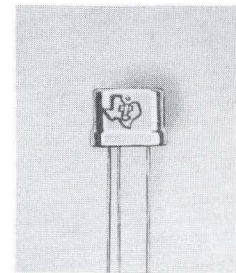




GERMANIUM P-N-P ALLOY JUNCTION TRANSISTORS

General Purpose Devices
Featuring
Close Beta Spreads

Stability and Reliability Assured
By Close Parameter Control



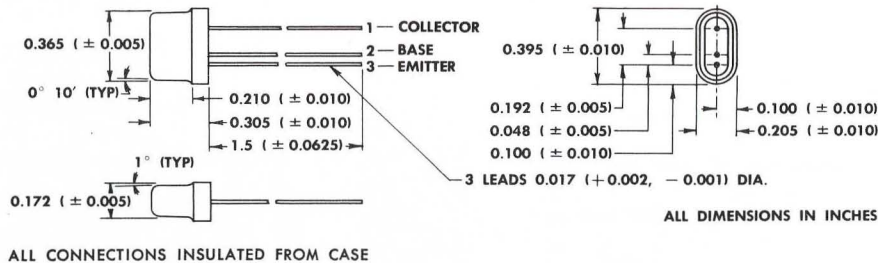
TYPES 2N368, 2N369
BULLETIN NO. DL-S 873
REPLACES BULLETIN NOS. DL-S 750, 751
MARCH, 1958
JUNE, 1957

qualification testing

To assure maximum reliability, stability, and long life, all units are heat 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. All transistors are thoroughly tested for rigid adherence to specified design characteristics.

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

Collector Voltage Referred to Base	- 30 V
Emitter Voltage Referred to Base	- 10 V
Collector Current	- 50 mA
Emitter Current	50 mA
Device Dissipation (Free Air)	100 mW
Junction Temp. Rise/Milliwatt (Free Air)	0.5° C/mW
Device Dissipation (Infinite Heat Sink)	150 mW
Junction Temp. Rise/Milliwatt (Infinite Heat Sink)	0.33° C/mW
Storage Temperature	- 55° C to + 75° C

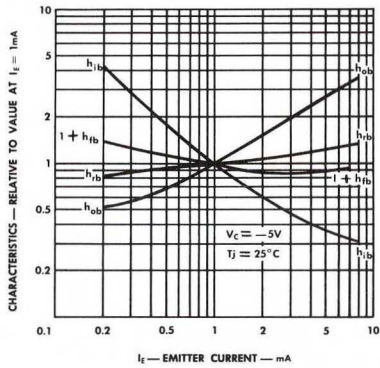
common base design characteristics at $T_j = 25^{\circ}\text{C}$

				min.	design center	max.	unit
I_{C0}	Collector Cutoff Current	$V_{CB} = -30\text{V}$	$I_E = 0$	—	7	20	μA
I_{C0}	Collector Cutoff Current	$V_{CB} = -5\text{V}$	$I_E = 0$	—	5	—	μA
C_{ob}	Output Capacitance	$f = 10\text{kc}$	—	—	33	50	$\mu\mu\text{f}$

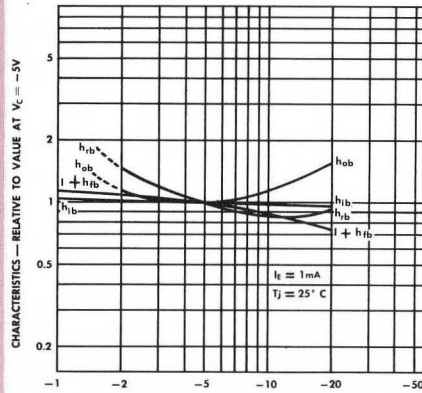
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TYPE 2N369

