

# MPSA75, MPSA77

## Darlington Transistors

### PNP Silicon

#### Features

- Pb-Free Packages are Available\*

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit	
Collector-Emitter Voltage	MPSA75 MPSA77	V <sub>CES</sub>	-40 -60	Vdc
Emitter-Base Voltage		V <sub>EBO</sub>	-10	Vdc
Collector Current - Continuous		I <sub>C</sub>	-500	mAdc
Total Device Dissipation @ T <sub>A</sub> = 25°C Derate above 25°C		P <sub>D</sub>	625 5.0	mW mW/°C
Operating and Storage Junction Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	-55 to +150	°C

#### THERMAL CHARACTERISTICS

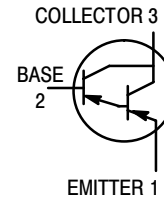
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	R <sub>θJA</sub>	200	°C/W

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.

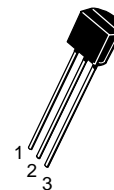


ON Semiconductor®

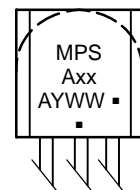
<http://onsemi.com>



#### MARKING DIAGRAM



TO-92  
CASE 29-11  
STYLE 1



MPSAxx = Device Code  
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†
MPSA75RLRA	TO-92	2,000/Tape & Reel
MPSA75RLRAG	TO-92 (Pb-Free)	2,000/Tape & Reel
MPSA75RLRP	TO-92	2,000/Ammo Pack
MPSA75RLRPG	TO-92 (Pb-Free)	2,000/Ammo Pack
MPSA77	TO-92	5,000 Units/Box
MPSA77G	TO-92 (Pb-Free)	5,000 Units/Box
MPSA77RLRA	TO-92	2,000/Ammo Pack
MPSA77RLRAG	TO-92 (Pb-Free)	2,000/Ammo Pack

†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	– –	– –	V <sub>dc</sub>
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	– –	– –	V <sub>dc</sub>
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 V <sub>dc</sub> )		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	V <sub>dc</sub>
Base–Emitter On Voltage (I <sub>C</sub> = –100 mA, V <sub>CE</sub> = –5.0 V <sub>dc</sub> )		V <sub>BE</sub>	–	–	–2.0	V <sub>dc</sub>
<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

