BULLETIN NO. DLS-709 MARCH, 1957

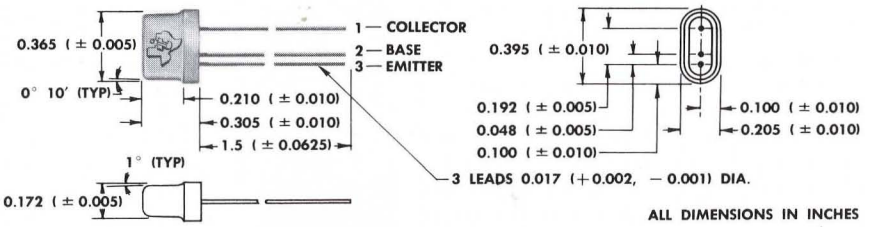
TYPES 2N308 AND 2N309
P-N-P GROWN — DIFFUSED GERMANIUM TRANSISTOR

Texas Instruments Types 2N308 and 2N309 germanium P-N-P grown — diffused transistors are especially designed to provide high gain in 455 kc common emitter intermediate frequency amplifier applications. The closely controlled characteristics of these transistors assure interchangeability in properly designed circuits.

To assure maximum reliability, stability, and long life, all units are cycled from −55°C to +75°C and +75°C at 95% relative humidity for four complete cycles over an eight-hour period. In addition, the hermetic seal is checked by vacuum testing. All units are thoroughly tested for design characteristics and 455 kc power gain.

mechanical data

Metal case with glass-to-metal hermetic seal between case and leads. Approximate weight is 1 gram.



absolute maximum ratings at 25°C ambient [except where advanced temperatures are indicated]

Collector Voltage Referred to Emitter	−20 V
Collector Current	− 5 mA
Collector Dissipation	30 mW
Operating Temperature	55 °C

design characteristics at 25°C ambient

		min.	design center	max.	unit
I_{CO}	Collector Cutoff Current *	—	−5	−10	μA
Z_{in}	Common Emitter Input Impedance †	—	4K	—	Ohm
Z_{out}	Common Emitter Output Impedance †	—	400K	—	Ohm
C_{ob}	Output Capacitance Referred to Base at 455 kc †	—	1	3	μμf
C_{oe}	Output Capacitance Referred to Emitter at 455 kc †	—	6	—	μμf
C_{ie}	Input Capacitance Referred to Emitter at 455 kc †‡	—	20	—	μμf

*V_C=−9V, I_E=0
†V_C = −9V, I_C = −1.0 mA
‡Input capacitance on input side of transformer is decreased by a factor of N^2, where N is input transformer turns ratio

TEXAS INSTRUMENTS
INCORPORATED
6000 LEMMON AVENUE DALLAS 9, TEXAS

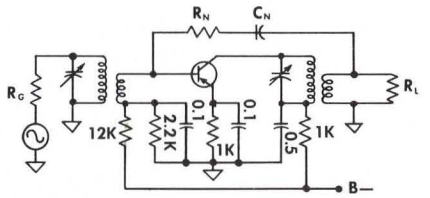
SEMICONDUCTOR-COMPONENTS DIVISION

TYPES 2N308 AND 2N309

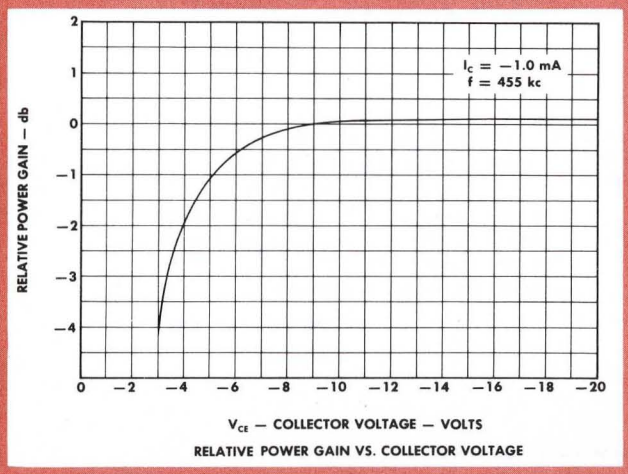
TYPICAL CHARACTERISTICS

power gain (in test circuit below)

