# MPSA75, MPSA77

# Darlington Transistors

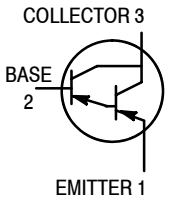
## PNP Silicon

### Features

- These are Pb-Free Devices*

ON Semiconductor®

http://onsemi.com




**MAXIMUM RATINGS**

| Rating | | Symbol | Value | Unit |
|---|---|---|---|---|
| Collector-Emitter Voltage | MPSA75<br>MPSA77 | $V_{CES}$ | -40<br>-60 | Vdc |
| Emitter-Base Voltage | | $V_{EBO}$ | -10 | Vdc |
| Collector Current - Continuous | | $I_C$ | -500 | mAdc |
| Total Device Dissipation @ $T_A$ = 25°C<br>Derate above 25°C | | $P_D$ | 625<br>5.0 | mW<br>mW/°C |
| Operating and Storage Junction Temperature Range | | $T_J$, $T_{stg}$ | -55 to +150 | °C |

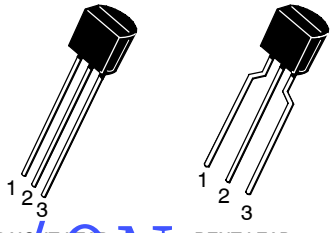
**THERMAL CHARACTERISTICS**

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

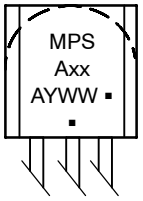
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



**TO-92**
**CASE 29**
**STYLE 1**




**MARKING DIAGRAM**




xx = 75, or 77
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

**ORDERING INFORMATION**

| Device | Package | Shipping† |
|---|---|---|
| MPSA75RLRPG | TO-92<br>(Pb-Free) | 2000 / Ammo Pack |
| MPSA77G | TO-92<br>(Pb-Free) | 5000 Units / Bulk |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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

| Characteristic | | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | |
| Collector−Emitter Breakdown Voltage ($I_C$ = −100 μAdc, $V_{BE}$ = 0) | MPSA75<br>MPSA77 | $V_{(BR)CES}$ | −40<br>−60 | −<br>− | −<br>− | Vdc |
| Collector−Base Breakdown Voltage ($I_C$ = 100 μAdc, $I_E$ = 0) | MPSA75<br>MPSA77 | $V_{(BR)CBO}$ | −40<br>−60 | −<br>− | −<br>− | Vdc |
| Collector Cutoff Current<br>($V_{CB}$= −30 V, $I_E$ = 0)<br>($V_{CB}$ = −50 V, $I_E$ = 0) | <br>MPSA75<br>MPSA77 | $I_{CBO}$ | <br>−<br>− | <br>−<br>− | <br>−100<br>−100 | nAdc |
| Collector Cutoff Current<br>($V_{CE}$ = −30 V, $V_{BE}$ = 0)<br>($V_{CE}$ = −50 V, $V_{BE}$ = 0) | <br>MPSA75<br>MPSA77 | $I_{CES}$ | <br>−<br>− | <br>−<br>− | <br>−500<br>−500 | nAdc |
| Emitter Cutoff Current ($V_{EB}$ = −10 Vdc) | | $I_{EBO}$ | − | − | −100 | nAdc |
| **ON CHARACTERISTICS** | | | | | | |
| DC Current Gain<br>($I_C$ = −10 mA, $V_{CE}$ = −5.0 V)<br>($I_C$ = −100 mA, $V_{CE}$ = −5.0 V) | | $h_{FE}$ | <br>10,000<br>10,000 | <br>−<br>− | <br>−<br>− | − |
| Collector−Emitter Saturation Voltage ($I_C$ = −100 mA, $I_B$ = −0.1 mAdc) | | $V_{CE(sat)}$ | − | − | −1.5 | Vdc |
| Base−Emitter On Voltage ($I_C$ = −100 mA, $V_{CE}$ = −5.0 Vdc) | | $V_{BE}$ | − | − | −2.0 | Vdc |
| **SMALL−SIGNAL CHARACTERISTICS** | | | | | | |
| Current−Gain − High Frequency ($I_C$ = −10 mA, $V_{CE}$ = −5.0 V, f = 100 MHz) | | $\|h_{fe}\|$ | 1.25 | 2.4 | − | − |

