RoHS
Available on commercial versions

RF and MICROWAVE DISCRETE LOW POWER TRANSISTORS

Qualified per MIL-PRF-19500/343

Qualified Levels:
JAN, JANTX, and JANTXV

DESCRIPTION

The 2N2857UB is a military qualified silicon NPN transistor (also available in commercial version), designed for UHF equipment and other high-reliability applications. Common applications include low noise amplifier; oscillator, and mixer applications. Microsemi also offers numerous other products to meet higher and lower power voltage regulation applications.

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

FEATURES

- Surface mount equivalent to JEDEC registered 2N2857.
- Silicon NPN, UB packaged UHF transistor.
- Maximum unilateral gain = 13 dB (typ) @ 500 MHz.
- JAN, JANTX, and JANTXV military qualified versions available per MIL-PRF-19500/343.
- RoHS compliant version available (commercial grade only).

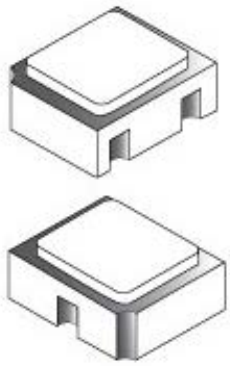
APPLICATIONS / BENEFITS

- Low-power, ultra-high frequency transistor.
- Low-profile ceramic surface mount 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}	15	V
Collector-Base Voltage	V_{CBO}	30	V
Emitter-Base Voltage	V_{EBO}	3	V
Thermal Resistance Junction-to-Ambient	$R_{\Theta JA}$	400	°C/W
Thermal Resistance Junction-to-Solder Pad	$R_{\Theta JSP}$	210	°C/W
Steady-State Power Dissipation (1)	P_D	200	mW
Collector Current	I_C	40	mA

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



UB Package

Also available in:

TO-72 Package
(axial-leaded)
2N2857

MSC – Lawrence
6 Lake Street,
Lawrence, MA 01841
Tel: 1-800-446-1158 or
(978) 620-2600
Fax: (978) 689-0803

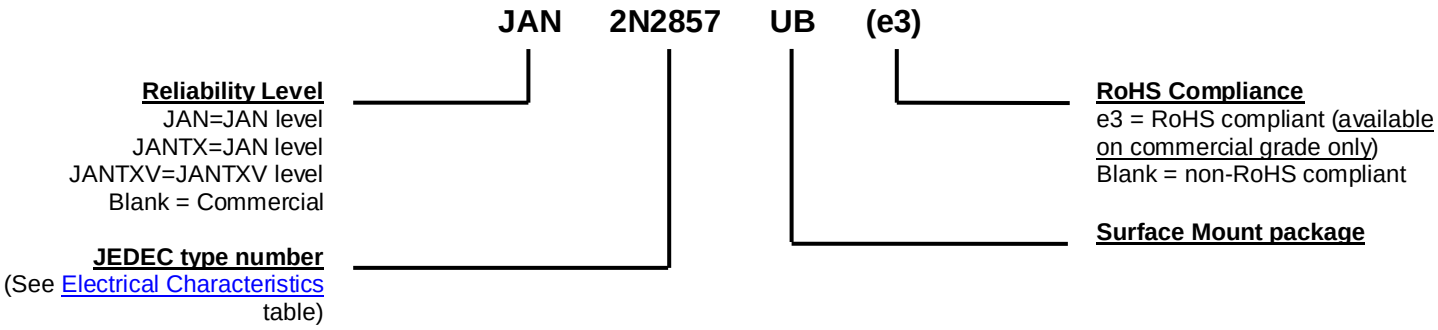
MSC – Ireland
Gort Road Business Park,
Ennis, Co. Clare, Ireland
Tel: +353 (0) 65 6840044
Fax: +353 (0) 65 6822298

Website:
www.microsemi.com

MECHANICAL and PACKAGING

- CASE: Ceramic.
- TERMINALS: Gold plating over nickel underplate. RoHS compliant matte/tin available on commercial grade only.
- MARKING: Part number, date code, manufacturer's ID.
- 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_C	Collector current (dc).
I_B	Base current (dc).
T_A	Ambient or free air temperature.
T_C	Case temperature.
V_{CB}	Collector to base voltage (dc).
V_{EB}	Emitter to base voltage (dc).

