

# 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/°C
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.5	12	Watts 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
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	°C/W

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

Characteristic	Symbol	Min	Max	Unit
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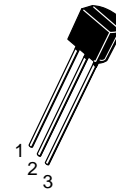
### OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ( $I_C = -100 \mu\text{Adc}$ , $V_{BE} = 0$ ) MPSA62	$V_{(BR)CES}$	-20	—	Vdc
MPSA63, MPSA64		-30	—	
Collector Cutoff Current ( $V_{CB} = -15 \text{Vdc}$ , $I_E = 0$ ) MPSA62	$I_{CBO}$	—	-100	nAdc
( $V_{CB} = -30 \text{Vdc}$ , $I_E = 0$ ) MPSA63, MPSA64		—	-100	
Emitter Cutoff Current ( $V_{EB} = -10 \text{Vdc}$ , $I_C = 0$ )	$I_{EBO}$	—	-100	nAdc

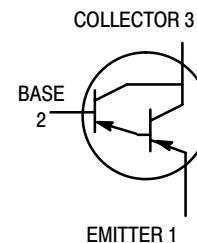
## MPSA62 MPSA63 MPSA64\*

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

\*ON Semiconductor Preferred Device



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



Preferred devices are ON Semiconductor recommended choices for future use and best overall value.

# MPSA62 MPSA63 MPSA64

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

Characteristic		Symbol	Min	Max	Unit
<b>ON CHARACTERISTICS<sup>(1)</sup></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 <sup>(2)</sup> ( $I_C = -100\text{ mAdc}$ , $V_{CE} = -5.0\text{ Vdc}$ , $f = 100\text{ MHz}$ )	MPSA63, MPSA64	$f_T$	125	—	MHz

