

TYPE 2N291 P-N-P ALLOY JUNCTION GERMANIUM TRANSISTOR



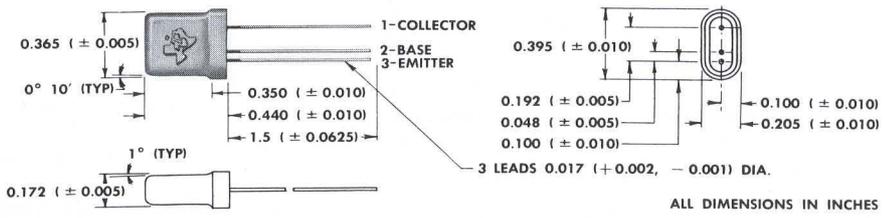
Texas Instruments Type 2N291 P-N-P alloy junction transistor is designed for medium power Class A or Class B audio applications. Rated at 180 milliwatt dissipation, the 2N291 is equally well adapted to high gain Class A and Class B output applications. Typical gains: Class A output, 33 db at 9v and 50mW; Class B output, 24 db at 12v and 500mW. The 2N291 is rated at 300 milliwatts when used with the recommended type of heat sink.

Both Class B power gain and beta measurements at high level insure maximum output power at low distortion levels. The 2N291 has an extremely linear beta with respect to collector current plus a low collector cutoff current.

To guarantee maximum reliability, stability, and long life, all units are cycled from -55°C and room humidity to $+75^{\circ}\text{C}$ and 95% relative humidity for four complete cycles over an eight-hour period. In addition, the hermetic seal is checked by vacuum testing.

mechanical data

Metal case with glass-to-metal hermetic seal between case and leads. Approximate unit weight is 1.5 grams.



absolute maximum ratings at 25°C ambient

Collector Voltage	−25 v
DC Supply Voltage (for Inductive Load)	−12 v
Collector Current	−200 ma
Device Dissipation (Free Air)	180 mw
Junction Temperature Rise/mw Dissipation (Free Air)	0.25 °C/mw
Device Dissipation (Infinite Heat Sink)	300 mw
Junction Temperature Rise/mw Dissipation (Infinite Heat Sink)	0.125 °C/mw

temperature data

Maximum Operating Temperature	50 °C
Maximum Storage Range	−55 °C to +85 °C

typical design characteristics at 25°C ambient

		test conditions		min.	design center	max.	unit
I_{CO}	Collector Cutoff Current	$V_{CB} = -25V$	$I_E = 0$	—	−10	−25	μA
h_{FE}	Beta at 60 cps	$V_{CE} = -0.5V$	$I_C = -100 mA$	30	45	—	—

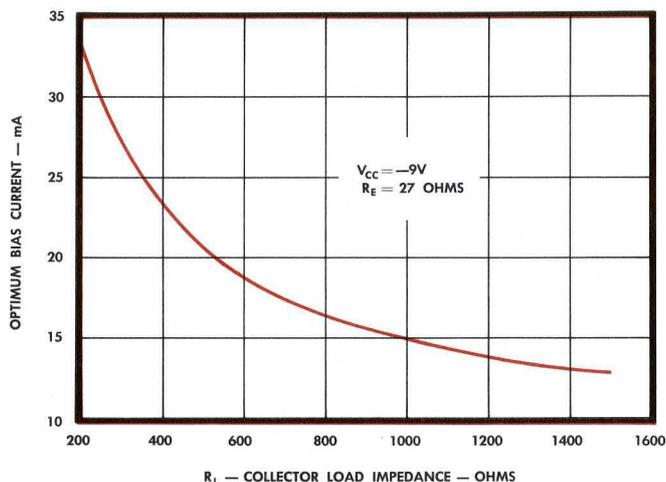
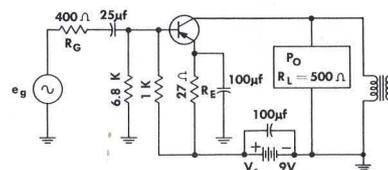
LICENSED UNDER BELL SYSTEM PATENTS

