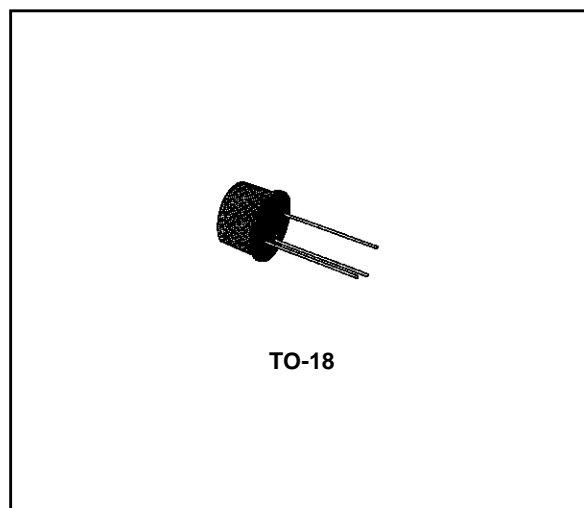


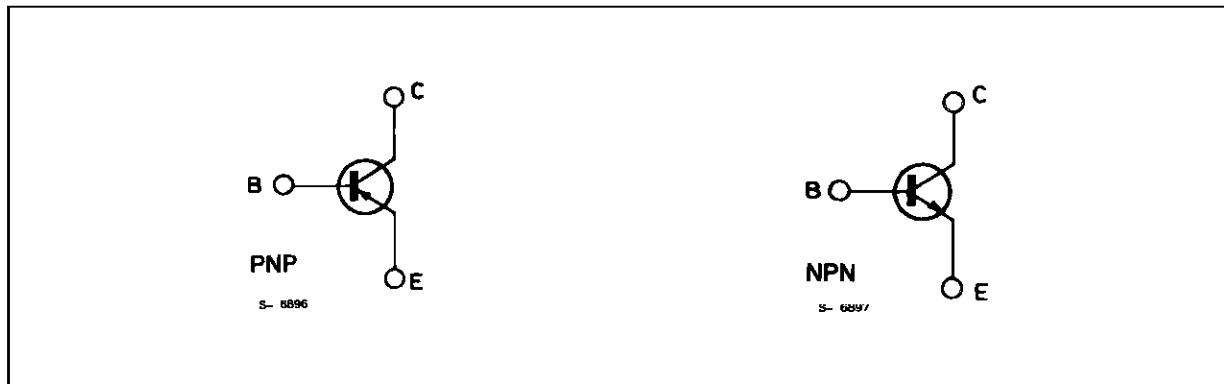
LOW NOISE GENERAL PURPOSE AUDIO AMPLIFIERS

DESCRIPTION

The BC177, BC178 and BC179 are silicon planar epitaxial PNP transistors in TO-18 metal case. They are suitable for use in driver audio stages, low noise input audio stages and as low power, high gain general purpose transistors. The complementary NPN types are respectively the BC107, BC108 and BC109.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | | | Unit |
|-----------|--|-------------|-------|-------|------------------|
| | | BC177 | BC178 | BC179 | |
| V_{CES} | Collector-emitter Voltage ($V_{BE} = 0$) | - 50 | - 30 | - 25 | V |
| V_{CEO} | Collector-emitter Voltage ($I_B = 0$) | - 45 | - 25 | - 20 | V |
| V_{EBO} | Emitter-base Voltage ($I_C = 0$) | - 5 | | | V |
| I_C | Collector Current | - 100 | | | mA |
| I_{CM} | Collector Peak Current | - 200 | | | mA |
| P_{tot} | Total Power Dissipation at $T_{amb} \leq 25\text{ }^\circ\text{C}$ | 300 | | | mW |
| T_{stg} | Storage Temperature | - 65 to 175 | | | $^\circ\text{C}$ |
| T_j | Junction Temperature | 175 | | | $^\circ\text{C}$ |

BC177-BC178-B179

THERMAL DATA

| | | | | |
|------------------|-------------------------------------|-----|-----|------|
| $R_{th\ j-case}$ | Thermal Resistance Junction-case | Max | 200 | °C/W |
| $R_{th\ j-amb}$ | Thermal Resistance Junction-ambient | Max | 500 | °C/W |

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ °C}$ unless otherwise specified)

