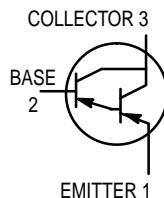


# Darlington Transistors

## PNP Silicon

**MPSA75**  
**MPSA77**



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

### MAXIMUM RATINGS

Rating	Symbol	MPSA75	MPSA77	Unit
Collector–Emitter Voltage	$V_{CES}$	–40	–60	Vdc
Emitter–Base Voltage	$V_{EBO}$	–10		Vdc
Collector Current — Continuous	$I_C$	–500		Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	625 5.0		mW 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

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

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

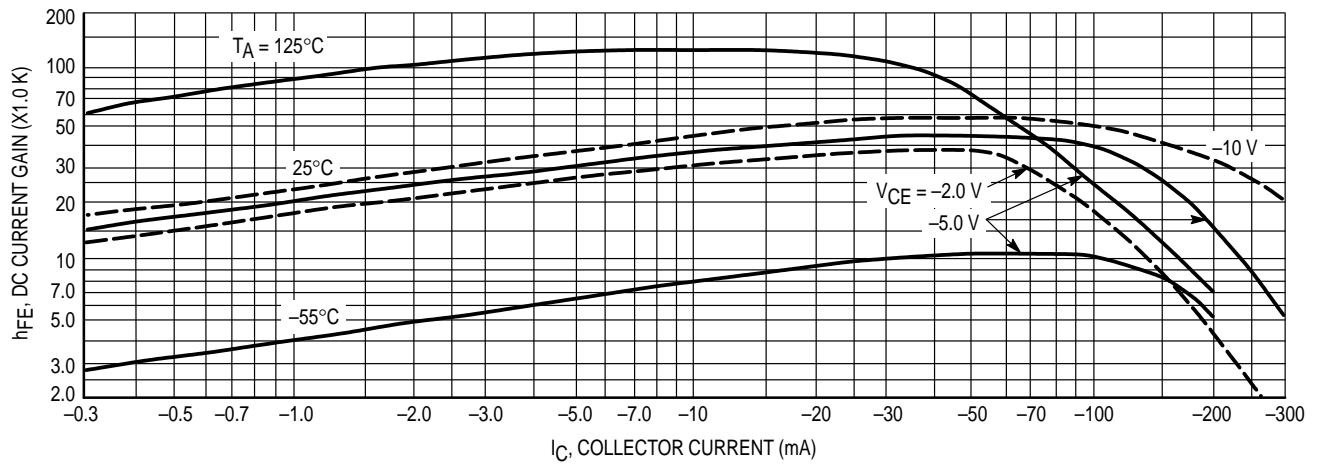
Collector–Emitter Breakdown Voltage ( $I_C = -100 \mu\text{Adc}$ , $V_{BE} = 0$ )	MPSA75 MPSA77	$V_{(BR)CES}$	–40 –60	— —	— —	Vdc
Collector–Base Breakdown Voltage ( $I_C = 100 \mu\text{Adc}$ , $I_E = 0$ )	MPSA75 MPSA77	$V_{(BR)CBO}$	–40 –60	— —	— —	Vdc
Collector Cutoff Current ( $V_{CB} = -30 \text{ V}$ , $I_E = 0$ ) ( $V_{CB} = -50 \text{ V}$ , $I_E = 0$ )	MPSA75 MPSA77	$I_{CBO}$	— —	— —	–100 –100	nAdc
Collector Cutoff Current ( $V_{CE} = -30 \text{ V}$ , $V_{BE} = 0$ ) ( $V_{CE} = -50 \text{ V}$ , $V_{BE} = 0$ )	MPSA75 MPSA77	$I_{CES}$	— —	— —	–500 –500	nAdc
Emitter Cutoff Current ( $V_{EB} = -10 \text{ Vdc}$ )		$I_{EBO}$	—	—	–100	nAdc

### ON CHARACTERISTICS

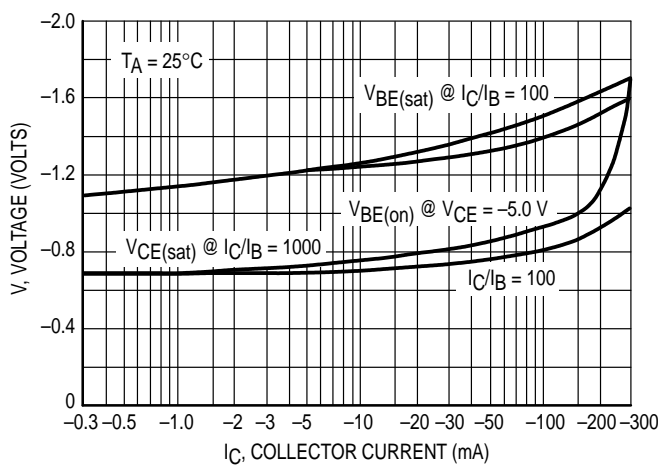
DC Current Gain ( $I_C = -10 \text{ mA}$ , $V_{CE} = -5.0 \text{ V}$ ) ( $I_C = -100 \text{ mA}$ , $V_{CE} = -5.0 \text{ V}$ )	$h_{FE}$	10,000 10,000	— —	— —	—
Collector–Emitter Saturation Voltage ( $I_C = -100 \text{ mA}$ , $I_B = -0.1 \text{ mAdc}$ )	$V_{CE(sat)}$	—	—	–1.5	Vdc
Base–Emitter On Voltage ( $I_C = -100 \text{ mA}$ , $V_{CE} = -5.0 \text{ Vdc}$ )	$V_{BE}$	—	—	–2.0	Vdc

