R_{BE} = 10\Omega$	55	–	–	V
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 5\text{mA}$ , $I_B = 0$	30	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_F = 100\mu\text{A}$ , $I_C = 0$	3.5	–	–	V
Collector Cutoff Current	$I_{CEO}$	$V_{CE} = 28\text{V}$ , $I_B = 0$	—	–	0.02	mA
		$V_{CE} = 30\text{V}$ , $V_{BE} = -1.5\text{V}$ , $T_C = +200^\circ\text{C}$	–	–	5.0	mA
		$V_{CE} = 55\text{V}$ , $V_{BE} = -1.5\text{V}$	–	–	0.1	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 3.5\text{V}$ , $I_C = 0$	–	–	0.1	mA
<b>ON Characteristics</b>						
DC Current Gain	$h_{FE}$	$I_C = 50\text{mA}$ , $V_{CE} = 5\text{V}$	25	–	200	–
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 100\text{mA}$ , $I_B = 20\text{mA}$	–	–	1.0	V
<b>Small–Signal Characteristics</b>						
Current–Gain Bandwidth Product	$f_T$	$I_C = 50\text{mA}$ , $V_{CE} = 15\text{V}$ , $f = 200\text{MHz}$	800	–	–	MHz
Output Capacitance	$C_{obo}$	$V_{CB} = 28\text{V}$ , $I_E = 0$ , $f = 1\text{MHz}$	–	–	3.0	pF
<b>Functional Test</b>						
Amplifier Power Gain	$G_{pe}$	$V_{CC} = 28\text{V}$ , $P_{OUT} = 1\text{W}$ , $f = 400\text{MHz}$	10	–	–	dB
Collector Efficiency	$h$	$V_{CC} = 20\text{V}$ , $P_{OUT} = 1\text{W}$ , $f = 400\text{MHz}$	45	–	–	%

