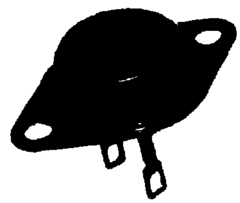
# TYPES 2N512, 2N512A, AND 2N512B
# P-N-P ALLOY-JUNCTION GERMANIUM HIGH-POWER TRANSISTORS

TYPES 2N512, 2N512A, and 2N512B
BULLETIN NO. DL-S 611472, MARCH 1961

**40, 60, or 80 VOLTS**
**15-Amp Collector Current**
**150-Watt Dissipation**
**LOW $I_{CO}$ LOW $V_{BE}$**
**LOW THERMAL RESISTANCE**
**for**
**HIGH-POWER CONVERSION • HIGH-CURRENT SWITCHING**
**AUDIO AMPLIFIER OUTPUT STAGES**



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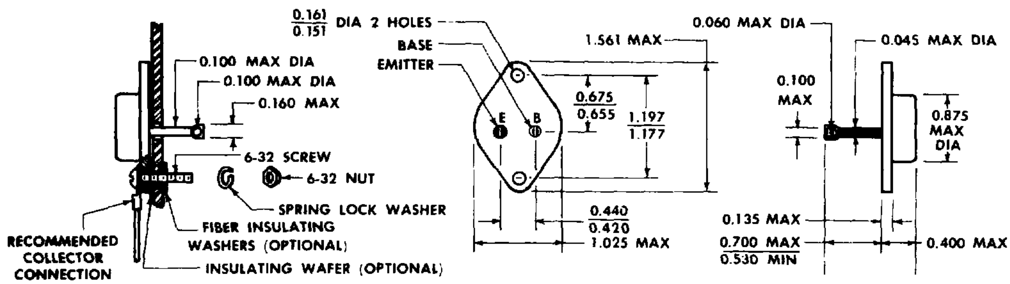
## mechanical data

The use of high-temperature silver solder to assemble the mounting base and the use of projection weld to seal the can provide a hermetically sealed enclosure which can withstand up to 300 psi. During the assembly process the absence of flux and soft solder, combined with extra cleanliness, prevents sealed-in contamination.

The mounting base provides an excellent heat path from the collector junction, which is electrically attached to the mounting base, to a heat sink which must be tightly attached to permit operation at maximum rated dissipation. The approximate weight of the unit is 17.6 grams.




COLLECTOR IS COMMON TO CASE

## absolute maximum ratings for all devices at 25°C mounting-base temperature

(unless otherwise noted)*

| | |
|---|---|
| Collector Current | 25a |
| Base Current | 5a |
| Total Device Dissipation** | 150w |
| Collector Junction Temperature | 100°C |
| Storage Temperature Range | −55 to +100°C |
| Thermal Resistance | 0.5°C/w |

*Maximum voltage ratings not specified because exceeding breakdown voltages will not permanently damage transistor characteristics so long as other maximum ratings are not exceeded.
**Derate at 2.0 w/°C.

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**electrical characteristics at 25°C mounting-base temperature (unless otherwise noted)**

