RoHS
Available on commercial versions

PNP Silicon Small Signal Transistor

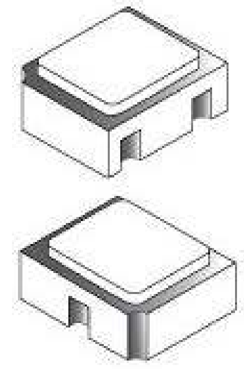
Qualified per MIL-PRF-19500/382

Qualified Levels:
JAN, JANTX, and JANTXV

DESCRIPTION

This 2N2944AUB through 2N2946AUB PNP silicon transistor device is military qualified up to a JANTXV level for high-reliability 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.



UB Package

Also available in:

TO-46 (TO-206AB)
(axial leaded)
2N2944A – 2N2946A

FEATURES

- Surface mount equivalent of JEDEC registered 2N2944A thru 2N2946A series.
- Low-profile ceramic surface mount package.
- JAN, JANTX, and JANTXV qualification per MIL-PRF-19500/382 available.
- RoHS compliant versions available (commercial grade only).

APPLICATIONS / BENEFITS

- Small lightweight package.
- ESD to Class 3 per MIL-STD-750, method 1020.

MAXIMUM RATINGS @ +25 °C unless otherwise noted.

Parameters/Test Conditions		Symbol	Value	Unit
Junction and Storage Temperature		T_J and T_{STG}	-65 to +200	°C
Thermal Resistance Junction-to-Ambient (2)		$R_{\Theta JA}$	435	°C/W
Thermal Resistance surface mount Junction to Solder Point		$R_{\Theta JSP}$	90	°C/W
Collector Current (dc)		I_C	-100	mA
Emitter to Base voltage (static), collector open	2N2944AUB 2N2945AUB 2N2946AUB	V_{EBO}	-15 -25 -40	V
Collector to Base voltage (static), emitter open	2N2944AUB 2N2945AUB 2N2946AUB	V_{CBO}	-15 -25 -40	V
Collector to Emitter voltage (static), base open	2N2944AUB 2N2945AUB 2N2946AUB	V_{CEO}	-10 -20 -35	V
Emitter to Collector voltage	2N2944AUB 2N2945AUB 2N2946AUB	V_{ECO}	-10 -20 -35	V
Total Power Dissipation, all terminals @ T_A = +25 °C (1)		P_T	400	mW
Total Power Dissipation, all terminals @ T_{SP} = +25 °C		P_T	800	mW

Notes:
1. Derate linearly 2.30 mW /°C above T_A = +25°C.
2. T_A = +55°C for UB on printed circuit board (PCB), PCB = FR4 .0625 inch (1.59 mm) 1 - layer 1 Oz Cu, horizontal, still air, pads (UB) = .034 inch (0.86 mm) x .048 inch (1.22 mm), $R_{\theta JA}$ with a defined thermal resistance condition included is measured at P_T = 400 mW .

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MECHANICAL and PACKAGING

- CASE: Ceramic.
- TERMINALS: Gold plating over nickel under-plate. 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

JAN 2N2944A UB (e3)

Reliability Level
JAN = JAN Level
JANTX = JANTX Level
JANTXV = JANTXV Level
Blank = Commercial

JEDEC type number
(see Electrical Characteristics table)

Surface Mount package

RoHS Compliance
e3 = RoHS Compliant (available on commercial grade only)
Blank = non-RoHS Compliant

SYMBOLS & DEFINITIONS

Symbol	Definition
I_B	Base current (dc).
I_E	Emitter current (dc).
V_{CB}	Collector to base voltage (dc).
V_{EB}	Emitter to base voltage (dc).
$V_{(BR)}$	Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current.

ELECTRICAL CHARACTERISTICS @ 25 °C unless otherwise noted.

