

# MPSA62, MPSA63, MPSA64

MPSA64 is a Preferred Device

## Darlington Transistors

### PNP Silicon

#### Features

- Pb-Free Packages are Available\*

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage MPSA62 MPSA63/64	$V_{CES}$	-20 -30	Vdc
Collector-Base Voltage MPSA62 MPSA63/64	$V_{CBO}$	-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 @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.5 12	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

#### THERMAL CHARACTERISTICS

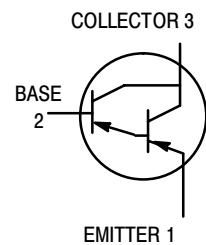
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

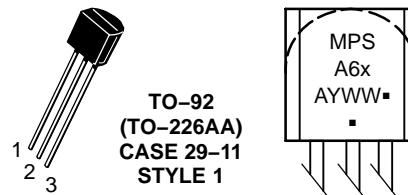


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#### MARKING DIAGRAM



x = 2, 3, or 4  
A = Assembly Location  
Y = Year  
WW = Work Week  
▪ = Pb-Free Package  
(Note: Microdot may be in either location)

#### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Breakdown Voltage ( $I_C = -100 \mu\text{A}_{\text{dc}}, V_{BE} = 0$ )	$V_{(\text{BR})\text{CES}}$	-20	-	$\text{V}_{\text{dc}}$
		-30	-	
Collector Cutoff Current ( $V_{CB} = -15 \text{ V}_{\text{dc}}, I_E = 0$ ) ( $V_{CB} = -30 \text{ V}_{\text{dc}}, I_E = 0$ )	$I_{CBO}$	-	-100	$\text{nA}_{\text{dc}}$
		-	-100	
Emitter Cutoff Current ( $V_{EB} = -10 \text{ V}_{\text{dc}}, I_C = 0$ )	$I_{EBO}$	-	-100	$\text{nA}_{\text{dc}}$

ON CHARACTERISTICS (Note 1)

DC Current Gain ( $I_C = -10 \text{ mA}_{\text{dc}}, V_{CE} = -5.0 \text{ V}_{\text{dc}}$ )	$h_{FE}$	5,000	-	-
MPSA63		10,000	-	
MPSA64		20,000	-	
MPSA62		10,000	-	
( $I_C = -100 \text{ mA}_{\text{dc}}, V_{CE} = -5.0 \text{ V}_{\text{dc}}$ )		20,000	-	
MPSA63			-	
MPSA64			-	
Collector-Emitter Saturation Voltage ( $I_C = -10 \text{ mA}_{\text{dc}}, I_B = -0.01 \text{ mA}_{\text{dc}}$ ) ( $I_C = -100 \text{ mA}_{\text{dc}}, I_B = -0.1 \text{ mA}_{\text{dc}}$ )	$V_{CE(\text{sat})}$	-	-1.0	$\text{V}_{\text{dc}}$
MPSA62		-	-1.5	
MPSA63, MPSA64				
Base-Emitter On Voltage ( $I_C = -10 \text{ mA}_{\text{dc}}, V_{CE} = -5.0 \text{ V}_{\text{dc}}$ ) ( $I_C = -100 \text{ mA}_{\text{dc}}, V_{CE} = -5.0 \text{ V}_{\text{dc}}$ )	$V_{BE(\text{on})}$	-	-1.4	$\text{V}_{\text{dc}}$
MPSA62		-	-2.0	
MPSA63, MPSA64				

## SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product (Note 2) ( $I_C = -100 \text{ mA}_{\text{dc}}, V_{CE} = -5.0 \text{ V}_{\text{dc}}, f = 100 \text{ MHz}$ )	$f_T$	125	-	MHz
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1. Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ ; Duty Cycle  $\leq 2.0\%$ .