| PARAMETER | | TYPE | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| $I_{CBO}$ | Collector Reverse-Current, 71° | 2N512 | $V_{CB}$ = −40 v, $I_E$ = 0 | | | −15.0 | ma |
| | | 2N512A | $V_{CB}$ = −60 v, $I_E$ = 0 | | | −15.0 | ma |
| | | 2N512B | $V_{CB}$ = −80 v, $I_E$ = 0 | | | −15.0 | ma |
| $I_{CBO}$ | Collector Reverse-Current | 2N512 | $V_{CB}$ = −40 v, $I_E$ = 0 | | −2.4 | −5.0 | ma |
| | | | $V_{CB}$ = −20 v, $I_E$ = 0 | | −0.6 | −2.0 | ma |
| | | 2N512A | $V_{CB}$ = −60 v, $I_E$ = 0 | | −2.4 | −5.0 | ma |
| | | | $V_{CB}$ = −30 v, $I_E$ = 0 | | −0.6 | −2.0 | ma |
| | | 2N512B | $V_{CB}$ = −80 v, $I_E$ = 0 | | −2.4 | −5.0 | ma |
| | | | $V_{CB}$ = −40 v, $I_E$ = 0 | | −0.6 | −2.0 | ma |
| $I_{EBO}$ | Emitter Reverse-Current | All | $V_{EB}$ = −30 v, $I_C$ = 0 | | −1.5 | −5.0 | ma |
| | | All | $V_{EB}$ = −15 v, $I_C$ = 0 | | −0.5 | | ma |
| $BV_{CBO}$ | Collector-Base Breakdown Voltage | 2N512 | $I_C$ = −5 ma, $I_E$ = 0 | −40 | | | v |
| | | 2N512A | | −60 | | | v |
| | | 2N512B | | −80 | | | v |
| $BV_{CEO}$ | Collector-Emitter Breakdown Voltage | 2N512 | $I_C$ = −500 ma, $I_B$ = 0 | −30 | −40 | | v |
| | | 2N512A | | −40 | −50 | | v |
| | | 2N512B | | −45 | −55 | | v |
| $BV_{CES}$ | Collector-Emitter Breakdown Voltage | 2N512 | $I_C$ = −300 ma, $V_{BE}$ = 0 | −50 | −60 | | v |
| | | 2N512A | | −60 | −70 | | v |
| | | 2N512B | | −65 | −80 | | v |
| $BV_{CER}$ | Collector-Emitter Breakdown Voltage | 2N512 | $I_C$ = −300 ma, $R_{BE}$ = 100 ohms | | −45 | | v |
| | | 2N512A | | | −55 | | v |
| | | 2N512B | | | −65 | | v |
| $BV_{EBO}$ | Emitter-Base Breakdown Voltage | All | $I_E$ = −5 ma, $I_C$ = 0 | −30 | −60 | | v |
| $h_{FE}$ | DC Forward-Current Transfer Ratio | All | $V_{CE}$ = −2 v, $I_C$ = −15 a | 20 | | 60 | — |
| $V_{BE}$ | Base-Emitter Voltage | All | $V_{CE}$ = −2 v, $I_C$ = −15 a | | | −2.0 | v |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | All | $I_B$ = −2.25 a, $I_C$ = −15 a | | −0.5 | −1.0 | v |
| $y_{FE}$ | DC Common-Emitter Forward Transfer Admittance | All | $V_{CE}$ = −2 v, $I_C$ = −15 a | 7.5 | | | mhos |
| $f_T$ | Internal Cutoff Frequency (where $\lvert h_{fe} \rvert = 1$) | All | $V_{CE}$ = −2 v, $I_C$ = −1 a | | 280 | | kc |

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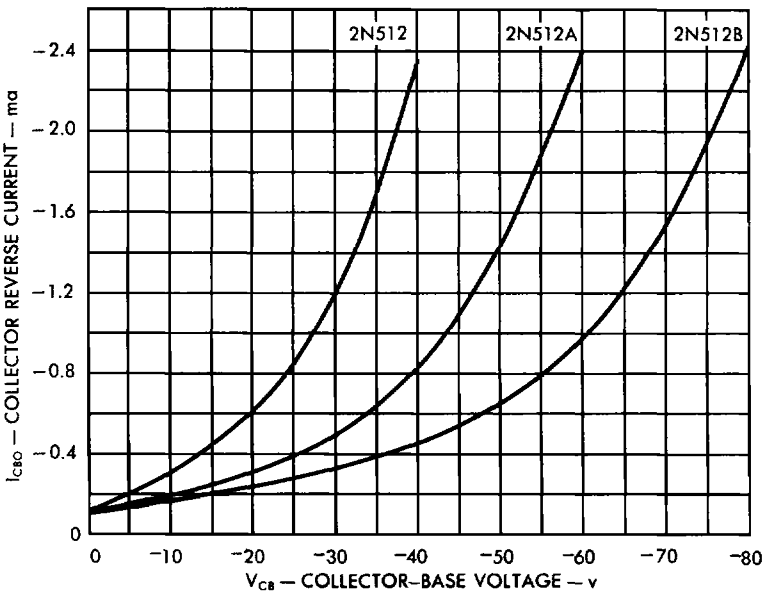
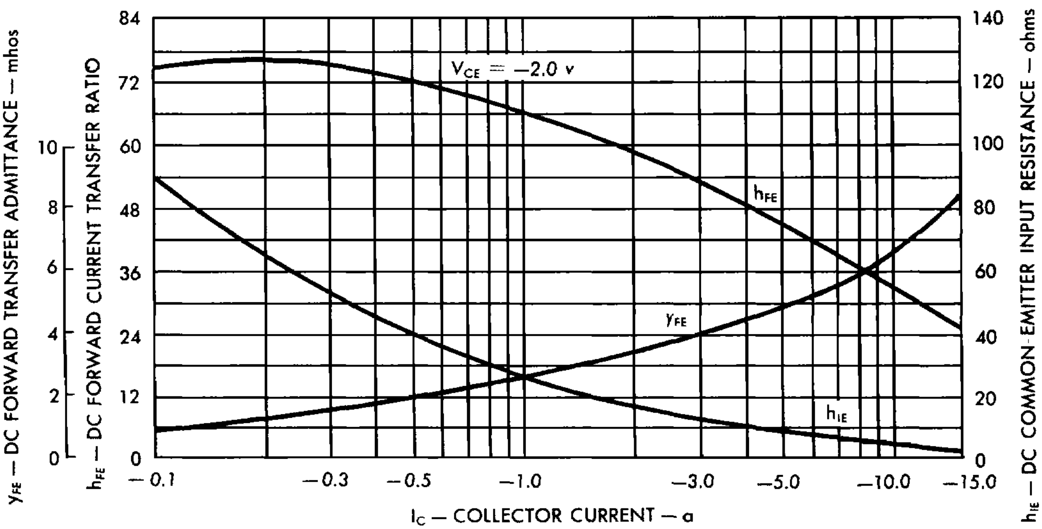
## TYPICAL CHARACTERISTICS

