

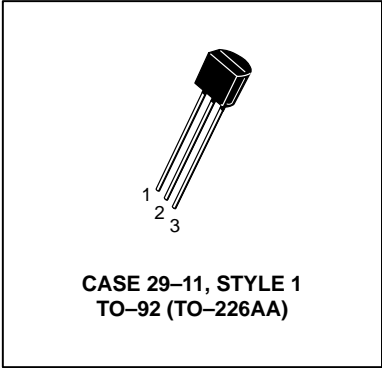
# Darlington Transistors

## PNP Silicon

**MPSA75**  
**MPSA77**

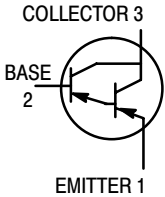
**MAXIMUM RATINGS**

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
<b>OFF CHARACTERISTICS</b>					
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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# MPSA75 MPSA77

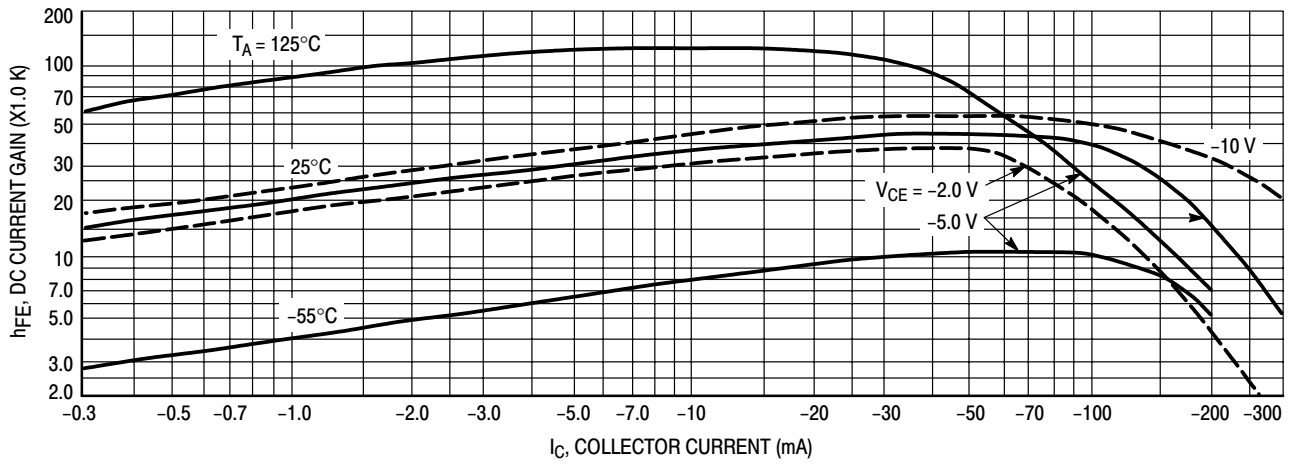


Figure 1. DC Current Gain

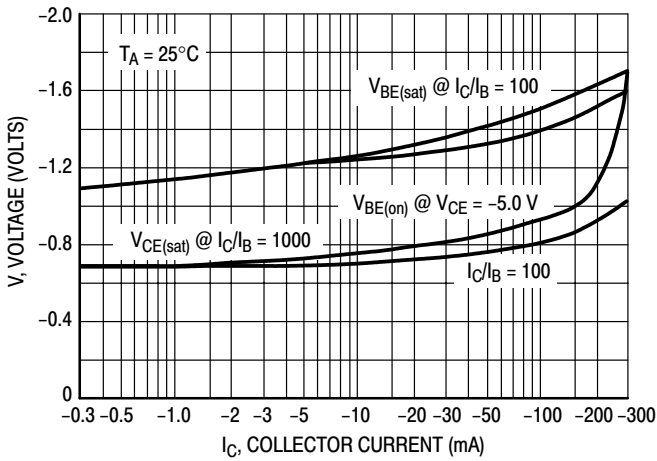


Figure 2. "On" Voltage

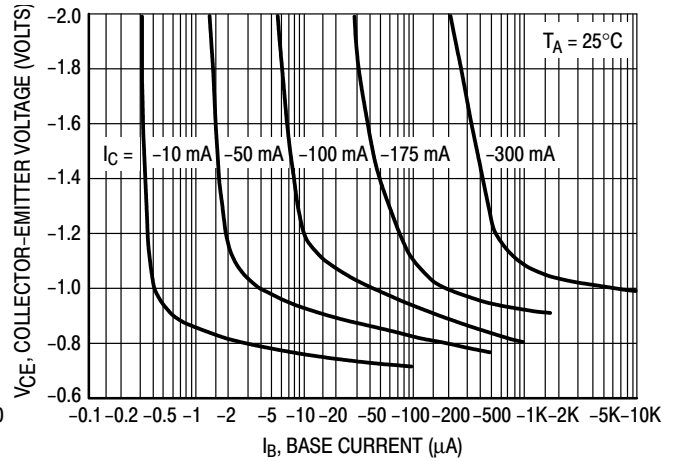


Figure 3. Collector Saturation Region

