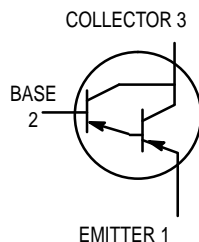


# Darlington Transistors

## PNP Silicon



### 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 $25^\circ\text{C}$	$P_D$	625	5.0	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.5	12	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	–55 to +150		$^\circ\text{C}$

### 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
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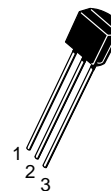
### OFF CHARACTERISTICS

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

## MPSA62 thru MPSA64\*

**MPSA55, MPSA56**  
For Specifications,  
See MPSA05, MPSA06 Data

\*Motorola Preferred Device



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

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 <sub>C</sub> = −10 mAdc, V <sub>CE</sub> = −5.0 Vdc)	MPSA63 MPSA64 MPSA62	h <sub>FE</sub>	5,000 10,000 20,000	— — —	—	
(I <sub>C</sub> = −100 mAdc, V <sub>CE</sub> = −5.0 Vdc)	MPSA63 MPSA64		10,000 20,000	— —		
Collector–Emitter Saturation Voltage (I <sub>C</sub> = −10 mAdc, I <sub>B</sub> = −0.01 mAdc) (I <sub>C</sub> = −100 mAdc, I <sub>B</sub> = −0.1 mAdc)	MPSA62 MPSA63, MPSA64		— —	−1.0 −1.5		Vdc
Base–Emitter On Voltage (I <sub>C</sub> = −10 mAdc, V <sub>CE</sub> = −5.0 Vdc) (I <sub>C</sub> = −100 mAdc, V <sub>CE</sub> = −5.0 Vdc)	MPSA62 MPSA63, MPSA64		— —	−1.4 −2.0		
SMALL–SIGNAL CHARACTERISTICS						
Current–Gain — Bandwidth Product(2) (I <sub>C</sub> = −100 mAdc, V <sub>CE</sub> = −5.0 Vdc, f = 100 MHz)	MPSA63, MPSA64	f <sub>T</sub>	125	—	MHz	

