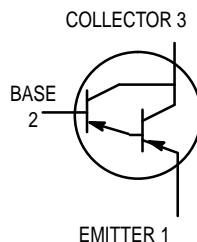


Darlington Transistors

PNP Silicon



MPSA62 thru MPSA64*

MPSA55, MPSA56
For Specifications,
See MPSA05, MPSA06 Data

*Motorola Preferred Device

MAXIMUM RATINGS

| Rating | Symbol | MPSA62 | MPSA63 MPSA64 | Unit |
|--|----------------|-------------|------------------|-------------------------------|
| Collector–Emitter Voltage | V_{CES} | -20 | -30 | Vdc |
| Collector–Base Voltage | V_{CBO} | -20 | -30 | Vdc |
| Emitter–Base Voltage | V_{EBO} | -10 | | Vdc |
| Collector Current — Continuous | I_C | -500 | | mAdc |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 625 | 5.0 | mW mW/ $^\circ\text{C}$ |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 1.5 | 12 | Watts mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | | $^\circ\text{C}$ |



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

THERMAL CHARACTERISTICS

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

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

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

OFF CHARACTERISTICS

| | | | | | |
|--|--------------------------|---------------|------------|--------------|------|
| Collector–Emitter Breakdown Voltage ($I_C = -100 \mu\text{Adc}$, $V_{BE} = 0$) | MPSA62 MPSA63, MPSA64 | $V_{(BR)CES}$ | -20 -30 | — — | Vdc |
| Collector Cutoff Current ($V_{CB} = -15 \text{Vdc}$, $I_E = 0$) ($V_{CB} = -30 \text{Vdc}$, $I_E = 0$) | MPSA62 MPSA63, MPSA64 | I_{CBO} | — — | -100 -100 | nAdc |
| Emitter Cutoff Current ($V_{EB} = -10 \text{Vdc}$, $I_C = 0$) | | I_{EBO} | — | -100 | nAdc |

Preferred devices are Motorola recommended choices for future use and best overall value.

MPSA62 thru MPSA64

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

| Characteristic | | Symbol | Min | Max | Unit |
|--|----------------|---------------|--------|------|------|
| ON CHARACTERISTICS(1) | | | | | |
| DC Current Gain ($I_C = -10\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$) | MPSA63 | h_{FE} | 5,000 | — | — |
| | MPSA64 | | 10,000 | — | — |
| | MPSA62 | | 20,000 | — | — |
| | | | | | |
| ($I_C = -100\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$) | MPSA63 | | 10,000 | — | |
| | MPSA64 | | 20,000 | — | |
| Collector–Emitter Saturation Voltage ($I_C = -10\text{ mAdc}$, $I_B = -0.01\text{ mAdc}$) ($I_C = -100\text{ mAdc}$, $I_B = -0.1\text{ mAdc}$) | MPSA62 | $V_{CE(sat)}$ | — | -1.0 | Vdc |
| | MPSA63, MPSA64 | | — | -1.5 | |
| Base–Emitter On Voltage ($I_C = -10\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$) ($I_C = -100\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$) | MPSA62 | $V_{BE(on)}$ | — | -1.4 | Vdc |
| | MPSA63, MPSA64 | | — | -2.0 | |
| SMALL–SIGNAL CHARACTERISTICS | | | | | |
| Current–Gain — Bandwidth Product(2) ($I_C = -100\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$, $f = 100\text{ MHz}$) | MPSA63, MPSA64 | f_T | 125 | — | MHz |

1. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$; Duty Cycle $\leq 2.0\%$.

2. $f_T = |h_{fe}| \cdot f_{test}$.