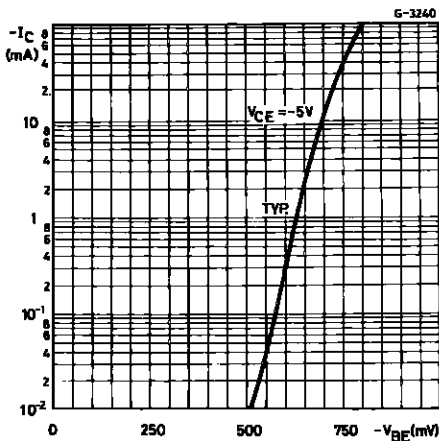
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------------|--|---|---------------------------------|----------------|---------------------------------|-------------|
| I_{CES} | Collector Cutoff Current ($V_{BE} = 0$) | $V_{CE} = -20\text{ V}$ $V_{CE} = -20\text{ V}$ $T_{amb} = 150\text{ °C}$ | | - 1 | - 100 - 10 | nA μA |
| $V_{(BR)CEO}^*$ | Collector-emitter Breakdown Voltage ($I_B = 0$) | $I_C = -2\text{ mA}$ for BC177 for BC178 for BC179 | - 45 - 25 - 20 | | | V V V |
| $V_{(BR)CES}$ | Collector-emitter Breakdown Voltage ($V_{BE} = 0$) | $I_C = -10\text{ μA}$ for BC177 for BC178 for BC179 | - 50 - 30 - 25 | | | V V V |
| $V_{(BR)EBO}$ | Emitter-base Breakdown Voltage ($I_C = 0$) | $I_E = -10\text{ μA}$ | - 5 | | | V |
| $V_{CE(sat)}^*$ | Collector-emitter Saturation Voltage | $I_C = -10\text{ mA}$ $I_B = -0.5\text{ mA}$ $I_C = -100\text{ mA}$ $I_B = -5\text{ mA}$ | | - 75 - 200 | - 250 | mV mV |
| V_{BE}^* | Base-emitter Voltage | $I_C = -2\text{ mA}$ $V_{CE} = -5\text{ V}$ | - 550 | - 640 | - 750 | mV |
| $V_{BE(sat)}$ | Base-emitter Saturation Voltage | $I_C = -10\text{ mA}$ $I_B = -0.5\text{ mA}$ $I_C = -100\text{ mA}$ $I_B = -5\text{ mA}$ | | - 720 - 860 | | mV mV |
| h_{fe} | Small Signal Current Gain | $I_C = -2\text{ mA}$ $V_{CE} = -5\text{ V}$ $f = 1\text{ kHz}$ for BC177 Gr. A for BC177 Gr. B for BC178 Gr. A for BC178 Gr. B for BC179 Gr. B | 125 240 125 240 240 | | 260 500 260 500 500 | |

* Pulsed: pulsed duration = 300 μs, duty cycle = 1 %.

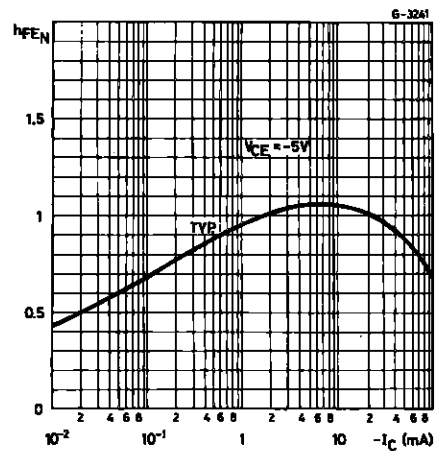
ELECTRICAL CHARACTERISTICS (continued)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------|----------------------------|--|------|----------------------|------|---------------|
| f_T | Transition Frequency | $I_C = -10 \text{ mA}$ $V_{CE} = -5 \text{ V}$ $f = 100 \text{ MHz}$ | | 200 | | MHz |
| C_{CBO} | Collector-base Capacitance | $I_E = 0$ $V_{CB} = -10 \text{ V}$ | | 5.0 | | pF |
| NF | Noise Figure | $I_C = -0.2 \text{ mA}$ $V_{CE} = -5 \text{ V}$ $R_g = 2 \text{ k}\Omega$ $f = 1 \text{ kHz}$ $B = 200 \text{ Hz}$ | | 2 | 10 | dB |
| | | for BC177 | | 2 | 10 | dB |
| | | for BC178 | | 1.2 | 4 | dB |
| | | for BC179 | | | | |
| h_{ie} | Input Impedance | $I_C = -2 \text{ mA}$ $V_{CE} = -5 \text{ V}$ $f = 1 \text{ kHz}$ | | 2.7 | | k Ω |
| | | for BC177 Gr. A | | 5.2 | | k Ω |
| | | for BC177 Gr. B | | 2.7 | | k Ω |
| | | for BC178 Gr. A | | 5.2 | | k Ω |
| | | for BC178 Gr. B | | 5.2 | | k Ω |
| | | for BC179 Gr. B | | | | |
| h_{re} | Reverse Voltage Ratio | $I_C = -2 \text{ mA}$ $V_{CE} = -5 \text{ V}$ $f = 1 \text{ kHz}$ | | 2.7×10^{-4} | | |
| | | for BC177 Gr. A | | 4.5×10^{-4} | | |
| | | for BC177 Gr. B | | 2.7×10^{-4} | | |
| | | for BC178 Gr. A | | 4.5×10^{-4} | | |
| | | for BC178 Gr. B | | 4.5×10^{-4} | | |
| | | for BC179 Gr. B | | | | |
| h_{oe} | Output Admittance | $I_C = -2 \text{ mA}$ $V_{CE} = -5 \text{ V}$ $f = 1 \text{ kHz}$ | | 25 | | μS |
| | | for BC177 Gr. A | | 35 | | μS |
| | | for BC177 Gr. B | | 25 | | μS |
| | | for BC178 Gr. A | | 35 | | μS |
| | | for BC178 Gr. B | | 35 | | μS |
| | | for BC179 Gr. B | | | | |

