

# Germanium PNP Transistor

## **2N173**

40/60V / 15A

# DATASHEET

OEM – Delco

Source: Delco Power Transistors 1958

**DELCO RADIO DIVISION**  
 GENERAL MOTORS CORPORATION  
 KOKOMO, INDIANA

**2N173**  
**POWER TRANSISTOR**

**ENGINEERING DATA SHEET**  
 SUPERSEDES ALL PREVIOUS DATA SHEETS

Distributed in the U.K. by  
 AC-DELCO DIVISION OF GENERAL MOTORS LTD.  
 DUNSTABLE, BEDFORDSHIRE

November 4, 1958

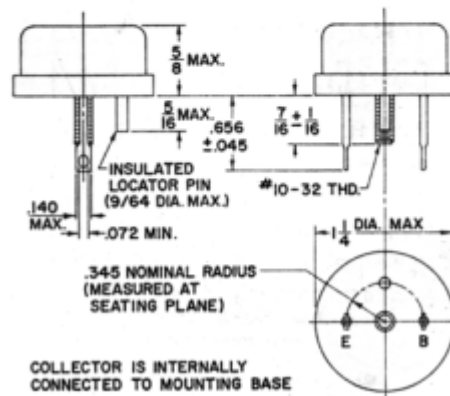
**GENERAL DESCRIPTION**

The improved Delco Radio Type 2N173, is a P-N-P germanium power transistor designed for general use with a 12 volt power supply. It is characterized by a new, higher maximum emitter current of 15 amperes, a maximum collector voltage of 60 volts and a thermal resistance below 1°C per watt. A low saturation resistance will give high efficiency in switching applications. The distortion is low both in Class A operation and in class AB operation with matched pairs.

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

The Delco 2N173 transistors will be supplied either in single units or in matched pairs.

**DIMENSIONS AND CONNECTIONS**



**ABSOLUTE MAXIMUM RATINGS**

Collector diode voltage $V_{CB}$ ( $V_{EB} = -1.5$ volts)	60 volts	Maximum junction temperature	
Emitter diode voltage $V_{EB}$	40 volts	Continuous	95°C
Emitter current (continuous)	15 amp.	Intermittent	100°C
Base current (continuous)	4 amp.	Minimum junction temperature	-65°C

**ELECTRICAL CHARACTERISTICS (T = 25°C)**

	Min.	Typical	Max.	
Collector diode current $I_{CO}$ ( $V_{CB} = -2$ volts)		100		microamp
Collector diode current $I_{CO}$ ( $V_{CB} = -60$ volts)		2	8	ma
Emitter diode current $I_{EO}$ ( $V_{EB} = -40$ volts)		1	8	ma
Current gain ( $V_{CE} = -2$ volts, $I_C = 5$ amps)	35		70	
Current gain ( $V_{CE} = -2$ volts, $I_C = 12$ amps)		25		
Base voltage $V_{EB}$ ( $V_{EC} = -2$ volts, $I_C = 5$ amps)		0.65		volts
Floating potential $V_{EB}$ ( $V_{CB} = -80$ volts, $I_B = 0$ )		0.15	1	volts
Saturation voltage $V_{EC}$ ( $I_B = 2$ A, $I_C = 12$ amp)		0.3	1	volts
Collector to emitter voltage $V_{CES}$ ( $I_C = 300$ ma d.c., $V_{EB} = 0$ )	50			volts
Collector to emitter voltage $V_{CEO}$ ( $I_C = 300$ ma d.c., $I_B = 0$ )		50		volts
Common emitter current amplification cutoff frequency ( $I_C = 5$ amp, $V_{EC} = -6$ volts)		10		kc.
Rise time ("on" $I_C = 12$ Adc, $I_B = 2$ amp, $V_{CE} = -12$ volts)		15		micro sec.
Fall time ("off" $I_C = 0$ , $V_{EB} = -6$ volts, $R_{EB} = 10\Omega$ )		15		micro sec.

