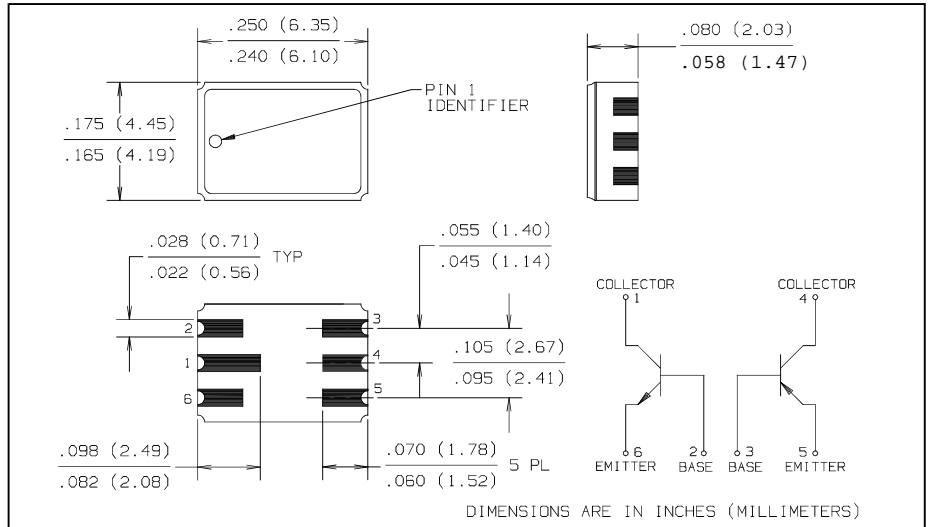


# Surface Mount NPN/PNP Complementary Transistors

## Type JANTX, JANTXV, 2N4854U



### Features

- Ceramic surface mount package
- Miniature package to minimize circuit board area required
- Hermetically sealed
- Per MIL-PRF-19500/421

### Description

The JANTX2N4854U is a hermetically sealed, ceramic surface mount, complementary transistor pair. The JANTX2N4854U consists of an NPN transistor die and PNP transistor die. This surface mount package is the most recent addition to MIL-PRF-19500/421. The "U" designator denotes the 6 terminal (C-6) leadless chip carrier package option. The miniature six pin ceramic package is ideal for designs where board space and device weight are important design considerations.

Typical screening and lot acceptance tests are provided on page 13-4. The burn-in condition is  $V_{CB} = 30\text{ V}$ ,  $P_D = 300\text{ mW}$  each transistor  $T_A = 25^\circ\text{ C}$ . Refer to MIL-PRF-19500/421 for complete requirements.

When ordering parts without processing, do not use a JAN prefix.

### Absolute Maximum Ratings ( $T_A = 25^\circ\text{ C}$ unless otherwise noted)

NPN to PNP Isolation Voltage .....	500 VDC
Collector-Base Voltage .....	60 V
Collector-Emitter Voltage .....	40 V
Emitter-Base Voltage .....	5.0 V
Collector Current-Continuous .....	600 mA
Operating Junction Temperature ( $T_J$ ) .....	$-65^\circ\text{ C}$ to $+200^\circ\text{ C}$
Storage Junction Temperature ( $T_{stg}$ ) .....	$-65^\circ\text{ C}$ to $+200^\circ\text{ C}$
Power Dissipation @ $T_A = 25^\circ\text{ C}$ (both transistors driven equally) .....	0.6 W
Power Dissipation @ $T_C = 25^\circ\text{ C}$ (both transistors driven equally) .....	2.0 W <sup>(1)</sup>
Soldering Temperature (vapor phase reflow for 30 sec.) .....	$215^\circ\text{ C}$
Soldering Temperature (heated Collet for 5 sec.) .....	$260^\circ\text{ C}$

#### Notes:

(1) Derate linearly 3.4 mW/ $^\circ\text{ C}$  above  $25^\circ\text{ C}$ .

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Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted) See Note 3

SYMBOL	PARAMETER	MIN	MAX	UNIT	TEST CONDITIONS
<b>Off Characteristics</b>					
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	60		V	$I_C = 10.0\ \mu\text{A}, I_E = 0$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	40		V	$I_C = 10.0\ \text{mA}, I_B = 0$
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	5.0		V	$I_E = 10.0\ \mu\text{A}, I_C = 0$
$I_{CBO}$	Collector-Base Cutoff Current		10.0	nA	$V_{CB} = 50\ \text{V}, I_E = 0$
			10.0	$\mu\text{A}$	$V_{CB} = 50\ \text{V}, I_E = 0, T_A = 150^\circ\text{C}$
$I_{EBO}$	Emitter-Base Cutoff Current		10.0	nA	$V_{EB} = 3.0\ \text{V}, I_C = 0$
<b>On Characteristics</b>					
$h_{FE}$	DC Current Transfer Ratio	50		-	$V_{CE} = 1\ \text{V}, I_C = 150\ \text{mA}^{(2)}$
		35		-	$V_{CE} = 10.0\ \text{V}, I_C = 0.1\ \text{mA}$
		50		-	$V_{CE} = 10.0\ \text{V}, I_C = 1.0\ \text{mA}$
		75		-	$V_{CE} = 10.0\ \text{V}, I_C = 10\ \text{mA}^{(2)}$
		100	300	-	$V_{CE} = 10.0\ \text{V}, I_C = 150\ \text{mA}^{(2)}$
		35		-	$V_{CE} = 10.0\ \text{V}, I_C = 300\ \text{mA}^{(2)}$
		12		-	$V_{CE} = 10.0\ \text{V}, I_C = 10\ \text{mA}, T_A = -55^\circ\text{C}^{(2)}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.40	V	$I_C = 150\ \text{mA}, I_B = 15\ \text{mA}^{(2)}$
$V_{BE(SAT)}$	Base-Emitter Saturation Voltage	0.8		V	$I_C = 150\ \text{mA}, I_B = 15\ \text{mA}^{(2)}$
<b>Small-Signal Characteristics</b>					
$h_{ie}$	Small Signal Common Emitter Input Impedance	1.5	9	k $\Omega$	$V_{CE} = 10\ \text{V}, I_C = 1.0\ \text{mA}, f = 1.0\ \text{kHz}$
$h_{oe}$	Small Signal Common Emitter Output Admittance		50	$\mu\text{mho}$	
$h_{fe}$	Small Signal Current Transfer Ratio	60	300	-	
NF	Noise Figure		8	db	$f = 1.0\ \text{kHz}, R_G = 1.0\ \text{k}\Omega, I_C = 0.1\ \text{mA}, V_{CE} = 10\ \text{V}$
$ h_{fe} $	Small Signal Current Transfer Ratio	2.0	8.0	-	$V_{CE} = 20\ \text{V}, I_C = 20\ \text{mA}, f = 100\ \text{MHz}$
$C_{obo}$	Output Capacitance		8.0	pF	$V_{CB} = 10\ \text{V}, 100\ \text{kHz} \leq f \leq 1.0\ \text{MHz}$
<b>Switching Characteristics</b>					
$t_{on}$	Turn-On Time		45	ns	$V_{CC} = 30\ \text{V}, I_C = 150\ \text{mA}, I_{B1} = 15\ \text{mA}$
$t_{off}$	Turn-Off Time		300	ns	$V_{CC} = 30\ \text{V}, I_C = 150\ \text{mA}, I_{B1} = I_{B2} = 15\ \text{mA}$

(2) Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

(3) Polarities given are for the NPN device. Reverse polarity on limits and conditions as applicable for the PNP side.

HI-REL  
SURFACE  
MOUNT