Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

MPSA28, MPSA29

MPSA29 is a Preferred Device

Darlington Transistors

NPN Silicon

ON Semiconductor®

http://onsemi.com

Features

- Pb−Free Packages are Available*

MAXIMUM RATINGS

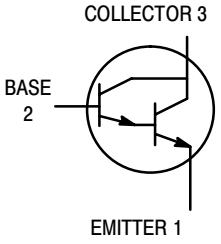
Rating		Symbol	Value	Unit
Collector − Emitter Voltage	MPSA28 MPSA29	V_{CES}	80 100	Vdc
Collector − Base Voltage	MPSA28 MPSA29	V_{CBO}	80 100	Vdc
Emitter − Base Voltage		V_{EBO}	12	Vdc
Collector Current − Continuous		I_C	500	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C		P_D	625 5.0	mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C		P_D	1.5 12	W mW/°C
Operating and Storage Junction Temperature Range		T_J, T_{stg}	−55 to +150	°C

THERMAL CHARACTERISTICS

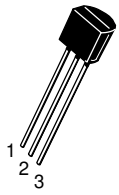
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	200	°C/W
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	83.3	°C/W

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.

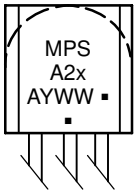
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector – Emitter Breakdown Voltage (I_C = 100 μAdc, V_{BE} = 0)	MPSA28 MPSA29	$V_{(BR)CES}$	 80 100	 – –	 – –	Vdc
Collector – Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	MPSA28 MPSA29	$V_{(BR)CBO}$	 80 100	 – –	 – –	Vdc
Emitter – Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)		$V_{(BR)EBO}$	12	–	–	Vdc
Collector Cutoff Current (V_{CB} = 60 Vdc, I_E = 0) (V_{CB} = 80 Vdc, I_E = 0)	 MPSA28 MPSA29	I_{CBO}	 – –	 – –	 100 100	nAdc
Collector Cutoff Current (V_{CE} = 60 Vdc, V_{BE} = 0) (V_{CE} = 80 Vdc, V_{BE} = 0)	 MPSA28 MPSA29	I_{CES}	 – –	 – –	 500 500	nAdc
Emitter Cutoff Current (V_{EB} = 10 Vdc, I_C = 0)		I_{EBO}	–	–	100	nAdc
ON CHARACTERISTICS (Note 1)						
DC Current Gain (I_C = 10 mAdc, V_{CE} = 5.0 Vdc) (I_C = 100 mAdc, V_{CE} = 5.0 Vdc)		h_{FE}	 10,000 10,000	 – –	 – –	–
Collector – Emitter Saturation Voltage (I_C = 10 mAdc, I_B = 0.01 mAdc) (I_C = 100 mAdc, I_B = 0.1 mAdc)		$V_{CE(sat)}$	 – –	 0.7 0.8	 1.2 1.5	Vdc
Base – Emitter On Voltage (I_C = 100 mAdc, V_{CE} = 5.0 Vdc)		$V_{BE(on)}$	–	1.4	2.0	Vdc
SMALL–SIGNAL CHARACTERISTICS						
Current–Gain – Bandwidth Product (Note 2) (I_C = 10 mAdc, V_{CE} = 5.0 Vdc, f = 100 MHz)		fT	125	200	–	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)		Cobo	–	5.0	8.0	pF

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
2. $f_T = h_{fe} \bullet f_{test}$.