DC Transconductance.

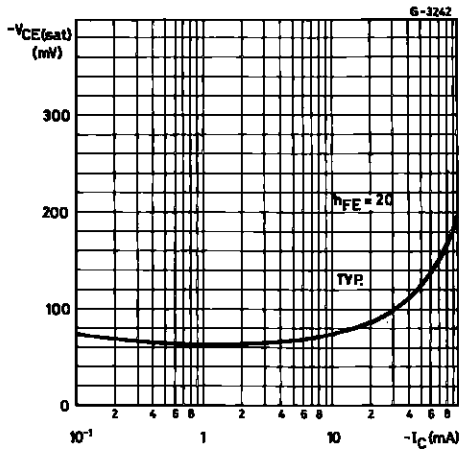


DC Normalized Current Gain.

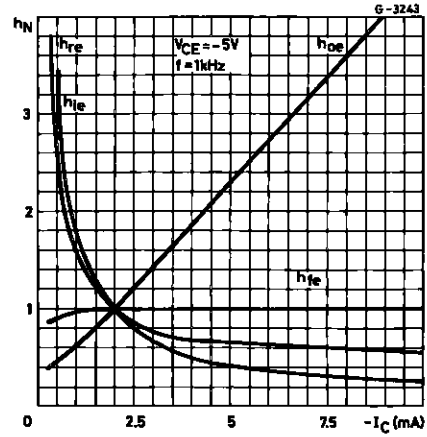


BC177-BC178-B179

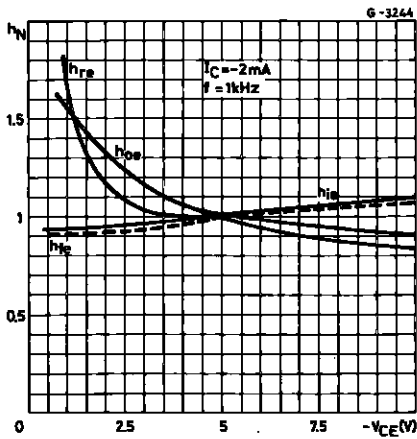
Collector-emitter Saturation Voltage.



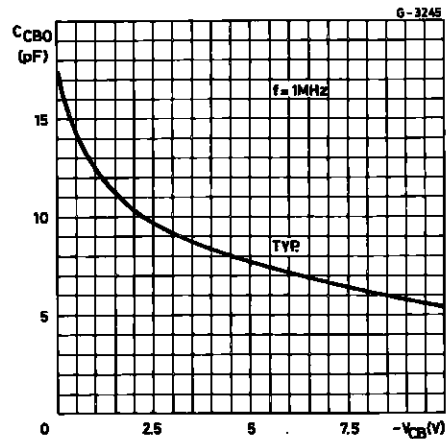
Normalized h Parameters.



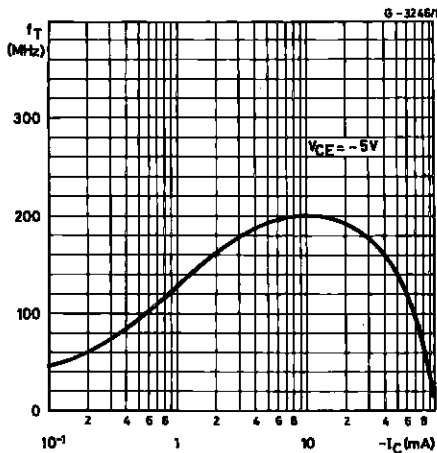
Normalized h Parameters.



