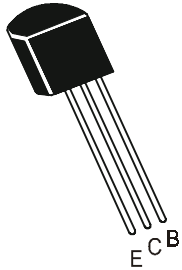


**PNP SILICON PLANAR EPITAXIAL HIGH VOLTAGE VIDEO TRANSISTORS**

**BF421  
BF423**

**TO-92  
Plastic Package**



**High Voltage Video Amplifier**

**ABSOLUTE MAXIMUM RATINGS(Ta=25°C unless specified otherwise)**

| DESCRIPTION                                      | SYMBOL         | 423         | 421 | UNITS |
|--|----------------|-------------|-----|-------|
| Collector Emitter Voltage                        | $V_{CEO}$      | 250         | 300 | V     |
| Collector Base Voltage                           | $V_{CBO}$      | 250         | 300 | V     |
| Emitter Base Voltage                             | $V_{EBO}$      | 5           |     | V     |
| Collector Current Continuous                     | $I_C$          | 500         |     | mA    |
| Power Dissipation@ Ta=25°C                       | $P_D$          | 800         |     | mW    |
| Derate Above 25°C                                |                | 6.4         |     | mW/°C |
| Power Dissipation@ Tc=25°C                       | $P_D$          | 2.75        |     | W     |
| Derate Above 25°C                                |                | 22          |     | mW/°C |
| Operating And Storage Junction Temperature Range | $T_j, T_{stg}$ | -55 to +150 |     | °C    |
| <b>THERMAL RESISTANCE</b>                        |                |             |     |       |
| Junction to ambient                              | $R_{th(j-a)}$  | 156         |     | °C/W  |
| Junction to case                                 | $R_{th(j-c)}$  | 45          |     | °C/W  |

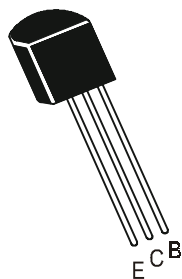
**ELECTRICAL CHARACTERISTICS (Ta=25°C Unless Otherwise Specified)**

| DESCRIPTION                          | SYMBOL        | TEST CONDITION         | 423  | 421  | UNITS |
|--------------------------------------|---------------|------------------------|------|------|-------|
| Collector Emitter Voltage*           | $V_{CEO}$     | $I_C=1.0mA, I_B=0$     | >250 | >300 | V     |
| Collector Base Voltage               | $V_{CBO}$     | $I_C=100\mu A, I_E=0$  | >250 | >300 | V     |
| EmitterBase Voltage                  | $V_{EBO}$     | $I_E=100\mu A, I_C=0$  | >5   | >5   | V     |
| Collector-Cut off Current            | $I_{CBO}$     | $V_{CB}=200V, I_E=0$   | <10  | <10  | nA    |
| Emitter-Cut off Current              | $I_{EBO}$     | $V_{EB}=5.0V, I_C=0$   | <100 | <100 | nA    |
| DC Current Gain                      | $h_{FE}$      | $I_C=25mA, V_{CE}=20V$ | >50  | >50  |       |
| Collector Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=20mA, I_B=2mA$    | <0.5 | <0.5 | V     |
| Base Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=20mA, I_B=2mA$    | <2   | <2   | V     |

**PNP SILICON PLANAR EPITAXIAL HIGH VOLTAGE  
VIDEO TRANSISTORS**

**BF421  
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**TO-92  
Plastic Package**



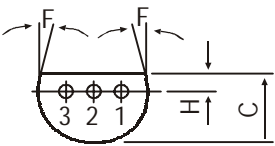
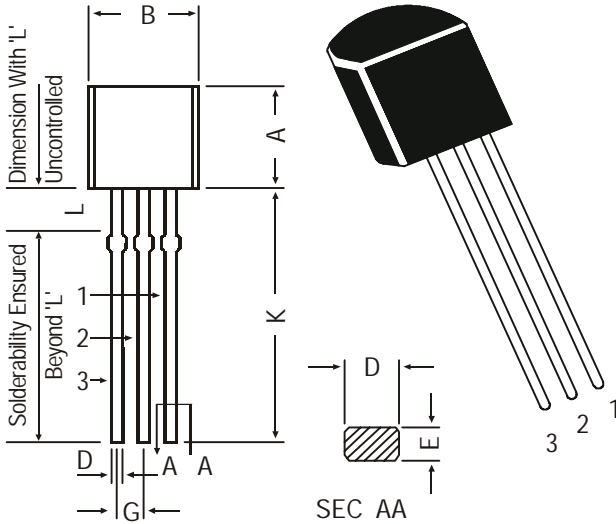
**ELECTRICAL CHARACTERISTICS (Ta=25°C Unless Specified Otherwise)**

| DESCRIPTION                           | SYMBOL   | TEST CONDITION  | 423  | 421  | UNITS |
|---------------------------------------|----------|---|------|------|-------|
| <b>DYNAMIC CHARACTERISTICS</b>        |          |   |      |      |       |
| <b>Current Gain-Bandwidth Product</b> | $f_T$    | $I_C=10\text{mA}$ , $V_{CE}=10\text{V}$<br>$f=50\text{MHz}$ | >60  | >60  | MHz   |
| <b>Feedback Capacitance</b>           | $C_{re}$ | $V_{CB}=30\text{V}$ , $I_E=0$<br>$f=1\text{MHz}$            | <2.8 | <2.8 | pF    |