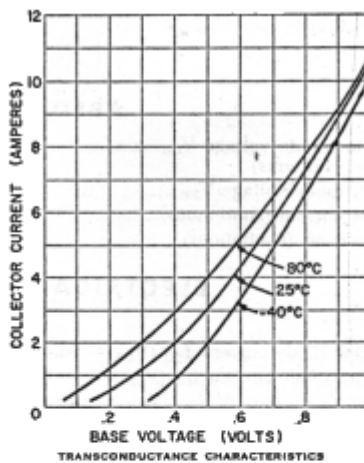
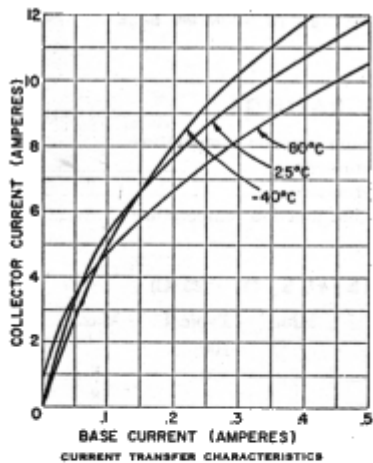
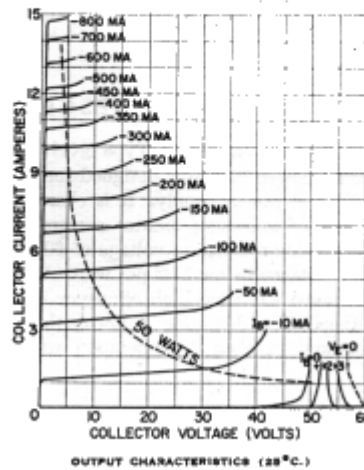
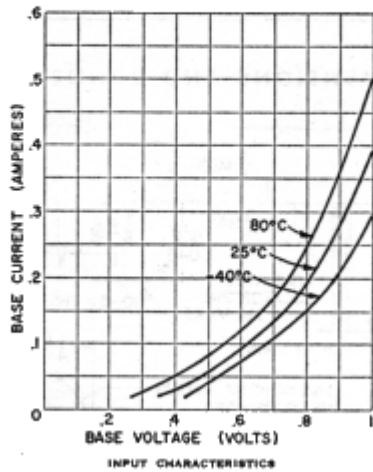
**THERMAL CHARACTERISTICS**

Thermal resistance (junction to mounting base)	.7	1	°C/watt
Thermal capacity for pulses in the 1 to 10 millisecond range	.075		watt sec/°C

# 2N173

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## TYPICAL CHARACTERISTICS, COMMON EMITTER



## MECHANICAL DATA

The 2N173 transistor has been designed to pass the following environmental tests: (The numbers refer to paragraphs of MIL-T-19500) Temperature Cycling (4.6.24), Glass Strain (4.6.25), Moisture Resistance (4.6.26), Shock (4.6.28), Vibration Fatigue (4.6.30), Vibration Noise (4.6.31), and Reduced Pressure (15 mm of mercury) (4.6.32). Maximum recommended torque on the mounting stud is twelve inch-pounds.

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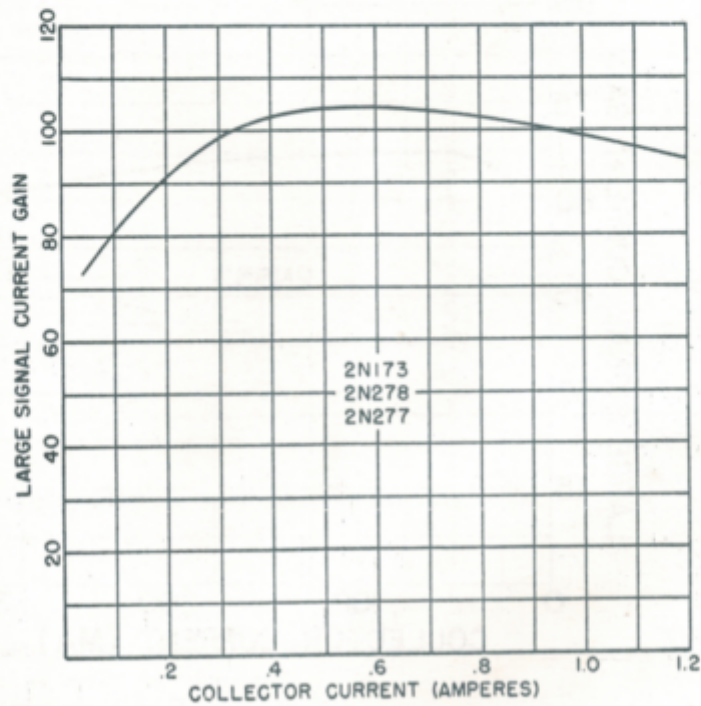
**LARGE SIGNAL CURRENT GAIN AT  
LOW COLLECTOR CURRENTS**

APPLICATION NOTE 11-A

January 1, 1958

**LARGE SIGNAL CURRENT GAIN AT LOW COLLECTOR CURRENTS**

Many circuits using Delco power transistors draw currents less than one ampere. Because of the wide collector current range of the transistors, our engineering data sheets do not show in detail what typical current gain to expect at low values of collector current. The following graph shows the typical current gain of three of our transistors, when the collector current is less than 1.2 amperes.



**LARGE SIGNAL CURRENT GAIN  
AT LOW COLLECTOR CURRENTS**