TYPE 2N291

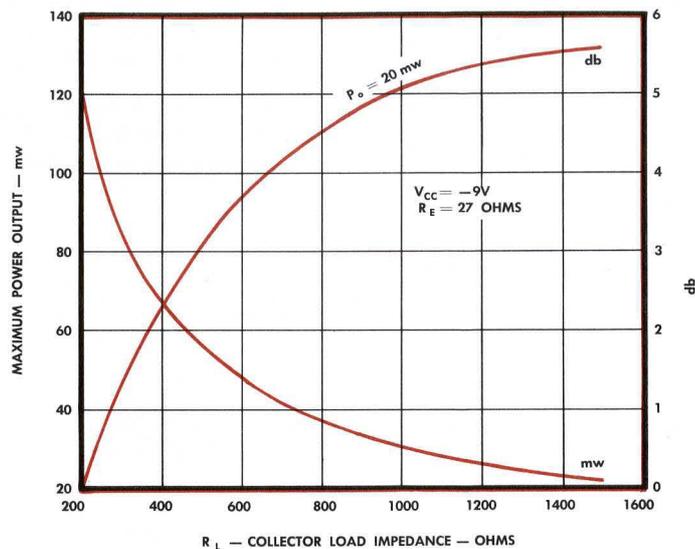
TYPICAL OPERATION

class A output

Collector Supply	- 9 V
Power Output	50 mW
Frequency	1000 cps
R_L , Collector Load	500 Ohms
Driving Impedance	400 Ohms
Average Distortion	6 %
Power Gain - Minimum	31 db
- Design Center	33 db



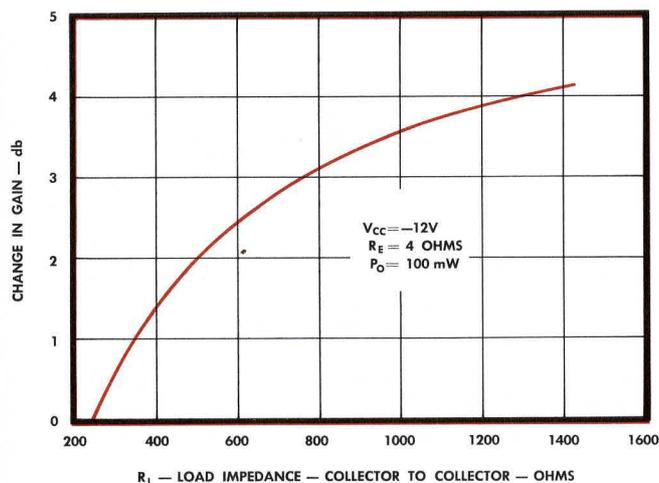
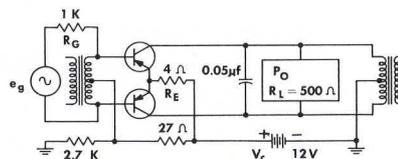
OPTIMUM BIAS CURRENT FOR MINIMUM DISTORTION VS. COLLECTOR LOAD



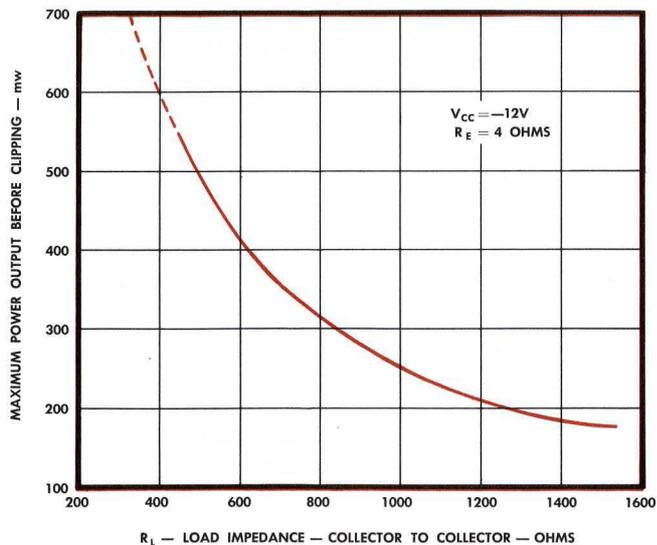
MAXIMUM POWER AND CHANGE IN GAIN VS. COLLECTOR LOAD IMPEDANCE (BIAS OPTIMIZED FOR LOW DISTORTION)

class B output

Collector Supply	-12 V
Power Output	0.5 W
Frequency	1000 cps
R_L , Load - Collector to Collector	500 Ohms
Input Impedance	1000 Ohms
Average Distortion	5 %
Power Gain - Minimum	22 db
- Design Center	24 db



CHANGE IN GAIN VS. LOAD IMPEDANCE



MAXIMUM POWER OUTPUT BEFORE CLIPPING VS. LOAD IMPEDANCE

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

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