

# 2N174

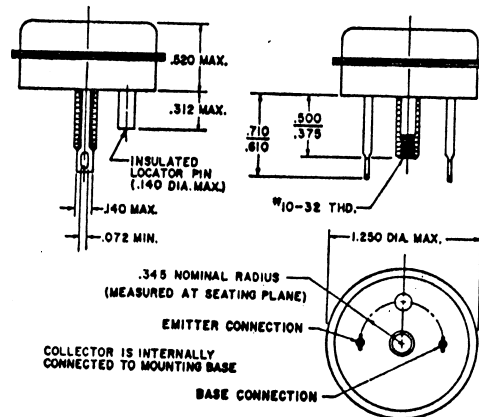
## POWER TRANSISTOR

### GENERAL DESCRIPTION

The 2N174 is a PNP germanium power transistor designed for general use with a 28 volt power supply and for use with a 12 volt power supply in applications where high voltage transients are encountered. It is characterized by a maximum emitter current of 15 amperes, a maximum collector diode rating of 80 volts and a thermal resistance below  $.6^{\circ}\text{C}$  per watt. A low saturation resistance will give high efficiency in switching applications.

The case is hermetically sealed. The collector and the case are electrically connected.

### DIMENSIONS AND CONNECTIONS



NOTE: MAXIMUM RECOMMENDED TORQUE ON THE MOUNTING STUD IS TWELVE INCH-POUNDS.

### ABSOLUTE MAXIMUM RATINGS

Collector diode voltage $V_{CB}$ ..... -80 volts	Base current (continuous) ..... 4 amp.
( $V_{EB} = -1.5$ volts)	Maximum junction temperature ..... $100^{\circ}\text{C}$
Emitter diode voltage $V_{EBO}$ ..... -60 volts	Minimum junction temperature ..... $-65^{\circ}\text{C}$
Emitter current (continuous) ..... 15 amp.	

### ELECTRICAL CHARACTERISTICS

$T = 25^{\circ}\text{C}$  unless otherwise specified

	Min.	Typical	Max.	
Collector diode current $I_{CBO}$ ( $V_{CB} = -2$ volts) .....		100		microamp
Collector diode current $I_{CB}$ ( $V_{CB} = -80$ volts, $V_{EB} = -1.5$ volts) ..		.5	4	ma
Collector diode current $I_{CBO}$ ( $V_{CB} = -80$ volts, $71^{\circ}\text{C}$ ) .....			15	ma
Emitter diode current $I_{EBO}$ ( $V_{EBO} = -60$ volts) .....		.25	4	ma
Current gain $h_{FE}$ ( $V_{CB} = -2$ volts, $I_C = 5$ amps) .....	25		50	
Current gain $h_{FE}$ ( $V_{CB} = -2$ volts, $I_C = 12$ amps) .....		20		
Base voltage $V_{EB}$ ( $V_{CB} = -2$ volts, $I_C = 5$ amps) .....			.9	volt
Floating potential $V_{EBF}$ ( $V_{CBO} = -80$ volts, $I_E = 0$ ) .....			-1	volt
Saturation voltage $V_{EC}$ ( $I_B = 2$ amp, $I_C = 12$ amps) .....		.3	.9	volt
Collector to emitter voltage $V_{CES}$ ( $I_C = 300$ ma, $V_{EB} = 0$ ) * .....	-70			volts
Collector to emitter voltage $V_{CEO}$ ( $I_C = 1$ amp, $I_B = 0$ ) * .....	-55			volts
Common emitter current amplification cutoff frequency $f_{\alpha c}$ ( $I_C = 5$ amp, $V_{CE} = -6$ volts) .....		10		kcs
Rise time ("on" $I_C = 12$ Adc, $I_B = 2$ amp, $V_{CE} = -12$ volts) .....		15		microsec
Fall time ("off" $I_C = 0$ , $V_{EB} = -6$ volts, $R_{EB} = 10\Omega$ ) .....		15		microsec

\*In order to avoid excessive heating of the collector junction, perform test with the sweep method.

### THERMAL CHARACTERISTICS

Thermal resistance (junction to case) .....	.5	$^{\circ}\text{C}/\text{Watt}$
Thermal resistance (junction to heat sink)† .....	.6	$^{\circ}\text{C}/\text{Watt}$
Thermal capacity (for pulses in 1 to 10 millisecond range) .....	.075	watt sec/ $^{\circ}\text{C}$