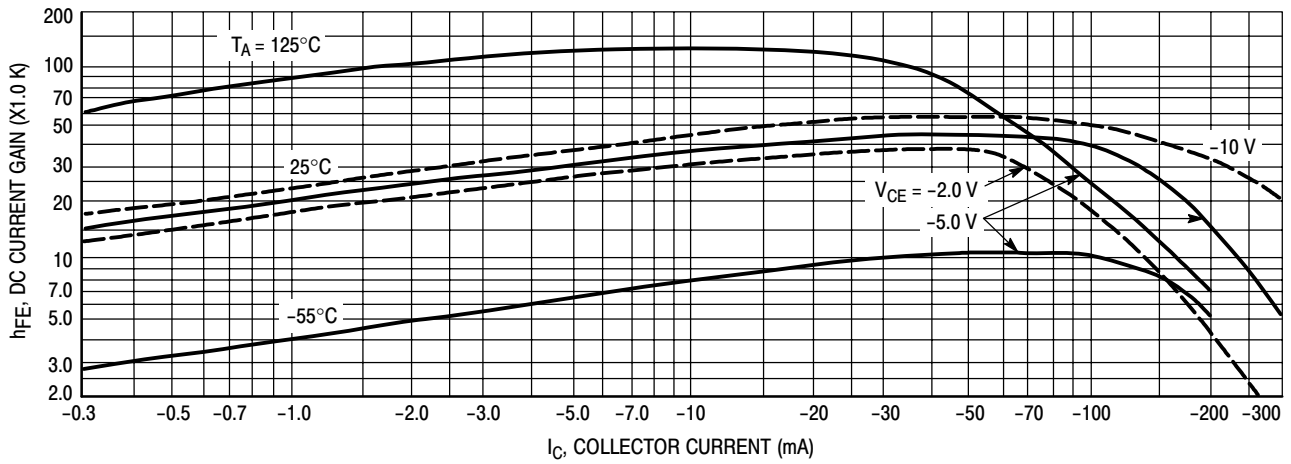


Figure 1. DC Current Gain

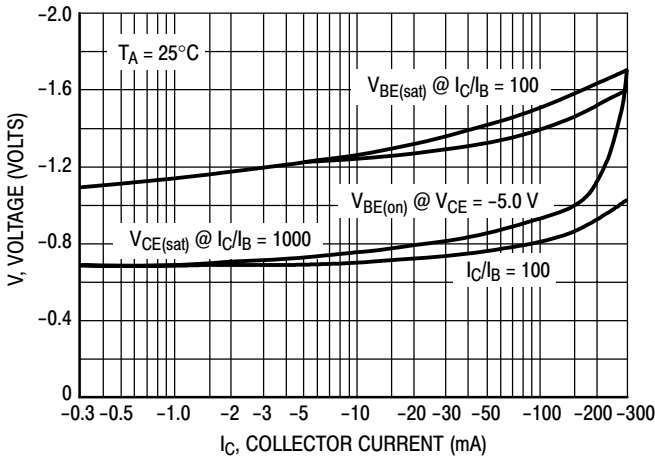


Figure 2. "On" Voltage

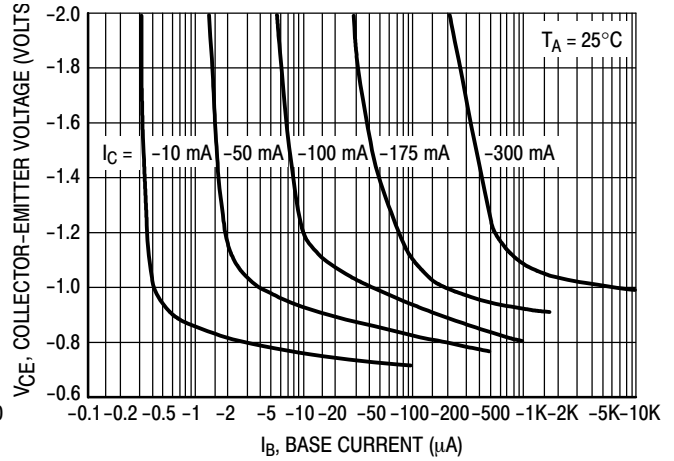


Figure 3. Collector Saturation Region

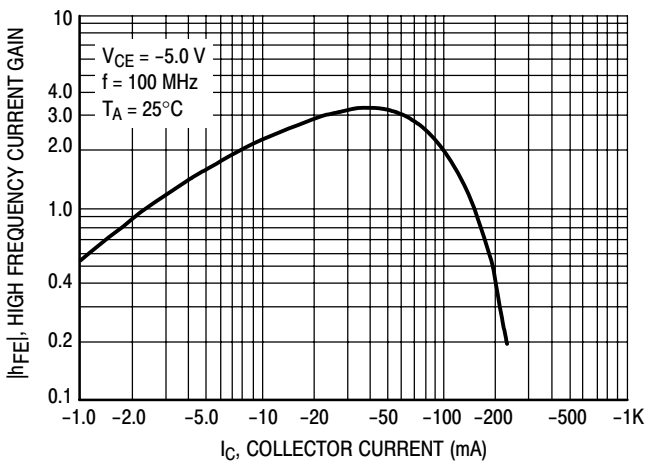


Figure 4. High Frequency Current Gain

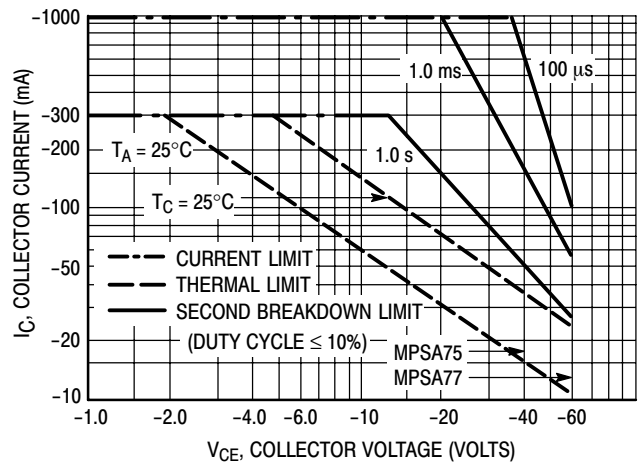
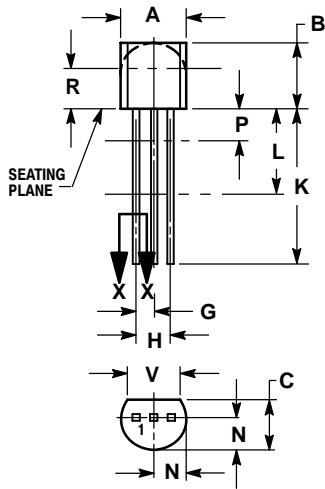


Figure 5. Active Region, Safe Operating Area

# MPSA75, MPSA77

## PACKAGE DIMENSIONS

TO-92 (TO-226)  
CASE 29-11  
ISSUE 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. PIN 1. EMITTER
2. BASE
3. COLLECTOR

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