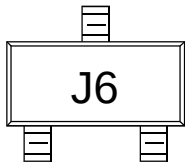
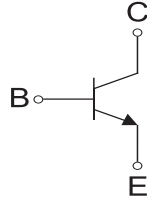


**SOT-23 Plastic-Encapsulate Transistors****S9014**

TRANSISTOR (NPN)

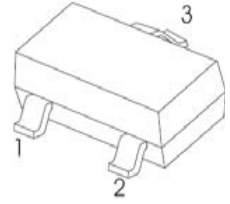
**FEATURES**

- Complementary To S9015 (PNP)

**MARKING****Equivalent Circuit**

|       |           |            |
|-------|-----------|------------|
| HFE   | 200-1000  |            |
| RANK  | L         | H          |
| RANGE | 200 - 450 | 450 - 1000 |

SOT - 23



1. BASE
2. EMITTER
3. COLLECTOR

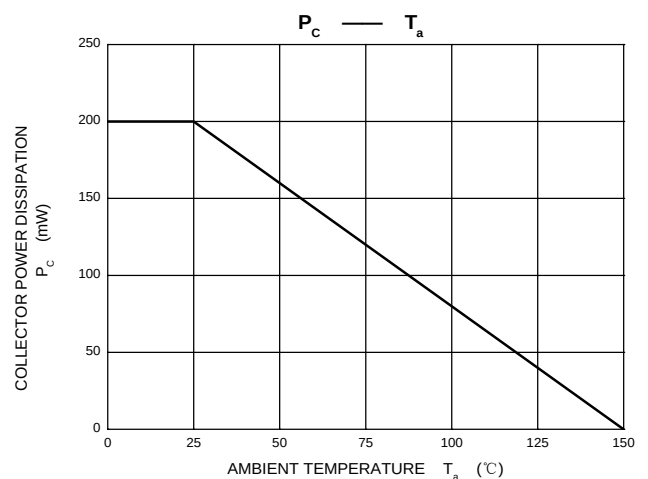
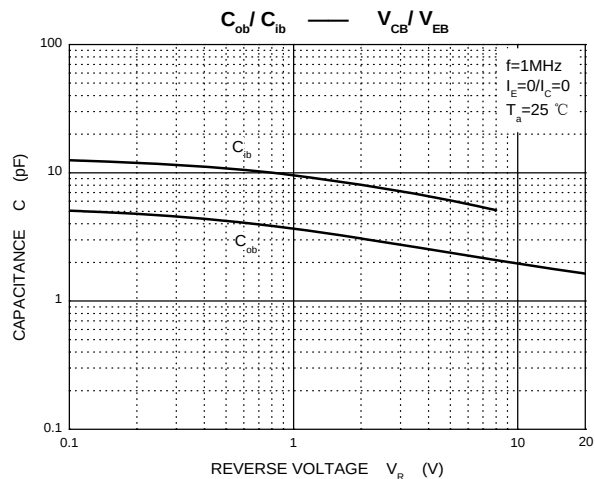
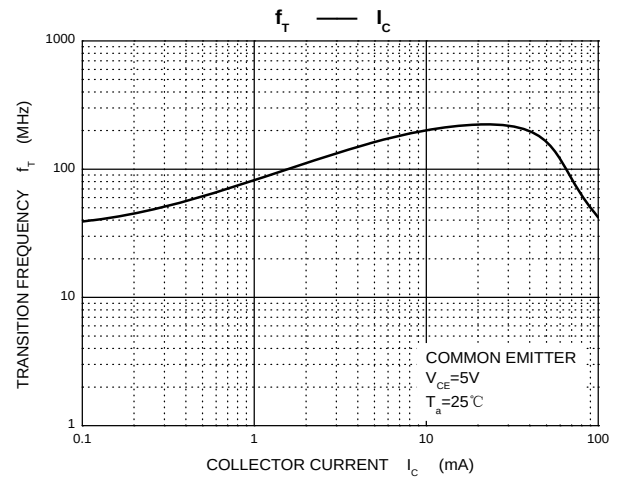
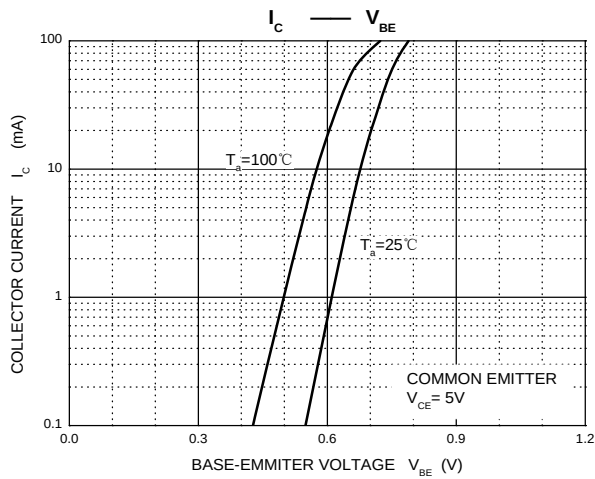
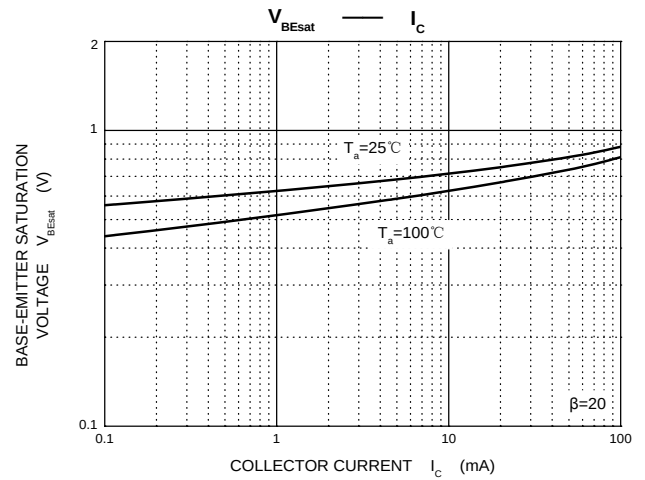
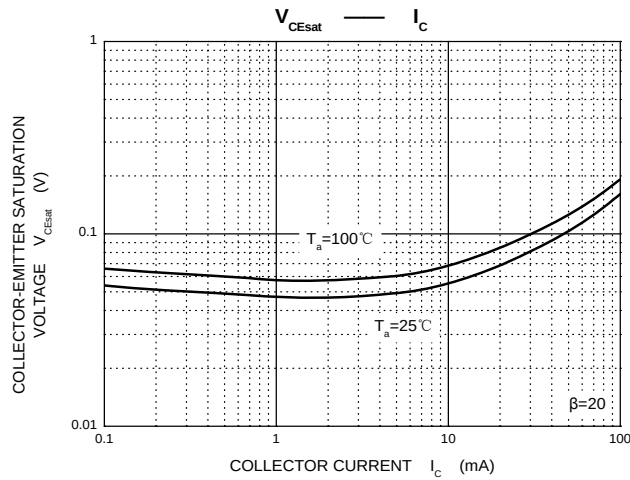
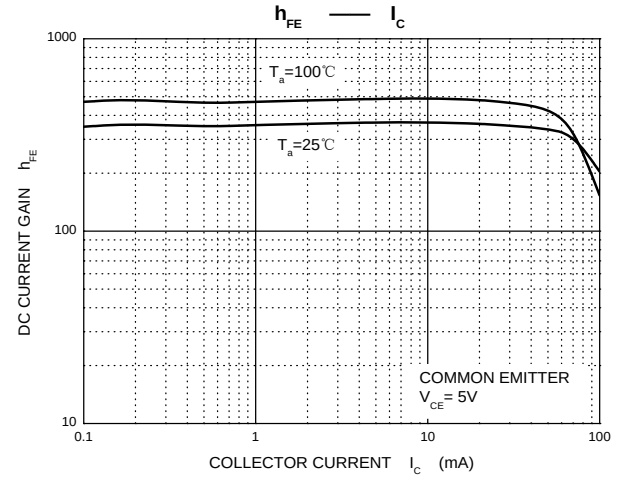
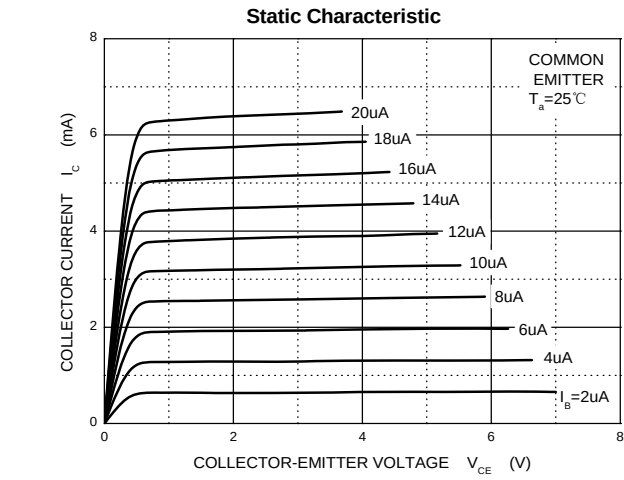
**MAXIMUM RATINGS** ( $T_a=25^{\circ}\text{C}$  unless otherwise noted)

