# TYPES 2N5225, A5T5225
# N-P-N SILICON TRANSISTORS

BULLETIN NO. DL-S 7311925, MARCH 1973

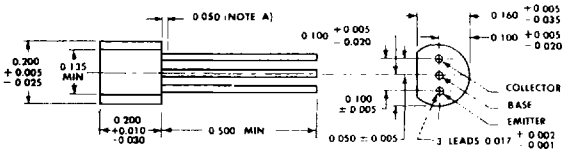
## SILECT† TRANSISTORS‡
## FOR MEDIUM-CURRENT AUDIO AMPLIFIER APPLICATIONS

- **For Complementary Use with P-N-P Types 2N5226, A5T5226**
- **Rugged One-Piece Construction with In-Line Leads or Standard TO-18 100-mil Pin-Circle Configuration**

### 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.

**2N5225**

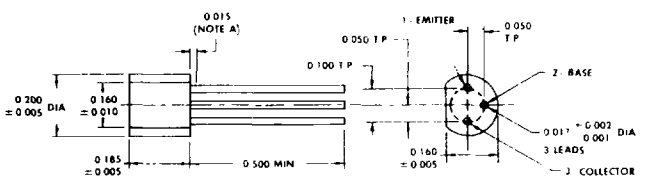



NOTES: A. Lead diameter is not controlled in this area
B. All dimensions are in inches.

*ALL JEDEC TO-92 DIMENSIONS AND NOTES ARE APPLICABLE

EBC

**A5T5225**




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 | 25 V* |
| Collector-Emitter Voltage (See Note 1) | 25 V* |
| Emitter-Base Voltage | 4 V* |
| Continuous Collector Current | 500 mA* |
| Continuous Device Dissipation at (or below) 25°C Free-Air Temperature (See Note 2) | 625 mW§ / 310 mW* |
| Storage Temperature Range | −65°C to 150°C§ / −55°C to 135°C* |
| Lead Temperature 1/16 Inch from Case for 60 Seconds | 260°C§ / 230°C* |

NOTES: 1. This value applies when the base-emitter diode is open-circuited.
2. Derate the 625-mW rating linearly to 150°C free-air temperature at the rate of 5 mW/°C. Derate the 310-mW (JEDEC registered) rating linearly to 135°C free-air temperature at the rate of 2.82 mW/°C.

*The asterisk identifies JEDEC registered data for the 2N5225 only. This data sheet contains all applicable registered data in effect at the time of publication.

†Trademark of Texas Instruments.

‡U.S. Patent No. 3,439,238.

§Texas Instruments guarantees these values in addition to the JEDEC registered values which are also shown.

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## *electrical characteristics at 25°C free-air temperature

| PARAMETER | | TEST CONDITIONS | | | MIN | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C$ = 100 μA, | $I_E$ = 0 | | 25 | | V |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C$ = 10 mA, | $I_B$ = 0, | See Note 3 | 25 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E$ = 100 μA, | $I_C$ = 0 | | 4 | | V |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$ = 15 V, | $I_E$ = 0 | | | 300 | nA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$ = 4 V, | $I_C$ = 0 | | | 500 | nA |
| $h_{FE}$ | Static Forward Current Transfer Ratio | $V_{CE}$ = 10 V, | $I_C$ = 10 mA | See Note 3 | 25 | | |
| | | $V_{CE}$ = 10 V, | $I_C$ = 50 mA | | 30 | 600 | |
| $V_{BE}$ | Base-Emitter Voltage | $I_B$ = 10 mA, | $I_C$ = 100 mA, | See Note 3 | | 1 | V |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_B$ = 10 mA, | $I_C$ = 100 mA, | See Note 3 | | 0.8 | V |
| $h_{fe}$ | Small-Signal Common-Emitter Forward Current Transfer Ratio | $V_{CE}$ = 10 V, | $I_C$ = 50 μA, | f = 1 kHz | 30 | 1800 | |
| $f_T$ | Transition Frequency | $V_{CE}$ = 10 V, | $I_C$ = 20 mA, | See Note 4 | 50 | | MHz |
| $C_{cb}$ | Collector-Base Capacitance | $V_{CB}$ = 5 V, See Note 5 | $I_E$ = 0, | f = 1 MHz, | | 20 | pF |

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NOTES: 3. These parameters must be measured using pulse techniques. $t_w$ = 300 μs, duty cycle ≤ 2%.
4. To obtain $f_T$, the $|h_{fe}|$ response with frequency is extrapolated at the rate of −6 dB per octave from f = 20 MHz to the frequency at which $|h_{fe}| = 1$.
5. $C_{cb}$ measurement employs a three-terminal capacitance bridge incorporating a guard circuit. The emitter is connected to the guard terminal of the bridge.

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## THERMAL INFORMATION

DISSIPATION DERATING CURVE