RoHS
Available on commercial versions

PNP Silicon VHF-UHF Amplifier Transistors

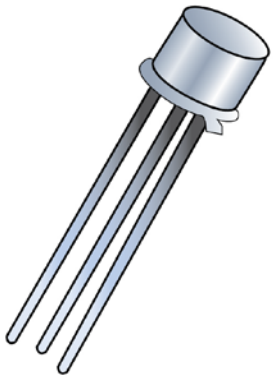
Qualified per MIL-PRF-19500/426

Qualified Levels: JAN, JANTX, and JANTXV

DESCRIPTION

The 2N4957 is a military qualified silicon PNP amplifier transistor designed for VHF-UHF equipment and other high-reliability applications. Common applications include high gain low noise amplifier; oscillator, and mixer applications. It is also available in a low-profile UB surface mount package.

Important: For the latest information, visit our website http://www.microsemi.com.



TO-72 Package

Also available in:

UB Package
(surface mount)
2N4957UB

FEATURES

- JEDEC registered 2N4957
- JAN, JANTX, and JANTXV military qualified versions are available per MIL-PRF-19500/426 (See part nomenclature for all available options)
- RoHS compliant version available (commercial grade only)

APPLICATIONS / BENEFITS

- Low-power, ultra-high frequency transistor
- Leaded metal TO-72 package

MAXIMUM RATINGS @ T_A = +25 °C

Parameters/Test Conditions	Symbol	Value	Unit
Junction and Storage Temperature	T_J and T_{STG}	-65 to +200	°C
Collector-Emitter Voltage	V_{CEO}	-30	V
Collector-Base Voltage	V_{CBO}	-30	V
Emitter-Base Voltage	V_{EBO}	-3	V
Total Power Dissipation (1)	P_T	200	mW
Collector Current	I_C	-30	mA

Notes: 1. Derate linearly 1.14 mW/°C for T_A > +25 °C

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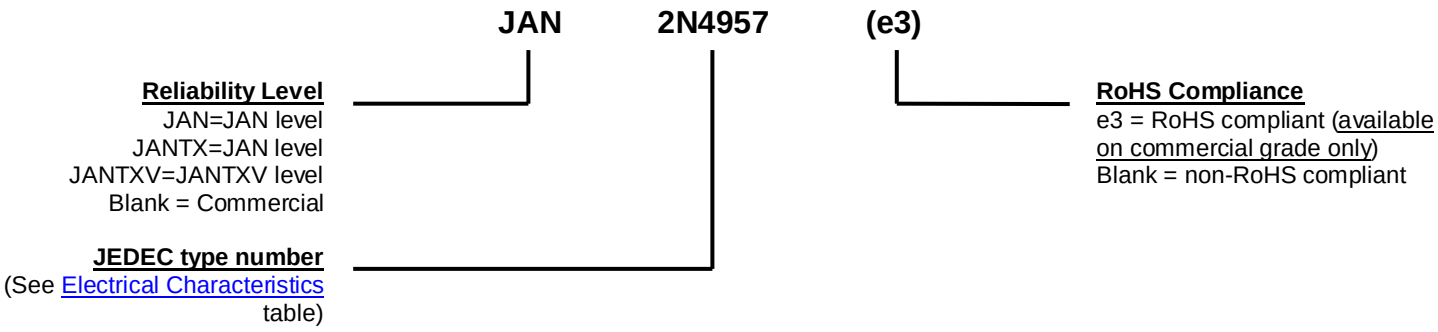
MECHANICAL and PACKAGING

- CASE: Ni plated kovar, Ni cap
- TERMINALS: Gold over nickel plated kovar leads, solder dipped. RoHS compliant versions are available without solder dip on commercial grade only.
- MARKING: Manufacturer's ID, date code, part number
- POLARITY: PNP, see case outline on last page
- WEIGHT: Approximately 0.322 grams
- See Package Dimensions on last page.

PART NOMENCLATURE



SYMBOLS & DEFINITIONS

Symbol	Definition
I_B	Base current: The value of the dc current into the base terminal.
I_C	Collector current: The value of the dc current into the collector terminal.
I_E	Emitter current: The value of the dc current into the emitter terminal.
T_A	Ambient temperature: The air temperature measured below a device, in an environment of substantially uniform temperature, cooled only by natural air convection and not materially affected by reflective and radiant surfaces.
T_C	Case temperature: The temperature measured at a specified location on the case of a device.
V_{CB}	Collector-base voltage: The dc voltage between the collector and the base.
V_{CBO}	Collector-base voltage, base open: The voltage between the collector and base terminals when the emitter terminal is open-circuited.
V_{CEO}	Collector-emitter voltage, base open: The voltage between the collector and the emitter terminals when the base terminal is open-circuited.
V_{EB}	Emitter-base voltage: The dc voltage between the emitter and the base.
V_{EBO}	Emitter-base voltage, collector open: The voltage between the emitter and base terminals with the collector terminal open-circuited.

