

BCY78, VII, VIII, IX, X  
BCY79, VII, VIII, IX, X

**SILICON  
PNP TRANSISTORS**



**TO-18 CASE**



[www.centrasemi.com](http://www.centrasemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR BCY78 and BCY79 series types are silicon PNP epitaxial planar transistors, mounted in a hermetically sealed metal case, designed for low noise amplifier and switching applications.

**MARKING: FULL PART NUMBER**

| MAXIMUM RATINGS: ( $T_A=25^\circ\text{C}$ unless otherwise noted) |                |             |       |                    |
|-------------------------------------------------------------------|----------------|-------------|-------|--------------------|
| SYMBOL                                                            | BCY78          | BCY79       | UNITS |                    |
| Collector-Base Voltage                                            | $V_{CBO}$      | 32          | 45    | V                  |
| Collector-Emitter Voltage                                         | $V_{CEO}$      | 32          | 45    | V                  |
| Emitter-Base Voltage                                              | $V_{EBO}$      | 5.0         |       | V                  |
| Continuous Collector Current                                      | $I_C$          | 100         |       | mA                 |
| Peak Collector Current                                            | $I_{CM}$       | 200         |       | mA                 |
| Peak Base Current                                                 | $I_{BM}$       | 200         |       | mA                 |
| Power Dissipation                                                 | $P_D$          | 340         |       | mW                 |
| Power Dissipation ( $T_C=25^\circ\text{C}$ )                      | $P_D$          | 1.0         |       | W                  |
| Operating and Storage Junction Temperature                        | $T_J, T_{stg}$ | -65 to +200 |       | $^\circ\text{C}$   |
| Thermal Resistance                                                | $\theta_{JA}$  | 450         |       | $^\circ\text{C/W}$ |
| Thermal Resistance                                                | $\theta_{JC}$  | 150         |       | $^\circ\text{C/W}$ |

**ELECTRICAL CHARACTERISTICS: ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

| SYMBOL               | TEST CONDITIONS                                       | MIN  | MAX  | UNITS         |
|----------------------|-------------------------------------------------------|------|------|---------------|
| $I_{CBO}$            | $V_{CB}=\text{Rated } V_{CBO}$                        |      | 15   | nA            |
| $I_{CBO}$            | $V_{CB}=\text{Rated } V_{CBO}, T_A=150^\circ\text{C}$ |      | 10   | $\mu\text{A}$ |
| $I_{EBO}$            | $V_{EB}=5.0\text{V}$                                  |      | 20   | nA            |
| $BV_{CBO}$           | $I_C=10\mu\text{A}$ (BCY78)                           | 32   |      | V             |
| $BV_{CBO}$           | $I_C=10\mu\text{A}$ (BCY79)                           | 45   |      | V             |
| $BV_{CEO}$           | $I_C=2.0\text{mA}$ (BCY78)                            | 32   |      | V             |
| $BV_{CEO}$           | $I_C=2.0\text{mA}$ (BCY79)                            | 45   |      | V             |
| $BV_{EBO}$           | $I_E=1.0\mu\text{A}$                                  | 5.0  |      | V             |
| $V_{CE(\text{SAT})}$ | $I_C=10\text{mA}, I_B=250\mu\text{A}$                 |      | 0.25 | V             |
| $V_{CE(\text{SAT})}$ | $I_C=100\text{mA}, I_B=2.5\text{mA}$                  |      | 0.80 | V             |
| $V_{BE(\text{SAT})}$ | $I_C=10\text{mA}, I_B=250\mu\text{A}$                 | 0.60 | 0.85 | V             |
| $V_{BE(\text{SAT})}$ | $I_C=100\text{mA}, I_B=2.5\text{mA}$                  | 0.70 | 1.20 | V             |
| $V_{BE(\text{ON})}$  | $V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$                | 0.60 | 0.75 | V             |

