

# ON Semiconductor

## Is Now

The logo for onsemi, featuring the word "onsemi" in a dark teal, lowercase, sans-serif font. The letter "i" is stylized with a white dot and a teal vertical bar. A small orange triangle is positioned above the top right of the "i". A trademark symbol (TM) is located to the right of the logo.

To learn more about onsemi™, please visit our website at  
[www.onsemi.com](http://www.onsemi.com)

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# MPSA75, MPSA77

## Darlington Transistors

### PNP Silicon

#### Features

- These are Pb-Free Devices\*

#### MAXIMUM RATINGS

Rating		Symbol	Value	Unit
Collector-Emitter Voltage	MPSA75 MPSA77	$V_{CES}$	-40 -60	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/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range		$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

#### THERMAL CHARACTERISTICS

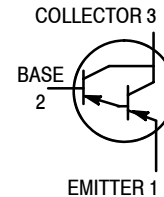
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

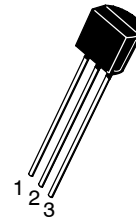


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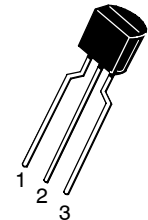
<http://onsemi.com>



**TO-92  
CASE 29  
STYLE 1**

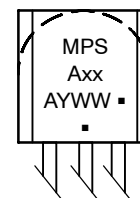


STRAIGHT LEAD  
BULK PACK



BENT LEAD  
TAPE & REEL  
AMMO PACK

#### MARKING DIAGRAM



xx = 75, or 77  
A = Assembly Location  
Y = Year  
WW = Work Week  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

Device	Package	Shipping†
MPSA75RLRPG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA77G	TO-92 (Pb-Free)	5000 Units / Bulk

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

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

# MPSA75, MPSA77

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Collector-Emitter Breakdown Voltage (I <sub>C</sub> = -100 μA <sub>dc</sub> , V <sub>BE</sub> = 0)	MPSA75 MPSA77	V <sub>(BR)CES</sub>	-40 -60	- -	- -	Vdc
Collector-Base Breakdown Voltage (I <sub>C</sub> = 100 μA <sub>dc</sub> , I <sub>E</sub> = 0)	MPSA75 MPSA77	V <sub>(BR)CBO</sub>	-40 -60	- -	- -	Vdc
Collector Cutoff Current (V <sub>CB</sub> = -30 V, I <sub>E</sub> = 0) (V <sub>CB</sub> = -50 V, I <sub>E</sub> = 0)	MPSA75 MPSA77	I <sub>CBO</sub>	- -	- -	-100 -100	nA <sub>dc</sub>
Collector Cutoff Current (V <sub>CE</sub> = -30 V, V <sub>BE</sub> = 0) (V <sub>CE</sub> = -50 V, V <sub>BE</sub> = 0)	MPSA75 MPSA77	I <sub>CES</sub>	- -	- -	-500 -500	nA <sub>dc</sub>
Emitter Cutoff Current (V <sub>EB</sub> = -10 Vdc)		I <sub>EBO</sub>	-	-	-100	nA <sub>dc</sub>
<b>ON CHARACTERISTICS</b>						
DC Current Gain (I <sub>C</sub> = -10 mA, V <sub>CE</sub> = -5.0 V) (I <sub>C</sub> = -100 mA, V <sub>CE</sub> = -5.0 V)		h <sub>FE</sub>	10,000 10,000	- -	- -	-
Collector-Emitter Saturation Voltage (I <sub>C</sub> = -100 mA, I <sub>B</sub> = -0.1 mA <sub>dc</sub> )		V <sub>CE(sat)</sub>	-	-	-1.5	Vdc
Base-Emitter On Voltage (I <sub>C</sub> = -100 mA, V <sub>CE</sub> = -5.0 Vdc)		V <sub>BE</sub>	-	-	-2.0	Vdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>						
Current-Gain - High Frequency (I <sub>C</sub> = -10 mA, V <sub>CE</sub> = -5.0 V, f = 100 MHz)		h <sub>fe</sub>	1.25	2.4	-	-

