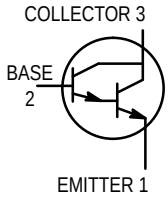
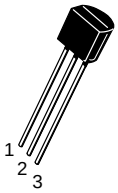
# High Voltage Darlington Transistors

## NPN Silicon

**BC372**
**BC373**




**CASE 29–04, STYLE 1**
**TO–92 (TO–226AA)**

**MAXIMUM RATINGS**

| Rating | Symbol | BC372 | BC373 | Unit |
|---|---|---|---|---|
| Collector–Emitter Voltage | $V_{CES}$ | 100 | 80 | Vdc |
| Collector–Base Voltage | $V_{CBO}$ | 100 | 80 | Vdc |
| Emitter–Base Voltage | $V_{EBO}$ | 12 | | Vdc |
| Collector Current — Continuous | $I_C$ | 1.0 | | Adc |
| Total Device Dissipation @ $T_A$ = 25°C<br>Derate above 25°C | $P_D$ | 625<br>5.0 | | mW<br>mW/°C |
| Total Device Dissipation @ $T_C$ = 25°C<br>Derate above 25°C | $P_D$ | 1.5<br>12 | | Watt<br>mW/°C |
| Operating and Storage Junction Temperature Range | $T_J$, $T_{stg}$ | –55 to +150 | | °C |

**THERMAL CHARACTERISTICS**

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 200 | °C/W |
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 83.3 | °C/W |

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted)

| Characteristic | | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | |
| Collector–Emitter Breakdown Voltage(1)<br>($I_C$ = 100 μAdc, $I_B$ = 0) | <br>BC372<br>BC373 | $V_{(BR)CES}$ | <br>100<br>80 | <br>—<br>— | <br>—<br>— | Vdc |
| Collector–Base Breakdown Voltage<br>($I_C$ = 100 μAdc, $I_E$ = 0) | <br>BC372<br>BC373 | $V_{(BR)CBO}$ | <br>100<br>80 | <br>—<br>— | <br>—<br>— | Vdc |
| Emitter–Base Breakdown Voltage<br>($I_E$ = 10 μAdc, $I_C$ = 0) | | $V_{(BR)EBO}$ | 12 | — | — | Vdc |
| Collector Cutoff Current<br>($V_{CB}$ = 80 Vdc, $I_E$ = 0)<br>($V_{CB}$ = 60 Vdc, $I_E$ = 0) | <br>BC372<br>BC373 | $I_{CBO}$ | <br>—<br>— | <br>—<br>— | <br>100<br>100 | nAdc |
| Emitter Cutoff Current<br>($V_{EB}$ = 10 V, $I_C$ = 0) | | $I_{EBO}$ | — | — | 100 | nAdc |

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle 2.0%.

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**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted) (Continued)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| **ON CHARACTERISTICS(1)** | | | | | |
| DC Current Gain<br>($I_C$ = 250 mAdc, $V_{CE}$ = 5.0 Vdc)<br>($I_C$ = 100 mAdc, $V_{CE}$ = 5.0 Vdc) | $h_{FE}$ | <br>8.0<br>10 | <br>—<br>— | <br>—<br>160 | K |
| Collector–Emitter Saturation Voltage<br>($I_C$ = 250 mAdc, $I_B$ = 0.25 mAdc) | $V_{CE(sat)}$ | — | 1.0 | 1.1 | Vdc |
| Base–Emitter Saturation Voltage<br>($I_C$ = 250 mAdc, $I_B$ = 0.25 mAdc) | $V_{BE(sat)}$ | — | 1.4 | 2.0 | Vdc |
| **DYNAMIC CHARACTERISTICS** | | | | | |
| Current–Gain Bandwidth Product<br>($I_C$ = 100 mAdc, $V_{CE}$ = 5.0 Vdc, f = 100 MHz) | $f_T$ | 100 | 200 | — | MHz |
| Output Capacitance<br>($V_{CB}$ = 10 Vdc, $I_E$ = 0, f = 1.0 MHz) | $C_{ob}$ | — | 10 | 25 | pF |
| Noise Figure<br>($I_C$ = 1.0 mAdc, $V_{CE}$ = 5.0 Vdc, $R_g$ = 100 k ohm, f = 1.0 kHz) | NF | — | 2.0 | — | dB |

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle 2.0%.

