TYPES 2N4996, 2N4997
N-P-N SILICON TRANSISTORS

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HIGH-FREQUENCY SILECT† TRANSISTORS‡ FOR TUNER AND IF-AMPLIFIER STAGES IN FM AND AM/FM STEREO-MULTIPLEX RECEIVERS

- **Rugged, One-Piece Construction with Standard TO-18 100-mil Pin-Circle**

mechanical data

These transistors are encapsulated in a plastic compound specifically designed for this purpose, using a highly mechanized process developed by Texas Instruments. The case will withstand soldering temperatures without deformation. These devices exhibit stable characteristics under high-humidity conditions and are capable of meeting MIL-STD-202C, Method 106B. The transistors are insensitive to light.

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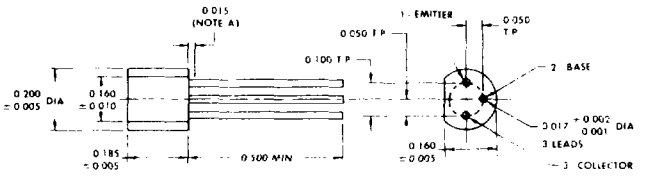
*CASE OUTLINE



NOTES: A. Lead diameter is not controlled in this area.
B Leads having maximum diameter (0.019) shall be within 0.007 of their true positions measured in the gaging plane 0.054 below the seating plane of the device relative to a maximum diameter package.
C. All dimensions are in inches.

*absolute maximum ratings at 25°C free-air temperature (unless otherwise noted)

Collector-Base Voltage	30 V
Collector-Emitter Voltage (See Note 1)	18 V
Emitter-Base Voltage	4 V
Continuous Collector Current	50 mA
Continuous Device Dissipation at (or below) 25°C Free-Air Temperature (See Note 2)	250 mW
Storage Temperature Range	−65°C to 150°C
Lead Temperature ⅛ Inch from Case for 10 Seconds	260°C

NOTES: 1. This value applies when the base-emitter diode is open-circuited.
2. Derate linearly to 150°C free-air temperature at the rate of 2 mW/°C.

*JEDEC registered data
†Trademark of Texas Instruments
‡U.S. Patent No. 3,439,238

USES CHIP N16

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***electrical characteristics at 25°C free-air temperature (unless otherwise noted)**

PARAMETER		TEST CONDITIONS	2N4996			2N4997			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\ \mu A$, $I_E = 0$	30			30			V
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 2$ mA, $I_B = 0$, See Note 3	18			18			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\ \mu A$, $I_C = 0$	4			4			V
I_{CBO}	Collector Cutoff Current	$V_{CB} = 15$ V, $I_E = 0$			100			100	nA
		$V_{CB} = 15$ V, $I_E = 0$, $T_A = 85°C$			10			10	μA
h_{FE}	Static Forward Current Transfer Ratio	$V_{CE} = 10$ V, $I_C = 2$ mA	50			30		150	
$\|h_{fe}\|$	Small-Signal Common-Emitter Forward Current Transfer Ratio	$V_{CE} = 10$ V, $I_C = 2$ mA, $f = 100$ MHz	6		14	6		14	
$\|y_{fe}\|$	Small-Signal Common-Emitter Forward Transfer Admittance	$V_{CE} = 10$ V, $I_C = 2$ mA, $f = 10$ MHz					70		mmho
C_{cb}	Collector-Base Capacitance	$V_{CB} = 10$ V, $I_E = 0$, $f = 1$ MHz, See Note 4	0.1		0.65	0.1		0.65	pF
r_{oep}	Parallel-Equivalent Common-Emitter Short-Circuit Output Resistance	$V_{CE} = 10$ V, $I_C = 2$ mA, $f = 10$ MHz				50			kΩ
$r_b'C_c$	Collector-Base Time Constant	$V_{CB} = 10$ V, $I_E = -2$ mA, $f = 79.8$ MHz		14	20		14	20	ps

operating characteristics at 25°C free-air temperature

PARAMETER		TEST CONDITIONS	2N4996	UNIT
			TYP	
NF	Spot Noise Figure	$V_{CE} = 10$ V, $I_C = 2$ mA, $R_G = 100\ \Omega$, $f = 100$ MHz	2.5	dB

NOTES: 3. This parameter must be measured using pulse techniques. $t_w = 300\ \mu s$, duty cycle ≤ 2%.
4. C_{cb} measurement employs a three-terminal capacitance bridge incorporating a guard circuit. The emitter is connected to the guard terminal of the bridge.

*JEDEC registered data

TEXAS INSTRUMENTS
INCORPORATED
POST OFFICE BOX 5012 • DALLAS, TEXAS 75222