### SMALL-SIGNAL CHARACTERISTICS

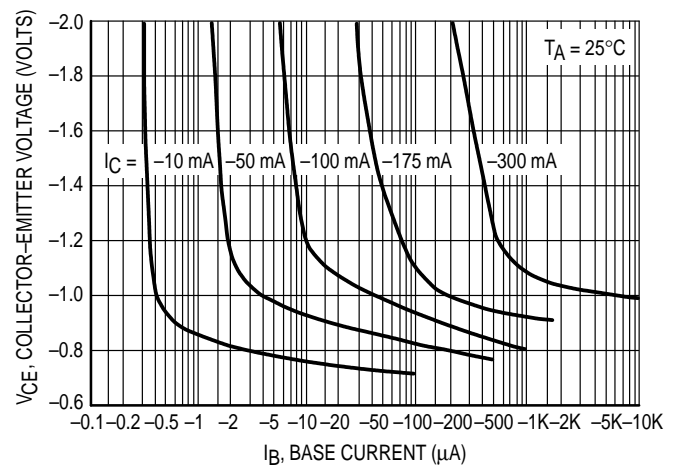
Current–Gain — High Frequency ( $I_C = -10 \text{ mA}$ , $V_{CE} = -5.0 \text{ V}$ , $f = 100 \text{ MHz}$ )	$ h_{fe} $	1.25	2.4	—	—
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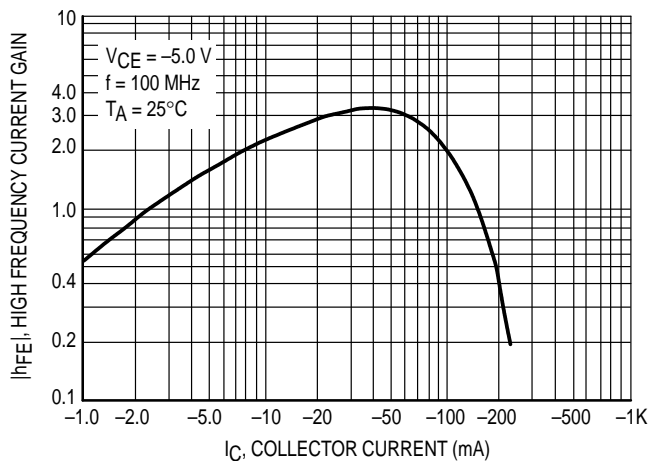
**Figure 1. DC Current Gain**



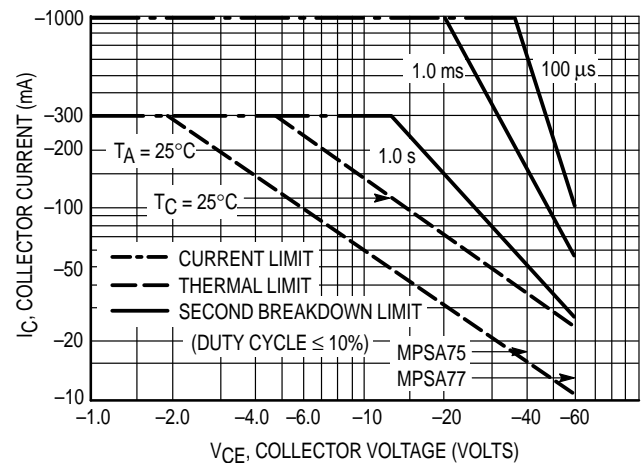
**Figure 2. "On" Voltage**



**Figure 3. Collector Saturation Region**

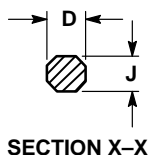
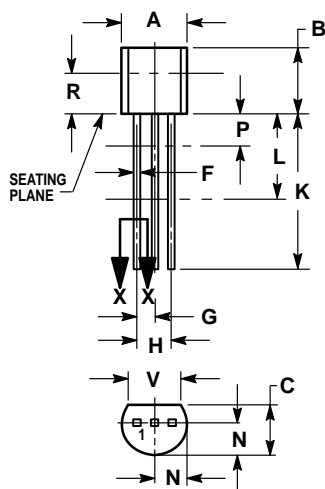


**Figure 4. High Frequency Current Gain**



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

# PACKAGE DIMENSIONS



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.

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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**How to reach us:**

**USA/EUROPE:** Motorola Literature Distribution;  
P.O. Box 20912; Phoenix, Arizona 85036. 1-800-441-2447

**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

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

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

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