

## NTE213 Germanium PNP Transistor High Power, High Gain Amplifier

**Description:**

The NTE213 is a germanium PNP power transistor in a TO36 type package designed high-power, high-gain applications in high-reliability industrial equipment.

**Absolute Maximum Ratings:**

Collector-Emitter Voltage, $V_{CEO}$ .....	60V
Collector-Emitter Voltage, $V_{CES}$ .....	75V
Collector-Base Voltage, $V_{CB}$ .....	75V
Emitter-Base Voltage, $V_{EB}$ .....	40V
Collector Current, $I_C$ .....	30A
Total Device Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	170W
Derate Above $25^\circ\text{C}$ .....	0.5W/ $^\circ\text{C}$
Operating Junction Temperature Range, $T_J$ .....	$-65^\circ$ to $+110^\circ\text{C}$
Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	0.5 $^\circ\text{C}/\text{W}$

**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	$V_{(BR)CEO}$	$I_C = 1\text{A}, I_B = 0$ , Note 1	60	-	-	V
	$V_{(BR)CES}$	$I_C = 300\text{mA}, V_{BE} = 0$ , Note 1	75	-	-	V
Floating Potential	$V_{EBF}$	$V_{CB} = 75\text{V}, I_E = 0$	-	-	1.0	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 2\text{V}, I_E = 0$	-	0.8	0.2	mA
		$V_{CB} = 74\text{V}, I_E = 0$	-	0.9	4.0	mA
		$V_{CB} = 75\text{V}, I_E = 0, T_C = +71^\circ\text{C}$	-	4.0	15	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 25\text{V}, I_C = 0$	-	0.2	4.0	mA
		$V_{BE} = 30\text{V}, I_C = 0$	-	0.2	4.0	mA
		$V_{BE} = 40\text{V}, I_C = 0$	-	0.2	4.0	mA
		$V_{BE} = 40\text{V}, I_C = 0, T_C = +71^\circ\text{C}$	-	2.7	15	mA

Note 1. To avoid excessive heating of the collector junction, perform these tests with an oscilloscope.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>ON Characteristics</b>						
DC Current Gain	$h_{FE}$	$V_{CB} = 2\text{V}, I_C = 5\text{A}$	50	75	100	
		$V_{CB} = 2\text{V}, I_C = 15\text{A}$	25	47	–	
		$V_{CB} = 2\text{V}, I_C = 25\text{A}$	15	38	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 5\text{A}, I_B = 500\text{mA}$	–	0.06	0.1	V
		$I_C = 25\text{A}, I_B = 2\text{A}$	–	0.2	0.3	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 5\text{A}, I_B = 500\text{mA}$	–	0.65	1.0	V
		$I_C = 25\text{A}, I_B = 2\text{A}$	–	1.0	2.0	V
<b>Dynamic Characteristics</b>						
Common–Emitter Cutoff Frequency	$f_{\alpha e}$	$V_{CE} = 6\text{V}, I_C = 5\text{A}$	2.0	2.7	–	kHz