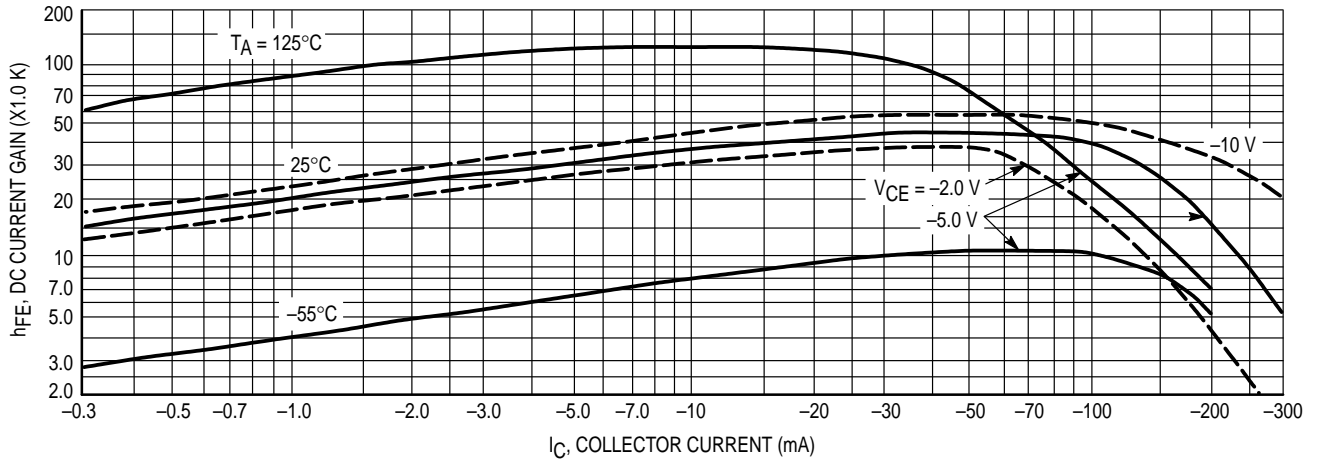


Figure 1. DC Current Gain

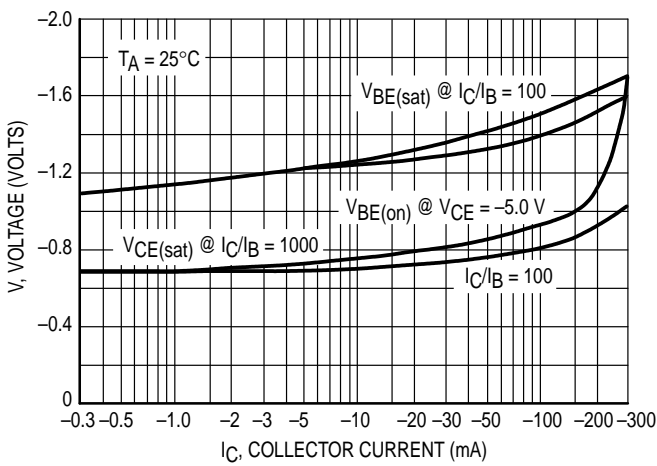


Figure 2. "On" Voltage

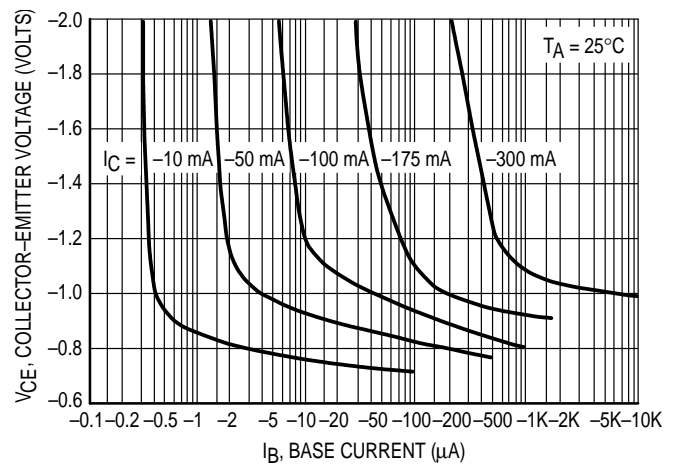


Figure 3. Collector Saturation Region

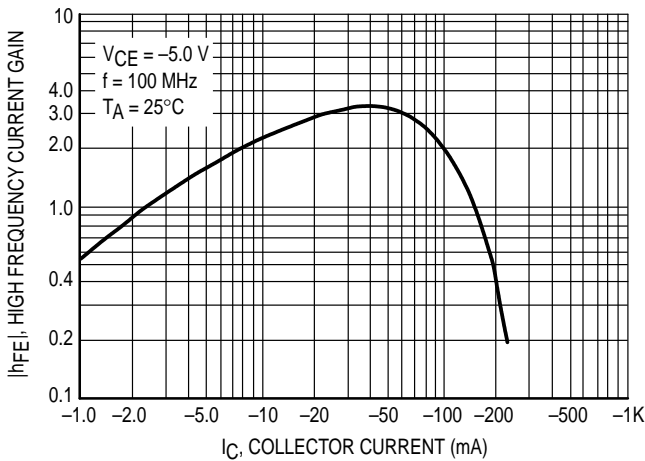


Figure 4. High Frequency Current Gain

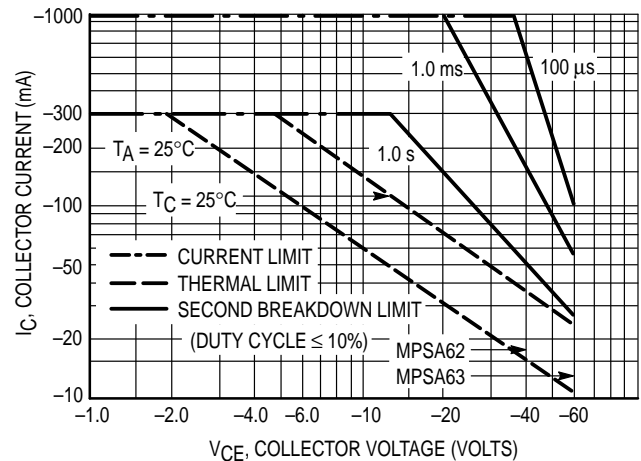


Figure 5. Active Region, Safe Operating Area

PACKAGE DIMENSIONS



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.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|------|
| | 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:

1. EMITTER
2. BASE
3. COLLECTOR

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How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution;
P.O. Box 20912; Phoenix, Arizona 85036. 1-800-441-2447 or 602-303-5454

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, 6F Seibu-Butsuryu-Center,
3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 03-81-3521-8315

MFAX: RMFA00@email.sps.mot.com – TOUCHTONE 602-244-6609
INTERNET: http://Design-NET.com

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

