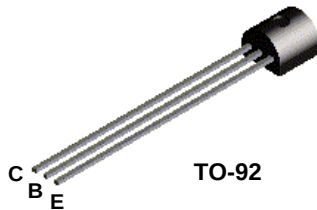
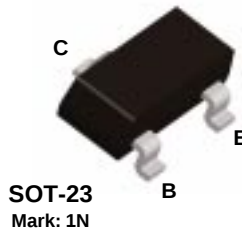


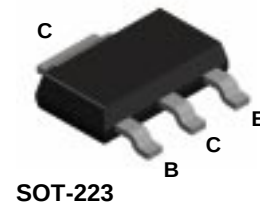
MPSA14



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 _{CBO}	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 Derate above 25°C	625 5.0	350 2.8	1,000 8.0	mW 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 cm².

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*

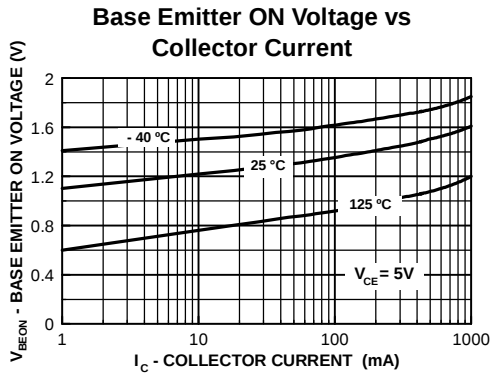
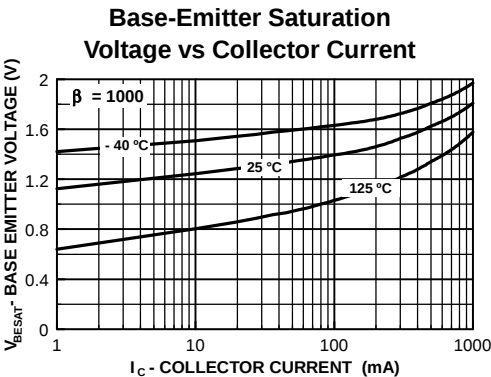
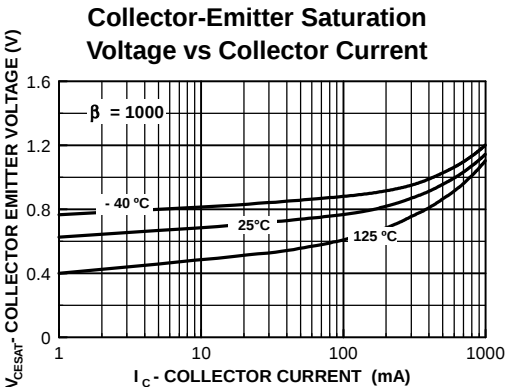
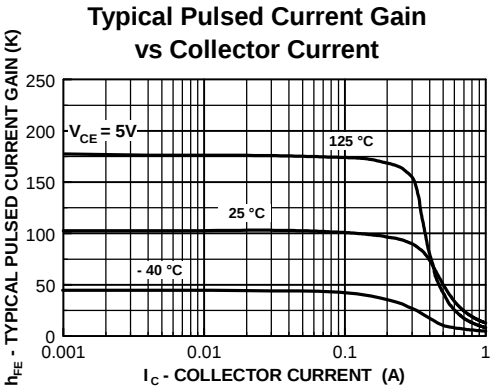
h_{FE}	DC Current Gain	$I_C = 10\ mA, V_{CE} = 5.0\ V$ $I_C = 100\ mA, V_{CE} = 5.0\ V$	10,000 20,000		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 100\ mA, I_B = 0.1\ mA$		1.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 100\ mA, V_{CE} = 5.0\ V$		2.0	V

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 $\leq 2.0\%$

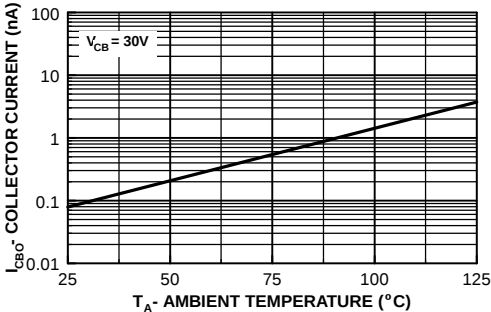
Typical Characteristics



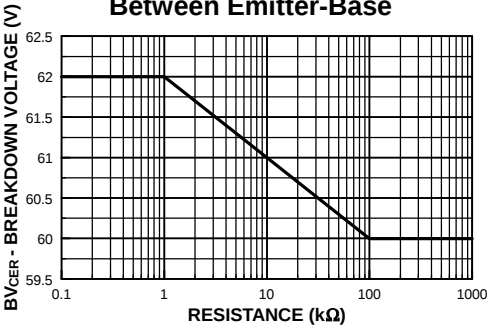
NPN Darlington Transistor
(continued)

Typical Characteristics (continued)

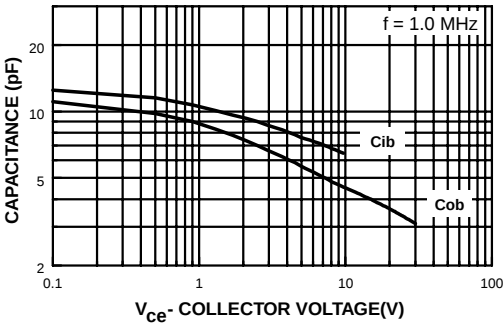
Collector-Cutoff Current
vs Ambient Temperature



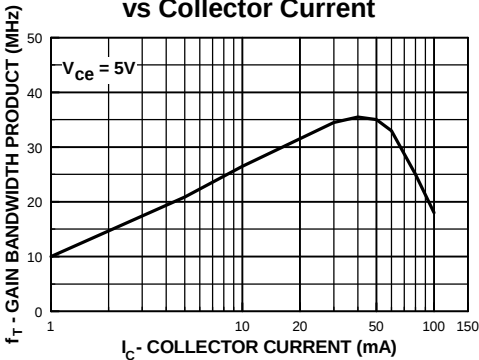
Collector-Emitter Breakdown
Voltage with Resistance
Between Emitter-Base



Input and Output Capacitance
vs Reverse Voltage



Gain Bandwidth Product
vs Collector Current



Power Dissipation vs
Ambient Temperature

