

BCY58, VII, VIII, IX, X
BCY59, VII, VIII, IX, X

**SILICON
NPN TRANSISTORS**



TO-18 CASE



www.centalsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR BCY58 and BCY59 series types are silicon NPN 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 | BCY58 | BCY59 | UNITS |
|---|----------------|-------|-------------|--------------------|
| Collector-Base Voltage | V_{CB0} | 32 | 45 | V |
| Collector-Emitter Voltage | V_{CEO} | 32 | 45 | V |
| Emitter-Base Voltage | V_{EBO} | | 7.0 | 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 | θ_{JA} | | 450 | $^\circ\text{C/W}$ |
| Thermal Resistance | θ_{JC} | | 150 | $^\circ\text{C/W}$ |

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

| SYMBOL | TEST CONDITIONS | MIN | MAX | UNITS |
|---------------|---|------|------|---------------|
| I_{CB0} | $V_{CB}=\text{Rated } V_{CB0}$ | | 10 | nA |
| I_{CBO} | $V_{CB}=\text{Rated } V_{CB0}, T_A=150^\circ\text{C}$ | | 10 | μA |
| I_{EBO} | $V_{EB}=5.0\text{V}$ | | 10 | nA |
| BV_{CB0} | $I_C=10\mu\text{A}$ (BCY58) | 32 | | V |
| BV_{CBO} | $I_C=10\mu\text{A}$ (BCY59) | 45 | | V |
| BV_{CEO} | $I_C=2.0\text{mA}$ (BCY58) | 32 | | V |
| BV_{CE0} | $I_C=2.0\text{mA}$ (BCY59) | 45 | | V |
| BV_{EBO} | $I_E=1.0\mu\text{A}$ | 7.0 | | V |
| $V_{CE(SAT)}$ | $I_C=10\text{mA}, I_B=250\mu\text{A}$ | | 0.35 | V |
| $V_{CE(SAT)}$ | $I_C=100\text{mA}, I_B=2.5\text{mA}$ | | 0.70 | V |
| $V_{BE(SAT)}$ | $I_C=10\text{mA}, I_B=250\mu\text{A}$ | 0.60 | 0.85 | V |
| $V_{BE(SAT)}$ | $I_C=100\text{mA}, I_B=2.5\text{mA}$ | 0.75 | 1.20 | V |

| | | BCY58-VII | | BCY58-VIII | | BCY58-IX | | BCY58-X | | |
|----------|---|-----------|-----|------------|-----|----------|-----|---------|-----|------|
| | | MIN | TYP | MAX | MIN | MAX | MIN | MAX | MIN | MAX |
| h_{FE} | $V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$ | - | 20 | - | 20 | - | 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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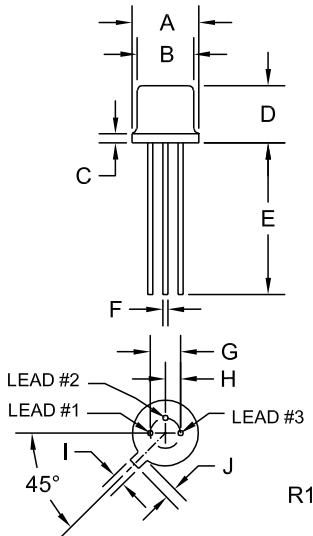
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ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

| SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|-----------|--|-----|-----|-----|-------|
| f_T | $V_{CE}=5.0\text{V}$, $I_C=10\text{mA}$, $f=100\text{MHz}$ | 150 | | | MHz |
| C_{ob} | $V_{CB}=10\text{V}$, $I_E=0$, $f=1.0\text{MHz}$ | | | 5.0 | 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} | $V_{CC}=10\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$ | | 85 | 150 | ns |
| t_d | $V_{CC}=10\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$ | | 35 | | ns |
| t_r | $V_{CC}=10\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$ | | 50 | | ns |
| t_{off} | $V_{CC}=10\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$ | | 450 | 800 | ns |
| t_s | $V_{CC}=10\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$ | | 400 | | ns |
| t_f | $V_{CC}=10\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$ | | 80 | | ns |
| t_{on} | $V_{CC}=10\text{V}$, $I_C=100\text{mA}$, $I_{B1}=I_{B2}=10\text{mA}$ | | 55 | 150 | ns |
| t_d | $V_{CC}=10\text{V}$, $I_C=100\text{mA}$, $I_{B1}=I_{B2}=10\text{mA}$ | | 5.0 | | ns |
| t_r | $V_{CC}=10\text{V}$, $I_C=100\text{mA}$, $I_{B1}=I_{B2}=10\text{mA}$ | | 50 | | ns |
| t_{off} | $V_{CC}=10\text{V}$, $I_C=100\text{mA}$, $I_{B1}=I_{B2}=10\text{mA}$ | | 450 | 800 | ns |
| t_s | $V_{CC}=10\text{V}$, $I_C=100\text{mA}$, $I_{B1}=I_{B2}=10\text{mA}$ | | 250 | | ns |
| t_f | $V_{CC}=10\text{V}$, $I_C=100\text{mA}$, $I_{B1}=I_{B2}=10\text{mA}$ | | 200 | | 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

R3 (26-July 2022)