Characteristic		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS:					
Collector-Emitter Breakdown Voltage I_C = -10 μA	2N2944AUB 2N2945AUB 2N2946AUB	$V_{(BR)CEO}$	-10 -20 -35		V
Emitter-Collector Breakdown Voltage I_E = -10 μA, I_B = 0	2N2944AUB 2N2945AUB 2N2946AUB	$V_{(BR)ECO}$	-10 -20 -35		V
Collector-Base Cutoff Current V_{CB} = -15 V V_{CB} = -25 V V_{CB} = -40 V	2N2944AUB 2N2945AUB 2N2946AUB	I_{CBO}	10 10 10		μA
Emitter-Base Cutoff Current V_{EB} = -12 V V_{EB} = -20 V V_{EB} = -32 V	2N2944AUB 2N2945AUB 2N2946AUB	I_{EBO}		-0.1 -0.2 -0.5	ηA
ON CHARACTERISTICS: [(1)]					
Forward-Current Transfer Ratio I_C = -1.0 mA, V_{CE} = -0.5 V	2N2944AUB 2N2945AUB 2N2946AUB	h_{FE}	100 70 50		
Forward-Current Transfer Ratio (inverted connection) I_E = -200 μA, V_{EC} = -0.5 V	2N2944AUB 2N2945AUB 2N2946AUB	$h_{FE(inv)}$	50 30 20		
Emitter-Collector Offset Voltage I_B = -200 μA, I_E = 0 I_B = -1.0 mA, I_E = 0 I_B = -2.0 mA, I_E = 0	2N2944AUB 2N2945AUB 2N2946AUB 2N2944AUB 2N2945AUB 2N2946AUB 2N2944AUB 2N2945AUB 2N2946AUB	$V_{EC(ofs)}$		-0.3 -0.5 -0.8 -0.6 -1.0 -2.0 -1.0 -1.6 -2.5	mV
DYNAMIC CHARACTERISTICS:					
Emitter-Collector On-State Resistance I_B = -100 μA, I_E = 0, I_e = 100 μA ac (rms) f = 1.0 kHz I_B = -1.0 mA, I_E = 0, I_e = 100 μA ac (rms) f =1.0 kHz	2N2944AUB 2N2945AUB 2N2946AUB 2N2944AUB 2N2945AUB 2N2946AUB	$r_{ec(on)}$		10 12 14 4.0 6.0 8.0	Ω
Magnitude of Small-Signal Forward Current Transfer Ratio I_C = -1.0 mA, V_{CE} = -6.0V, f = 1.0 MHz	2N2944AUB 2N2945AUB 2N2946AUB	$\|h_{fe}\|$	15 10 5.0	55 55 55	
Output Capacitance V_{CB} = -6.0 V, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz		C_{obo}		10	pF
Input Capacitance V_{EB} = -6.0 V, I_C = 0, 100 kHz ≤ f ≤ 1.0 MHz		C_{ibo}		6.0	pF

(1) Pulse Test: Pulse Width = 300 s, duty cycle 2.0%.

