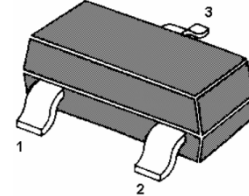


## NPN General Purpose Amplifier

For low noise, high gain, general purpose amplifier applications at collector currents from 1 $\mu$ A to 50mA.



1: Base 2: Emitter 3: Collector

**Marking: 1RM**

**SOT-23 Plastic Package**

### Absolute Maximum Ratings (Ta = 25 °C)

|  | Symbol          | Value       | Unit        |
|--|-----------------|-------------|-------------|
| Collector Emitter Voltage                        | $V_{CEO}$       | 25          | V           |
| Collector Base Voltage                           | $V_{CBO}$       | 30          | V           |
| Emitter Base Voltage                             | $V_{EBO}$       | 4.5         | V           |
| Collector Current - Continuous                   | $I_C$           | 100         | mA          |
| Total Device Dissipation<br>Derate above 25°C    | $P_{tot}$       | 200<br>2.8  | mW<br>mW/°C |
| Thermal Resistance, Junction to Ambient          | $R_{\theta JA}$ | 357         | °C/W        |
| Operating and Storage Junction Temperature Range | $T_J, T_S$      | -55 to +150 | °C          |

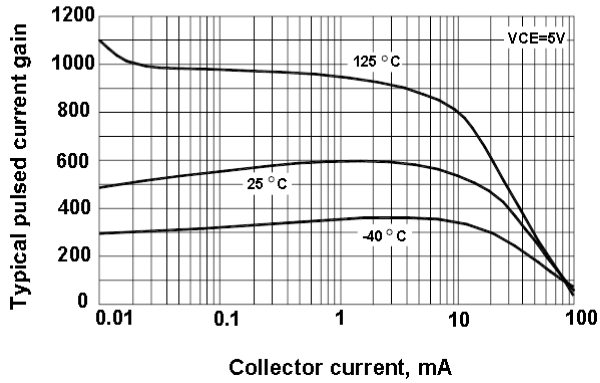


## Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

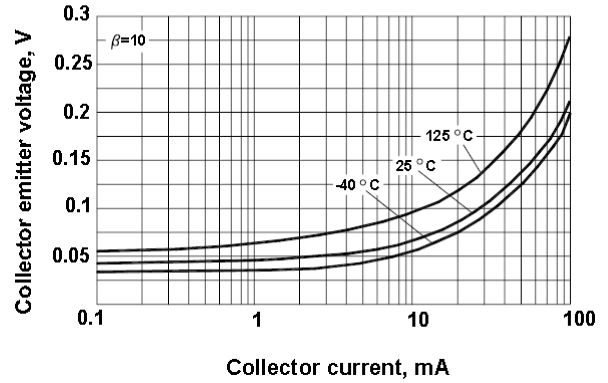
|  | Symbol        | Min. | Max. | Unit |
|--|---------------|------|------|------|
| DC Current Gain  |               |      |      |      |
| at $V_{CE}=5\text{V}, I_C=100\mu\text{A}$  | $h_{FE}$      | 400  | 1200 | -    |
| at $V_{CE}=5\text{V}, I_C=1\text{mA}$  | $h_{FE}$      | 450  | -    | -    |
| at $V_{CE}=5\text{V}, I_C=10\text{mA}$   | $h_{FE}$      | 400  | -    | -    |
| Small Signal Current Gain  |               |      |      |      |
| at $V_{CE}=5\text{V}, I_C=1\text{mA}, f=1\text{KHz}$   | $h_{fe}$      | 450  | 1800 | -    |
| Collector Base Breakdown Voltage   |               |      |      |      |
| at $I_C=100\mu\text{A}$  | $V_{(BR)CBO}$ | 30   | -    | V    |
| Collector Emitter Breakdown Voltage  |               |      |      |      |
| at $I_C=1\text{mA}$  | $V_{(BR)CEO}$ | 25   | -    | V    |
| Collector Emitter Saturation Voltage   |               |      |      |      |
| at $I_C=10\text{mA}, I_B=1\text{mA}$   | $V_{CEsat}$   | -    | 0.5  | V    |
| Base Emitter On Voltage  |               |      |      |      |
| at $I_C=10\text{mA}, V_{CE}=5\text{V}$   | $V_{BEon}$    | -    | 0.8  | V    |
| Collector Cutoff Current   |               |      |      |      |
| at $V_{CB}=15\text{V}$   | $I_{CBO}$     | -    | 50   | nA   |
| Emitter Cutoff Current   |               |      |      |      |
| at $V_{EB}=3\text{V}$  | $I_{EBO}$     | -    | 50   | nA   |
| at $V_{EB}=4.5\text{V}$  | $I_{EBO}$     | -    | 100  | nA   |
| Gain Bandwidth Product   |               |      |      |      |
| at $V_{CE}=5\text{V}, I_C=500\mu\text{A}, f=20\text{MHz}$  | $f_T$         | 50   | -    | MHz  |
| Collector Base Capacitance   |               |      |      |      |
| at $V_{CB}=5\text{V}, f=100\text{KHz}$   | $C_{cb}$      | -    | 4    | pF   |
| Emitter Base Capacitance   |               |      |      |      |
| at $V_{BE}=0.5\text{V}, f=100\text{KHz}$   | $C_{eb}$      | -    | 10   | pF   |
| Noise Figure   |               |      |      |      |
| at $V_{CE}=5\text{V}, I_C=100\mu\text{A}, R_s=10\text{K}\Omega, f=10\text{Hz to }15.7\text{KHz}$ | NF            | -    | 2    | dB   |