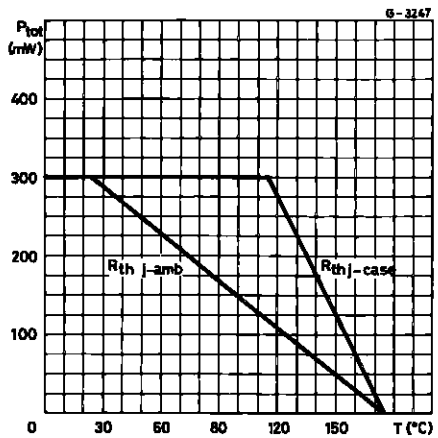
Collector-base Capacitance.



Transition Frequency.

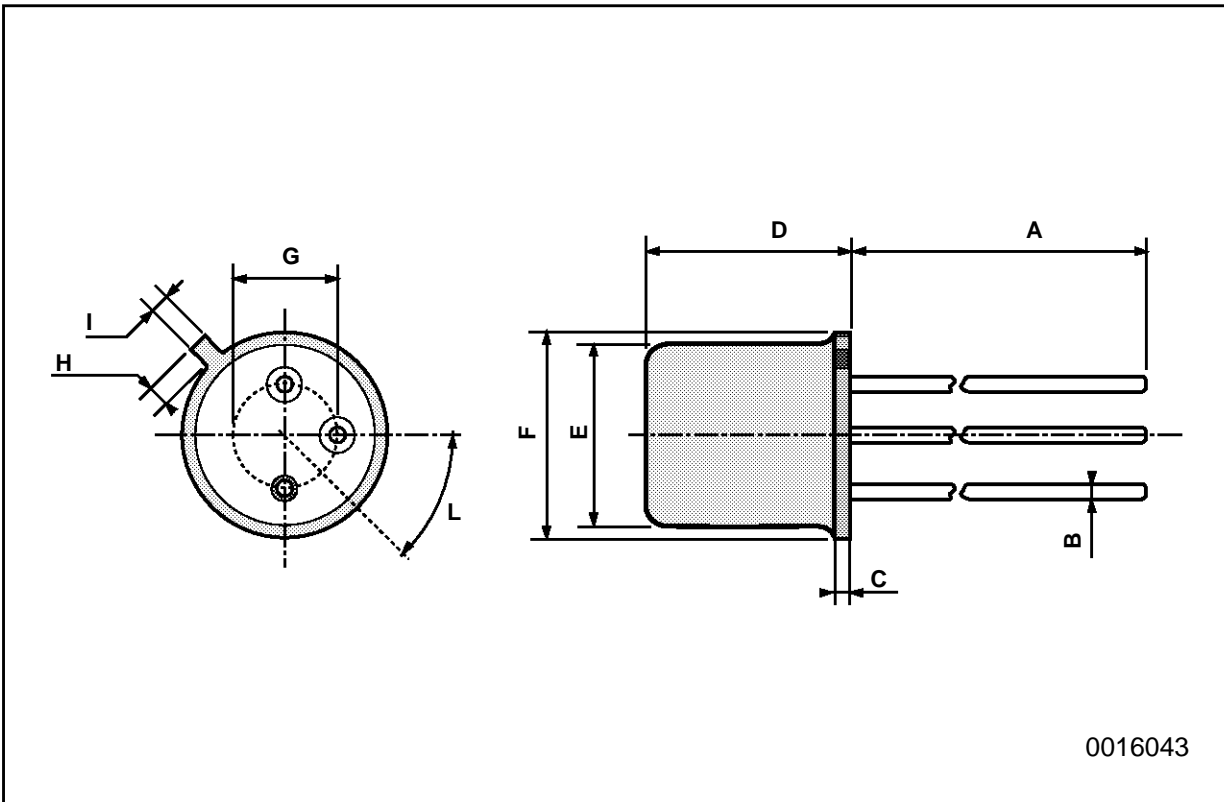


Power Rating Chart.



TO-18 MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------|------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | | 12.7 | | | 0.500 | |
| B | | | 0.49 | | | 0.019 |
| D | | | 5.3 | | | 0.208 |
| E | | | 4.9 | | | 0.193 |
| F | | | 5.8 | | | 0.228 |
| G | 2.54 | | | 0.100 | | |
| H | | | 1.2 | | | 0.047 |
| I | | | 1.16 | | | 0.045 |
| L | 45° | | | 45° | | |



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