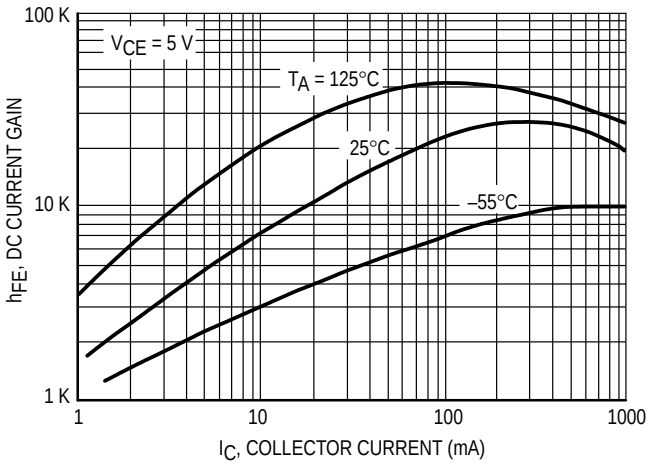



**Figure 1. DC Current Gain**

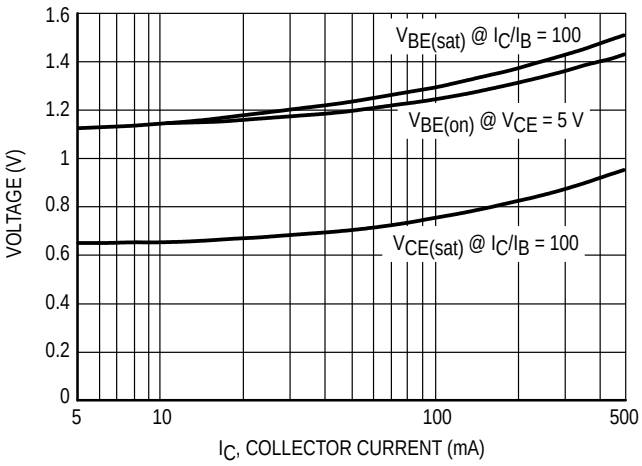



**Figure 2. “Saturation” and “On” Voltages**

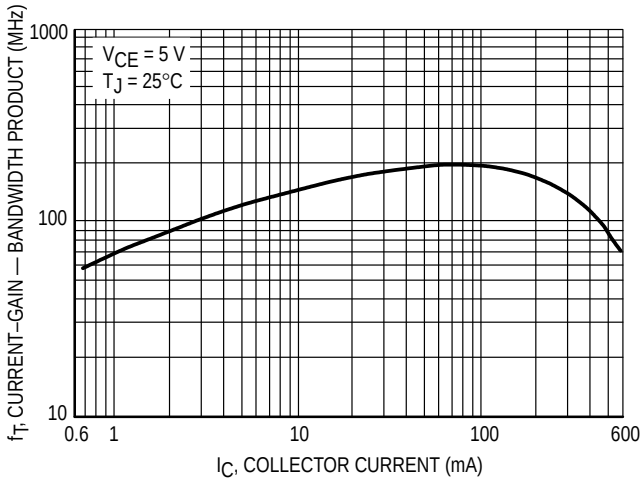



**Figure 3. Current–Gain — Bandwidth Product**

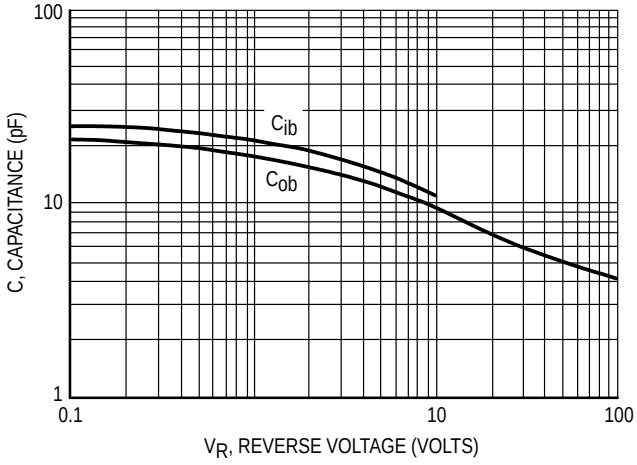
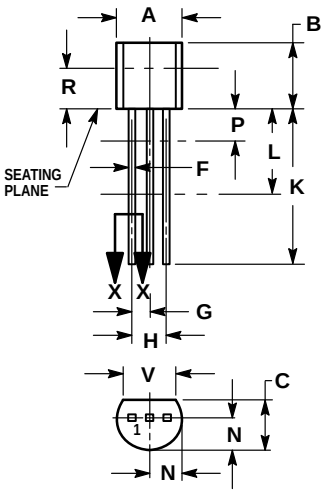
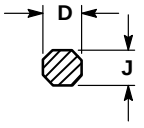



**Figure 4. Capacitances**

## PACKAGE DIMENSIONS




SECTION X–X

**CASE 029–04**
**(TO–226AA)**
**ISSUE AD**

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | MIN | MAX | MIN | MAX |
| A | 0.175 | 0.205 | 4.45 | 5.20 |
| B | 0.170 | 0.210 | 4.32 | 5.33 |
| C | 0.125 | 0.165 | 3.18 | 4.19 |
| D | 0.016 | 0.022 | 0.41 | 0.55 |
| F | 0.016 | 0.019 | 0.41 | 0.48 |
| G | 0.045 | 0.055 | 1.15 | 1.39 |
| H | 0.095 | 0.105 | 2.42 | 2.66 |
| J | 0.015 | 0.020 | 0.39 | 0.50 |
| K | 0.500 | — | 12.70 | — |
| L | 0.250 | — | 6.35 | — |
| N | 0.080 | 0.105 | 2.04 | 2.66 |
| P | — | 0.100 | — | 2.54 |
| R | 0.115 | — | 2.93 | — |
| V | 0.135 | — | 3.43 | — |

STYLE 1:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

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**How to reach us:**
**USA/EUROPE**: Motorola Literature Distribution;
P.O. Box 20912; Phoenix, Arizona 85036. 1–800–441–2447

**MFAX**: RMFAX0@email.sps.mot.com – TOUCHTONE (602) 244–6609
**INTERNET**: http://Design–NET.com

**JAPAN**: Nippon Motorola Ltd.; Tatsumi–SPD–JLDC, Toshikatsu Otsuki,
6F Seibu–Butsuryu–Center, 3–14–2 Tatsumi Koto–Ku, Tokyo 135, Japan. 03–3521–8315

**HONG KONG**: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852–26629298