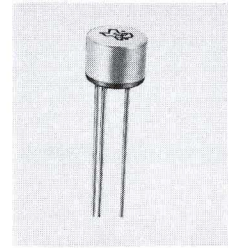


# TYPES 2N1372 THROUGH 2N1381 P-N-P ALLOY-JUNCTION GERMANIUM TRANSISTOR



## LINEAR BETA, LOW DISTORTION, HIGH POWER GAIN

Specifically designed for low-frequency  
general purpose industrial applications-



- medium frequency switching
- servo amplifiers
- audio amplifiers
- pagers
- intercoms
- motor controls

TYPES 2N1372 THROUGH 2N1381  
BULLETIN NO. DL-S 1139, AUGUST 1959

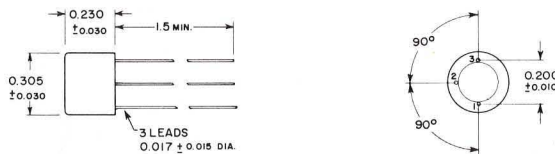
### qualification testing

To ensure maximum reliability, stability, and long life, all units are heat cycled from  $-55^{\circ}\text{C}$  and room humidity to  $+100^{\circ}\text{C}$  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 on CAT (Central Automatic Testing) equipment.

### mechanical data

Metal case with new glass-to-metal hermetic seal between case and leads eliminates all welding and soldering operations from the sealing process. Standard JEDEC E3-51 base, TO-9 package. Approximate unit weight, 1 gram.

ALL LEADS INSULATED FROM CASE



ALL DIMENSIONS IN INCHES

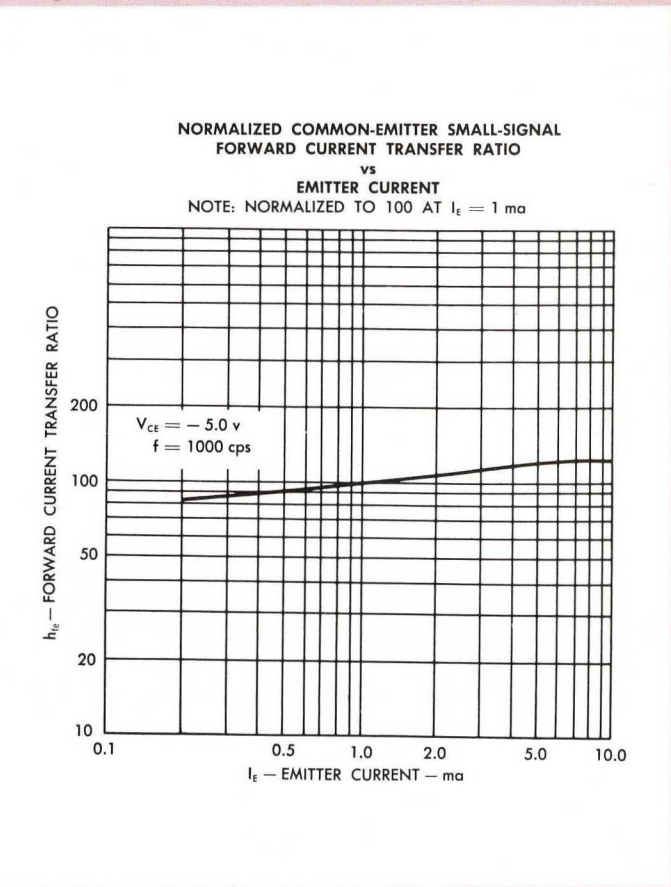
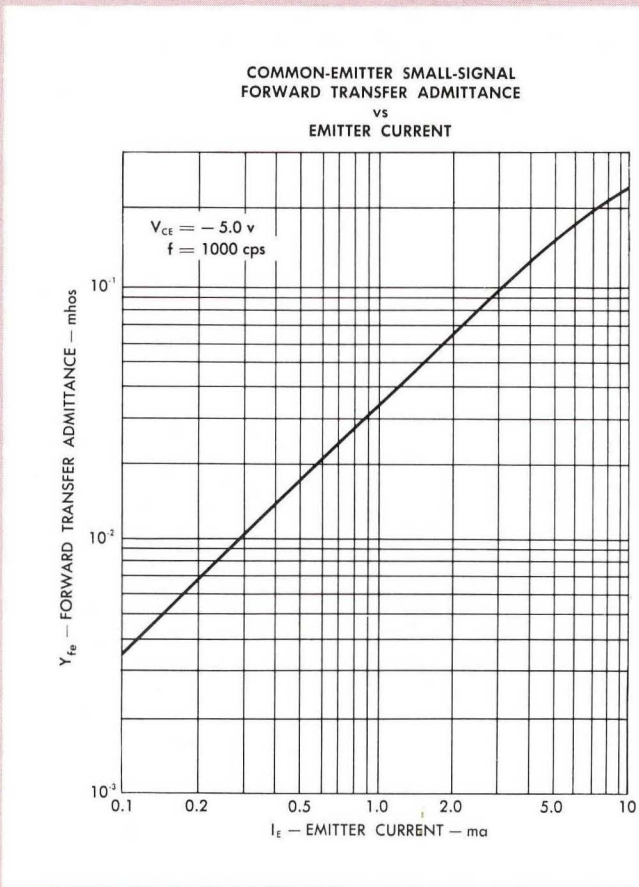
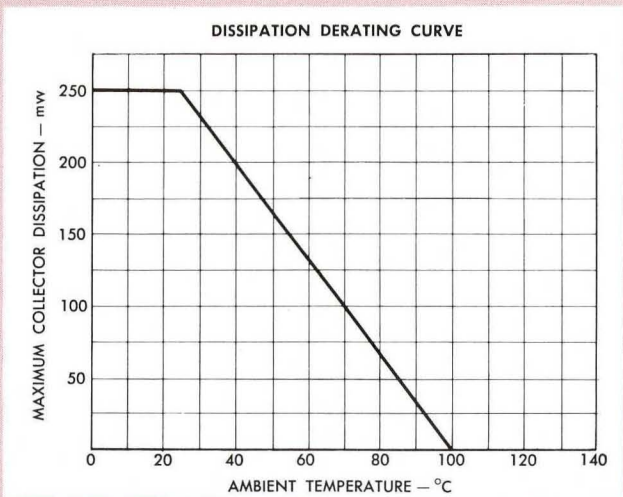
LICENSED UNDER BELL SYSTEM PATENTS