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

## ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MPSA62	TO-92	5000 Units / Bulk
MPSA63	TO-92	5000 Units / Bulk
MPSA63G	TO-92 (Pb-Free)	5000 Units / Bulk
MPSA63RLRA	TO-92	2000 / Tape & Reel
MPSA63RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA63RLRM	TO-92	2000 / Ammo Pack
MPSA63RLRMG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA63RLRP	TO-92	2000 / Ammo Pack
MPSA63RLRPG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA63ZL1	TO-92	2000 / Ammo Pack
MPSA63ZL1G	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA64	TO-92	5000 Units / Bulk
MPSA64G	TO-92 (Pb-Free)	5000 Units / Bulk
MPSA64RLRA	TO-92	2000 / Tape & Reel
MPSA64RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA64RLRM	TO-92	2000 / Ammo Pack
MPSA64RLRMG	TO-92 (Pb-Free)	2000 / Ammo Pack

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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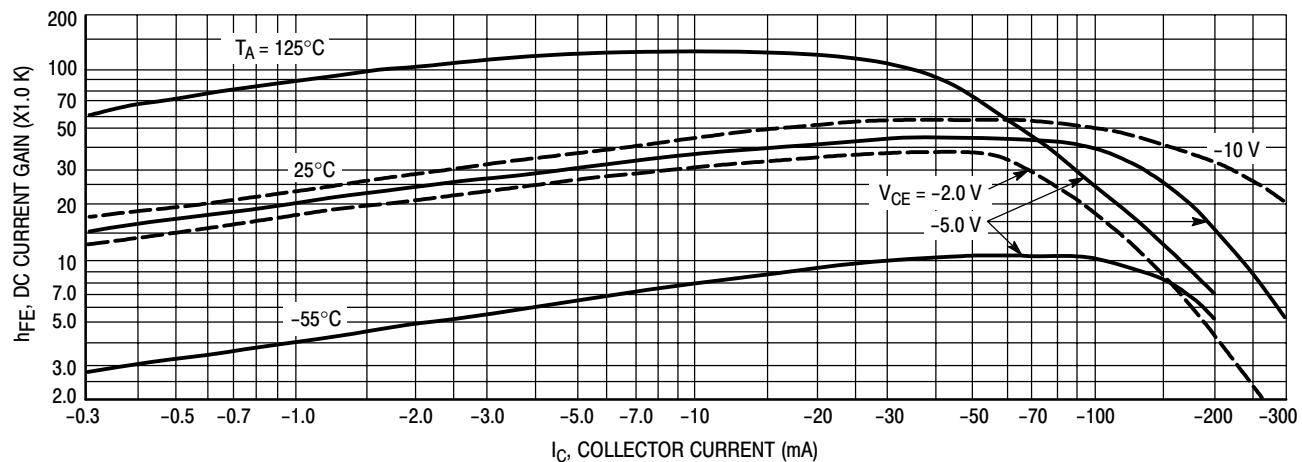