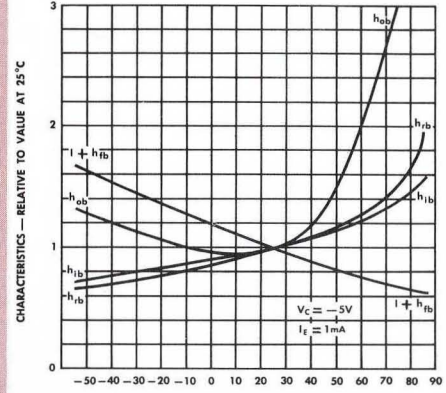
TYPICAL CHARACTERISTICS



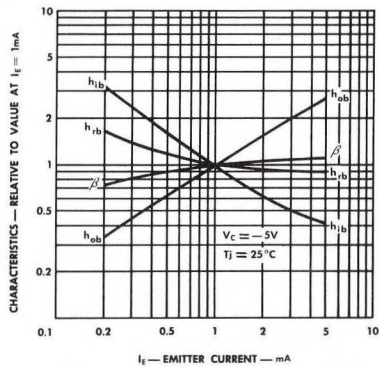
COMMON BASE CHARACTERISTICS VS. EMITTER CURRENT



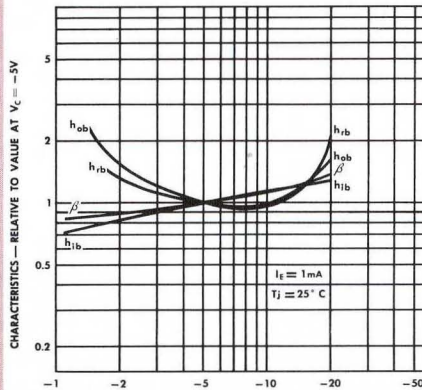
COMMON BASE CHARACTERISTICS VS. COLLECTOR VOLTAGE



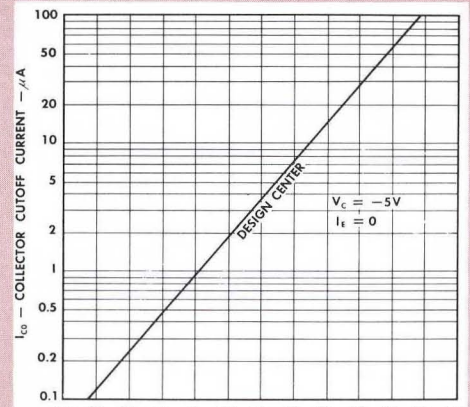
COMMON BASE CHARACTERISTICS VS. JUNCTION TEMPERATURE



COMMON EMITTER CHARACTERISTICS VS. EMITTER CURRENT



COMMON EMITTER CHARACTERISTICS VS. COLLECTOR VOLTAGE



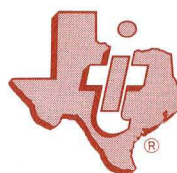
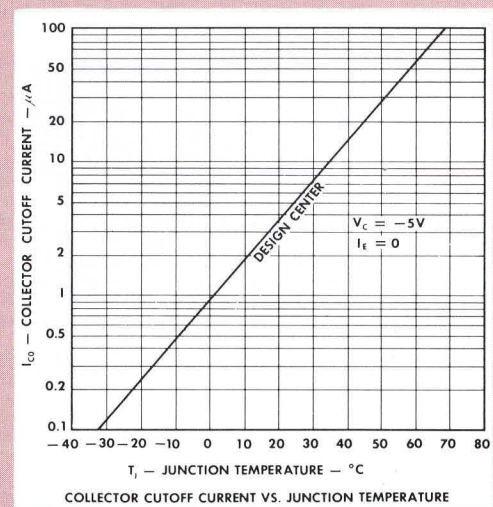
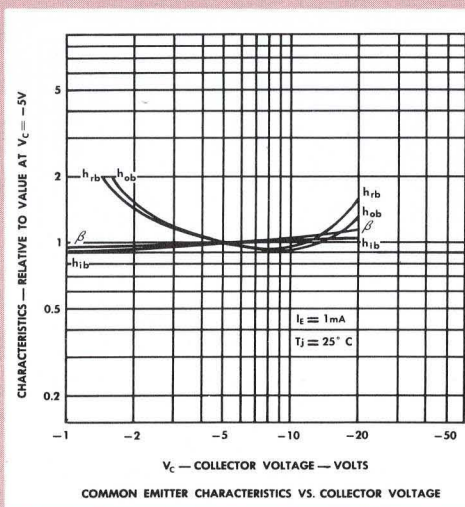
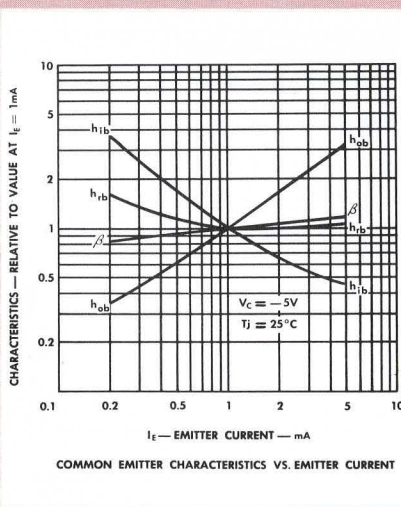
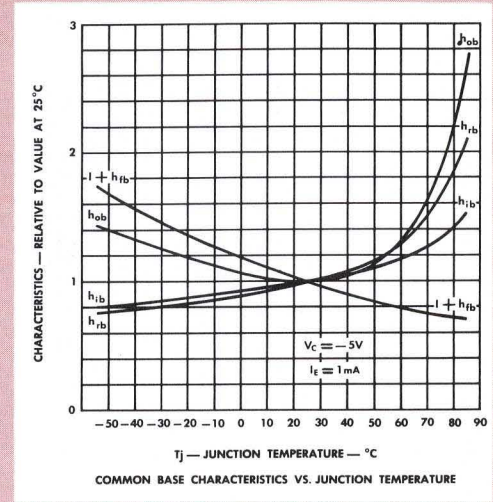
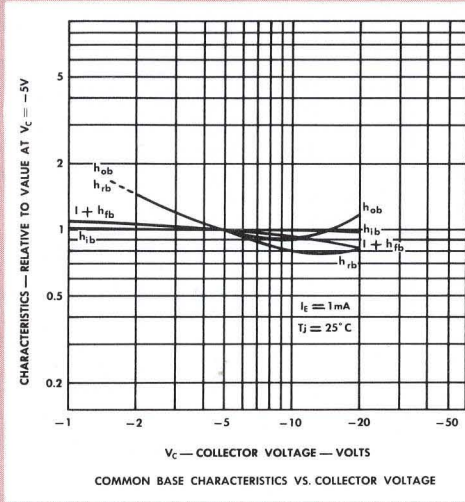
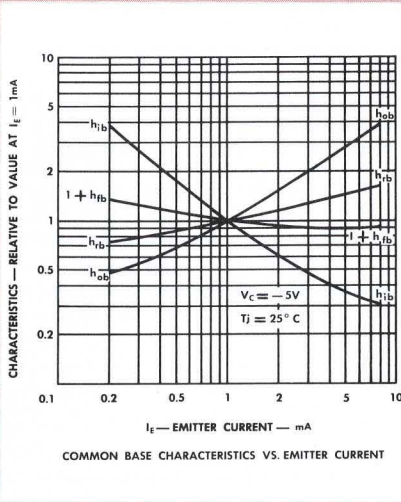
COLLECTOR CUTOFF CURRENT VS. JUNCTION TEMPERATURE

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TYPES 2N368, 2N369

