# MPSA28, MPSA29

MPSA29 is a Preferred Device

# **Darlington Transistors**

### **NPN Silicon**

### **Features**

• Pb-Free Packages are Available\*

勝 特 力 材 料 886-3-5753170 胜特力电子(上海) 86-21-54151736 胜特力电子(深圳) 86-755-83298787

Http://www.100y.com.tw



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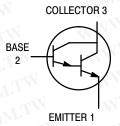
### **MAXIMUM RATINGS**

Rating	COM	Symbol	Value	Unit
Collector – Emitter Voltage	MPSA28 MPSA29	V <sub>CES</sub>	80 100	Vdc
Collector - Base Voltage	MPSA28 MPSA29	V <sub>CBO</sub>	80 100	Vdc
Emitter – Base Voltage	N 100Y.	V <sub>EBO</sub>	12	Vdc
Collector Current – Continuou	is 100 Y	Ic	500	mAdc
Total Device Dissipation @ Total Device Dissipation Dissipation Device Devi	4 = 25°C	P <sub>D</sub>	625 5.0	mW mW/°C
Total Device Dissipation @ Total Device Dissipation @ Total Derate above 25°C	<sub>C</sub> = 25°C	P <sub>D</sub>	1.5 12	W mW/°C
Operating and Storage Juncti Temperature Range	on	T <sub>J</sub> , T <sub>stg</sub>	-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

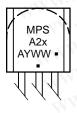
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur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



### MARKING DIAGRAM



TO-92 CASE 29-11 STYLE 1



MPSA2x = Device Code

x = 8 or 9

A = Assembly Location

Y = Year WW = Work Week = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping
MPSA28	TO-92	5,000 Units/Box
MPSA28G	TO-92 (Pb-Free)	5,000 Units/Box
MPSA28RLRP	TO-92	2,000/Ammo Pack
MPSA28RLRPG	TO-92 (Pb-Free)	2,000/Ammo Pack
MPSA29	TO-92	5,000 Units/Box
MPSA29G	TO-92 (Pb-Free)	5,000 Units/Box
MPSA29RLRP	TO-92	2,000/Ammo Pack
MPSA29RLRPG	TO-92 (Pb-Free)	2,000/Ammo Pack

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

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

# WWW.100Y. MPSA28, MPSA29

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# WWW.100Y.COM.TW 100Y.COM.TW **ELECTRICAL CHARACTERISTICS** (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Тур	Max	Unit
OFF CHARACTERISTICS	Mr.	WY	1111	NY.CO	WT
Collector – Emitter Breakdown Voltage $ \text{(I}_{\text{C}} = 100 \; \mu\text{Adc}, \; \text{V}_{\text{BE}} = 0) \\ \text{MPSA28} \\ \text{MPSA29} $	V <sub>(BR)CES</sub>	80 100	WW.M	007.CC	Vdc
Collector – Base Breakdown Voltage $ (I_C = 100 \; \mu \text{Adc}, \; I_E = 0) \\ \text{MPSA28} \\ \text{MPSA29} $	V <sub>(BR)CBO</sub>	80 100	WWW	1.100X	Vdc
Emitter – Base Breakdown Voltage ( $I_E = 10 \mu Adc, I_C = 0$ )	V <sub>(BR)EBO</sub>	12	MM	N.700	Vdc
	I <sub>CBO</sub>	TW	- 1/	100 100	nAdc
	I <sub>CES</sub>	M.EM	- -	500 500	nAdc
Emitter Cutoff Current (V <sub>EB</sub> = 10 Vdc, I <sub>C</sub> = 0)	I <sub>EBO</sub>	OM.T.	_	100	nAdc
ON CHARACTERISTICS (Note 1)	NY TOOY	CO	N	MM	1001
DC Current Gain ( $I_C = 10 \text{ mAdc}$ , $V_{CE} = 5.0 \text{ Vdc}$ ) ( $I_C = 100 \text{ mAdc}$ , $V_{CE} = 5.0 \text{ Vdc}$ )	h <sub>FE</sub>	10,000 10,000	TW.	- M	WW.100
Collector – Emitter Saturation Voltage ( $I_C = 10 \text{ mAdc}, I_B = 0.01 \text{ mAdc}$ ) ( $I_C = 100 \text{ mAdc}, I_B = 0.1 \text{ mAdc}$ )	V <sub>CE(sat)</sub>	N.CON	0.7 0.8	1.2 1.5	Vdc
Base – Emitter On Voltage (I <sub>C</sub> = 100 mAdc, V <sub>CE</sub> = 5.0 Vdc)	V <sub>BE(on)</sub>	100½.CC	1.4	2.0	Vdc
SMALL-SIGNAL CHARACTERISTICS	MMM	100Y.C	, o	TI I	MM
Current-Gain - Bandwidth Product (Note 2) (I <sub>C</sub> = 10 mAdc, V <sub>CE</sub> = 5.0 Vdc, f = 100 MHz)	fT	125	200	TVI	MHz
Output Capacitance (V <sub>CB</sub> = 10 Vdc, I <sub>F</sub> = 0, f = 1.0 MHz)	Cobo	100°	5.0	8.0	pF

