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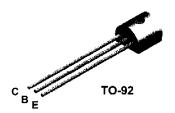
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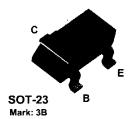
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PN918

MMBT918





NPN RF Transistor

This device is designed for use as RF amplifiers, oscillators and multipliers with collector currents in the 1.0 mA to 30 mA range. Sourced from Process 43.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CEO}	Collector-Emitter Voltage	15	>
V _{CBO}	Collector-Base Voltage	30	V
V _{EBO}	Emitter-Base Voltage	3.0	V
lc	Collector Current - Continuous	50	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.

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	V	Мах	
		PN918	*MMBT918	
P _D	Total Device Dissipation Derate above 25°C	350 2.8	225 1.8	mW mW/∘C
R _{eJC}	Thermal Resistance, Junction to Case	125		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	556	°C/W

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

NPN RF Transistor

(continued)

Symbol	Parameter	Test Conditions	Min	Max	Unit
OFF CHA	RACTERISTICS				
V _{CEO(SUS)}	Collector-Emitter Sustaining Voltage*	$I_C = 3.0 \text{ mA}, I_B = 0$	15		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_{\rm C} = 1.0 \mu \text{A}, I_{\rm E} = 0$	30	<u> </u>	V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \mu A, I_C = 0$	3.0		V
I _{CBO}	Collector Cutoff Current	V _{CB} = 15 V, I _E = 0		0.01	μА
	L	V _{CB} = 15 V, T _A = 150°C		1.0	μA
					.,
ON CHAR	ACTERISTICS				
h _{FE}	DC Current Gain	$I_{\rm C}$ = 3.0 mA, $V_{\rm CE}$ = 1.0 V	20		<u> </u>
V _{CE(sat)}	Collector-Emitter Saturation Voltage	I _C = 10 mA, I _B = 1.0 mA		0.4	V
V _{BE(sat)}	Base-Emitter Saturation Voltage	I _C = 10 mA, I _B = 1.0 mA		1.0	V
SMALL SI	GNAL CHARACTERISTICS Current Gain - Bandwidth Product	11 - 40 40 /- 40 /-			
'1					
		I _C = 4.0 mA, V _{CE} = 10 V, f = 100 MHz	600		MHz
Cobo	Output Capacitance	f = 100 MHz V _{CB} = 10 V, I _E = 0, f = 1.0 MHz	600	1.7	MHz
	Output Capacitance		600	3.0	pF pF
C _{ibo}	Output Capacitance Input Capacitance	$\begin{split} &f = 100 \text{ MHz} \\ &V_{CB} = 10 \text{ V, } I_E = 0, f = 1.0 \text{ MHz} \\ &V_{CB} = 0, I_E = 0, f = 1.0 \text{ MHz} \\ &V_{BE} = 0.5 \text{ V, } I_C = 0, f = 1.0 \text{ MHz} \end{split}$	600	3.0 2.0	pF pF pF
C _{ibo}	Output Capacitance	$\begin{split} &f = 100 \text{ MHz} \\ &V_{CB} = 10 \text{ V, } I_E = 0, f = 1.0 \text{ MHz} \\ &V_{CB} = 0, I_E = 0, f = 1.0 \text{ MHz} \\ &V_{BE} = 0.5 \text{ V, } I_C = 0, f = 1.0 \text{ MHz} \\ &I_C = 1.0 \text{ mA, } V_{CE} = 6.0 \text{ V,} \end{split}$	600	3.0	pF
C _{ibo}	Output Capacitance Input Capacitance	$\begin{split} &f = 100 \text{ MHz} \\ &V_{CB} = 10 \text{ V, } I_E = 0, f = 1.0 \text{ MHz} \\ &V_{CB} = 0, I_E = 0, f = 1.0 \text{ MHz} \\ &V_{BE} = 0.5 \text{ V, } I_C = 0, f = 1.0 \text{ MHz} \end{split}$	600	3.0 2.0	pF pF pF
C _{ibo} NF	Output Capacitance Input Capacitance Noise Figure	$\begin{split} &f = 100 \text{ MHz} \\ &V_{CB} = 10 \text{ V, } I_E = 0, f = 1.0 \text{ MHz} \\ &V_{CB} = 0, I_E = 0, f = 1.0 \text{ MHz} \\ &V_{BE} = 0.5 \text{ V, } I_C = 0, f = 1.0 \text{ MHz} \\ &I_C = 1.0 \text{ mA, } V_{CE} = 6.0 \text{ V,} \end{split}$	600	3.0 2.0	pF pF pF
C _{ibo} NF	Output Capacitance Input Capacitance Noise Figure	$\begin{split} &f = 100 \text{ MHz} \\ &V_{CB} = 10 \text{ V, } I_E = 0, f = 1.0 \text{ MHz} \\ &V_{CB} = 0, I_E = 0, f = 1.0 \text{ MHz} \\ &V_{BE} = 0.5 \text{ V, } I_C = 0, f = 1.0 \text{ MHz} \\ &I_C = 1.0 \text{ mA, } V_{CE} = 6.0 \text{ V,} \end{split}$	600	3.0 2.0	pF pF pF
C _{ibo} NF FUNCTION G _{pe}	Output Capacitance Input Capacitance Noise Figure NAL TEST Amplifier Power Gain	$\begin{split} &f = 100 \text{ MHz} \\ &V_{CB} = 10 \text{ V, } I_E = 0, f = 1.0 \text{ MHz} \\ &V_{CB} = 0, I_E = 0, f = 1.0 \text{ MHz} \\ &V_{BE} = 0.5 \text{ V, } I_C = 0, f = 1.0 \text{ MHz} \\ &I_C = 1.0 \text{ mA, } V_{CE} = 6.0 \text{ V,} \end{split}$	15	3.0 2.0	pF pF pF
C _{ibo} NF FUNCTION G _{pe}	Output Capacitance Input Capacitance Noise Figure	$\begin{split} &f=100 \text{ MHz} \\ &V_{CB}=10 \text{ V, } I_{E}=0, f=1.0 \text{ MHz} \\ &V_{CB}=0, I_{E}=0, f=1.0 \text{ MHz} \\ &V_{BE}=0.5 \text{ V, } I_{C}=0, f=1.0 \text{ MHz} \\ &I_{C}=1.0 \text{ mA, } V_{CE}=6.0 \text{ V,} \\ &R_{G}=400 \Omega, f=60 \text{ MHz} \\ \end{split}$ $\begin{aligned} &V_{CB}=12 \text{ V, } I_{C}=6.0 \text{ mA,} \\ &f=200 \text{ MHz} \\ \end{aligned}$ $\begin{aligned} &V_{CB}=15 \text{ V, } I_{C}=8.0 \text{ mA,} \end{aligned}$		3.0 2.0	pF pF pF dB
C _{obo} C _{ibo} NF FUNCTION Gpe Po	Output Capacitance Input Capacitance Noise Figure NAL TEST Amplifier Power Gain	$\begin{split} &f=100 \text{ MHz} \\ &V_{CB}=10 \text{ V, } I_{E}=0, f=1.0 \text{ MHz} \\ &V_{CB}=0, I_{E}=0, f=1.0 \text{ MHz} \\ &V_{BE}=0.5 \text{ V, } I_{C}=0, f=1.0 \text{ MHz} \\ &I_{C}=1.0 \text{ mA, } V_{CE}=6.0 \text{ V,} \\ &R_{G}=400\Omega, f=60 \text{ MHz} \\ \end{split}$	15	3.0 2.0	pF pF dB

^{*}Pulse Test: Pulse Width \leq 300 μ s, Duty Cycle \leq 2.0%