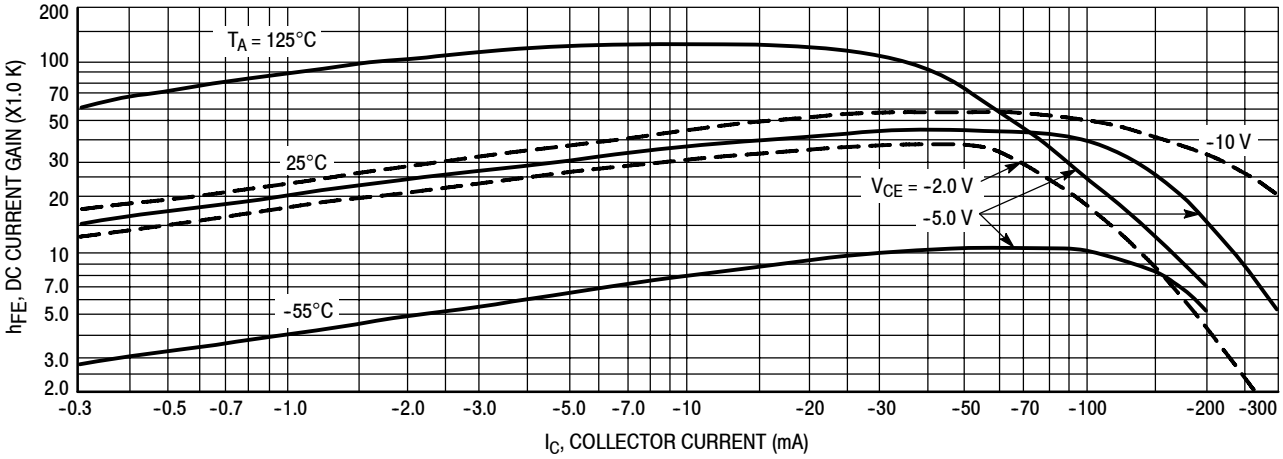



**Figure 1. DC Current Gain**

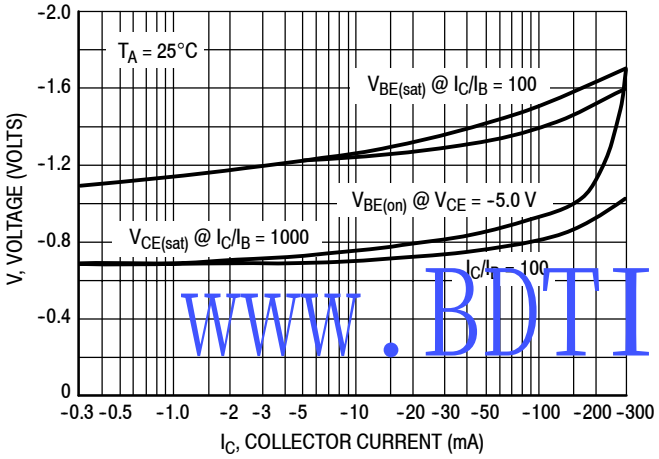



**Figure 2. "On" Voltage**

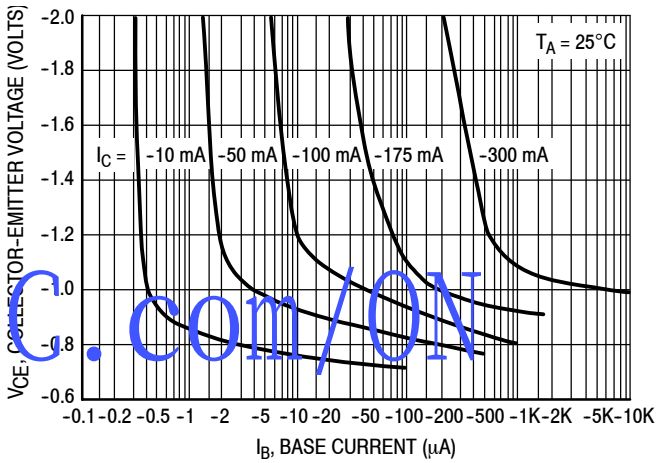



**Figure 3. Collector Saturation Region**



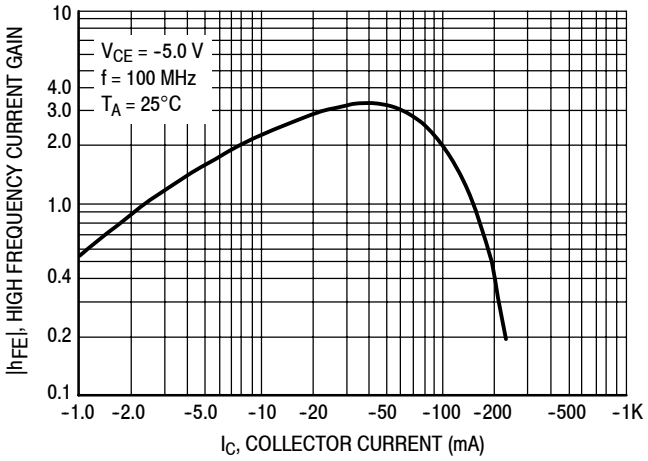



**Figure 4. High Frequency Current Gain**

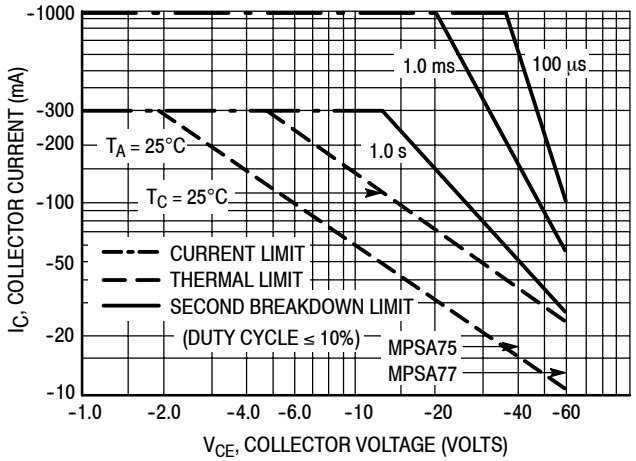
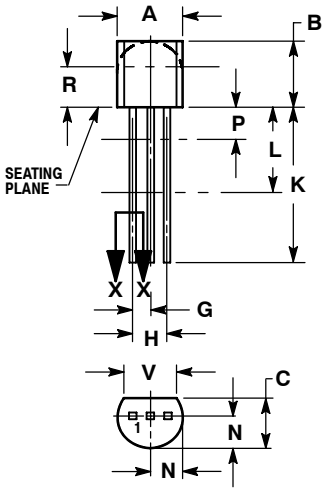


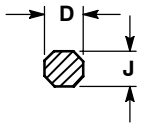

**Figure 5. Active Region, Safe Operating Area**

## PACKAGE DIMENSIONS

**TO−92 (TO−226)**
CASE 29−11
ISSUE AM



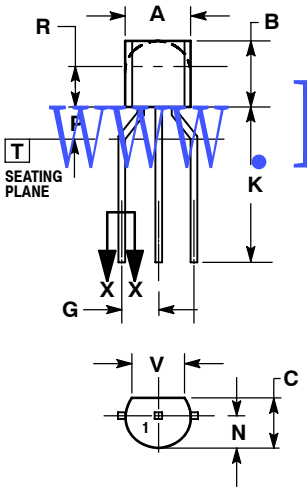

STRAIGHT LEAD
BULK PACK



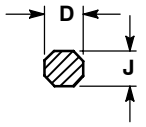

SECTION X−X

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. 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 | 0.021 | 0.407 | 0.533 |
| 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 | --- |




BENT LEAD
TAPE & REEL
AMMO PACK




SECTION X−X

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

| | MILLIMETERS | |
|---|---|---|
| DIM | MIN | MAX |
| A | 4.45 | 5.20 |
| B | 4.32 | 5.33 |
| C | 3.18 | 4.19 |
| D | 0.40 | 0.54 |
| G | 2.40 | 2.80 |
| J | 0.39 | 0.50 |
| K | 12.70 | --- |
| N | 2.04 | 2.66 |
| P | 1.50 | 4.00 |
| R | 2.93 | --- |
| V | 3.43 | --- |

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





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