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

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

# MPSA62 MPSA63 MPSA64

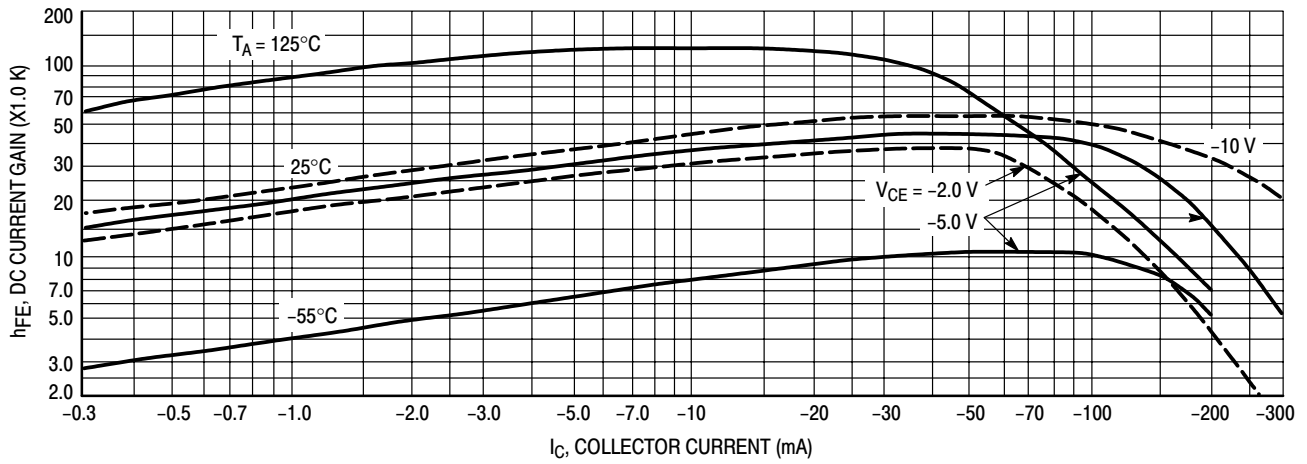


Figure 1. DC Current Gain

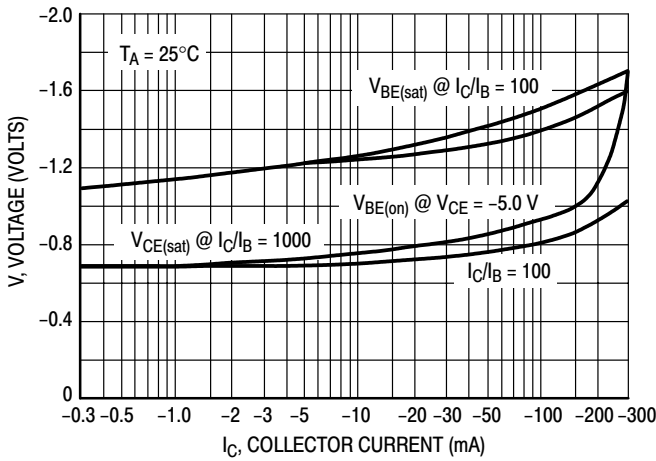


Figure 2. "On" Voltage

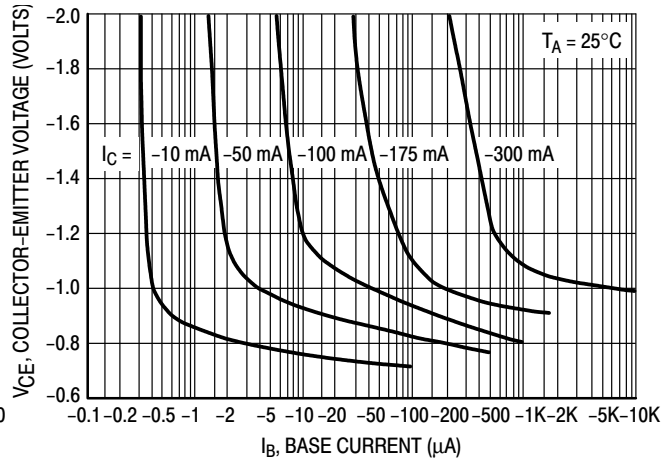


Figure 3. Collector Saturation Region

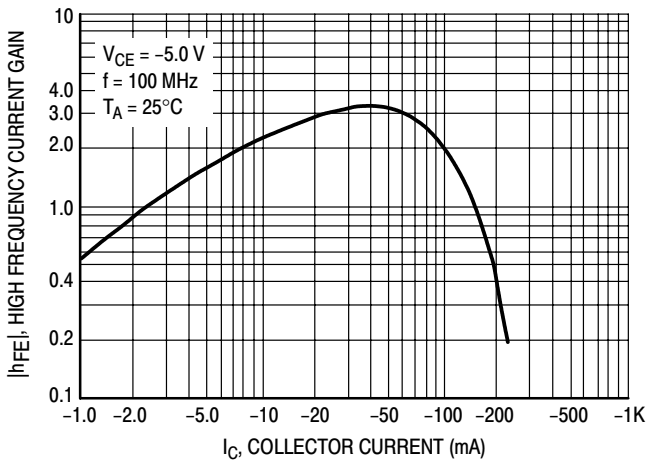


Figure 4. High Frequency Current Gain

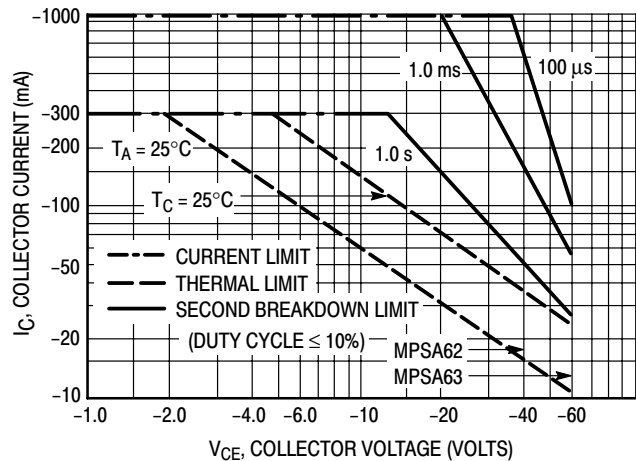
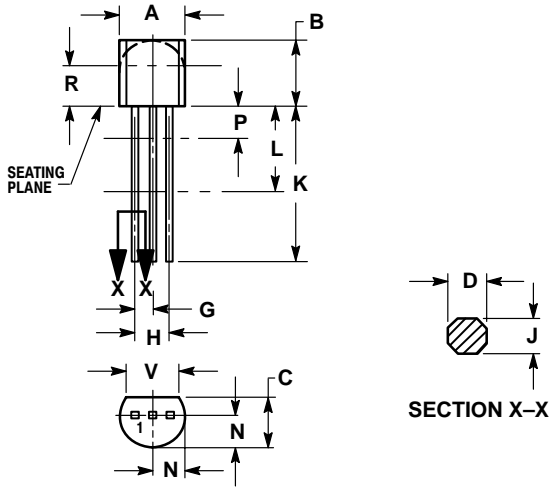


Figure 5. Active Region, Safe Operating Area

# MPSA62 MPSA63 MPSA64

## 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:

1. EMITTER
2. BASE
3. COLLECTOR

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