### COLLECTOR REVERSE-CURRENT CHARACTERISTICS



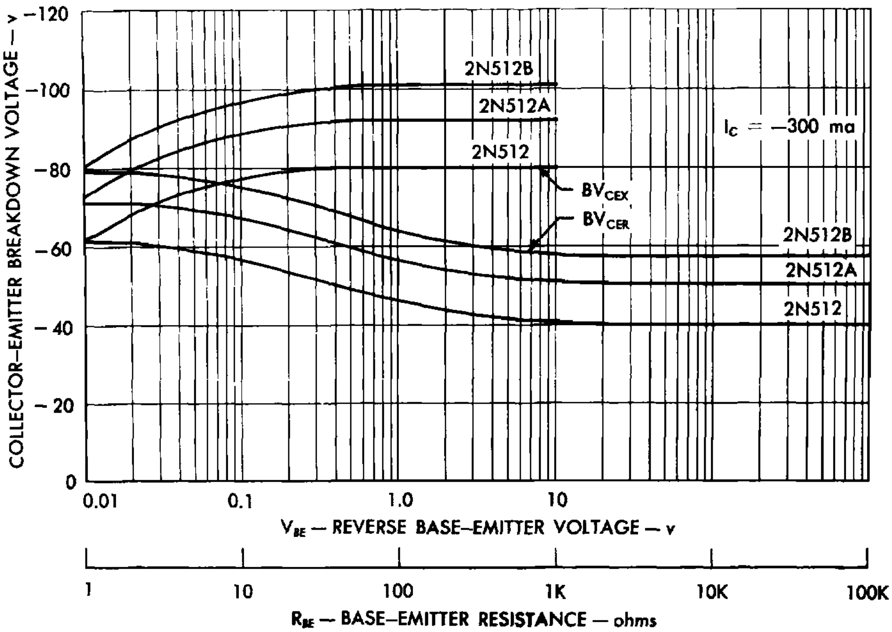



### COMMON-EMITTER DC FORWARD-CURRENT TRANSFER RATIO, DC FORWARD TRANSFER ADMITTANCE AND DC INPUT RESISTANCE VS COLLECTOR CURRENT



## TYPICAL CHARACTERISTICS

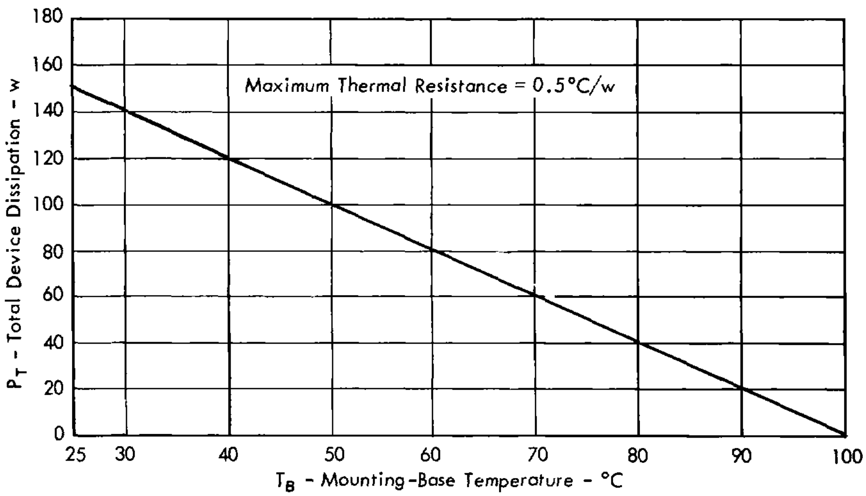
### COLLECTOR–EMITTER BREAKDOWN VOLTAGE CHARACTERISTICS






## THERMAL INFORMATION

POWER DISSIPATION DERATING CURVE

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