| Symbol          | Parameter                                        | Value           | Unit                 |
|-----------------|--------------------------------------------------|-----------------|----------------------|
| $V_{CBO}$       | Collector-Base Voltage                           | 50              | V                    |
| $V_{CEO}$       | Collector-Emitter Voltage                        | 45              | V                    |
| $V_{EBO}$       | Emitter-Base Voltage                             | 5               | V                    |
| $I_C$           | Collector Current                                | 100             | mA                   |
| $P_C$           | Collector Power Dissipation                      | 200             | mW                   |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient      | 625             | $^{\circ}\text{C/W}$ |
| $T_J, T_{stg}$  | Operation Junction and Storage Temperature Range | $-55 \sim +150$ | $^{\circ}\text{C}$   |

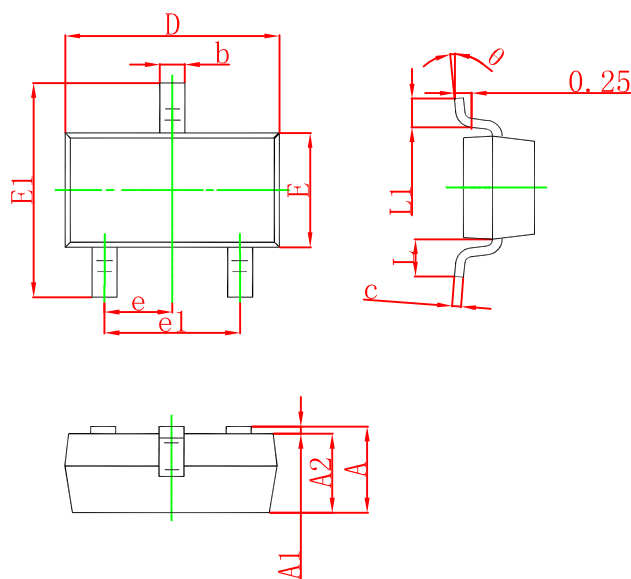
**ELECTRICAL CHARACTERISTICS** ( $T_a=25^{\circ}\text{C}$  unless otherwise specified)

| Parameter                            | Symbol        | Test conditions                                               | Min | Typ | Max  | Unit          |
|--------------------------------------|---------------|---------------------------------------------------------------|-----|-----|------|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C = 100\mu\text{A}, I_E = 0$                               | 50  |     |      | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C = 0.1\text{mA}, I_B = 0$                                 | 45  |     |      | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E = 100\mu\text{A}, I_C = 0$                               | 5   |     |      | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = 50\text{V}, I_E = 0$                                |     |     | 0.1  | $\mu\text{A}$ |
| Collector cut-off current            | $I_{CEO}$     | $V_{CE} = 35\text{V}, I_B = 0$                                |     |     | 1    | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = 3\text{V}, I_C = 0$                                 |     |     | 0.1  | $\mu\text{A}$ |
| DC current gain                      | $h_{FE}$      | $V_{CE} = 5\text{V}, I_C = 1\text{mA}$                        | 200 |     | 1000 |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 100\text{mA}, I_B = 5\text{mA}$                        |     |     | 0.3  | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = 100\text{mA}, I_B = 5\text{mA}$                        |     |     | 1    | V             |
| Transition frequency                 | $f_T$         | $V_{CE} = 5\text{V}, I_C = 10\text{mA}$<br>$f = 30\text{MHz}$ | 150 |     |      | MHz           |

## Typical Characteristics

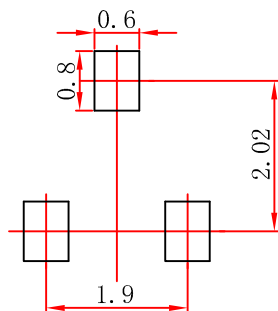


Package Outline Dimensions (SOT-23)



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                     | 2.550 | 0.089                | 0.100 |
| e      | 0.950 TYP                 |       | 0.037 TYP            |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550 REF                 |       | 0.022 REF            |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

Suggested Pad Layout (SOT-23)



- Note:
- 1.Controlling dimension:in millimeters.
  - 2.General tolerance:± 0.05mm.
  - 3.The pad layout is for reference purposes only.