



Micro Commercial Components



Micro Commercial Components  
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**S9013-G**  
**S9013-H**  
**S9013-I**

## Features

- TO-92 Plastic-Encapsulate Transistors
- Capable of 0.625Watts( $T_{amb}=25^{\circ}C$ ) of Power Dissipation.
- Collector-current 0.5A
- Collector-base Voltage 40V
- Operating and storage junction temperature range:  $-55^{\circ}C$  to  $+150^{\circ}C$
- Marking Code: S9013
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Halogen free available upon request by adding suffix "-HF"

## Electrical Characteristics @ $25^{\circ}C$ Unless Otherwise Specified

| Symbol                     | Parameter                                                        | Min | Max | Units   |
|----------------------------|------------------------------------------------------------------|-----|-----|---------|
| <b>OFF CHARACTERISTICS</b> |                                                                  |     |     |         |
| $V_{(BR)CBO}$              | Collector-Base Breakdown Voltage<br>( $I_C=100\mu A$ , $I_E=0$ ) | 40  | --- | Vdc     |
| $V_{(BR)CEO}$              | Collector-Emitter Breakdown Voltage<br>( $I_C=0.1mA$ , $I_B=0$ ) | 25  | --- | Vdc     |
| $V_{(BR)EBO}$              | Emitter-Base Breakdown Voltage<br>( $I_E=100\mu A$ , $I_C=0$ )   | 5.0 | --- | Vdc     |
| $I_{CBO}$                  | Collector Cutoff Current<br>( $V_{CB}=40Vdc$ , $I_E=0$ )         | --- | 0.1 | $\mu A$ |
| $I_{CEO}$                  | Collector Cutoff Current<br>( $V_{CE}=20Vdc$ , $I_B=0$ )         | --- | 0.1 | $\mu A$ |
| $I_{EBO}$                  | Emitter Cutoff Current<br>( $V_{EB}=5.0Vdc$ , $I_C=0$ )          | --- | 0.1 | $\mu A$ |

## ON CHARACTERISTICS

|               |                                                                      |     |     |     |
|---------------|----------------------------------------------------------------------|-----|-----|-----|
| $h_{FE(1)}$   | DC Current Gain<br>( $I_C=50mA$ , $V_{CE}=1.0Vdc$ )                  | 64  | 400 | --- |
| $h_{FE(2)}$   | DC Current Gain<br>( $I_C=500mA$ , $V_{CE}=1.0Vdc$ )                 | 40  | --- | --- |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage<br>( $I_C=500mA$ , $I_B=50mA$ ) | --- | 0.6 | Vdc |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage<br>( $I_C=500mA$ , $I_B=50mA$ )      | --- | 1.2 | Vdc |
| $V_{EB}$      | Base- Emitter Voltage<br>( $I_E=100mA$ )                             | --- | 1.4 | Vdc |

## SMALL-SIGNAL CHARACTERISTICS

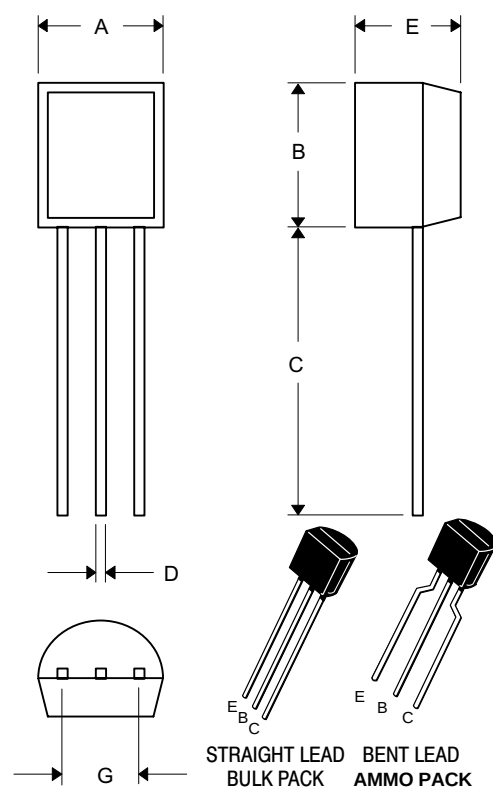
|       |                                                                      |     |     |     |
|-------|----------------------------------------------------------------------|-----|-----|-----|
| $f_T$ | Transistor Frequency<br>( $I_C=20mA$ , $V_{CE}=6.0Vdc$ , $f=30MHz$ ) | 150 | --- | MHz |
|-------|----------------------------------------------------------------------|-----|-----|-----|

## CLASSIFICATION OF $h_{FE(1)}$

|       |         |         |         |
|-------|---------|---------|---------|
| Rank  | G       | H       | I       |
| Range | 112-166 | 144-202 | 190-300 |

## NPN Silicon Transistors

### TO-92



### DIMENSIONS

| DIM | INCHES |      | MM    |      | NOTE          |
|-----|--------|------|-------|------|---------------|
|     | MIN    | MAX  | MIN   | MAX  |               |
| A   | .175   | .185 | 4.45  | 4.70 |               |
| B   | .175   | .185 | 4.45  | 4.70 |               |
| C   | .500   | ---  | 12.70 | ---  |               |
| D   | .016   | .020 | 0.41  | 0.63 |               |
| E   | .135   | .145 | 3.43  | 3.68 |               |
| G   | .095   | .105 | 2.42  | 2.67 | Straight Lead |
|     | .173   | .220 | 4.40  | 5.60 | Bent Lead     |

\* For ammo packing detailed specification, click here to visit our website of product packaging for details.

## Ordering Information :

| Device         | Packing                     |
|----------------|-----------------------------|
| Part Number-AP | Ammo Packing: 20Kpcs/Carton |
| Part Number-BP | Bulk: 100Kpcs/Carton        |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-AP-HF

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