

# Transistors

## 2SC9014

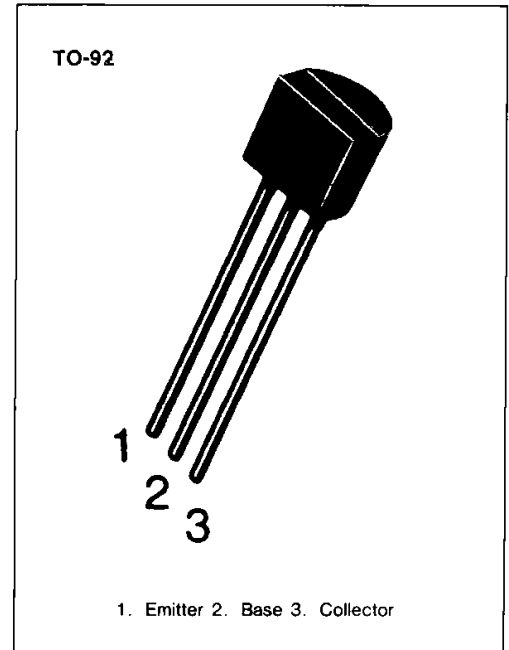


### PRE-AMPLIFIER, LOW LEVEL & LOW NOISE

- High total power dissipation. (PT=450mW)
- High  $h_{FE}$  and good linearity
- Complementary to SS9015

### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

| Characteristic            | Symbol    | Rating  | Unit             |
|---------------------------|-----------|---------|------------------|
| Collector-Base Voltage    | $V_{CBO}$ | 50      | V                |
| Collector-Emitter Voltage | $V_{CEO}$ | 45      | V                |
| Emitter-Base Voltage      | $V_{EBO}$ | 5       | V                |
| Collector Current         | $I_C$     | 100     | mA               |
| Collector Dissipation     | $P_C$     | 450     | mW               |
| Junction Temperature      | $T_j$     | 150     | $^\circ\text{C}$ |
| Storage Temperature       | $T_{stg}$ | -55~150 | $^\circ\text{C}$ |



### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

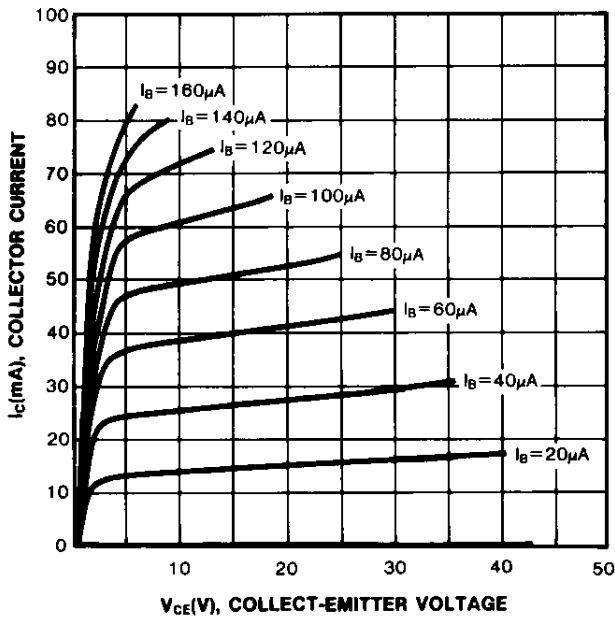
| Characteristic                      | Symbol        | Test Conditions  | Min  | Typ  | Max  | Unit |
|-------------------------------------|---------------|--|------|------|------|------|
| Collector-Base Breakdown Voltage    | $BV_{CBO}$    | $I_C = 100\mu\text{A}$ , $I_E = 0$   | 50   |      |      | V    |
| Collector-Emitter Breakdown Voltage | $BV_{CEO}$    | $I_C = 1\text{mA}$ , $I_B = 0$   | 45   |      |      | V    |
| Emitter-Base Breakdown Voltage      | $BV_{EBO}$    | $I_E = 100\mu\text{A}$ , $I_C = 0$   | 5    |      |      | V    |
| Collector Cutoff Current            | $I_{CBO}$     | $V_{CB} = 50\text{V}$ , $I_E = 0$  |      |      | 50   | nA   |
| Emitter Cutoff Current              | $I_{EBO}$     | $V_{EB} = 5\text{V}$ , $I_C = 0$   |      |      | 50   | nA   |
| DC Current Gain                     | $h_{FE}$      | $V_{CE} = 5\text{V}$ , $I_C = 1\text{mA}$  | 60   | 280  | 1000 |      |
| Collector-Base Saturation Voltage   | $V_{CE(sat)}$ | $I_C = 100\text{mA}$ , $I_B = 5\text{mA}$  |      | 0.14 | 0.3  | V    |
| Base-Emitter Saturation Voltage     | $V_{BE(sat)}$ | $I_C = 100\text{mA}$ , $I_B = 5\text{mA}$  |      | 0.84 | 1.0  | V    |
| Base-Emitter On Voltage             | $V_{BE(on)}$  | $V_{CE} = 5\text{V}$ , $I_C = 2\text{mA}$  | 0.58 | 0.63 | 0.7  | V    |
| Output Capacitance                  | $C_{ob}$      | $V_{CB} = 10\text{V}$ , $I_E = 0$<br>$f = 1\text{MHz}$                                     |      | 2.2  | 3.5  | pF   |
| Current Gain-Bandwidth Product      | $f_T$         | $V_{CE} = 5\text{V}$ , $I_C = 10\text{mA}$   | 150  | 270  |      | MHz  |
| Noise Figure                        | NF            | $V_{CE} = 5\text{V}$ , $I_C = 0.2\text{mA}$<br>$f = 1\text{KHz}$ , $R_s = 2\text{K}\Omega$ |      | 0.9  | 10   | dB   |

