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NTE319 Silicon NPN Transistor VHF Amp with Forward AGC

Features:

- Low Feedback Capacity (C_{CB}) – 0.13pF Typ, 0.22pF Max
- High Unneutralized Power Gain – 27dB Min at 45MHz
- V_{AGC} Guaranteed for –30dB and –50dB at 45MHz

Absolute Maximum Ratings: (Note 1)

Collector-to-Base Voltage, V_{CBO}	20V
Collector-to-Emitter Voltage (Note 2), V_{CEO}	20V
Emitter-to-Base Voltage, V_{EBO}	3.0V
Total Dissipation (Note 3), P_D	
$T_C = +25^\circ C$	0.260W
$T_A = +25^\circ C$	0.175W
Operating Junction Temperature, T_J	+175°C
Storage Temperature Range, T_{stg}	–55° to +175°C

Note 1. These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.

Note 2. Rating refers to a high-current point where collector-to-emitter voltage is lowest.

Note 3. These ratings give a maximum junction temperature of 175°C and junction-to-case thermal resistance of 583°C/W (derating factor of 1.73mW/°C); junction-to-ambient thermal resistance of 850°C/W (derating factor of 1.17mW/°C).

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Power Gain	PG	$V_{BE} = 2V, f = 45MHz$	27	29	–	dB
Noise Figure	NF	$V_{BE} = 2V, f = 45MHz$	–	2.7	5.0	dB
AGC Voltage for 30dB Gain Reduction	V_{AGC}	$V_{CC} = 12V, f = 45MHz$	3.3	4.15	5.0	V
AGC Voltage for 50dB Gain Reduction		$V_{CC} = 12V, f = 45MHz$	–	6.15	7.5	V
Collector Current for 30dB Gain Reduction	I_{AGC}	$V_{CC} = 12V, f = 45MHz$	–	7.2	–	mA
Collector-to-Base Capacitance	C_{cb}	$V_{CB} = 10V, I_E = 0, f = 1MHz$	–	0.13	0.22	pF
DC Current Gain	h_{FE}	$V_{CE} = 10V, I_C = 2mA$	20	80	220	
Collector-Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 1mA, I_B = 0, \text{Note 2}$	20	–	–	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 20V, I_E = 0$	–	–	50	nA
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu A, I_E = 0$	20	–	–	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu A, I_C = 0$	3.0	–	–	V

Note 2. Rating refers to a high-current point where collector-to-emitter voltage is lowest.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Saturation Voltage	$V_{CE(sat)}$	$I_C = 1\text{mA}, I_B = 5\text{mA}$	-	-	2.75	V
High Frequency Current Gain	h_{FE}	$V_{CE} = 10\text{V}, I_C = 2\text{mA}, f = 100\text{MHz}$	3	5	-	V
Input Resistance, Common Emitter	R_{iep}	$V_{CE} = 10\text{V}, I_C = 2\text{mA}, f = 45\text{MHz}$	-	400	-	W
Output Resistance, Common Emitter	R_{oep}		-	67	-	$k\Omega$
Input Capacitance, Common Emitter	C_{iep}		-	16	-	pF
Output Capacitance, Common Emitter	C_{oep}		-	1.2	-	pF