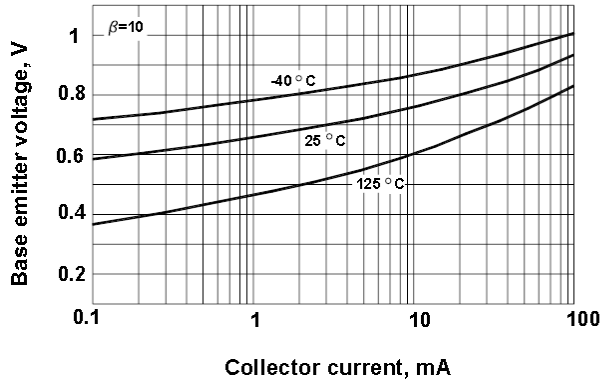
Typical pulsed current gain vs. collector current



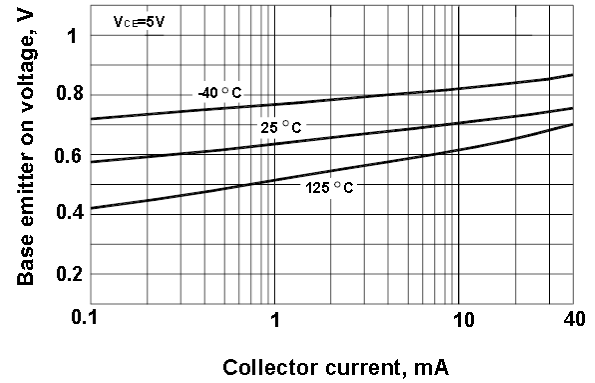
Collector emitter saturation voltage vs. collector current



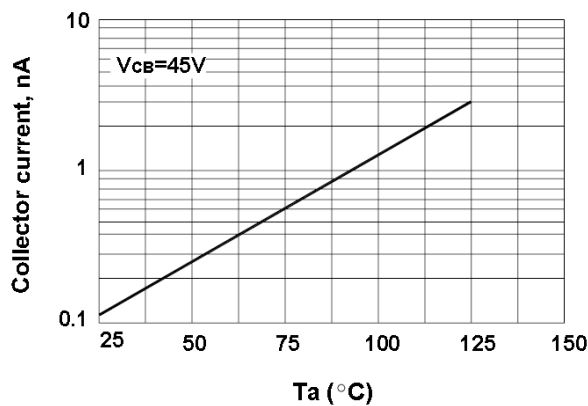
Base emitter saturation voltage vs. collector current



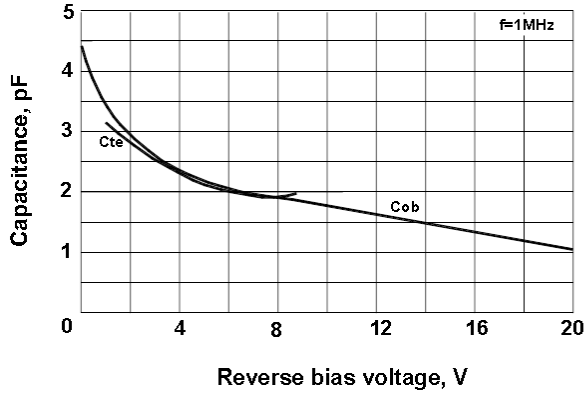
Base emitter on voltage vs. collector current



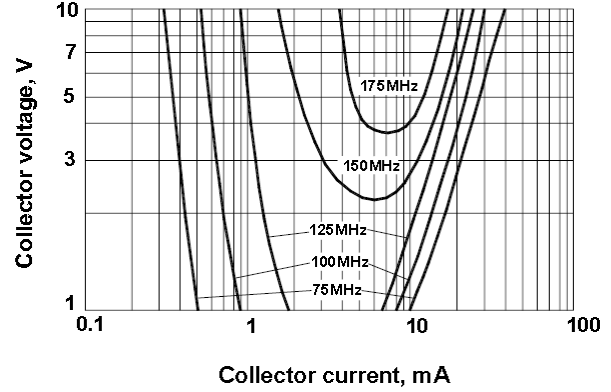
Collector cutoff current vs. ambient temperature



