

Types 2N292 and 2N293 are rate grown NPN germanium transistors intended for amplifier applications in radio receivers. Special manufacturing techniques provide a low value and a narrow spread in collector capacity so that neutralization in many circuits is not required. The type 2N293 is intended for receiver circuits where high gain is needed. In IF amplifier service the range in power gain is controlled to 3 db.

2N292, 2N293

Outline Drwg. No. 14

IF TRANSISTOR SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS

	2N292	2N293
Voltage		
Collector to Emitter (base open), V_{CE0}	15	15
Collector to Base (emitter open), V_{CB0}	15	15
Current		
Collector, I_C	-20	-20
Power		
Collector Dissipation at 25°C*, P_{CM}	65	65

Temperature Range

Operating and Storage, T_A , T_{STG}	-55 to 85	-55 to 85	°C
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ELECTRICAL CHARACTERISTICS**

IF Amplifier Service

Maximum Ratings

Collector Supply Voltage, V_{CC}	12	12	volts
Design Center Characteristics			
Input Impedance ($I_E = 1$ ma; $V_{CE} = 5$ v; $f = 455$ KC), Z_i	500	350	ohms
Output Impedance ($I_E = 1$ ma; $V_{CE} = 5$ v; $f = 455$ KC), Z_o	15	15	K ohms
Voltage Feedback Ratio ($I_E = 1$ ma; $V_{CB} = 5$ v; $f = 1$ mc), h_{FB}	10×10^{-3}	5×10^{-3}	
Collector to Base Capacitance ($I_E = 1$ ma; $V_{CB} = 5$ v; $f = 1$ mc), C_{CB}	2.4	2.4	μ uf
Frequency Cutoff ($I_E = 1$ ma; $V_{CB} = 5$ v), f_{cb}	5	8	mc
Base Current Gain ($I_B = 20$ ma; $V_{CE} = 1$ v), h_{FE}	25	25	
Min. Base Current Gain, h_{FE}	6	6	
Max. Base Current Gain, h_{FE}	44	55	

IF Amplifier Performance

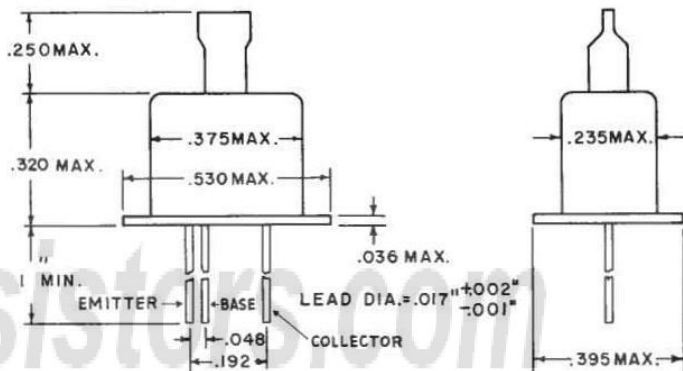
Collector Supply Voltage, V_{CC}	5	5	volts
Collector Current, I_C	1	1	ma
Input Frequency, f_i	455	455	KC
Available Power Gain, G_a	36	30	db
Min. Power Gain in Typical IF Test Circuit, G_a	25	28	db min
Power Gain Range of Variation in Typical IF Circuit	3	3	db

Cutoff Characteristics

Collector Cutoff Current ($V_{CB} = 5$ v), I_{CO}	.5	.5	μ a
Collector Cutoff Current ($V_{CB} = 15$ v), I_{CO}	.5	.5	μ a max

*Derate 1.1 mw/°C increase in ambient temperature over 25°C.

**All values are typical unless indicated as a min or max.



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