TYPICAL CHARACTERISTICS

common base design characteristics at $T_j = 25^\circ\text{C}$ (continued)

TYPE 2N368

				min.	design center	max.	unit
h_{ib}	Input Impedance	$V_{CB} = -5\text{V}$	$I_E = 1\text{mA}$	25	33	50	Ohm
h_{ob}	Output Admittance	$V_{CB} = -5\text{V}$	$I_E = 1\text{mA}$	0.20	0.50	1.5	μmho
h_{rb}	Feedback Voltage Ratio	$V_{CB} = -5\text{V}$	$I_E = 1\text{mA}$	75	200	1000	$\times 10^{-6}$
h_{fb}	Current Transfer Ratio	$V_{CB} = -5\text{V}$	$I_E = 1\text{mA}$	0.950	0.973	0.980	—
β	Beta*	$V_{CE} = -5\text{V}$	$I_E = 1\text{mA}$	19	36	49	—
NF	Noise Figure†*	$V_{CE} = -5\text{V}$	$I_E = 1\text{mA}$	—	8	—	db
$F_{\alpha b}$	Frequency Cutoff	$V_{CB} = -5\text{V}$	$I_E = 1\text{mA}$	0.40	1.0	—	mc

*Common Emitter

†Conventional Noise—Compared to 1000 ohm resistor, 1000 cps and 1 cycle band width.