SEMICONDUCTOR-COMPONENTS DIVISION

**TEXAS INSTRUMENTS**  
INCORPORATED  
SEMICONDUCTOR-COMPONENTS DIVISION  
P. O. BOX 312 • 13500 N. CENTRAL EXPRESSWAY  
DALLAS, TEXAS

# TYPES 2N1372 THROUGH 2N1381

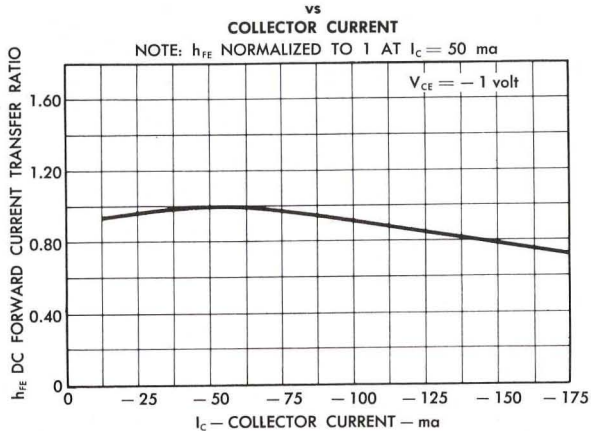
## TYPICAL CHARACTERISTICS



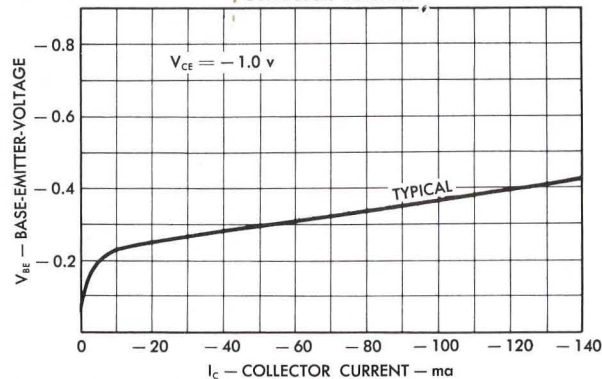
# TYPES 2N1372 THROUGH 2N1381

## TYPICAL CHARACTERISTICS

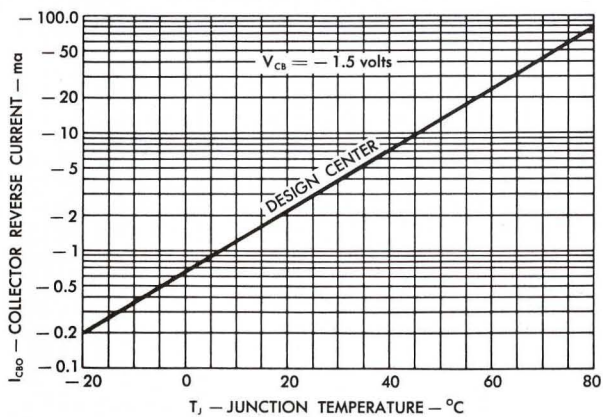
NORMALIZED COMMON-EMITTER  
DC FORWARD CURRENT TRANSFER RATIO



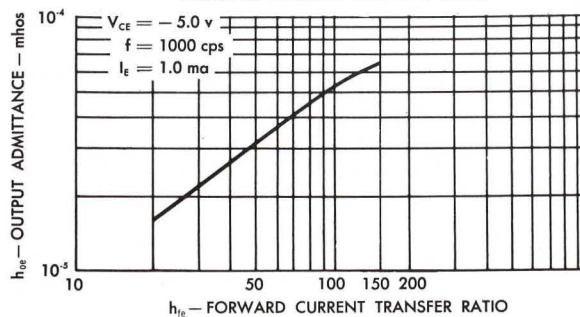
COMMON-EMITTER BASE-EMITTER VOLTAGE  
vs  
COLLECTOR CURRENT



COLLECTOR REVERSE CURRENT VS.  
JUNCTION TEMPERATURE



COMMON-EMITTER SMALL-SIGNAL  
OUTPUT ADMITTANCE  
vs  
FORWARD CURRENT TRANSFER RATIO



# TYPES 2N1372 THROUGH 2N1381

## TYPICAL CHARACTERISTICS

maximum ratings at 25°C ambient (unless otherwise noted)

|                                | 2N1372          | 2N1373          | 2N1374          | 2N1375          | 2N1376          | 2N1377          | 2N1378          | 2N1379          | 2N1380          | 2N1381          | unit |
|--------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------|
| Collector - Base Voltage       | -25             | -45             | -25             | -45             | -25             | -45             | -12             | -25             | -12             | -25             | v    |
| Emitter - Base Voltage         | -15             | -25             | -15             | -25             | -15             | -25             | -7              | -15             | -7              | -15             | v    |
| Collector - Emitter Voltage    | -25             | -45             | -25             | -45             | -25             | -45             | -12             | -25             | -12             | -25             | v    |
| Collector Current              | -200            | -200            | -200            | -200            | -200            | -200            | -200            | -200            | -200            | -200            | ma   |
| Total Device Dissipation       | 250             | 250             | 250             | 250             | 250             | 250             | 250             | 250             | 250             | 250             | mw   |
| Collector Junction Temperature | 100             | 100             | 100             | 100             | 100             | 100             | 100             | 100             | 100             | 100             | °C   |
| Storage Temperature Range      | -55°C to +100°C | -55°C to +100°C | -55°C to +100°C | -55°C to +100°C | -55°C to +100°C | -55°C to +100°C | -55°C to +100°C | -55°C to +100°C | -55°C to +100°C | -55°C to +100°C |      |

