

## NPN SILICON LOW POWER TRANSISTOR

Qualified per MIL-PRF-19500/313

### Devices

2N2432  
2N2432A

### Qualified Level

JAN  
JANTX  
JANTXV

### MAXIMUM RATINGS

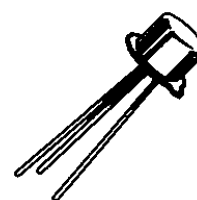
| Ratings                                                                                                                 | Symbol    | 2N2432      | 2N2432A | Unit               |
|-------------------------------------------------------------------------------------------------------------------------|-----------|-------------|---------|--------------------|
| Collector-Emitter Voltage                                                                                               | $V_{CEO}$ | 30          | 45      | Vdc                |
| Collector-Base Voltage                                                                                                  | $V_{CBO}$ | 30          | 45      | Vdc                |
| Emitter-Collector Voltage                                                                                               | $V_{ECO}$ | 15          | 18      | Vdc                |
| Collector Current                                                                                                       | $I_C$     | 100         |         | mAdc               |
| Total Power Dissipation<br>@ $T_A = +25^{\circ}\text{C}$ <sup>(1)</sup><br>@ $T_C = +25^{\circ}\text{C}$ <sup>(2)</sup> | $P_T$     | 300         |         | mW                 |
|                                                                                                                         |           | 600         |         | mW                 |
| Operating & Storage Junction Temp. Range                                                                                | $T_{stg}$ | -65 to +200 |         | $^{\circ}\text{C}$ |
|                                                                                                                         | $T_J$     | -65 to +175 |         | $^{\circ}\text{C}$ |

### THERMAL CHARACTERISTICS

| Characteristics                      | Symbol          | Max. | Unit                         |
|--------------------------------------|-----------------|------|------------------------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 0.25 | $\text{mW}/^{\circ}\text{C}$ |

1) Derate linearly 2.0 mW/ $^{\circ}\text{C}$  above  $T_A > +25^{\circ}\text{C}$

2) Derate linearly 4.0 mW/ $^{\circ}\text{C}$  above  $T_C > +25^{\circ}\text{C}$



TO- 18\*  
(TO-206AA)

\*See appendix A for  
package outline

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted)

| Characteristics | Symbol | Min. | Max. | Unit |
|-----------------|--------|------|------|------|
|-----------------|--------|------|------|------|

### OFF CHARACTERISTICS

|                                                                                            |         |               |    |                  |
|--------------------------------------------------------------------------------------------|---------|---------------|----|------------------|
| Emitter-Collector Breakdown Voltage<br>$I_E = 100 \mu\text{Adc}$ , $I_B = 0$               | 2N2432  | $V_{(BR)ECO}$ | 15 | Vdc              |
|                                                                                            | 2N2432A |               | 18 |                  |
|                                                                                            | Both    |               | 10 |                  |
| Collector-Emitter Breakdown Current<br>$I_C = 10 \text{ mAdc}$                             | 2N2432  | $V_{(BR)CEO}$ | 30 | Vdc              |
|                                                                                            | 2N2432A |               | 45 |                  |
| Collector-Emitter Cutoff Current<br>$V_{CB} = 25 \text{ Vdc}$<br>$V_{CB} = 40 \text{ Vdc}$ | 2N2432  | $I_{CES}$     |    | $\eta\text{Adc}$ |
|                                                                                            | 2N2432A |               | 10 |                  |
|                                                                                            |         |               | 10 |                  |

# 2N2432, 2N2432A JAN SERIES

## ELECTRICAL CHARACTERISTICS (con't)

| Characteristics | Symbol | Min. | Max. | Unit |
|-----------------|--------|------|------|------|
|-----------------|--------|------|------|------|

## OFF CHARACTERISTICS (con't)

|                                                                                                                                                                                    |           |  |                        |                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--|------------------------|----------------------------------------------------------------------------|
| Collector-Emitter Cutoff Current<br>$V_{CB} = 30 \text{ Vdc}$ 2N2432<br>$V_{CB} = 25 \text{ Vdc}$ 2N2432<br>$V_{CB} = 40 \text{ Vdc}$ 2N2432A<br>$V_{CB} = 45 \text{ Vdc}$ 2N2432A | $I_{CBO}$ |  | 100<br>10<br>100<br>10 | $\mu\text{Adc}$<br>$\eta\text{Adc}$<br>$\mu\text{Adc}$<br>$\eta\text{Adc}$ |
| Emitter-Collector Cutoff Current<br>$V_{EC} = 15 \text{ Vdc}, V_{BC} = 0 \text{ Vdc}$                                                                                              | $I_{ECS}$ |  | 2.0                    | $\eta\text{Adc}$                                                           |
| Emitter-Base Cutoff Current<br>$V_{EB} = 15 \text{ Vdc}$                                                                                                                           | $I_{EBO}$ |  | 2.0                    | $\eta\text{Adc}$                                                           |

## ON CHARACTERISTICS (1)

|                                                                                                                                                                           |               |            |                          |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|--------------------------|------|
| Forward-Current Transfer Ratio<br>$I_C = 10 \mu\text{Adc}, V_{CE} = 5.0 \text{ Vdc}$<br>$I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$                                | $h_{FE}$      | 30<br>80   | 400                      |      |
| Forward-Current Transfer Ratio (Inverted Connection)<br>$I_C = 0.2 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ 2N2432<br>2N2432A                                              | $h_{FE(inv)}$ | 2.0<br>3.0 |                          |      |
| Collector-Emitter Saturation Voltage<br>$I_C = 10 \text{ Vdc}, I_B = 0.5 \text{ mAdc}$                                                                                    | $V_{CE(sat)}$ |            | 0.15                     | mVdc |
| Emitter-Collector Offset Voltage<br>$I_E = 0 \text{ mAdc}, I_B = 200 \mu\text{Adc}$ 2N2432<br>2N2432A<br>$I_E = 0 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$ 2N2432<br>2N2432A | $V_{EC(ofs)}$ |            | 0.5<br>0.4<br>0.1<br>0.7 | mVdc |

## DYNAMIC CHARACTERISTICS

|                                                                                                          |            |     |    |    |
|----------------------------------------------------------------------------------------------------------|------------|-----|----|----|
| Forward Current Transfer Ratio<br>$I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}, f = 20 \text{ MHz}$ | $ h_{fe} $ | 2.0 | 10 |    |
| Output Capacitance<br>$V_{CB} = 0 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$     | $C_{obo}$  |     | 12 | pF |
| Input Capacitance<br>$V_{EB} = 0 \text{ Vdc}, I_C = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$      | $C_{ibo}$  |     | 12 | pF |

(1) Pulse Test: Pulse Width = 300 $\mu$ s, Duty Cycle  $\leq$  2.0%.