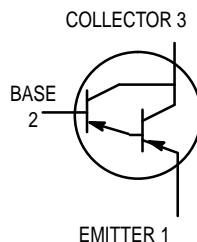


# Darlington Transistors

## PNP Silicon



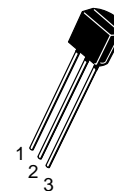
## MPSA62 thru MPSA64\*

**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 $25^\circ\text{C}$	$P_D$	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		$^\circ\text{C}$



**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
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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

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
<b>ON CHARACTERISTICS(1)</b>					
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	
<b>SMALL–SIGNAL CHARACTERISTICS</b>					
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.  $f_T = |h_{fe}| \cdot f_{test}$ .

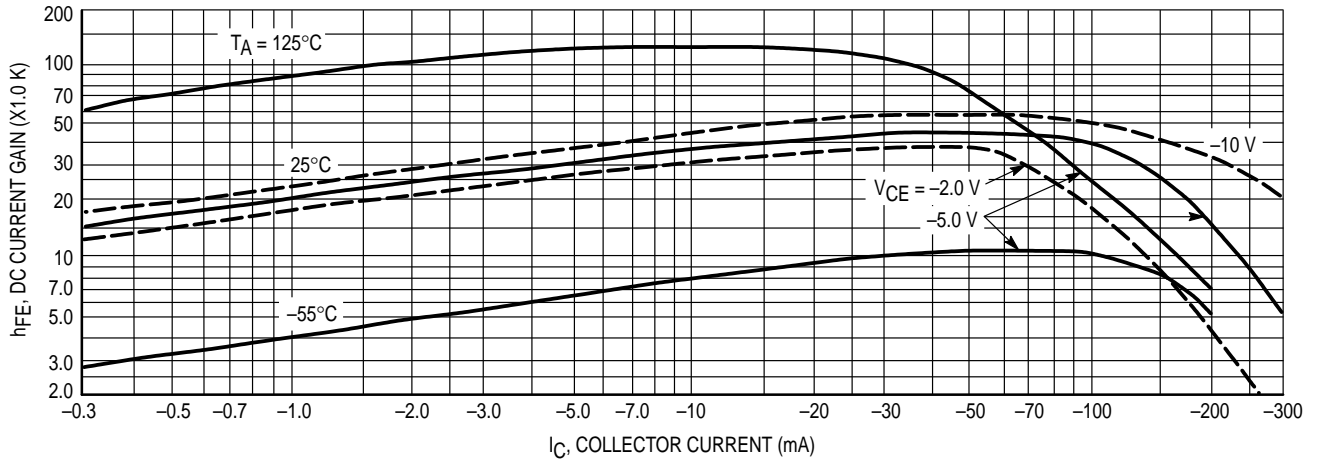


Figure 1. DC Current Gain

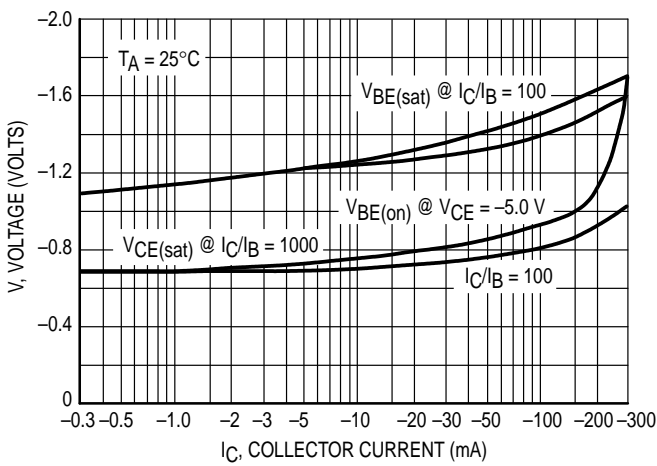


Figure 2. "On" Voltage

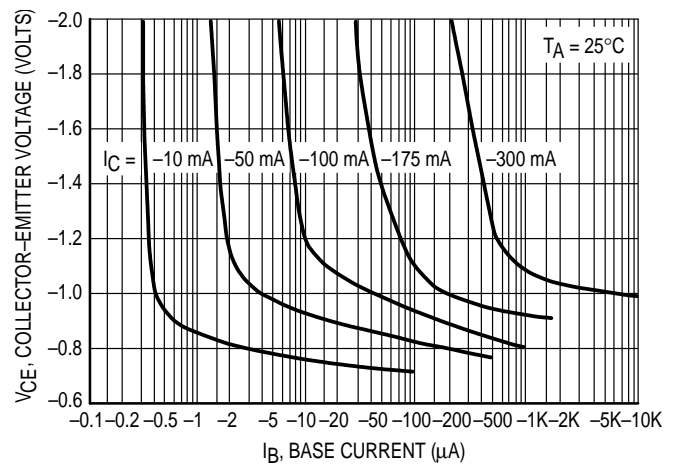


Figure 3. Collector Saturation Region

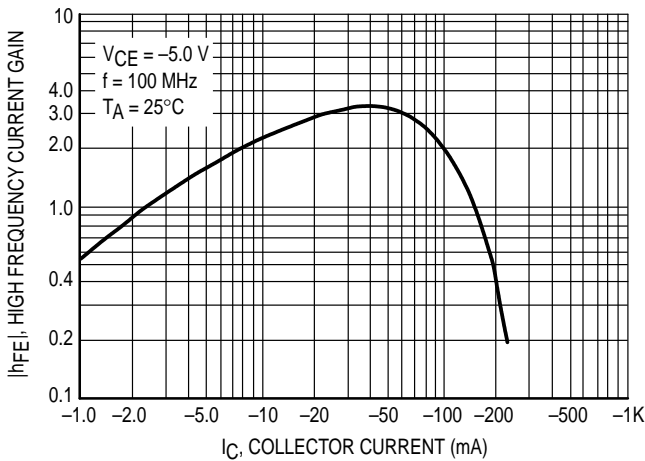


Figure 4. High Frequency Current Gain

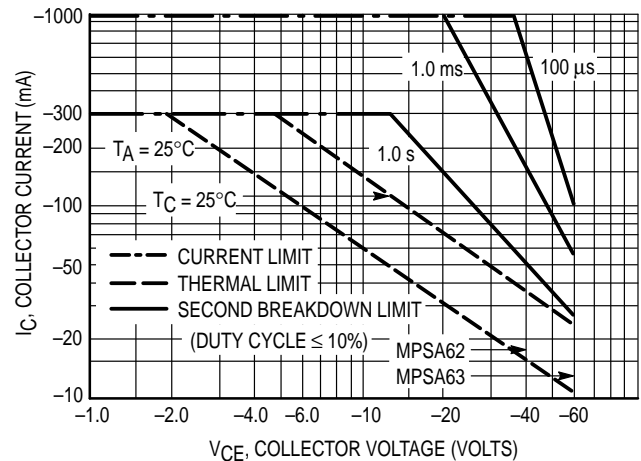


Figure 5. Active Region, Safe Operating Area

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:

- PIN 1. EMITTER
2. BASE
3. COLLECTOR

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