ELECTRICAL CHARACTERISTICS @ T_C = +25°C

OFF CHARACTERISTICS

Test Conditions	Symbol	Value		Unit
		Min.	Max.	
Collector-Emitter Breakdown Voltage I_C = -1.0 mA, I_B = 0, Bias condition D	$V_{(BR)CEO}$	-30	-	V
Collector to Base Cutoff Current V_{CB} = -20 V, I_E = 0, Bias condition D V_{CB} = -30 V, Bias condition D	I_{CBO}	-	-100 -100	nA µA
Emitter to Base Cutoff Current V_{EB} = -3 V, Bias condition D	I_{EBO}	-	-100	µA

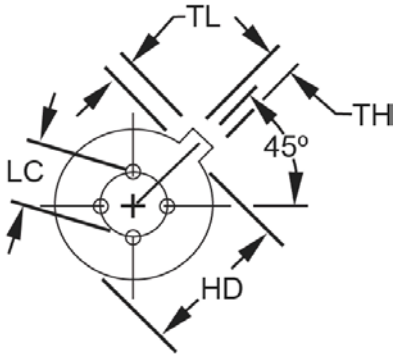
ON CHARACTERISTICS

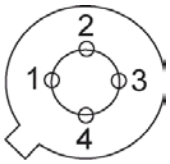
Test Conditions	Symbol	Value		Unit
		Min.	Max.	
Forward Current transfer ratio I_C = -0.5 mA, V_{CE} = -10 V I_C = -2.0 mA, V_{CE} = -10 V I_C = -5.0 mA, V_{CE} = -10 V I_C = -5.0 mA, V_{CE} = -10 V, T_A = -55 ºC	h_{FE}	15 20 30 10	165	

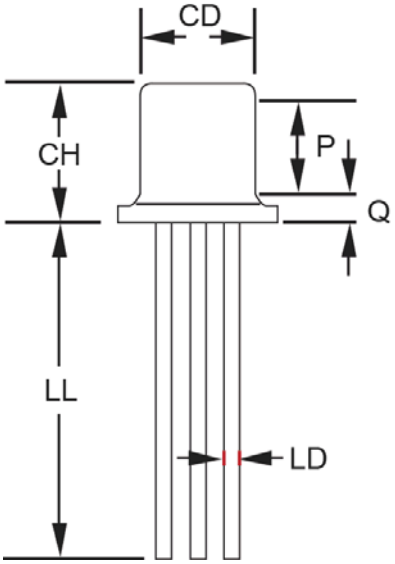
DYNAMIC CHARACTERISTICS

Test Conditions	Symbol	Value		Unit
		Min.	Max.	
Magnitude of common emitter small signal short circuit forward current transfer ratio V_{CE} = -10 V, I_E = -2.0 mA, f = 100 MHz	$\lvert h_{fe} \rvert$	12	36	
Collector-base time constant I_E = -2.0 mA, V_{CB} = -10.0 V, f = 63.6 MHz	$r_b'C_c$	1.0	8.0	ps
Collector to Base – feedback capacitance I_E = 0 mA, V_{CB} = -10 V, 100 kHz $\leq$ f $\leq$ 1 MHz	C_{cb}		0.8	pF
Noise Figure (50 Ohms) I_C = -2.0 mA, V_{CE} = -10 V, f = 450 MHz, R_L = 50 Ω	NF		3.5	dB
Small Signal Power Gain (common emitter) I_C = -2.0 mA, V_{CE} = -10 V, f = 450 MHz	G_{pe}	17	25	dB

PACKAGE DIMENSIONS







Ltr	Dimensions				Notes
	Inch		Millimeters		
	Min	Max	Min	Max	
TL	0.028	0.048	0.071	1.22	
TH	0.036	0.046	0.091	1.17	
HD	0.209	0.230	5.31	5.84	5
CD	0.178	0.195	4.52	4.95	5
LD	0.016	0.021	0.410	0.53	7, 8
LC	0.100 TP		2.54 TP		7, 8
CH	0.170	0.210	4.32	5.33	
LL	0.500	0.750	12.70	19.05	7, 8
P	0.100		2.54		
Q	-	0.040	-	1.02	5
1	Emitter				
2	Base				
3	Collector				
4	Case				

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for information only.
3. Beyond r (radius) maximum, TH shall be held for a minimum length of 0.011 (0.28 mm).
4. Dimension TL measured from maximum HD.
5. Body contour optional within zone defined by HD, CD, and Q.
6. Leads at gauge plane 0.054 +0.001 -0.000 inch (1.37 +0.03 -0.00 mm) below seating plane shall be within 0.007 inch (0.18mm) radius of true position (TP) at maximum material condition (MMC) relative to tab at MMC. The device may be measured by direct methods.
7. Dimension LU applies between L_1 and L_2. Dimension LD applies between L_2 and LL minimum. Diameter is uncontrolled in L_1 and beyond LL minimum.
8. All four leads.
9. Dimension r (radius) applies to both inside corners of tab.
10. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.
11. Lead 1 = emitter, lead 2 = base, lead 3 = collector, lead 4 = case (electrically connected).