|          |                                         | BCY78-VII<br>BCY79-VII |     |     | BCY78-VIII<br>BCY79-VIII |     | BCY78-IX<br>BCY79-IX |     | BCY78-X<br>BCY79-X |      |
|----------|-----------------------------------------|------------------------|-----|-----|--------------------------|-----|----------------------|-----|--------------------|------|
|          |                                         | MIN                    | TYP | MAX | MIN                      | MAX | MIN                  | MAX | MIN                | MAX  |
| $h_{FE}$ | $V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$ | -                      | 140 | -   | 30                       | -   | 40                   | -   | 100                | -    |
| $h_{FE}$ | $V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$  | 120                    | -   | 220 | 180                      | 310 | 250                  | 460 | 380                | 630  |
| $h_{FE}$ | $V_{CE}=1.0\text{V}, I_C=10\text{mA}$   | 80                     | -   | -   | 120                      | 400 | 160                  | 630 | 240                | 1000 |
| $h_{FE}$ | $V_{CE}=1.0\text{V}, I_C=100\text{mA}$  | 40                     | -   | -   | 45                       | -   | 60                   | -   | 60                 | -    |

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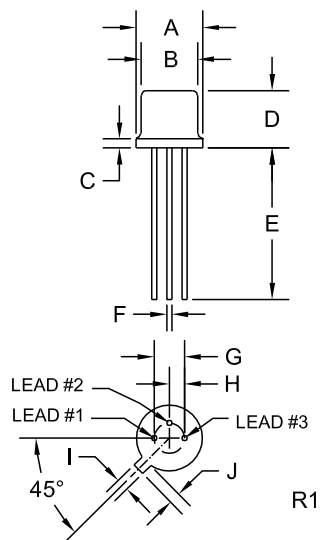
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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

| SYMBOL    | TEST CONDITIONS                                                                                            | MIN | MAX | UNITS |
|-----------|------------------------------------------------------------------------------------------------------------|-----|-----|-------|
| $f_T$     | $V_{CE}=5.0\text{V}$ , $I_C=10\text{mA}$ , $f=100\text{MHz}$                                               | 100 |     | MHz   |
| $C_{ob}$  | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$                                                          |     | 7.0 | pF    |
| $C_{ib}$  | $V_{EB}=0.5\text{V}$ , $I_C=0$ , $f=1.0\text{MHz}$                                                         |     | 15  | pF    |
| NF        | $V_{CE}=5.0\text{V}$ , $I_C=0.2\text{mA}$ , $R_S=2.0\text{k}\Omega$ , $f=1.0\text{kHz}$ , $B=200\text{Hz}$ |     | 10  | dB    |
| $t_{on}$  | $V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$                                    |     | 100 | ns    |
| $t_d$     | $V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$                                    |     | 50  | ns    |
| $t_r$     | $V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$                                    |     | 50  | ns    |
| $t_{off}$ | $V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$                                    |     | 700 | ns    |
| $t_s$     | $V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$                                    |     | 600 | ns    |
| $t_f$     | $V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$                                    |     | 100 | ns    |
| $t_{on}$  | $V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$                                     |     | 100 | ns    |
| $t_d$     | $V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$                                     |     | 35  | ns    |
| $t_r$     | $V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$                                     |     | 65  | ns    |
| $t_{off}$ | $V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$                                     |     | 400 | ns    |
| $t_s$     | $V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$                                     |     | 300 | ns    |
| $t_f$     | $V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$                                     |     | 100 | ns    |

**TO-18 CASE - MECHANICAL OUTLINE**



| SYMBOL  | DIMENSIONS |       |             |      |
|---------|------------|-------|-------------|------|
|         | INCHES     |       | MILLIMETERS |      |
|         | MIN        | MAX   | MIN         | MAX  |
| A (DIA) | 0.209      | 0.230 | 5.31        | 5.84 |
| B (DIA) | 0.178      | 0.195 | 4.52        | 4.95 |
| C       | -          | 0.030 | -           | 0.76 |
| D       | 0.170      | 0.210 | 4.32        | 5.33 |
| E       | 0.500      | -     | 12.70       | -    |
| F (DIA) | 0.016      | 0.019 | 0.41        | 0.48 |
| G (DIA) | 0.100      |       | 2.54        |      |
| H       | 0.050      |       | 1.27        |      |
| I       | 0.036      | 0.046 | 0.91        | 1.17 |
| J       | 0.028      | 0.048 | 0.71        | 1.22 |

TO-18 (REV: R1)

**LEAD CODE:**

- 1) Emitter
- 2) Base
- 3) Collector

**MARKING:**  
**FULL PART NUMBER**

R4 (4-June 2013)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

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- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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