<sup>1.</sup> Pulse Test: Pulse Width  $\leq$  300  $\mu$ s, Duty Cycle  $\leq$  2.0%. WWW.100Y.COM.TW WWW.100Y.C

<sup>2.</sup>  $f_T = h_{fe} \cdot f_{test}$ .

### MPSA28, MPSA29

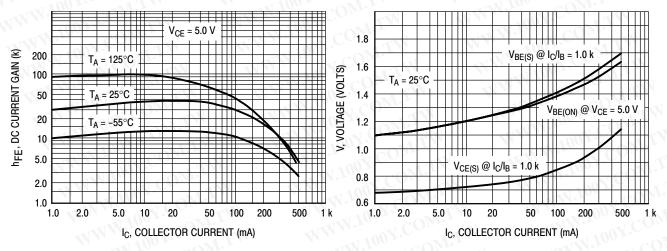


Figure 1. DC Current Gain

Figure 2. "ON" Voltages

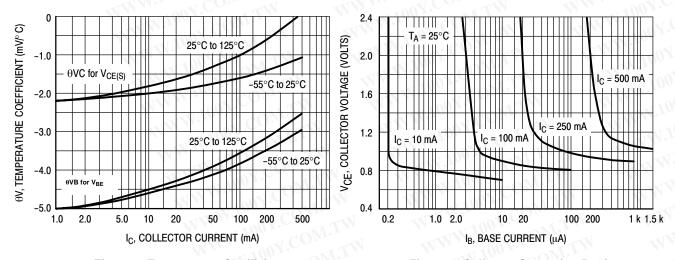


Figure 3. Temperature Coefficients

Figure 4. Collector Saturation Region

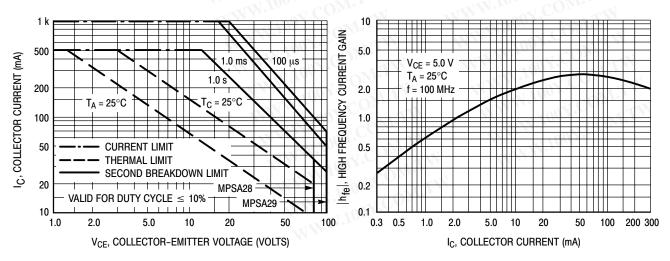


Figure 5. Active Region - Safe Operating Area

Figure 6. High Frequency Current Gain

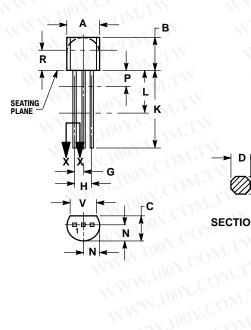
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#### PACKAGE DIMENSIONS

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

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#### NOTES:

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- 100 Y. COM. BEYOND DIMENSION K MINIMUM.

177	INC	HES	MILLIN	METERS
DIM	MIN	MAX	MIN	MAX
Α	0.175	0.205	4.45	5.20
В	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
Н	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	×7	12.70	
Г	0.250	//	6.35	-77
N	0.080	0.105	2.04	2.66
P		0.100		2.54
R	0.115	7 77	2.93	
٧	0 135		3.43	

STYLE 1:

PIN 1. EMITTER

BASE 3. COLLECTOR

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