ELECTRICAL CHARACTERISTICS @ T_C = +25 °C

OFF CHARACTERISTICS

Test Conditions	Symbol	Value			Unit
		Min.	Typ.	Max.	
Collector-Emitter Breakdown Voltage (I_C = 3.0 mA, Bias condition D)	$V_{(BR)CEO}$	15	-	-	V
Collector to Emitter Cutoff Current (V_{CE} = 16 V, Bias condition C)	I_{CES}	-	-	100	nA
Emitter to Base Cutoff Current (V_{EB} = 3 V, Bias condition D)	I_{EBO}	-	-	10	µA
Collector to Base Cutoff Current (V_{CB} = 15 V, Bias condition D)	I_{CBO}	-	-	10	nA

ON CHARACTERISTICS

Test Conditions	Symbol	Value			Unit
		Min.	Typ.	Max.	
Forward Current transfer ratio (I_C = 3.0 mA, V_{CE} = 1.0 V)	h_{FE}	30	-	150	
Collector-Emitter Saturation Voltage (I_C = 10 mA, I_B = 1 mA)	$V_{CE(sat)}$		-	0.4	V
Base-Emitter Saturation Voltage (I_C = 10 mA, I_B = 1 mA)	$V_{BE(sat)}$		-	1.0	V

DYNAMIC CHARACTERISTICS

Test Conditions	Symbol	Value			Unit
		Min.	Typ.	Max.	
Magnitude of common emitter small signal short circuit forward current transfer ratio (V_{CE} = 6 V, Ic = 5 mA, f = 100 MHz)	$\|h_{fe}\|$	10	-	21	
Collector-base time constant (I_E = 2.0 mA, V_{CB} = 6.0 V, f = 31.9 MHz)	$r_b'C_c$	4	-	15	pF
Collector to Base – feedback capacitance (I_E = 0 mA, V_{CB} = 10 V, 100 kHz ≤ f ≤ 1 MHz	C_{cb}			1.0	pF
Noise Figure (50 Ohms) (I_C = 1.5 mA, V_{CE} = 6 V, f = 450 MHz, R_g = 50 Ω)	F		4.5		dB
Small Signal Power Gain (common emitter) (I_E = 1.5 mA, V_{CE} = 6 V, f = 450 MHz	G_{pe}	12.5		21	dB