GRAPHS

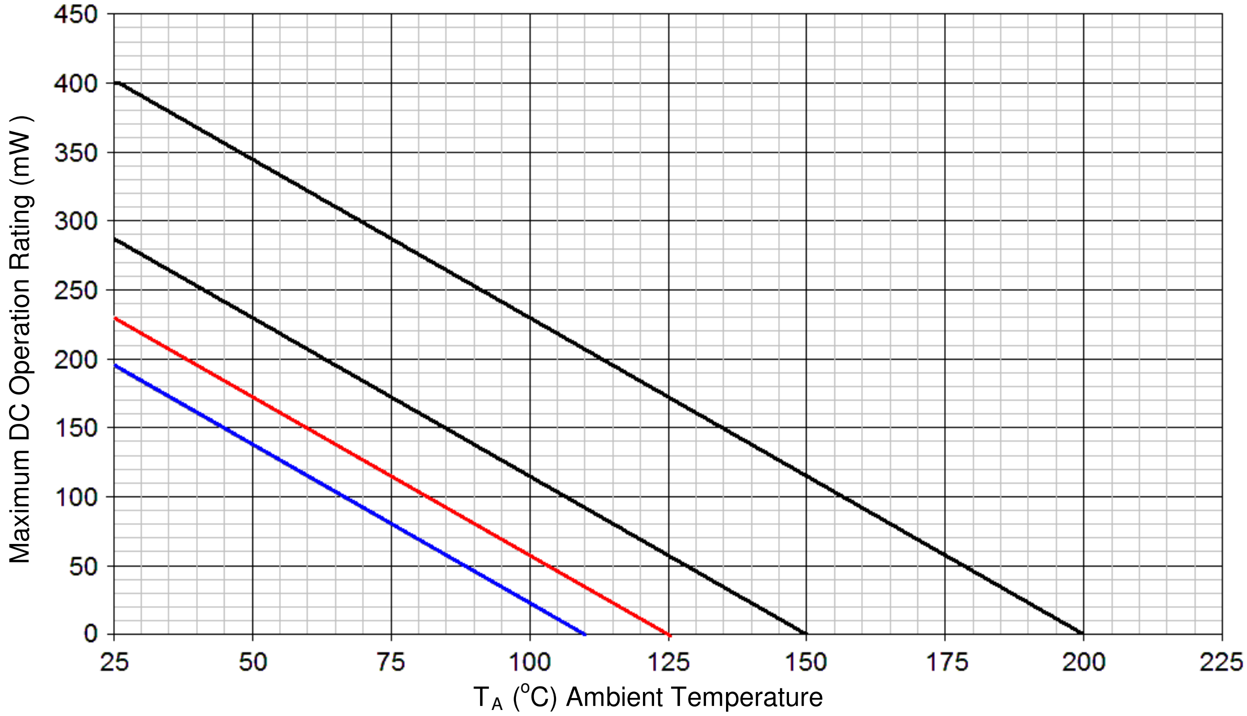


FIGURE 1 – Temperature-Power Derating Curve ($R_{\Theta JA}$)

