RoHS Compliant

Surface Mount PNP Silicon VHF-UHF Amplifier Transistors

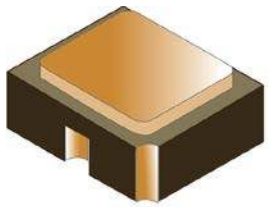
Qualified per MIL-PRF-19500/426

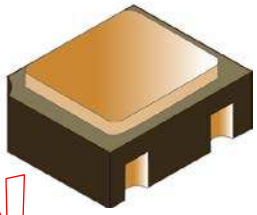
Qualified Levels: JAN, JANTX, and JANTXV

DESCRIPTION

The 2N4957UB 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 TO-72 leaded package.

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





UB Package

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

APPLICATIONS / BENEFITS

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

Also available in:

TO-72 Package
(leaded top hat)
2N4957

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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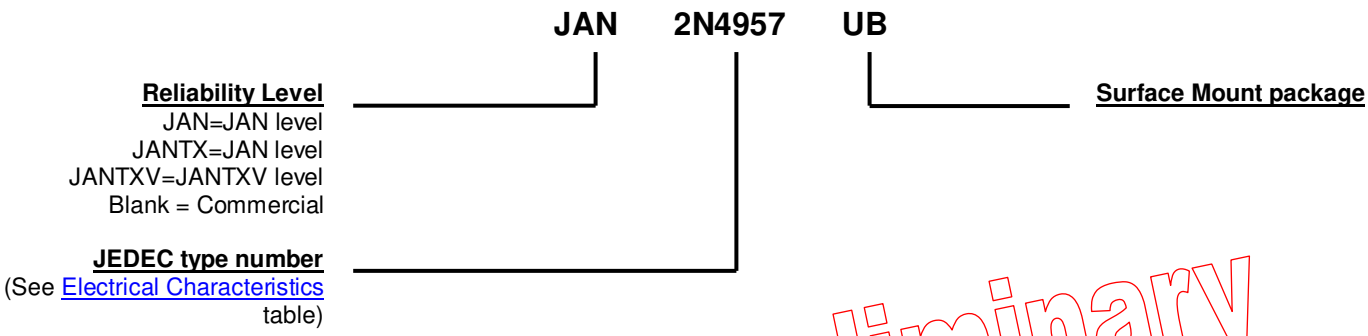
MECHANICAL and PACKAGING

- CASE: Ceramic
- TERMINALS: Gold plating over nickel underplate
- MARKING: Part number, date code, manufacturer's ID
- POLARITY: PNP, see case outline on last page
- TAPE & REEL option: Standard per EIA-418D. Consult factory for quantities
- WEIGHT: < 0.04 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

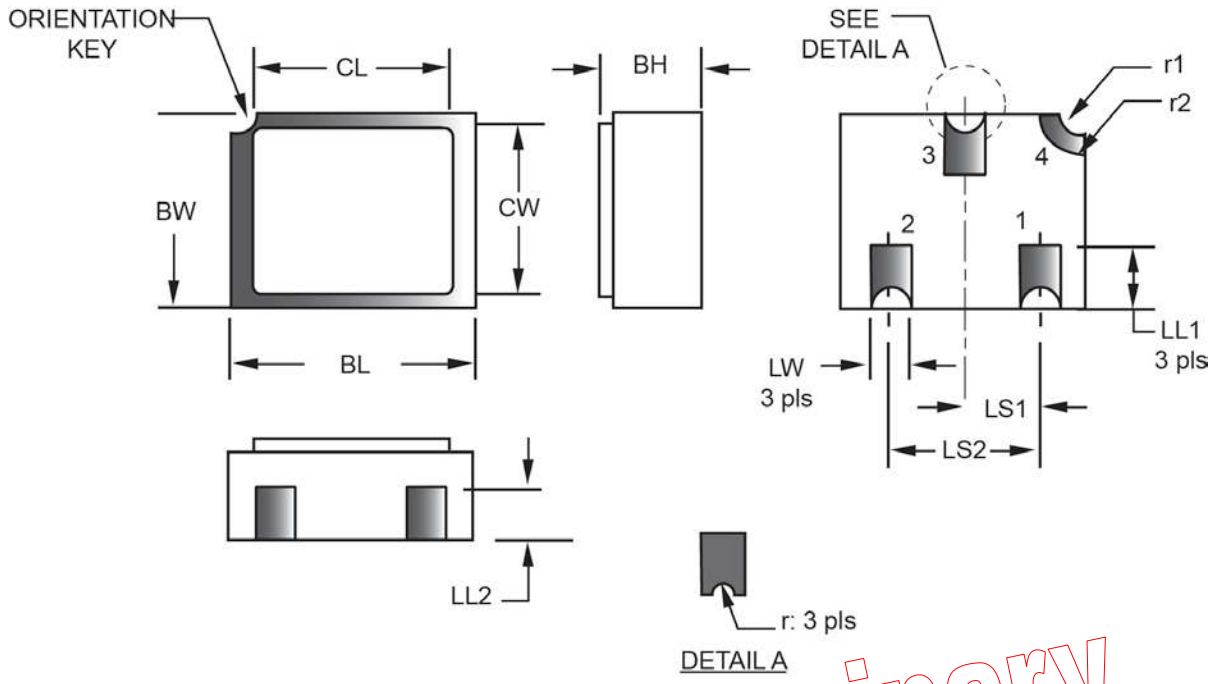
ON CHARACTERISTICS

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	$\|h_{fe}\|$	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 ≤ f ≤ 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



Symbol	Dimensions				Note	Symbol	Dimensions				Note
	inch		millimeters				inch		millimeters		
	Min	Max	Min	Max			Min	Max	Min	Max	
BH	0.046	0.056	1.17	1.42		**LS1**	0.036	0.040	0.91	1.02	
BL	0.115	0.128	2.92	3.25		**LS2**	0.071	0.079	1.80	2.01	
BW	0.085	0.108	2.16	2.74		**LW**	0.16	0.24	0.41	0.61	
CL	-	0.128	-	3.25		**r**	-	0.008	-	0.20	
CW	-	0.108	-	2.74		**r1**	-	0.012	-	0.31	
LL1	0.022	0.038	0.56	0.97		**r2**	-	0.022	-	0.056	
LL2	0.017	0.035	0.43	0.89							

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for information only.
3. Hatched areas on package denote metallized areas.
4. Pad 1 = Base, Pad 2 = Emitter, Pad 3 = Collector, Pad 4 = Shielding connected to the lid.
5. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.