GRAPHS

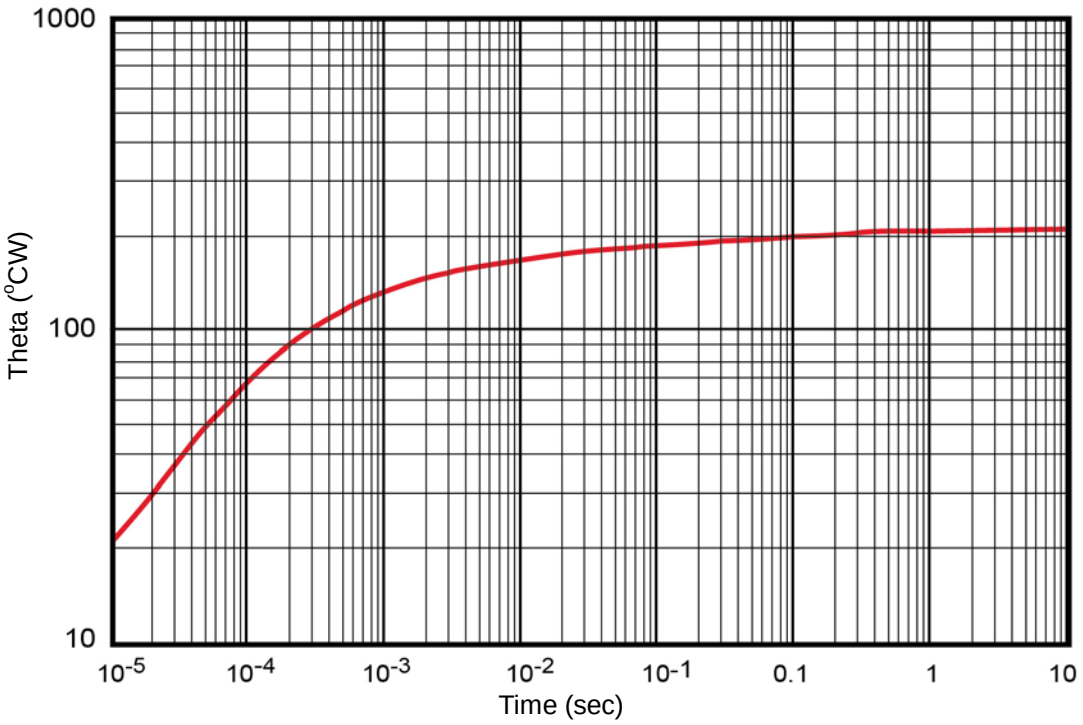
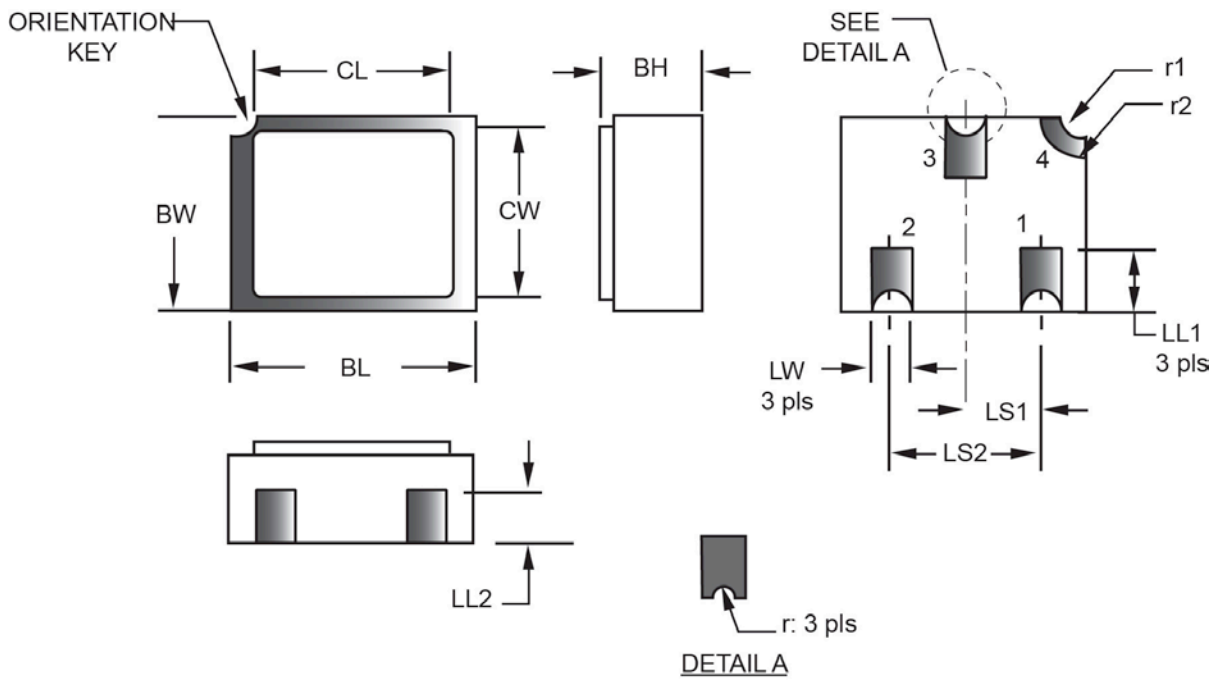


FIGURE 1
Maximum Thermal Impedance

PACKAGE DIMENSIONS



Symbol	Dimensions				Note	Symbol	Dimensions				Note
	inch		millimeters				inch		millimeters		
	Min	Max	Min	Max			Min	Max	Min	Max	
BH	.046	.056	1.17	1.42		LS1	.035	.039	0.89	1.02	
BL	.115	.128	2.92	3.25		LS2	.071	.079	1.80	2.01	
BW	.085	.108	2.16	2.74		LW	0.16	0.24	0.41	0.61	
CL		.128		3.25		r		.008		0.20	
CW		.108		2.74		r1		.012		0.31	
LL1	.022	.038	0.56	0.97		r2		.022		.056	
LL2	.017	.035	0.43	0.89							

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general 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.