electrical characteristics at 25°C ambient

|  | 2N1372 | 2N1373             | 2N1374             | 2N1375             | 2N1376             | 2N1377             | 2N1378             | 2N1379             | 2N1380             | 2N1381             | unit               |           |
|--|--------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----------|
| $I_{CBO}$ Collector Reverse Current<br>( $V_{CB} = -12v$ $I_E = 0$ )   | (max)  |                    |                    |                    |                    |                    | -7                 |                    | -14                |                    | $\mu a$            |           |
| ( $V_{CB} = -20v$ $I_E = 0$ )  | (max)  | -7                 | -7                 | -7                 | -7                 | -7                 | -7                 | -7                 | -14                | -14                | $\mu a$            |           |
| ( $V_{CB} = -1.5v$ $I_E = 0$ )   | (typ)  | -3                 | -3                 | -3                 | -3                 | -3                 | -3                 | -3                 | -3                 | -3                 | $\mu a$            |           |
| $I_{EBO}$ Emitter Reverse Current<br>( $V_{EB} = -1.5v$ $I_C = 0$ )  | (typ)  | -3                 | -3                 | -3                 | -3                 | -3                 | -7                 | -5                 | -7                 | -5                 | $\mu a$            |           |
| $h_{FE}$ dc Forward Current Transfer Ratio*<br>( $V_{CE} = -1v$ $I_C = -50 ma$ )                                 | (min)  | 30                 | 30                 | 50                 | 50                 | 75                 | 75                 | 95                 | 95                 | 30                 | 30                 |           |
|  | (typ)  | 45                 | 45                 | 80                 | 80                 | 95                 | 95                 | 200                | 200                | 100                | 100                |           |
|  | (max)  | 190                | 190                | 150                | 150                | 150                | 150                | 300                | 300                | 300                | 300                |           |
| $f_{\alpha_b}$ Common-Base Alpha-Cutoff<br>Frequency<br>( $V_{CB} = -5v$ $I_C = -1 ma$ )                         | (typ)  | 1.5                | 1.5                | 2                  | 2                  | 2                  | 2                  | 3                  | 3                  | 2                  | 2                  | mc        |
| $h_{FE}$ ac Common - Emitter Forward<br>Current Transfer Ratio<br>( $f = 1000 cps$ $V_{CE} = -5v$ $I_E = 1 ma$ ) | (typ)  | 45                 | 45                 | 70                 | 70                 | 95                 | 95                 | 200                | 200                | 100                | 100                |           |
| $h_{ib}$ Common - Base Input Impedance<br>( $f = 1000 cps$ $V_{CB} = -5v$ $I_E = 1 ma$ )                         | (typ)  | 30                 | 30                 | 30                 | 30                 | 30                 | 30                 | 35                 | 35                 | 30                 | 30                 | ohm       |
| $h_{ob}$ Common - Base Output Admittance<br>( $f = 1000 cps$ $V_{CB} = -5v$ $I_E = 1 ma$ )                       | (typ)  | 0.6                | 0.6                | 0.5                | 0.5                | 0.5                | 0.5                | 0.4                | 0.4                | 0.5                | 0.5                | $\mu mho$ |
| $h_{rb}$ Common - Base Reverse Voltage<br>Transfer Ratio<br>( $f = 1000 cps$ $V_{CB} = -5v$ $I_E = 1 ma$ )       | (typ)  | $4 \times 10^{-4}$ | $4 \times 10^{-4}$ | $5 \times 10^{-4}$ | $5 \times 10^{-4}$ | $5 \times 10^{-4}$ | $5 \times 10^{-4}$ | $6 \times 10^{-4}$ | $6 \times 10^{-4}$ | $5 \times 10^{-4}$ | $5 \times 10^{-4}$ |           |
| Noise Figure 1000 cps†   | (typ)  | 7.0                | 7.0                | 6.5                | 6.5                | 5.5                | 5.5                | 4                  | 4                  | 5.5                | 5.5                | db        |

\*Tolerance on all values  $\pm 10\%$  for test set correlation.

†Conventional noise compared to 1000 cps and 1 cycle bandwidth.