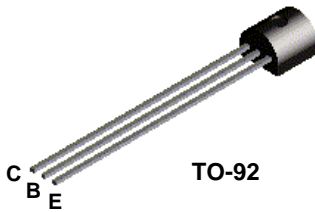
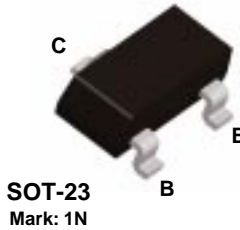


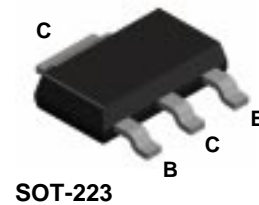
## MPSA14



## MMBTA14



## PZTA14



## NPN Darlington Transistor

This device is designed for applications requiring extremely high current gain at collector currents to 1.0 A. Sourced from Process 05.

### Absolute Maximum Ratings\*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CES</sub>	Collector-Emitter Voltage	30	V
V <sub>CB0</sub>	Collector-Base Voltage	30	V
V <sub>EBO</sub>	Emitter-Base Voltage	10	V
I <sub>C</sub>	Collector Current - Continuous	1.2	A
T <sub>J</sub> , T <sub>stg</sub>	Operating and Storage Junction Temperature Range	-55 to +150	°C

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max			Units
		MPSA14	*MMBTA14	**PZTA14	
P <sub>D</sub>	Total Device Dissipation	625	350	1,000	mW
	Derate above 25°C	5.0	2.8	8.0	mW/°C
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	83.3			°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	200	357	125	°C/W

\* Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

\*\* Device mounted on FR-4 PCB 36 mm X 18 mm X 1.5 mm; mounting pad for the collector lead min. 6 cm<sup>2</sup>.

# NPN Darlington Transistor

(continued)

## Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
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### OFF CHARACTERISTICS

$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	$I_C = 100 \mu A, I_B = 0$	30		V
$I_{CBO}$	Collector-Cutoff Current	$V_{CB} = 30 V, I_E = 0$		100	nA
$I_{EBO}$	Emitter-Cutoff Current	$V_{EB} = 10 V, I_C = 0$		100	nA

### ON CHARACTERISTICS\*

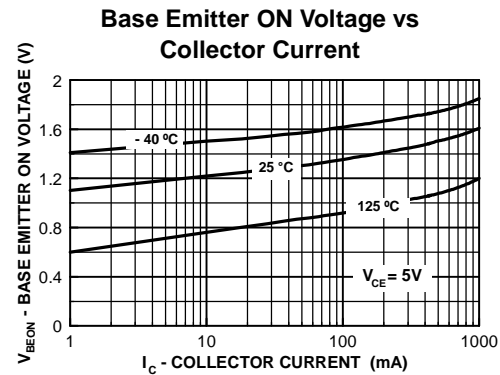
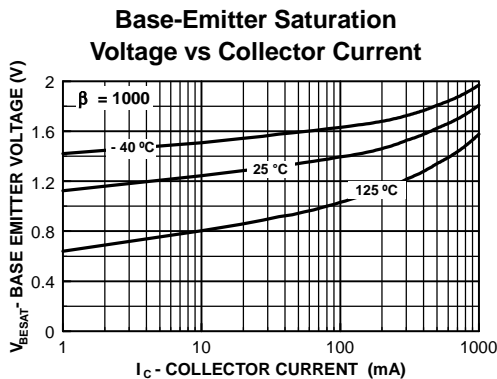
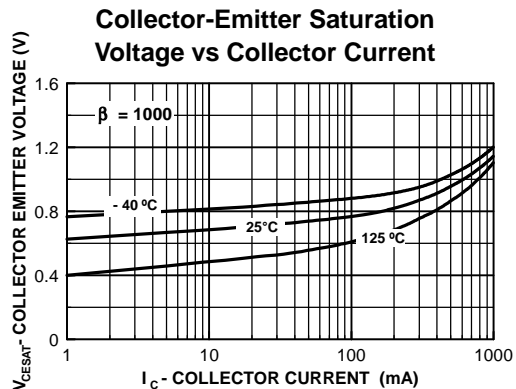
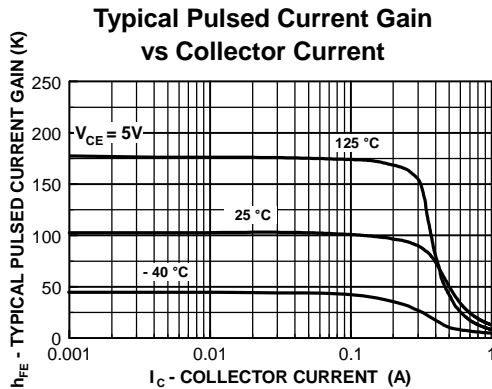
$h_{FE}$	DC Current Gain	$I_C = 10 mA, V_{CE} = 5.0 V$ $I_C = 100 mA, V_{CE} = 5.0 V$	10,000 20,000		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 100 mA, I_B = 0.1 mA$		1.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 100 mA, V_{CE} = 5.0 V$		2.0	V