# MPSA75, MPSA77

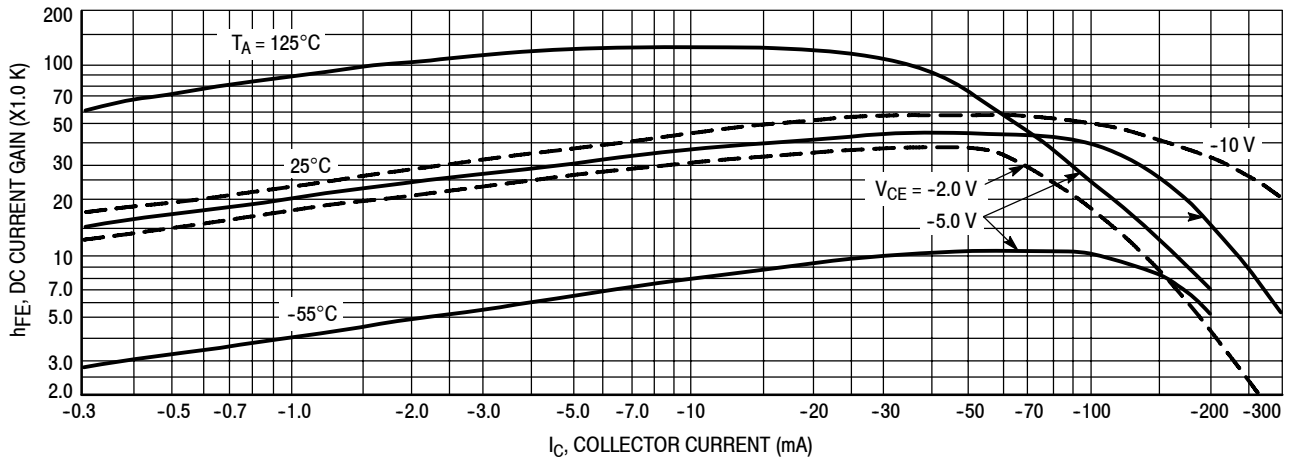


Figure 1. DC Current Gain

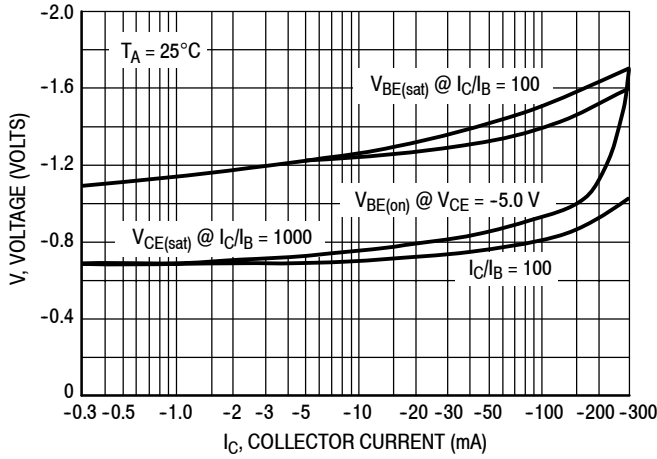


Figure 2. "On" Voltage

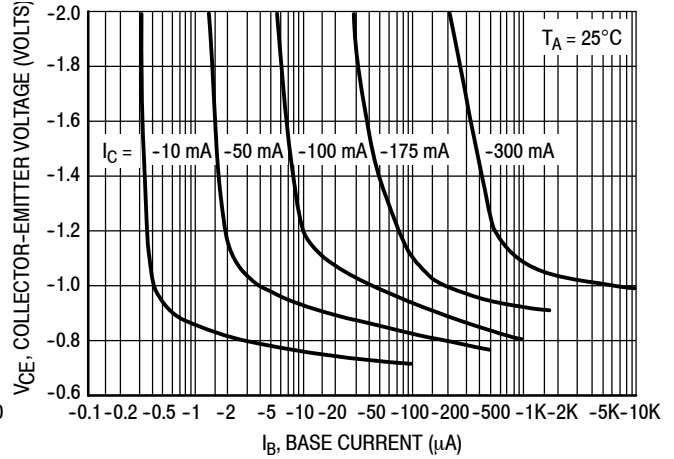


Figure 3. Collector Saturation Region

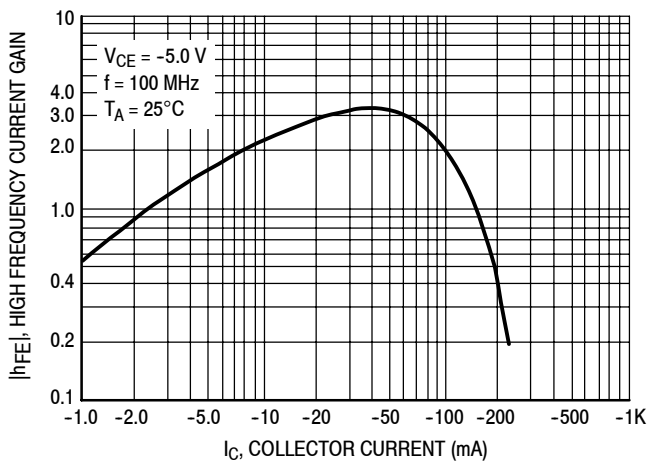


Figure 4. High Frequency Current Gain

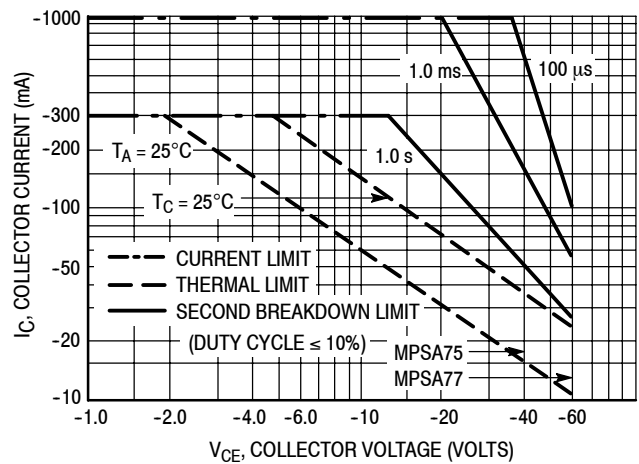
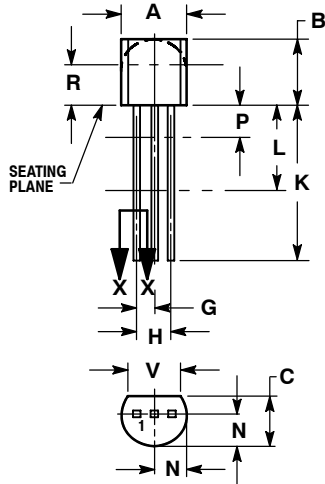


Figure 5. Active Region, Safe Operating Area

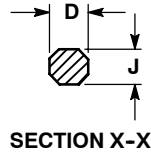
# MPSA75, MPSA77

## PACKAGE DIMENSIONS

### TO-92 (TO-226) CASE 29-11 ISSUE AM



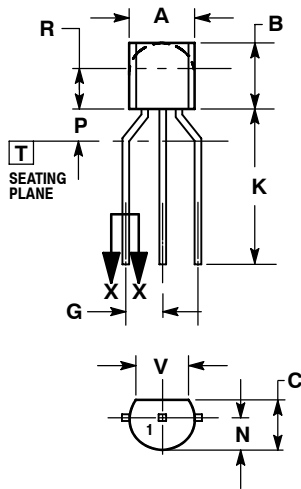
STRAIGHT LEAD  
BULK PACK



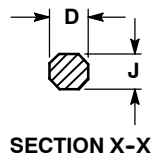
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1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

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	---



BENT LEAD  
TAPE & REEL  
AMMO PACK



NOTES:

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4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS	
	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---

STYLE 1:

1. EMITTER
2. BASE
3. COLLECTOR

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