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## 2N404 Germanium PNP Transistor Medium Speed Switch TO5 Type Package

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Collector-Base Voltage, $V_{CBO}$ .....	-25V
Emitter-Base Voltage, $V_{EBO}$ .....	-12V
Collector-Emitter Voltage (Note 1), $V_{CE}$ .....	-24V
Collector Current, $I_C$ .....	100mA
Total Device Dissipation, $P_D$	
$T_A = +25^\circ\text{C}$ .....	150mW
$T_A = +55^\circ\text{C}$ .....	75mW
$T_A = +71^\circ\text{C}$ .....	35mW
Storage Temperature Range, $T_{stg}$ .....	-65° to +100°C

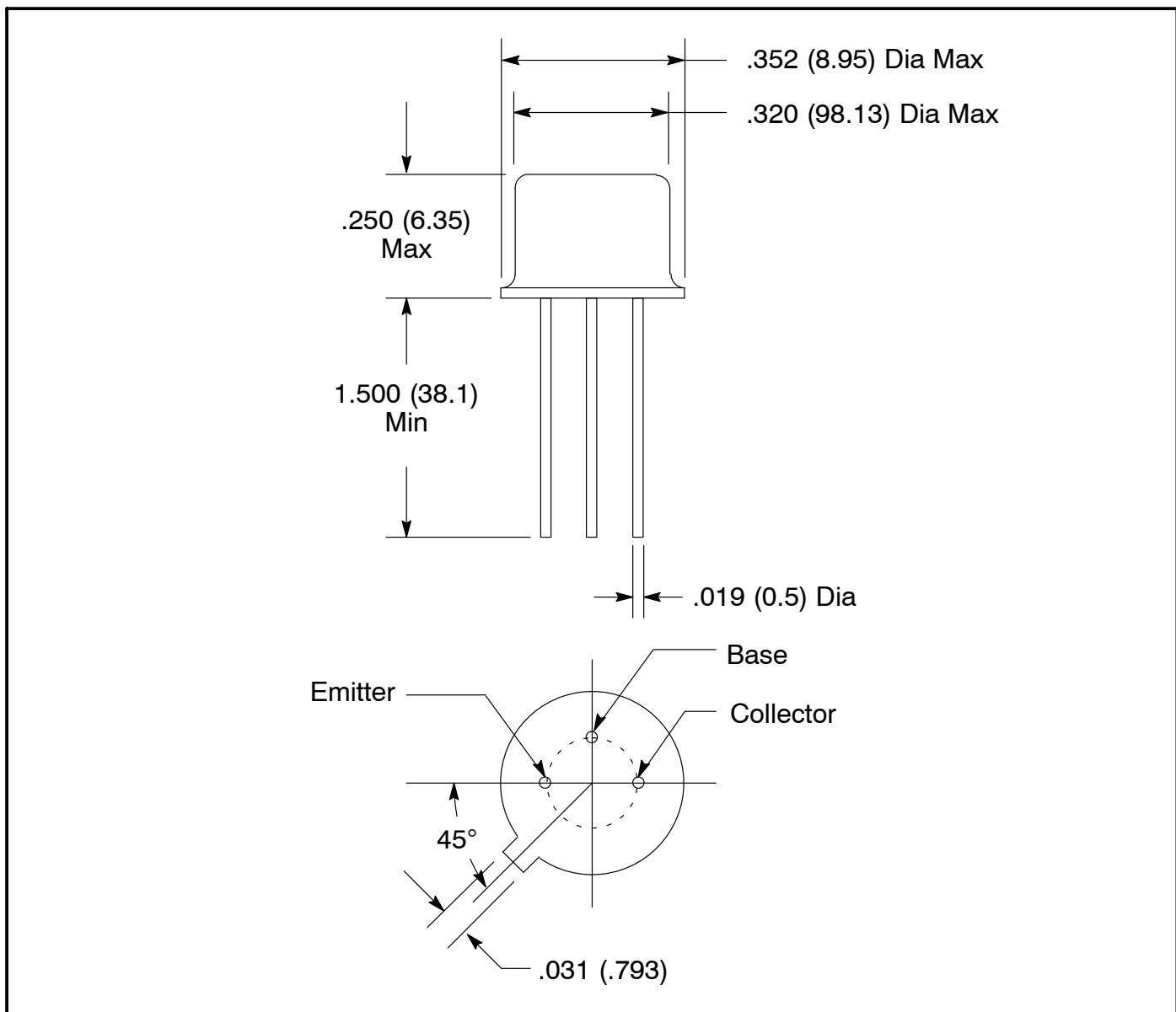
Note 1. Reach through voltage.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -20\mu\text{A}$	-25	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -20\mu\text{A}$	-12	-	-	V
Reach Through Voltage	$V_{RT}$		-24	-	-	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = -12\text{V}$	-	-	-5	$\mu\text{A}$
		$T_A = +80^\circ\text{C}$	-	-	-90	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 2.5\text{V}$	-	-	-2.5	$\mu\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_B = 0.4\text{mA}, I_C = -12\text{mA}$	-	-	-0.15	V
		$I_B = 1\text{mA}, I_C = 24\text{mA}$	-	-	-0.2	V
Base Input Voltage	$V_{BE}$	$I_B = 0.4\text{mA}, I_C = -12\text{mA}$	-	-	-0.35	V
		$I_B = 1\text{mA}, I_C = 24\text{mA}$	-	-	-0.4	V

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>High Frequency Characteristics</b>						
Alpha Cutoff Frequency	$f_{\text{hfb}}$		4	-	-	mcs
Collector Capacitance	$C_{\text{ob}}$	$f = 2\text{mcs}$	-	-	20	pF
Stored Base Charge	QSB	$I_B = 1\text{mA}, I_C = -10\text{mA}$	-	-	1400	pcb
Base Spreading Resistance	$r'b$		-	100	-	$\Omega$
Input Resistance	$h_{ie}$		-	2700	-	$\Omega$
Noise Figure	NF	1kc, 1 cycle wide	-	3.5	-	dB
<b>Low Frequency Characteristics (Common Emitter)</b>						
Output Admittance	$h_{oe}$		-	400	-	$\mu\text{mhos}$
Voltage Feedback Ratio	$h_{re}$		-	8.4	-	$\times 10^{-4}$
Forward Current Transfer Ratio	$h_{fe}$		-	86	-	
Input Impedance	$h_{ie}$		-	450	-	$\Omega$



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