

**2N167A**  
**NPN GERMANIUM TRANSISTOR**

absolute maximum ratings: (25°C)

<b>Voltages</b>		
Collector to Base	$V_{CB}$	30 volts
Collector to Emitter	$V_{CE}$	30 volts
Emitter to Base	$V_{EB}$	5 volts
<b>Current</b>		
Collector	$I_C$	75 ma
Emitter	$I_E$	-75 ma
<b>Dissipation</b>		
Collector (25°C)*	$P_C$	65 mw
Total Transistor (25°C)**	$P_M$	75 mw
<b>Temperature</b>		
Storage	$T_{STG}$	85°C

\*Derate 1.1 mw/°C increase in ambient temperature.

\*\*Derate 1.25 mw/°C increase in ambient temperature.

electrical characteristics: (25°C—unless otherwise specified)

**D-C CHARACTERISTICS**

	Min.	Design Center	Max.	
Forward Current Transfer Ratio ( $I_C = 8$ ma; $V_{CE} = 1$ v)	17	30	90	
Base Input Voltage ( $I_B = .47$ ma; $I_C = 8$ ma)	.3*	.41	.6*	* volts
Collector to Emitter Voltage (Base Open; $I_C = .3$ ma)	30			volts
Saturation Voltage ( $I_B = .8$ ma; $I_C = 8$ ma)		.35		volts

**CUTOFF CHARACTERISTICS**

Collector Current ( $I_E = 0$ ; $V_{CE} = 15$ v; $T_A = 25^\circ\text{C}$ )	$I_{CO}$	.6	1.5	$\mu\text{A}$
Collector Current ( $I_E = 0$ ; $V_{CE} = 15$ v; $T_A = 71^\circ\text{C}$ )	$I_{CO}$	11	29	$\mu\text{A}$
Emitter Current ( $I_C = 0$ ; $V_{EB} = 5$ v; $T_A = 25^\circ\text{C}$ )	$I_{EO}$	.4	1.5	$\mu\text{A}$
Emitter Current ( $I_C = 0$ ; $V_{EB} = 5$ v; $T_A = 71^\circ\text{C}$ )	$I_{EO}$	8		$\mu\text{A}$

**HIGH FREQUENCY CHARACTERISTICS (COMMON BASE)**

	Min.	Design Center	Max.	
( $V_{CB} = 5$ v; $I_B = 1$ ma)				
Alpha Cutoff Frequency	$f_{cb}$	5.0	9.0	mc
Collector Capacity ( $f = 1$ mc)	$C_{cb}$		2.5	$\mu\text{Mf}$
Voltage Feedback Ratio ( $f = 1$ mc)	$h_{rb}$		7.3	$\times 10^{-4}$

**LOW FREQUENCY CHARACTERISTICS (COMMON BASE)**

	Min.	Design Center	Max.	
( $V_{CB} = 5$ v; $I_E = -1$ ma; $f = 270$ cps)				
Forward Current Transfer Ratio	$h_{fb}$	.952	.985	.995*
Output Admittance	$h_{ob}$	.1*	.2	$\mu\text{mhos}$
Input Impedance	$h_{ib}$	25*	55	ohms
Reverse Voltage Transfer Ratio	$h_{rb}$		1.5	$\times 10^{-4}$

**SWITCHING CHARACTERISTICS, (See circuit)**

	Min.	Design Center	Max.	
( $I_C = 8$ ma; $I_{B1} = .8$ ma; $I_{B2} = .8$ ma)				
Turn-on Time	$t_o$	.4		$\mu\text{SEC}$
Storage Time	$t_s$	.7		$\mu\text{SEC}$
Fall Time	$t_f$	.2		$\mu\text{SEC}$

\*These limits are design limits within which 98% of production normally fall.



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