

SEMICONDUCTOR
TECHNICAL DATA

M/D

2N918

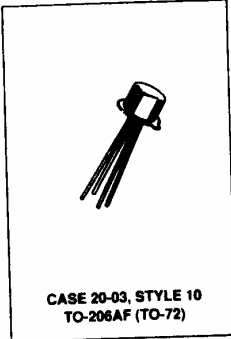
NPN Silicon
Small-Signal Transistor

... designed for ultra-high frequency amplifier applications.

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MAXIMUM RATINGS			
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	15	V _{dc}
Collector-Base Voltage	V _{CBO}	30	V _{dc}
Emitter-Base Voltage	V _{EBO}	3.0	V _{dc}
Collector Current — Continuous	I _C	50	mAdc
Total Device Dissipation @ T _A = 25°C Derate above 25°C @ T _C = 25°C Derate above 25°C	P _T	200	mW
		1.14	mW/°C
		300	mW
		1.71	mW/°C
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-65 to 200	°C



ELECTRICAL CHARACTERISTICS (T _A = 25°C unless otherwise noted.)				
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ⁽¹⁾ (I _C = 3.0 mAdc, I _B = 0)	V _{(BR)CEO}	15	—	V _{dc}
Collector-Base Breakdown Voltage (I _C = 1.0 μAdc, I _E = 0)	V _{(BR)CBO}	30	—	V _{dc}
Emitter-Base Breakdown Voltage (I _E = 10 μAdc, I _C = 0)	V _{(BR)EBO}	3.0	—	V _{dc}
Collector Cutoff Current (V _{CB} = 25 Vdc, I _E = 0) (V _{CB} = 25 Vdc, I _E = 0, T _A = 150°C)	I _{CBO}	—	10	nAdc
		—	1.0	μAdc
Emitter Cutoff Current (V _{EB} = 2.5 Vdc)	I _{EBO}	—	10	nAdc

⁽¹⁾ Pulsed. Pulse Width 300 μs. Duty Cycle 2.0%

(continued)

2N918JAN SERIES

ELECTRICAL CHARACTERISTICS — continued (T _A = 25°C unless otherwise noted.)				
Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS				
DC Current Gain (I _C = 500 μAdc, V _{CE} = 10 Vdc) (I _C = 3.0 mAdc, V _{CE} = 1.0 Vdc) (I _C = 10 mAdc, V _{CE} = 10 Vdc) (I _C = 3.0 mAdc, V _{CE} = 1.0 Vdc, T _A = -55 C)	h _{FE}	10 20 20 10	— 200 — —	—
Collector-Emitter Saturation Voltage (I _C = 10 mAdc, I _B = 1.0 mAdc)	V _{CE(sat)}	—	0.4	Vdc
Base-Emitter Saturation Voltage (I _C = 10 mAdc, I _B = 1.0 mAdc)	V _{BE(sat)}	—	1.0	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Output Capacitance (V _{CB} = 10 Vdc, I _E = 0, f = 0.1 to 1.0 MHz) (V _{CB} = 0 Vdc, I _E = 0, f = 0.1 to 1.0 MHz)	C _{obo}	— —	1.7 3.0	pF
Input Capacitance (V _{BE} = 0.5 Vdc, I _C = 0, f = 0.1 to 1.0 MHz)	C _{ibo}	—	2.0	pF
Small-Signal Current Transfer Ratio, Magnitude (I _C = 4.0 mAdc, V _{CE} = 10 Vdc, f = 100 MHz)	h _{ie}	6.0	18	—
Noise Figure (See figure) (V _{CE} = 6.0 Vdc, I _C = 1.0 mAdc, f = 60 MHz g _s = 7.5 mmhos)	NF	6.0	—	dB
OUTPUT CHARACTERISTICS (See Figure 25) (V _{CB} = 12 Vdc, I _C = 6.0 mAdc, f = 200 MHz) Adjust V _{CC} and V _{EE} for specified test conditions.				
Power Gain (V _{CB} = 12 Vdc, I _C = 6.0 mAdc, f = 200 MHz)	G _{pe}	15	—	dB
Power Output (V _{CB} = 15 Vdc, I _C = 8.0 mAdc, f ≥ 500 MHz)	P _o	30	—	mW
Efficiency (V _{CB} = 15 Vdc, I _C = 8.0 mAdc, f ≥ 500 MHz)	η	25	—	%
Collector-Base Time Constant (V _{CB} = 10 Vdc, I _C = -4.0 mAdc, f = 79.8 MHz)	t _b C _C	—	25	ps

ASSURANCE TESTING (Pre/Post Burn-In)				
Burn-In Conditions: T _A = 25 ±3°C, V _{CB} = 10 Vdc P _T = 200 mW				
Characteristics Tested	Symbol	Initial and End Point Limits		Unit
		Min	Max	
Collector Cutoff Current (V _{CB} = 25 Vdc)	I _{CBO}	—	10	nAdc
DC Current Gain (I _C = 3.0 mAdc, V _{CE} = 1.0 Vdc)	h _{FE}	20	200	—
Delta from Pre-Burn-In Measured Values				
Delta Collector Cutoff Current	ΔI _{CBO}	—	±100 or ±5.0 whichever is greater	% of Initial Value nAdc
Delta DC Current Gain	Δh _{FE}	—	±20	% of Initial Value

(1) Pulsed Pulse Width 300 μs Duty Cycle 2.0%

