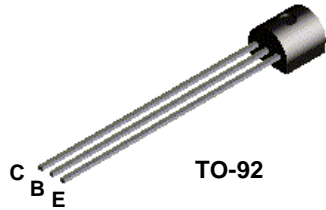
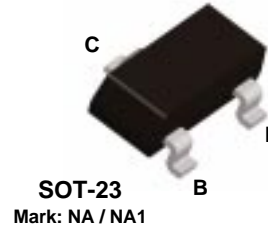


**PN100  
PN100A**



**MMBT100  
MMBT100A**



**NPN General Purpose Amplifier**

This device is designed for general purpose amplifier applications at collector currents to 300 mA. Sourced from Process 10.

**Absolute Maximum Ratings\***

TA=25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CEO</sub>	Collector-Emitter Voltage	45	V
V <sub>CBO</sub>	Collector-Base Voltage	75	V
V <sub>EBO</sub>	Emitter-Base Voltage	6.0	V
I <sub>C</sub>	Collector Current - Continuous	500	mA
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
		PN100A	*MMBT100A	
P <sub>D</sub>	Total Device Dissipation	625	350	mW
	Derate above 25°C	5.0	2.8	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	°C/W

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

# NPN General Purpose Amplifier

(continued)

## Electrical Characteristics

TA= 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
<b>OFF CHARACTERISTICS</b>					
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 10 \mu A, I_B = 0$	75		V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 1 mA, I_E = 0$	45		V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \mu A, I_C = 0$	6.0		V
$I_{CBO}$	Collector Cutoff Current	$V_{CB} = 60 V$		50	nA
$I_{CES}$	Collector Cutoff Current	$V_{CE} = 40 V$		50	nA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB} = 4 V$		50	nA

## ON CHARACTERISTICS

$h_{FE}$	DC Current Gain	$I_C = 100 \mu A, V_{CE} = 1.0 V$	<b>100</b>	80		
			<b>100A</b>	240		
		$I_C = 10 mA, V_{CE} = 1.0 V$	<b>100</b>	100	450	
			<b>100A</b>	300	600	
		$I_C = 100 mA, V_{CE} = 1.0 V^*$		100		
		$I_C = 150 mA, V_{CE} = 5.0 V^*$	<b>100</b>	100	350	
			<b>100A</b>	100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10 mA, I_B = 1.0 mA$		0.2	V	
		$I_C = 200 mA, I_B = 20 mA^*$		0.4	V	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 10 mA, I_B = 1.0 mA$		0.85	V	
		$I_C = 200 mA, I_B = 20 mA^*$		1.0	V	

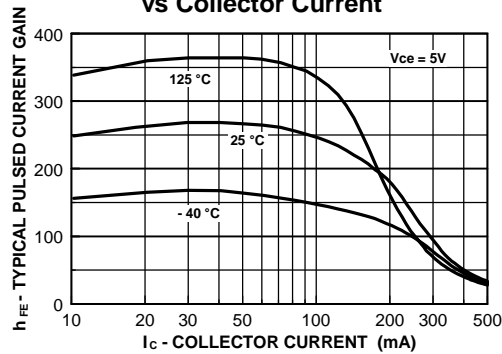
## SMALL SIGNAL CHARACTERISTICS

$f_T$	Current Gain - Bandwidth Product	$V_{CE} = 20 V, I_C = 20 mA$	250		MHz
$C_{obo}$	Output Capacitance	$V_{CB} = 5.0 V, f = 1.0 MHz$		4.5	pF
NF	Noise Figure	$I_C = 100 \mu A, V_{CE} = 5.0 V,$	<b>100</b>	5.0	dB
		$R_G = 2.0 k\Omega, f = 1.0 kHz$	<b>100A</b>	4.0	dB

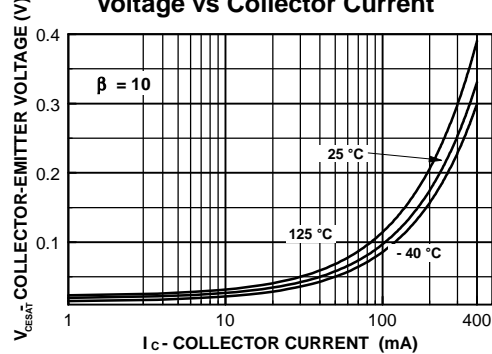
\*Pulse Test: Pulse Width  $\leq 300 \mu s$ , Duty Cycle  $\leq 2.0\%$

## Typical Characteristics

Typical Pulsed Current Gain vs Collector Current



Collector-Emitter Saturation Voltage vs Collector Current



PN100 / MMBT100 / PN100A / MMBT100A

# NPN General Purpose Amplifier

(continued)

PN100 / MMBT100 / PN100A / MMBT100A

## Typical Characteristics (continued)