### $h_{FE}$ CLASSIFICATION

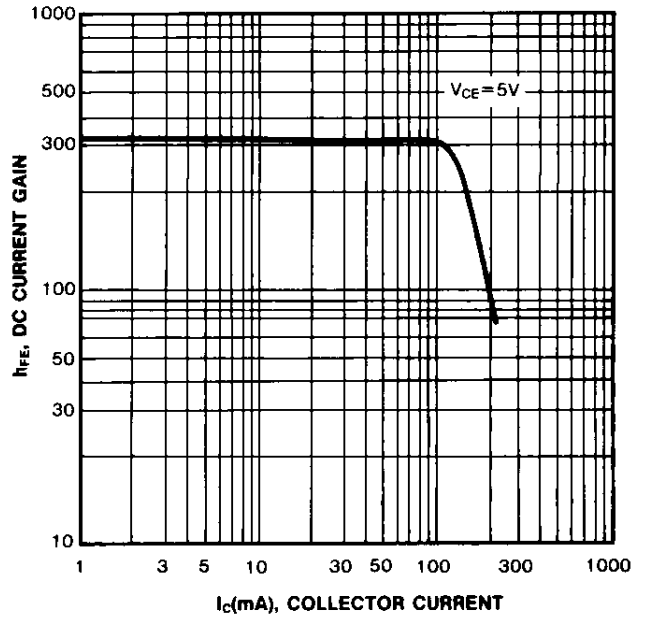
| Classification | A      | B       | C       | D        |
|----------------|--------|---------|---------|----------|
| $h_{FE}$       | 60-150 | 100-300 | 200-600 | 400-1000 |



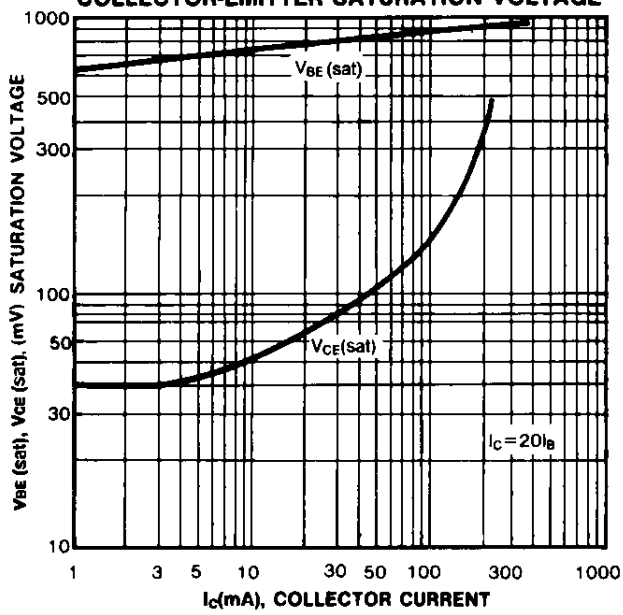
**STATIC CHARACTERISTIC**



**DC CURRENT GAIN**



**BASE-EMITTER SATURATION VOLTAGE  
COLLECTOR-EMITTER SATURATION VOLTAGE**



**CURRENT GAIN-BANDWIDTH PRODUCT**