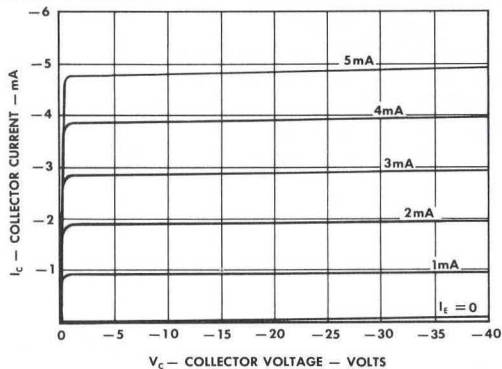
TYPE 2N369

				min.	design center	max.	unit
h_{ib}	Input Impedance	$V_{CB} = -5\text{V}$	$I_E = 1\text{mA}$	25	30	50	Ohm
h_{ob}	Output Admittance	$V_{CB} = -5\text{V}$	$I_E = 1\text{mA}$	0.15	0.35	1.5	μmho
h_{rb}	Feedback Voltage Ratio	$V_{CB} = -5\text{V}$	$I_E = 1\text{mA}$	100	250	1500	$\times 10^{-6}$
h_{fb}	Current Transfer Ratio	$V_{CB} = -5\text{V}$	$I_E = 1\text{mA}$	0.980	0.982	0.993	—
β	Beta*	$V_{CE} = -5\text{V}$	$I_E = 1\text{mA}$	49	55	142	—
NF	Noise Figure†*	$V_{CE} = -5\text{V}$	$I_E = 1\text{mA}$	—	7	—	db
$F_{\alpha b}$	Frequency Cutoff	$V_{CB} = -5\text{V}$	$I_E = 1\text{mA}$	0.5	1.3	—	mc

*Common Emitter

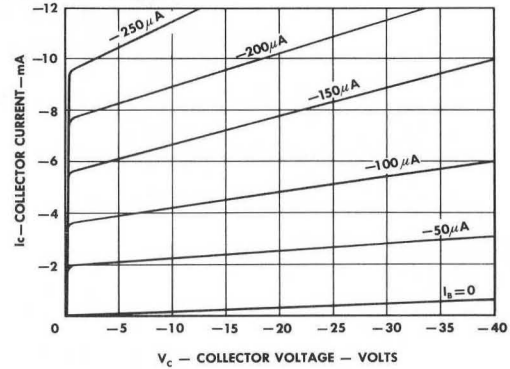
†Conventional Noise—Compared to 1000 ohm resistor, 1000 cps and 1 cycle band width.

TYPE 2N368



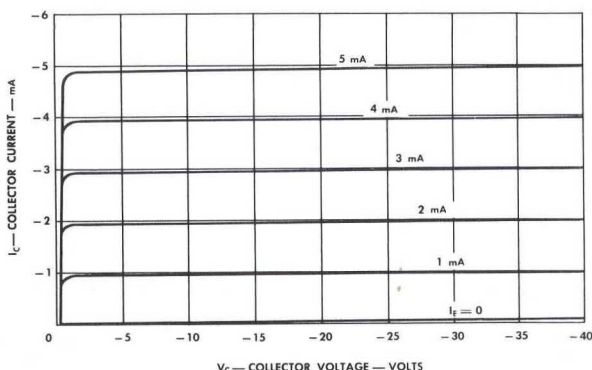
COMMON BASE OUTPUT CHARACTERISTICS

TYPE 2N368



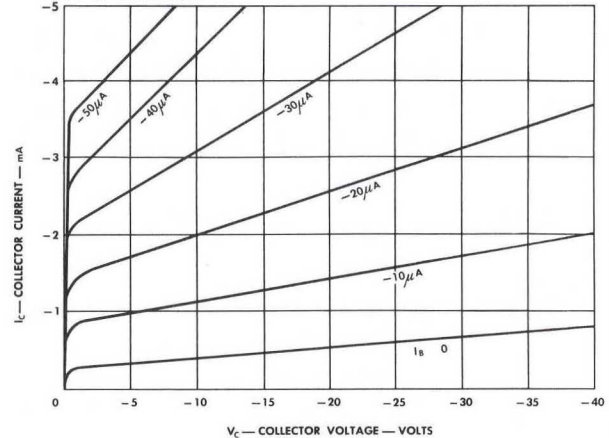
COMMON EMITTER OUTPUT CHARACTERISTICS

TYPE 2N369



COMMON BASE OUTPUT CHARACTERISTICS

TYPE 2N369



COMMON EMITTER OUTPUT CHARACTERISTICS

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