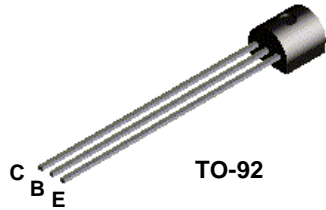
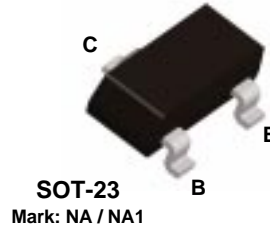


**PN100
PN100A**



**MMBT100
MMBT100A**



PN100 / MMBT100 / PN100A / 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 _{CEO}	Collector-Emitter Voltage	45	V
V _{CBO}	Collector-Base Voltage	75	V
V _{EBO}	Emitter-Base Voltage	6.0	V
I _C	Collector Current - Continuous	500	mA
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
		PN100A	*MMBT100A	
P _D	Total Device Dissipation	625	350	mW
	Derate above 25°C	5.0	2.8	mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	83.3		°C/W
R _{θJA}	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
OFF CHARACTERISTICS					
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	$I_C = 100 \mu A, V_{CE} = 1.0 V$	100	80		
			100A	240		
		$I_C = 10 mA, V_{CE} = 1.0 V$	100	100	450	
			100A	300	600	
		$I_C = 100 mA, V_{CE} = 1.0 V^*$		100		
		$I_C = 150 mA, V_{CE} = 5.0 V^*$	100	100	350	
			100A	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	

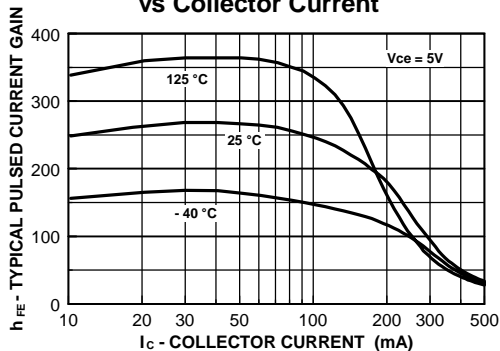
SMALL SIGNAL CHARACTERISTICS

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	$I_C = 100 \mu A, V_{CE} = 5.0 V,$	100	5.0	dB
		$R_G = 2.0 k\Omega, f = 1.0 kHz$	100A	4.0	dB

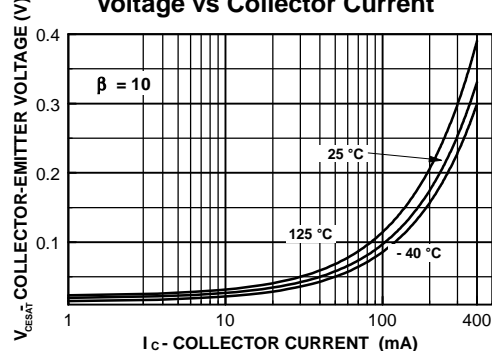
*Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$

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)