**\*Pulse Condition: = Width  $\leq$  300us, Duty Cycle  $\leq$  2.0%.**

**TO-92 Plastic Package**

**TO-92 Transistors on Tape and Ammo Pack**

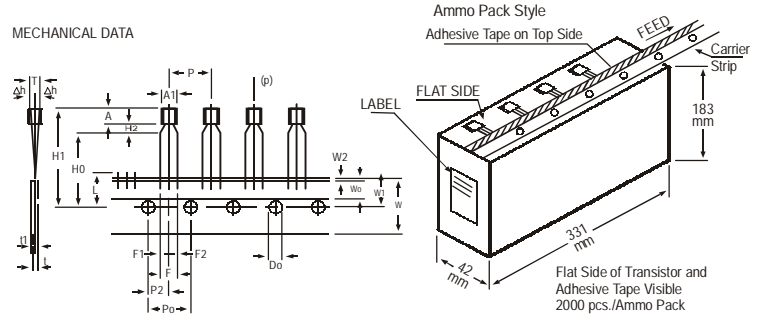


**PIN CONFIGURATION**

- 1. BASE
- 2. COLLECTOR
- 3. EMITTER

| DIM | MIN.  | MAX.  |
|-----|-------|-------|
| A   | 4.32  | 5.33  |
| B   | 4.45  | 5.20  |
| C   | 3.18  | 4.19  |
| D   | 0.41  | 0.55  |
| E   | 0.35  | 0.50  |
| F   | 5 DEG |       |
| G   | 1.14  | 1.40  |
| H   | 1.14  | 1.53  |
| K   | 12.70 | —     |
| L   | 1.982 | 2.082 |

All dimensions in mm.



All dimensions in mm unless specified otherwise

| ITEM                                 | SYMBOL | SPECIFICATION |      |       |              | REMARKS  |
|--------------------------------------|--------|---------------|------|-------|--------------|--|
|                                      |        | MIN.          | NOM. | MAX.  | TOL.         |  |
| BODY WIDTH                           | A1     | 4.0           |      | 4.8   |              |  |
| BODY HEIGHT                          | A      | 4.8           |      | 5.2   |              |  |
| BODY THICKNESS                       | T      | 3.9           |      | 4.2   |              |  |
| PITCH OF COMPONENT                   | P      |               | 12.7 |       | ±1           |  |
| FEED HOLE PITCH                      | Po     |               | 12.7 |       | ±0.3         |  |
| FEED HOLE CENTRE TO COMPONENT CENTRE | P2     |               | 6.35 |       | ±0.4         | CUMULATIVE PITCH ERROR 1.0 mm/20 PITCH<br>TO BE MEASURED AT BOTTOM OF CLINCH |
| DISTANCE BETWEEN OUTER LEADS         | F      |               | 5.08 |       | +0.6<br>-0.2 |  |
| COMPONENT ALIGNMENT                  | Δh     |               | 0    | 1     |              | AT TOP OF BODY   |
| TAPE WIDTH                           | W      |               | 18   |       | ±0.5         |  |
| HOLD-DOWN TAPE WIDTH                 | Wo     |               | 6    |       | ±0.2         |  |
| HOLE POSITION                        | W1     |               | 9    |       | +0.7<br>-0.5 |  |
| HOLD-DOWN TAPE POSITION              | W2     |               | 0.5  |       | ±0.2         |  |
| LEAD WIRE CLINCH HEIGHT              | Ho     |               | 16   |       | ±0.5         |  |
| COMPONENT HEIGHT                     | H1     |               |      | 23.25 |              |  |
| LENGTH OF SNIPPED LEADS              | L      |               |      | 11.0  |              |  |
| FEED HOLE DIAMETER                   | Do     |               | 4    |       | ±0.2         |  |
| TOTAL TAPE THICKNESS                 | t      |               |      | 1.2   |              | 11 0.3 - 0.6   |
| LEAD - TO - LEAD DISTANCE F1,        | F2     |               | 2.54 |       | +0.4<br>-0.1 |  |
| CLINCH HEIGHT                        | H2     |               |      | 3     |              |  |
| PULL - OUT FORCE                     | (P)    | 6N            |      |       |              |  |

**NOTES**

1. MAXIMUM ALIGNMENT DEVIATION BETWEEN LEADS NOT TO BE GREATER THAN 0.2 mm.
2. MAXIMUM NON-CUMULATIVE VARIATION BETWEEN TAPE FEED HOLES SHALL NOT EXCEED 1 mm IN 20 PITCHES.
3. HOLDDOWN TAPE NOT TO EXCEED BEYOND THE EDGE(S) OF CARRIER TAPE AND THERE SHALL BE NO EXPOSURE OF ADHESIVE.
4. NO MORE THAN 3 CONSECUTIVE MISSING COMPONENTS ARE PERMITTED.
5. A TAPE TRAILER, HAVING AT LEAST THREE FEED HOLES ARE REQUIRED AFTER THE LAST COMPONENT.
6. SPLICES SHALL NOT INTERFERE WITH THE SPROCKET FEED HOLES.

**Packing Detail**

| PACKAGE    | STANDARD PACK |                | INNER CARTON BOX  |     | OUTER CARTON BOX  |     |          |
|------------|---------------|----------------|-------------------|-----|-------------------|-----|----------|
|            | Details       | Net Weight/Qty | Size              | Qty | Size              | Qty | Gr Wt    |
| TO-92 Bulk | 1K/polybag    | 200 gm/1K pcs  | 3" x 7.5" x 7.5"  | 5K  | 17" x 15" x 13.5" | 80K | 23 kgs   |
| TO-92 T&A  | 2K/ammo box   | 645 gm/2K pcs  | 12.5" x 8" x 1.8" | 2K  | 17" x 15" x 13.5" | 32K | 12.5 kgs |

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