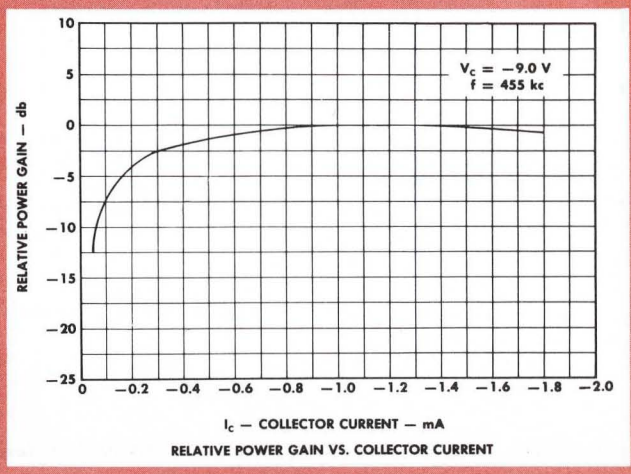
type	min.	max.	units	test conditions: frequency	Vc	Ic
2N308	39	42	db	455 kc	−9V	−1.0 mA
2N309	41	44	db	455 kc	−9V	−1.0 mA



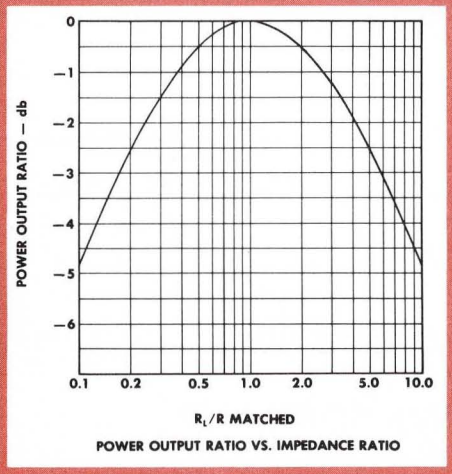
NOTES: 1. C_N and R_N are determined by circuit configuration and transformer design. Their values should be chosen to minimize the internal feedback of the transistor. For any particular circuit, fixed values of C_N and R_N may be used.
2. Generator Impedance, R_G, must reflect an impedance of 1000 ohms at the transistor input (base to ground).
3. Load Impedance, R_L, must reflect an impedance of 100,000 ohms at the transistor output (collector to ground).
4. Power Gain = $\frac{\text{Power Delivered to 100,000-Ohm Collector Load}}{\text{Maximum Available Power from 1000-Ohm Source}}$



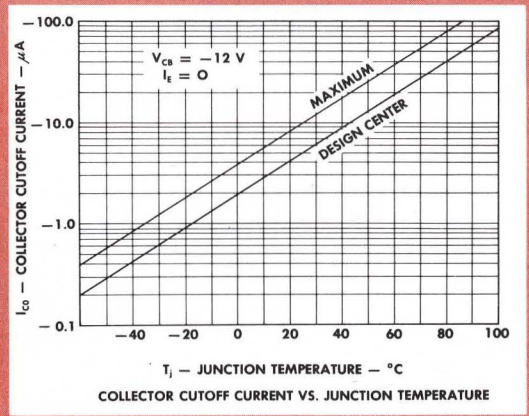
RELATIVE POWER GAIN VS. COLLECTOR VOLTAGE



RELATIVE POWER GAIN VS. COLLECTOR CURRENT



POWER OUTPUT RATIO VS. IMPEDANCE RATIO



COLLECTOR CUTOFF CURRENT VS. JUNCTION TEMPERATURE

TEXAS INSTRUMENTS RESERVES THE RIGHT TO MAKE CHANGES AT ANY TIME IN ORDER TO IMPROVE DESIGN

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