### SMALL SIGNAL CHARACTERISTICS

$f_T$	Current Gain - Bandwidth Product	$I_C = 10 mA, V_{CE} = 5 V,$ $f = 100 MHz$	125		MHz
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\*Pulse Test: Pulse Width  $\leq 300 \mu s$ , Duty Cycle  $\leq 2.0\%$

## Typical Characteristics



MPSA14 / NMBTA14 / PZTA14

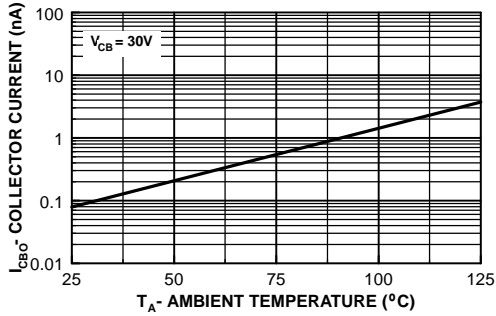
# NPN Darlington Transistor

(continued)

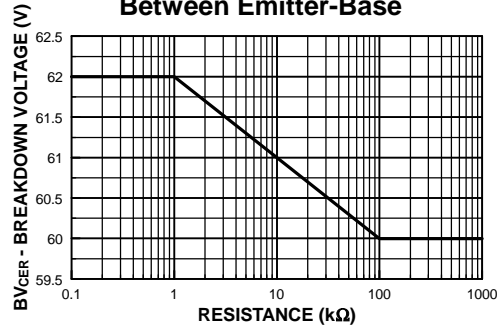
MPSA14 / NMBTA14 / PZTA14

## Typical Characteristics (continued)

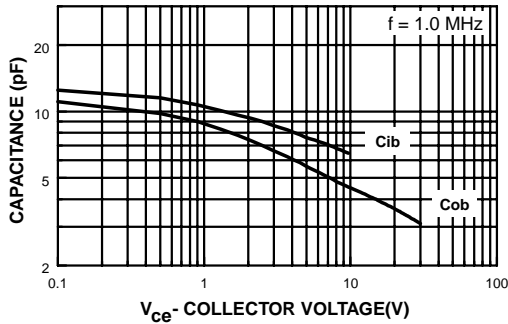
**Collector-Cutoff Current vs Ambient Temperature**



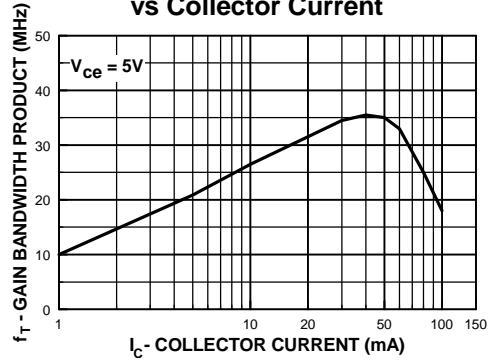
**Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base**



**Input and Output Capacitance vs Reverse Voltage**



**Gain Bandwidth Product vs Collector Current**



**Power Dissipation vs Ambient Temperature**

