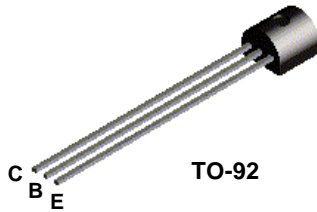


N

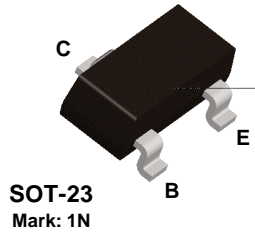
Discrete POWER & Signal Technologies

MPSA14 / MMBTA14 / PZTA14

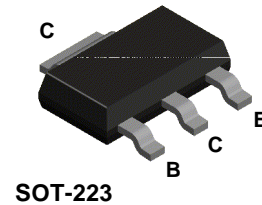
MPSA14



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 _{CES}	Collector-Emitter Voltage	30	V
V _{CB0}	Collector-Base Voltage	30	V
V _{EBO}	Emitter-Base Voltage	10	V
I _C	Collector Current - Continuous	1.2	A
T _J , T _{stg}	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 _D	Total Device Dissipation	625	350	1,000	mW
	Derate above 25°C	5.0	2.8	8.0	mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	83.3			°C/W
R _{θJA}	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 2m

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

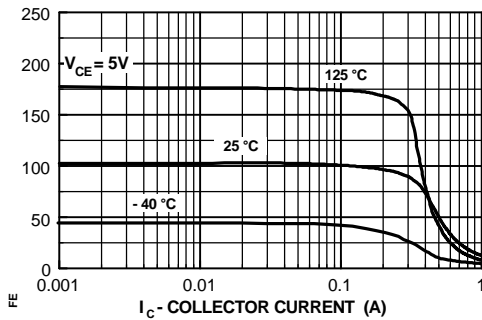
SMALL SIGNAL CHARACTERISTICS

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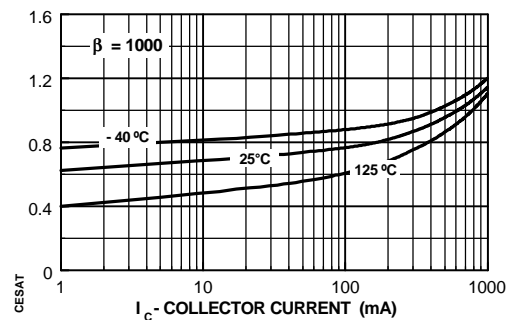
*Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$

Typical Characteristics

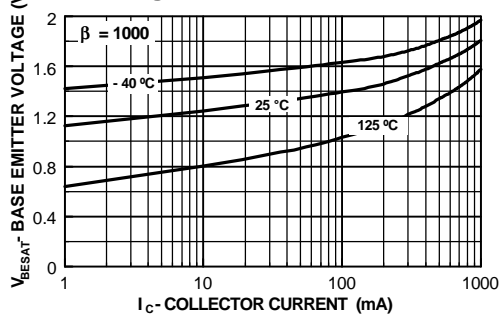
Typical Pulsed Current Gain vs Collector Current



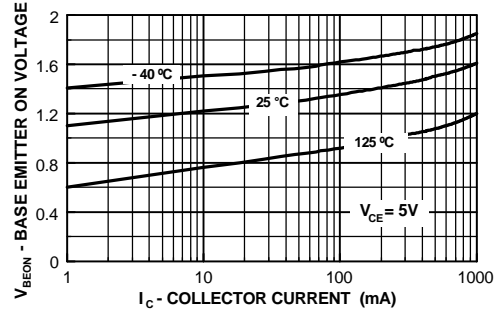
Collector-Emitter Saturation Voltage vs Collector Current



Base-Emitter Saturation Voltage vs Collector Current



Base Emitter ON Voltage vs Collector Current



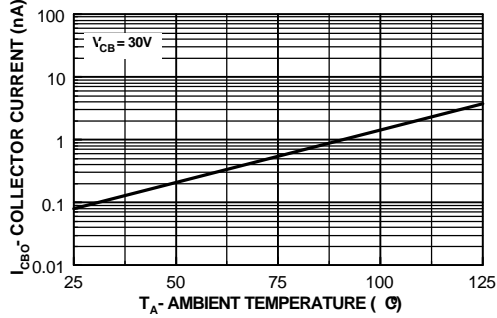
NPN Darlington Transistor

(continued)

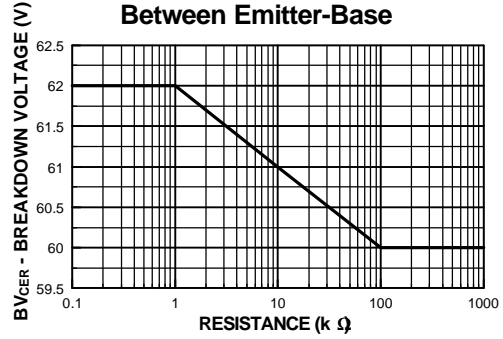
MPSA14 / NMBTA14 / PZTA14

Typical Characteristics (continued)

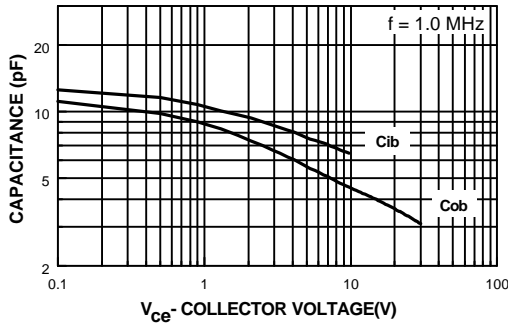
Collector-Cutoff Current vs Ambient Temperature



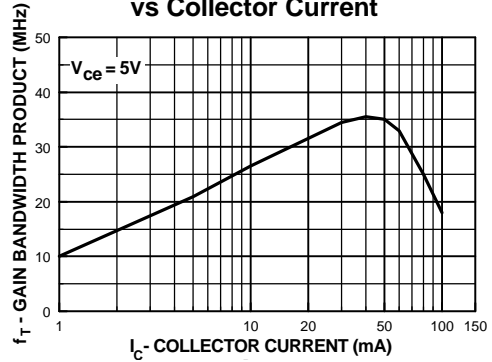
Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base



Input and Output Capacitance vs Reverse Voltage



Gain Bandwidth Product vs Collector Current



Power Dissipation vs Ambient Temperature

