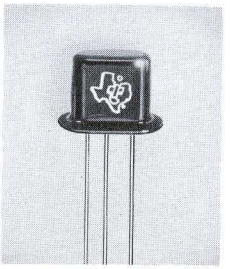
TYPE 2N117

N-P-N GROWN JUNCTION SILICON TRANSISTOR

TYPE 2N117
BULLETIN NO. DL-S 896 MARCH, 1958
REPLACES BULLETIN NO. DL-S 745 APRIL, 1957



9 to 20 beta spread

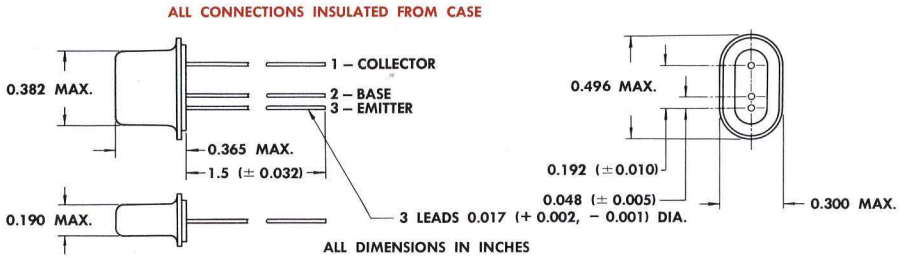
Specifically designed for high gain at high temperatures

qualification testing

All units are heat cycled from −65°C to + 175°C. This test consists of fourteen cycles, four at 95% relative humidity (from −65°C to + 75°C). Also, the hermetic seal is checked by pressure testing. All units are completely tested for design characteristics and undergo a rigorous tumble test to check for mechanical reliability. These units are designed to meet the requirements of MIL-T-19500/35.

mechanical data

Welded case with glass-to-metal hermetic seal between case and leads. Approximate weight is 1.7 grams.



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

Collector Voltage Referred to Base	45 V
Emitter Voltage Referred to Base	1 V
Collector Current	25 mA
Emitter Current	− 25 mA
Collector Dissipation	150 mW
at 100°C	100 mW
at 150°C	50 mW

junction temperature

Maximum Range	−65°C to +175°C

common base design characteristics at T_j = 25°C [except where advanced temperatures are indicated]

		test conditions		min.	design center	max.	unit
BV_{CBO}	Collector Breakdown Voltage	$I_C = 50\mu A$	$I_E = 0$	45	—	—	Volt
I_{CBO}	Collector Cutoff Current	$V_{CB} = 30V$	$I_E = 0$	—	—	2	μA
	at 100° C	$V_{CB} = 5V$	$I_E = 0$	—	—	10	μA
	at 150° C	$V_{CB} = 5V$	$I_E = 0$	—	—	50	μA
h_{ib}	Input Impedance	$V_{CB} = 5V$	$I_E = -1mA$	30	42	80	Ohm
h_{ob}	Output Admittance	$V_{CB} = 5V$	$I_E = -1mA$	0.0	0.4	1.2	μmho
h_{rb}	Feedback Voltage Ratio	$V_{CB} = 5V$	$I_E = -1mA$	25	120	500	$X10^{-6}$
h_{fb}	Current Transfer Ratio	$V_{CB} = 5V$	$I_E = -1mA$	−0.9	−0.925	−0.953	—
PG_e	Power Gain*†	$V_{CE} = 20V$	$I_E = -2mA$	—	35	—	db
NF	Noise Figure*‡	$V_{CE} = 5V$	$I_E = -1mA$	—	20	—	db
$f_{\alpha b}$	Frequency Cutoff	$V_{CB} = 5V$	$I_E = -1mA$	—	4	—	mc
C_{ob}	Output Capacitance (1mc)	$V_{CB} = 5V$	$I_E = -1mA$	—	7	—	$\mu\mu f$
R_{cs}	Saturation Resistance*	$I_B = 2.2mA$	$I_C = 5mA$	—	100	200	Ohm

*Common Emitter †R_g = 1k; R_L = 20k ‡Conventional Noise—Compared to 1000 ohm resistor, 1000 cps and 1 cycle band width