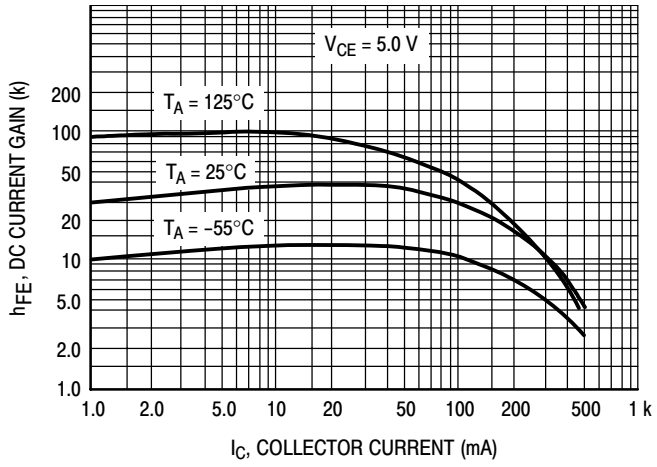


Figure 1. DC Current Gain

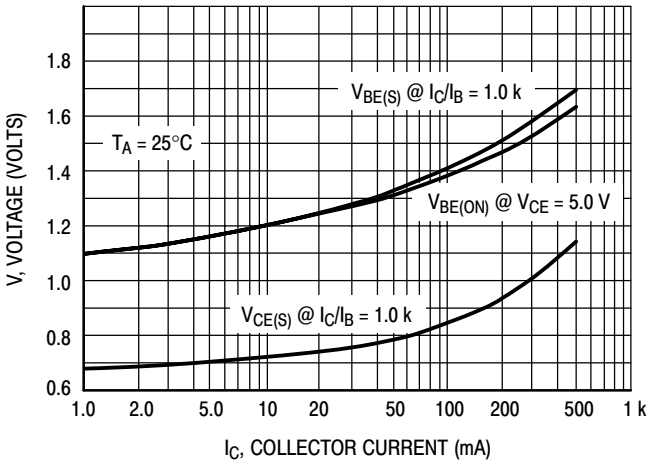


Figure 2. "ON" Voltages

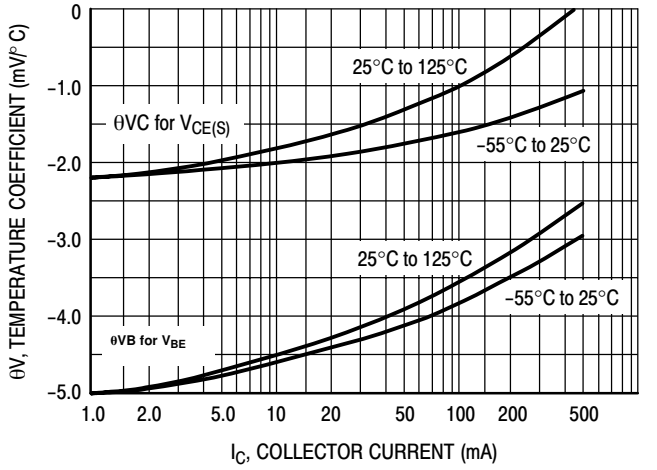


Figure 3. Temperature Coefficients

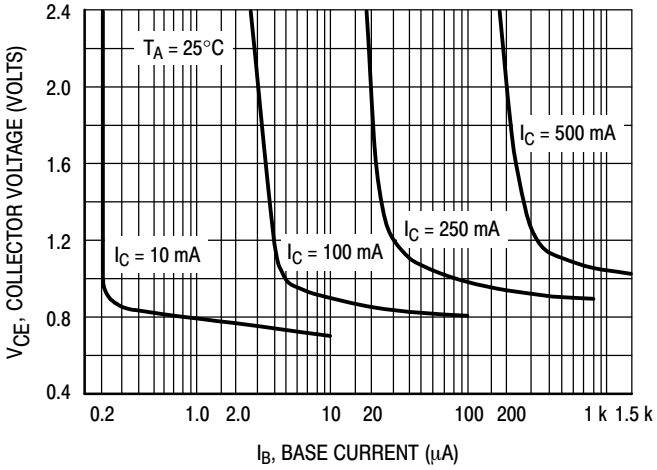


Figure 4. Collector Saturation Region

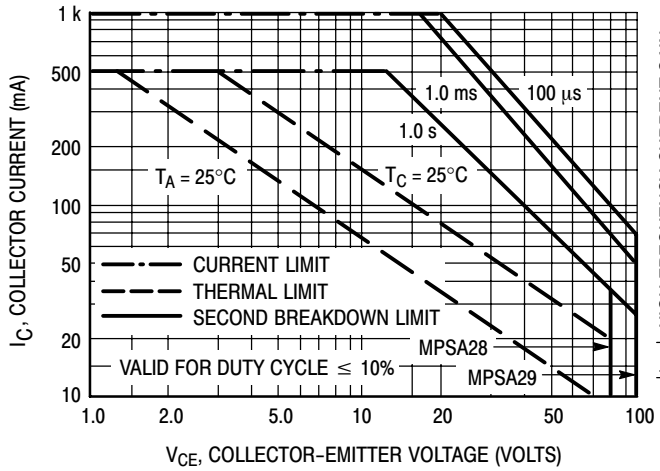


Figure 5. Active Region – Safe Operating Area

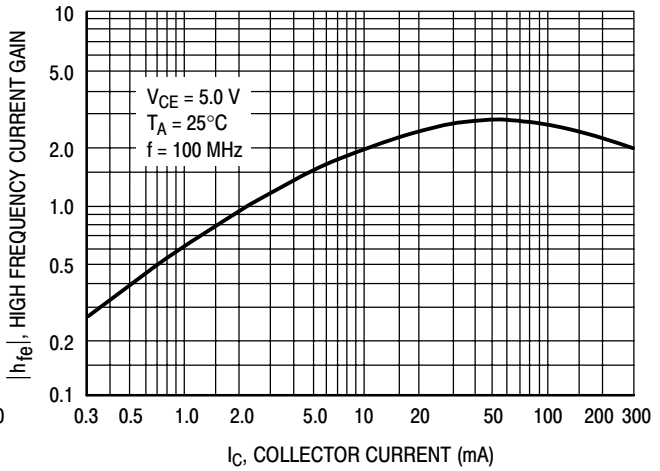
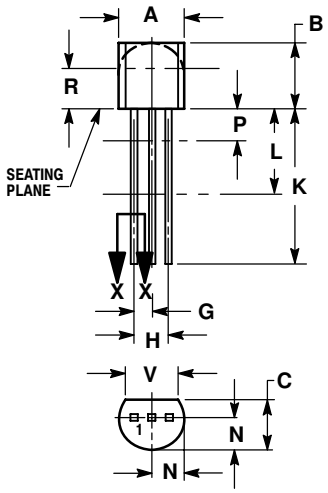
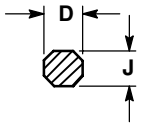


Figure 6. High Frequency Current Gain

PACKAGE DIMENSIONS

TO−92 (TO−226)
CASE 29−11
ISSUE AL





SECTION X−X

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.

	INCHES		MILLIMETERS	
DIM	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

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082−1312 USA
Phone: 480−829−7710 or 800−344−3860 Toll Free USA/Canada
Fax: 480−829−7709 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2−9−1 Kamimeguro, Meguro−ku, Tokyo, Japan 153−0051
Phone: 81−3−5773−3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.