2N918 (SILICON)

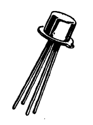
2N918 JAN, JTX AVAILABLE

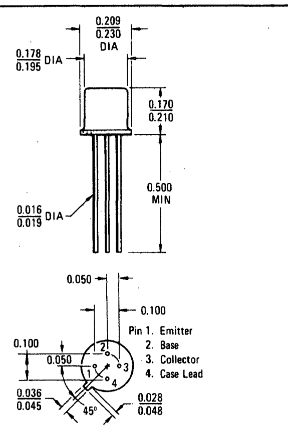
NPN SILICON ANNULAR TRANSISTORS

. . . designed for use in VHF and UHF amplifier, mixer and oscillator applications.

- High Current-Gain – Bandwidth Product –
  f_T = 600 MHz (Min) @ f = 100 MHz
- Low Output Capacitance –
  C_{ob} = 1.7 pF (Max) @ V_{CB} = 10 Vdc
- Collector-Emitter Sustaining Voltage –
  $V_{CEO(sus)}$ = 15 Vdc (Min) @ I_C = 3.0 mAdc
- JAN/JANTX Also Available

NPN SILICON AMPLIFIER TRANSISTORS





CASE 20 (10)
TO-72 PACKAGE

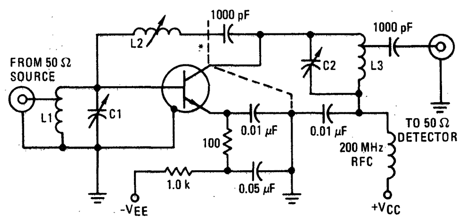
To convert inches to millimeters multiply by 25.4.
All JEDEC TO-72 dimensions and notes apply.

*MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	15	Vdc
Collector-Base Voltage	V_{CB}	30	Vdc
Emitter-Base Voltage	V_{EB}	3.0	Vdc
Collector Current – Continuous	I_C	50	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	200 1.14	mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	300 1.71	mW mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	°C

*Indicates JEDEC Registered Data

FIGURE 1 – NEUTRALIZED 200 MHz POWER AMPLIFIER GAIN TEST CIRCUIT

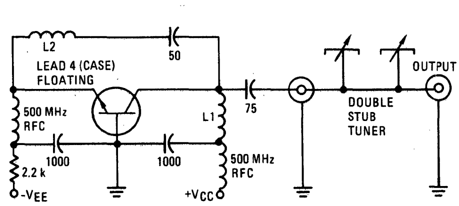


CIRCUIT COMPONENT INFORMATION:

C1: 3.0-12 pF
C2: 1.5-7.5 pF
L1: 3 1/2 turns #16 AWG 5/16" ID, 7/16" length, turns ratio -2 to 1
L2: 0.4-0.65 µH Miller #4303 (or equal)
L3: 8 turns #16 AWG 1/8" ID, 7/8" length, turns ratio – 8 to 1

*External interlead shield to isolate collector lead from emitter and base leads.

FIGURE 2 – 500 MHz OSCILLATOR TEST CIRCUIT



CIRCUIT COMPONENT INFORMATION:

L1: 2 turns #16 AWG, 3/8" OD, 1 1/4" length
L2: 9 turns #22 AWG, 3/16" OD, 1/2" length

Capacitance values are in pF.

Double Stub Tuner consists of the following commercially available components.

2 GR Type 874 TEE
1 GR Type 874-D20 Adjustable Stub
1 GR Type 874-LA Adjustable Line
1 GR Type 874-WN3 Short-Circuit Termination
(or equivalents)

***ELECTRICAL CHARACTERISTICS** (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (I_C = 3.0 mAdc, I_B = 0)	$V_{CEO(sus)}$	15	–	Vdc
Collector-Base Breakdown Voltage (I_C = 1.0 μAdc, I_E = 0)	BV_{CBO}	30	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	BV_{EBO}	3.0	–	Vdc
Collector Cutoff Current (V_{CB} = 15 Vdc, I_E = 0) (V_{CB} = 15 Vdc, I_E = 0, T_A = 150°C)	I_{CBO}	 – –	 .010 1.0	 μAdc μAdc
ON CHARACTERISTICS				
DC Current Gain (I_C = 3.0 mAdc, V_{CE} = 1.0 Vdc)	h_{FE}	20	–	–
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
DYNAMIC CHARACTERISTICS				
Current-Gain – Bandwidth Product (1) (I_C = 4.0 mAdc, V_{CE} = 10 Vdc, f = 100 MHz)	f_T	600	–	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 140 kHz) (V_{CB} = 0, I_E = 0, f = 140 kHz)	C_{ob}	 – –	 1.7 3.0	pF
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, f = 140 kHz)	C_{ib}	–	2.0	pF
Noise Figure (I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc, R_G = 400 Ohms, f = 60 MHz)	NF	–	6.0	dB
FUNCTIONAL TEST				
Amplifier Power Gain (Figure 1) (V_{CB} = 12 Vdc, I_C = 6.0 mAdc, f = 200 MHz)	G_{pe}	15	–	dB
Power Output (Figure 2) (V_{CB} = 15 Vdc, I_C = 8.0 mAdc, f = 500 MHz)	P_{out}	30	–	mW
Collector Efficiency (Figure 2) (V_{CB} = 15 Vdc, I_C = 8.0 mAdc, f = 500 MHz)	η	25	–	%

*Indicates JEDEC Registered Data.

(1) f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.