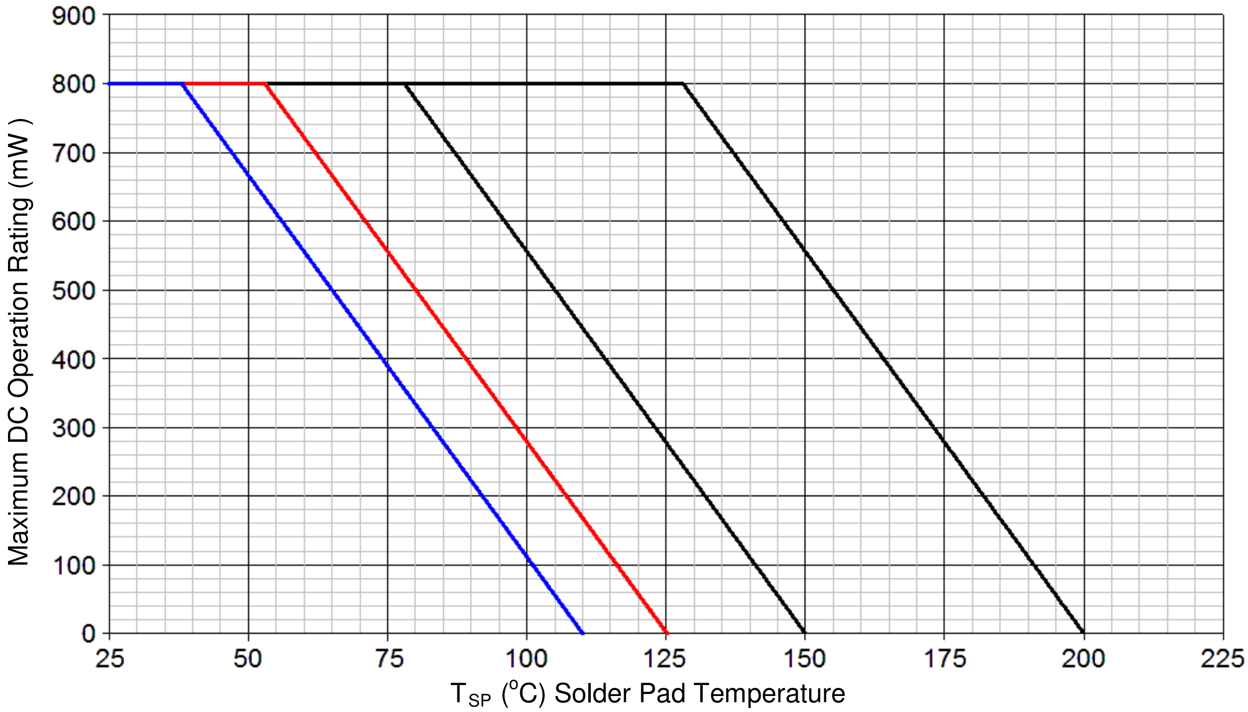
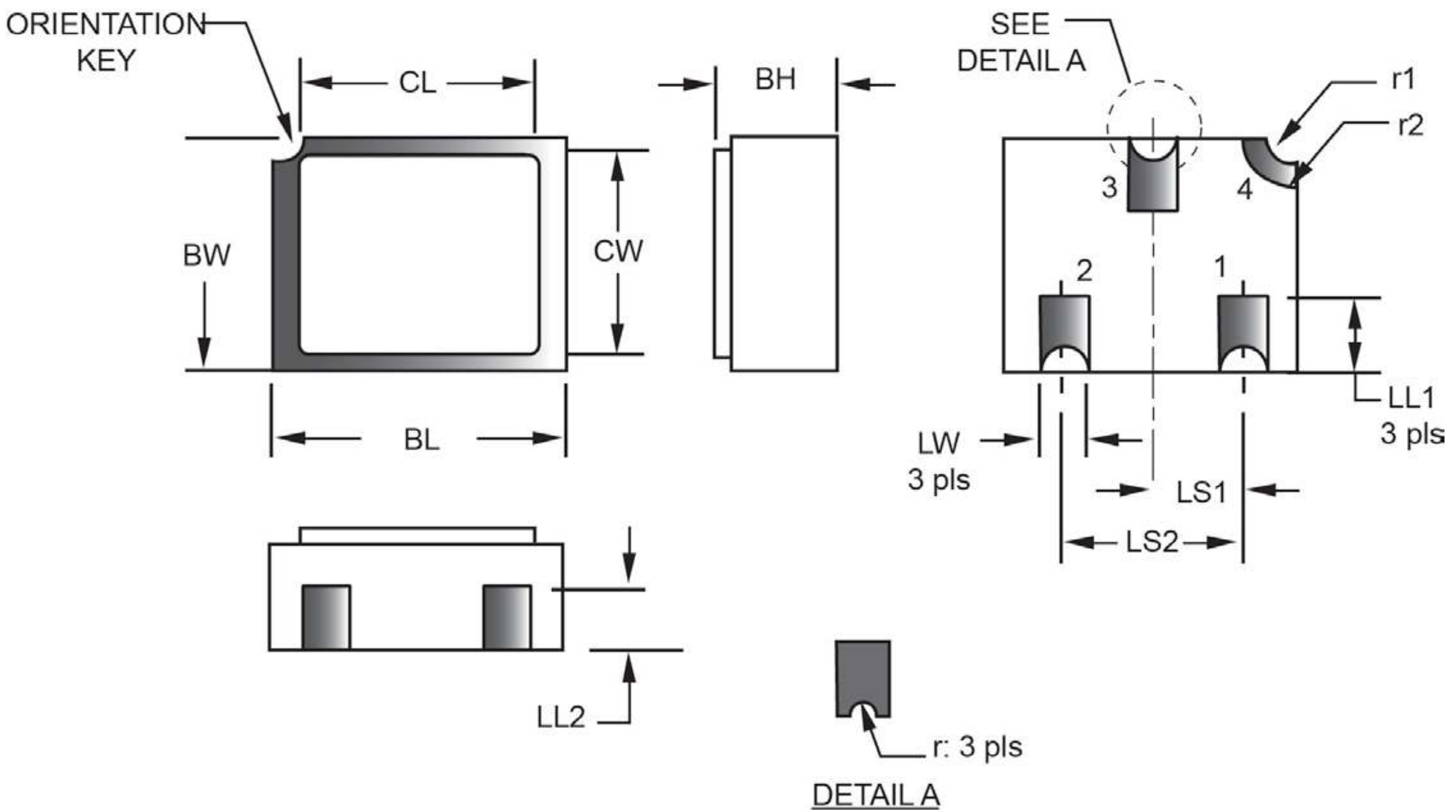


FIGURE 2 – Temperature-Power Derating Curve ($R_{\Theta JSP}$)

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	0.99	
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.