LICENSED UNDER BELL SYSTEM PATENTS

SEMICONDUCTOR-COMPONENTS DIVISION

TEXAS INSTRUMENTS
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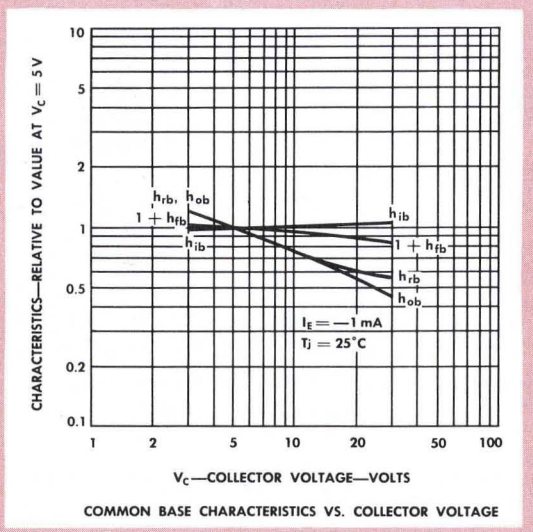
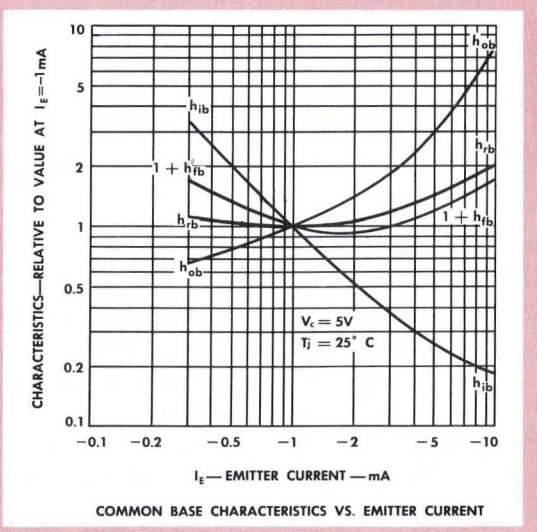
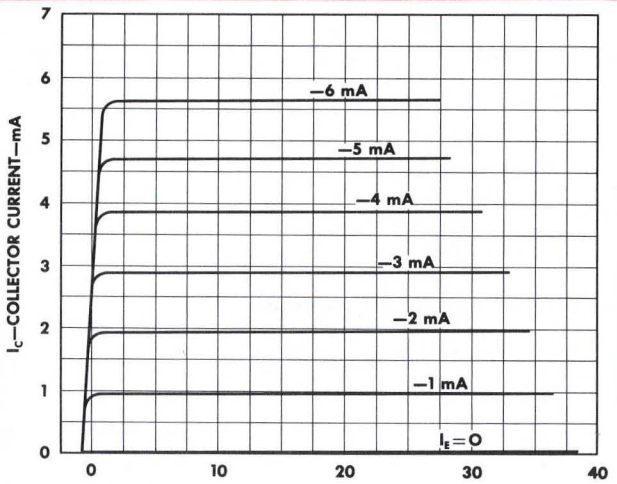
TYPICAL CHARACTERISTICS



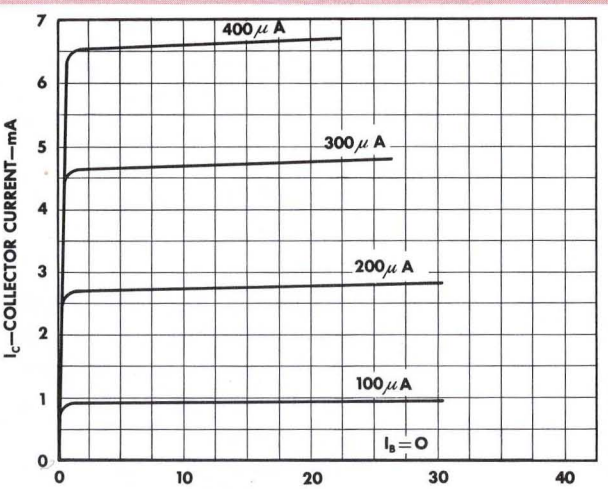
COMMON BASE CHARACTERISTICS VS. COLLECTOR VOLTAGE



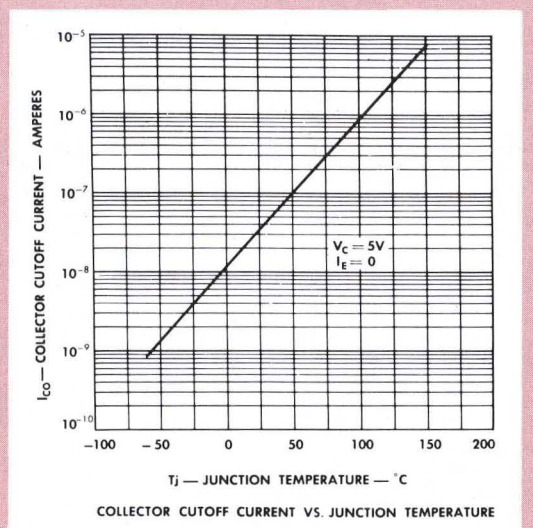
COMMON BASE CHARACTERISTICS VS. EMITTER CURRENT



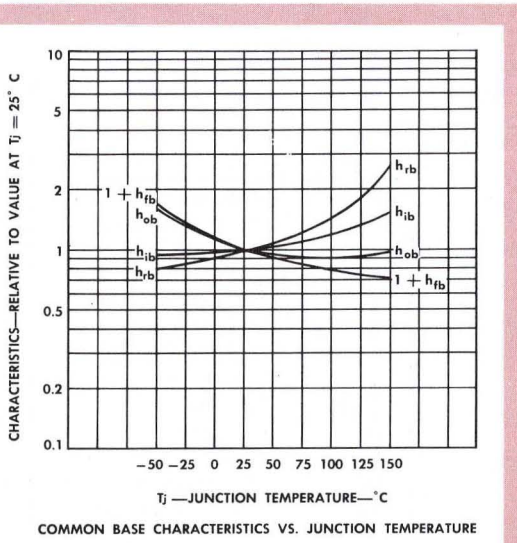
COMMON BASE OUTPUT CHARACTERISTICS



COMMON EMITTER OUTPUT CHARACTERISTICS



COLLECTOR CUTOFF CURRENT VS. JUNCTION TEMPERATURE



COMMON BASE CHARACTERISTICS VS. JUNCTION TEMPERATURE

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