Figure 1. DC Current Gain

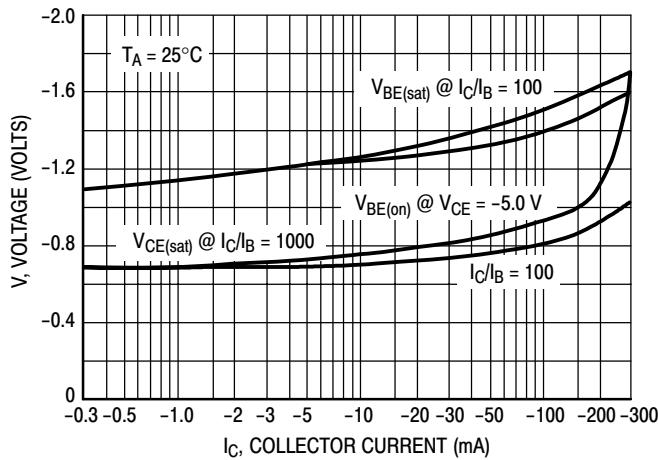


Figure 2. "On" Voltage

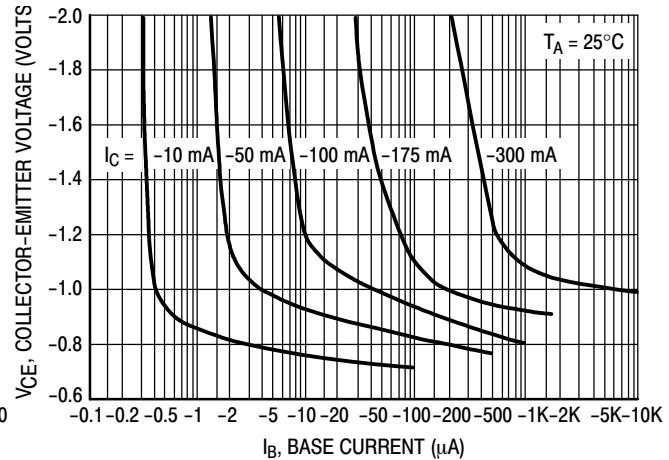


Figure 3. Collector Saturation Region

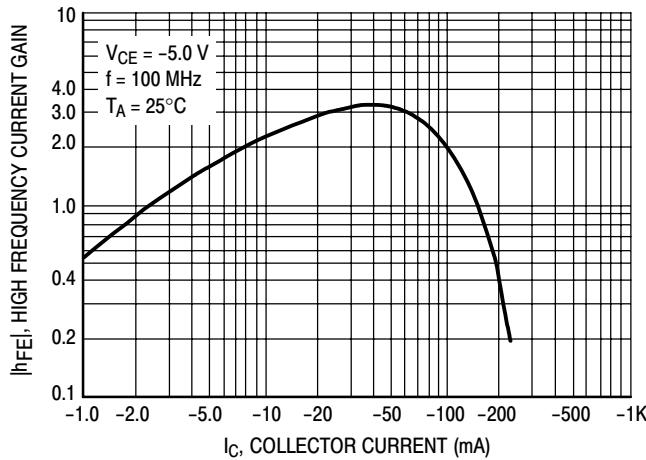


Figure 4. High Frequency Current Gain

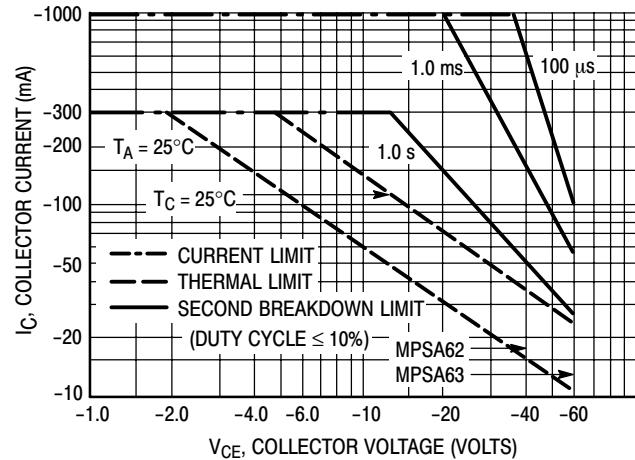
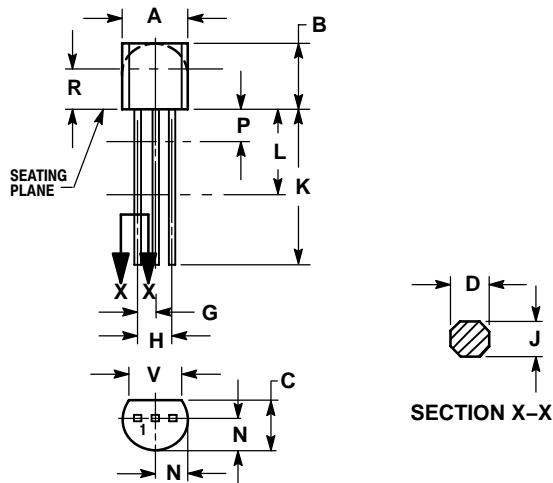


Figure 5. Active Region, Safe Operating Area

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## 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

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