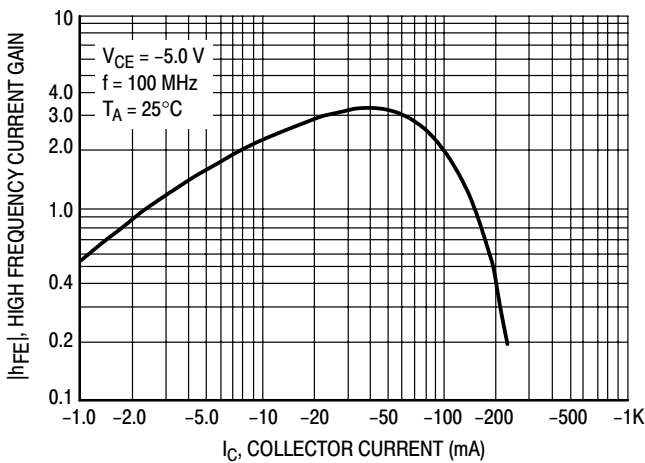


Figure 4. High Frequency Current Gain

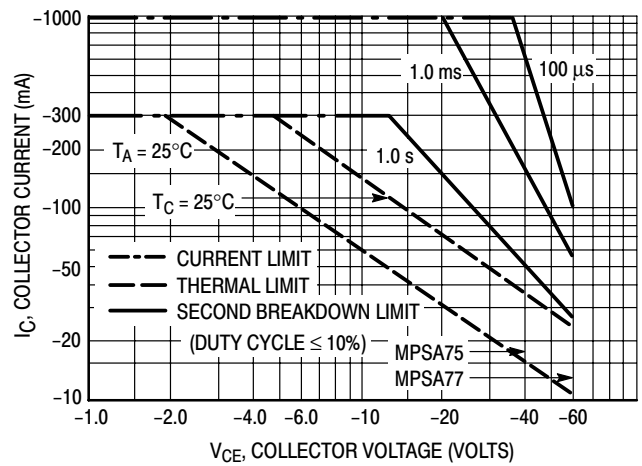
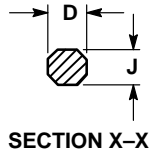
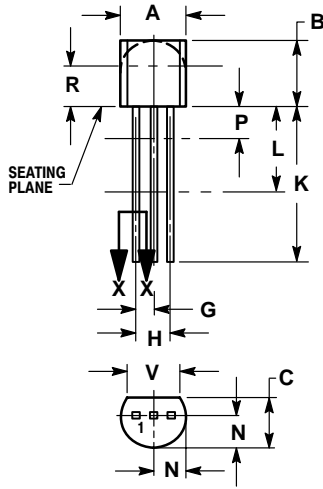


Figure 5. Active Region, Safe Operating Area

# MPSA75 MPSA77

## PACKAGE DIMENSIONS

TO-92 (TO-226)  
CASE 29-11  
ISSUE AL



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.

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	0.021	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	---

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

# MPSA75 MPSA77

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