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

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

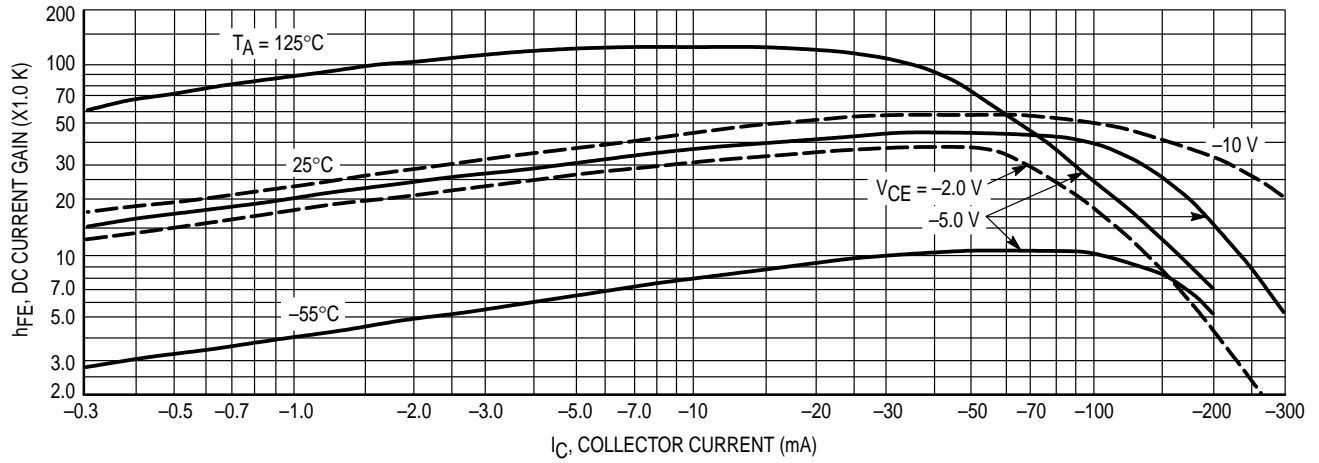


Figure 1. DC Current Gain

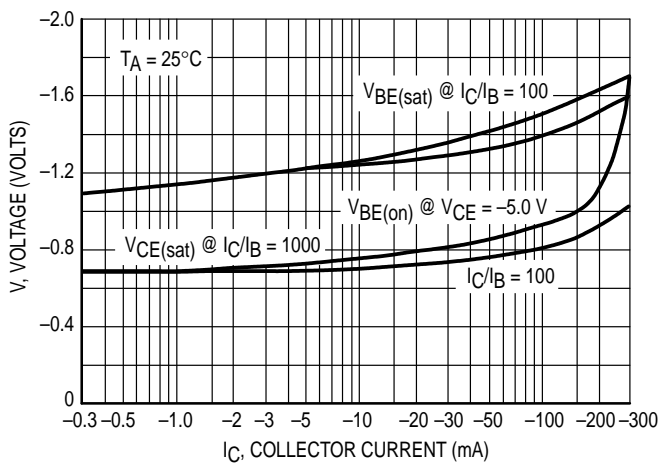


Figure 2. "On" Voltage

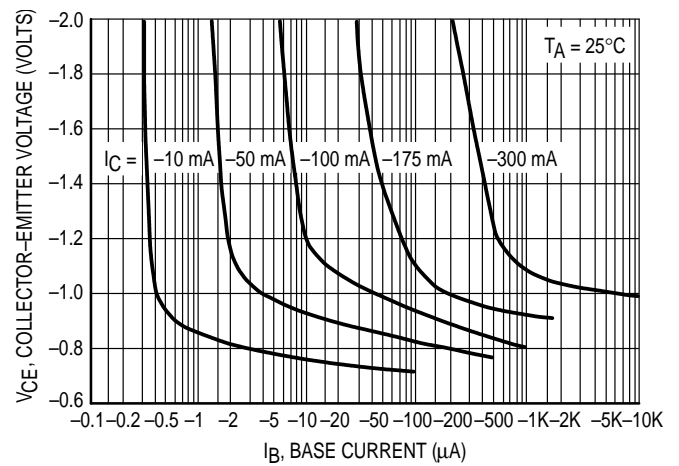


Figure 3. Collector Saturation Region

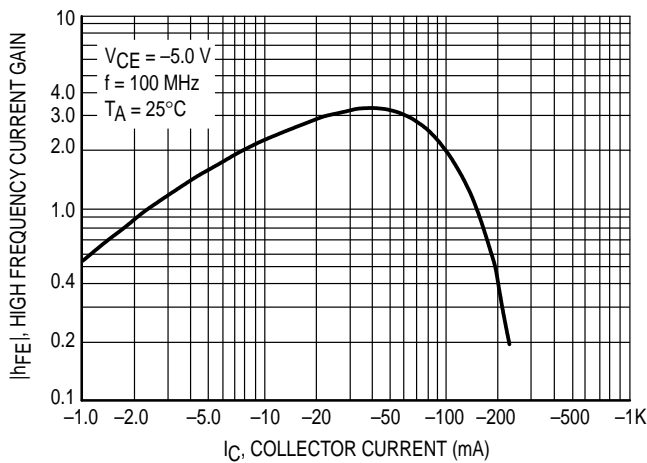


Figure 4. High Frequency Current Gain

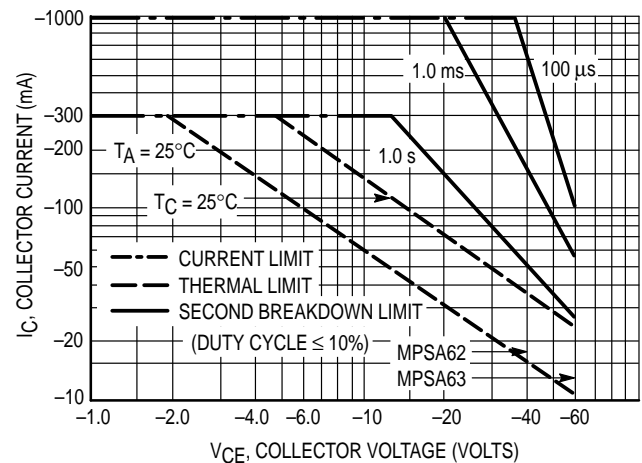
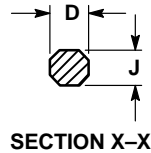
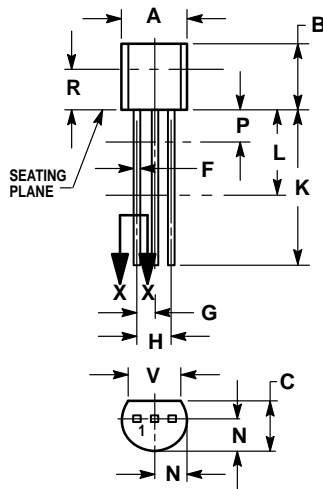


Figure 5. Active Region, Safe Operating Area

## 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. PIN 1. EMITTER
2. BASE
3. COLLECTOR

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