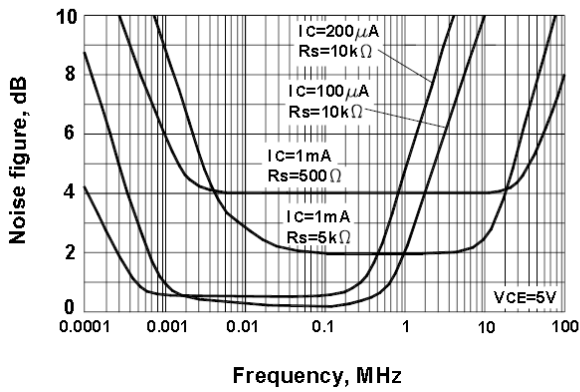
Input and output capacitance vs. reverse bias voltage



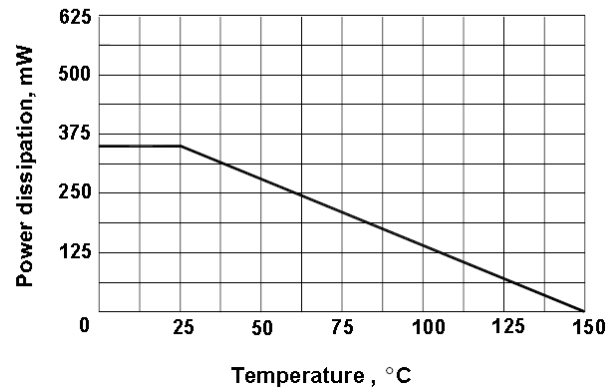
Contours of constant gain bandwidth product



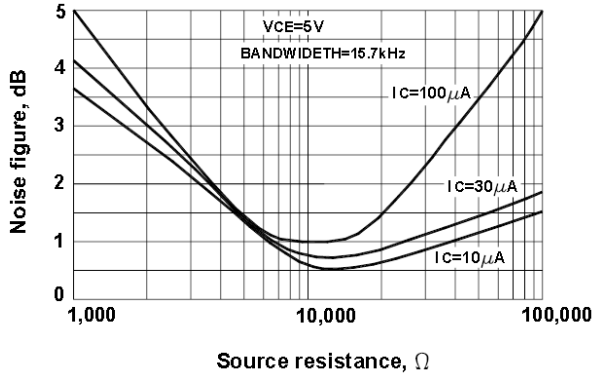
Noise figure vs. frequency



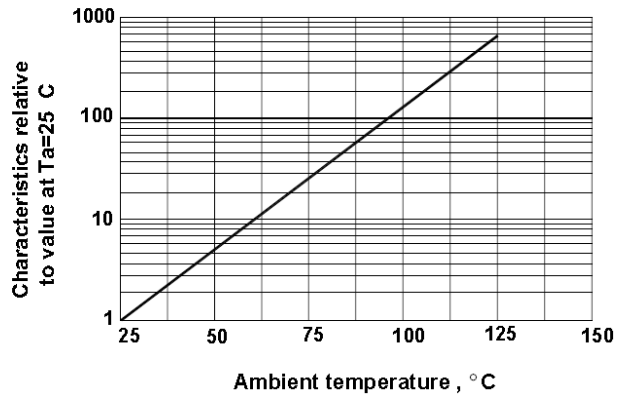
Power dissipation vs. ambient temperature



Wideband noise frequency vs. source resistance



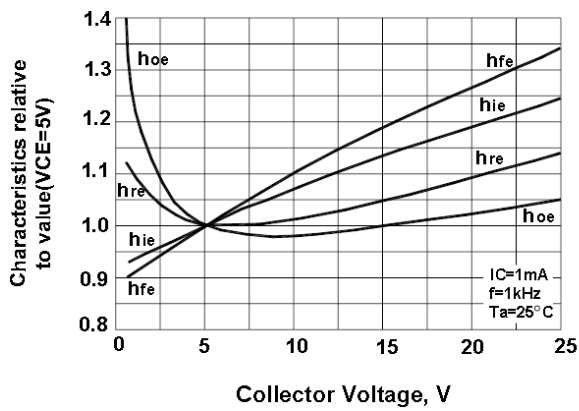
Normalized collector cutoff current vs. ambient temperature



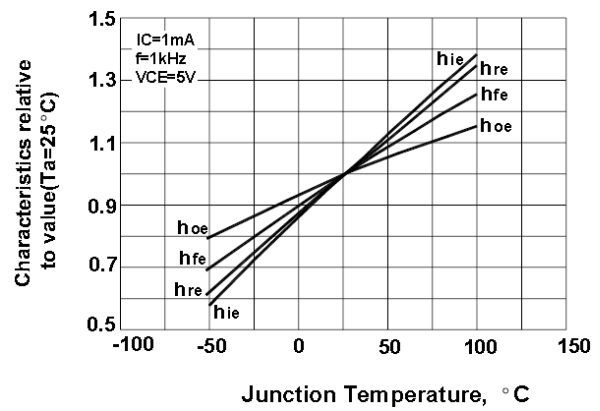
SHIKE MAKE CONSCIOUS PRODUCT  
CONSCIOUS PRODUCTS BEGIN WITH CONSCIOUS PEOPLE



Typical common emitter characteristics



Typical common emitter characteristics



Typical common emitter characteristics

