

PNP HIGH VOLTAGE SILICON TRANSISTOR

Qualified per MIL-PRF-19500/397

Devices

2N3743

2N4930

2N4931

Qualified Level

JAN, JANTX
JANTXV

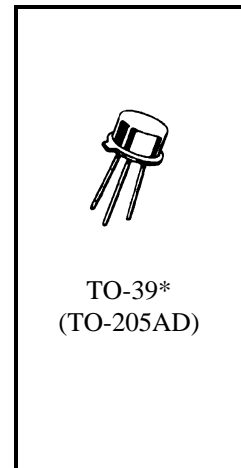
MAXIMUM RATINGS

| Ratings | Sym | 2N3743 | 2N4930 | 2N4931 | Unit |
|--|----------------|-------------------------------------|--------|--------|-------------|
| Collector-Emitter Voltage | V_{CEO} | 300 | 200 | 250 | Vdc |
| Collector-Base Voltage | V_{CBO} | 300 | 200 | 250 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 5.0 | | | Vdc |
| Collector Current | I_C | 200 | | | mAdc |
| Total Power Dissipation | P_T | @ $T_A = +25^{\circ}C$ ¹ | 1.0 | | W |
| | | @ $T_C = +25^{\circ}C$ ² | 5.0 | | W |
| Operating & Storage Junction Temperature Range | T_J, T_{stg} | -65 to +200 | | | $^{\circ}C$ |

THERMAL CHARACTERISTICS

| Characteristics | Symbol | Max. | Unit |
|-------------------------------------|-----------------|------|---------------|
| Thermal Resistance Junction-to-Case | $R_{\theta JC}$ | 35 | $^{\circ}C/W$ |

- 1) Derate linearly 5.71 mW/ $^{\circ}C$ for $T_A > +25^{\circ}C$
- 2) Derate linearly 28.6 mW/ $^{\circ}C$ for $T_C > +25^{\circ}C$



*See appendix A for package outline

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

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

OFF CHARACTERISTICS

| | | | | |
|---|----------------------------|---------------|-------------------|------------|
| Collector-Emitter Breakdown Voltage $I_C = 1.0$ mAdc | 2N3743 2N4930 2N4931 | $V_{(BR)CEO}$ | 300 200 250 | Vdc |
| Collector-Emitter Breakdown Voltage $I_C = 100$ μ Adc | 2N3743 2N4930 2N4931 | $V_{(BR)CBO}$ | 300 200 250 | Vdc |
| Emitter-Base Breakdown Voltage $I_E = 100$ μ Adc | | $V_{(BR)EBO}$ | 5.0 | Vdc |
| Collector-Base Cutoff Current $V_{CB} = 250$ Vdc $V_{CB} = 150$ Vdc $V_{CB} = 200$ Vdc | 2N3743 2N4930 2N4931 | I_{CBO} | 250 250 250 | η Adc |

ELECTRICAL CHARACTERISTICS (con't)

| Characteristics | Symbol | Min. | Max. | Unit |
|---|-----------|------|------|------------------|
| Emitter-Base Cutoff Current $V_{EB} = 4.0 \text{ Vdc}$ | I_{EBO} | | 150 | ηAdc |

ON CHARACTERISTICS ⁽³⁾

| | | | | |
|--|---------------|----------------------------|------------|-----|
| Forward-Current Transfer Ratio $I_C = 0.1 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ $I_C = 1.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ $I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ $I_C = 30 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ $I_C = 50 \text{ mAdc}, V_{CE} = 20 \text{ Vdc}$ | h_{FE} | 30 40 40 50 30 | 200 | |
| Collector-Emitter Saturation Voltage $I_C = 30 \text{ mAdc}, I_B = 3.0 \text{ mAdc}$ $I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$ | $V_{CE(sat)}$ | | 1.2 1.0 | Vdc |
| Base-Emitter Saturation Voltage $I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$ $I_C = 30 \text{ mAdc}, I_B = 3.0 \text{ mAdc}$ | $V_{BE(sat)}$ | | 1.0 1.2 | Vdc |

DYNAMIC CHARACTERISTICS

| | | | | |
|---|------------|-----|-----|----|
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 10 \text{ mAdc}, V_{CE} = 20 \text{ Vdc}, f = 20 \text{ MHz}$ | $ h_{fe} $ | 2.0 | 8.0 | |
| Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 1.0 \text{ kHz}$ | h_{fe} | 30 | 300 | |
| Output Capacitance $V_{CB} = 20 \text{ Vdc}, I_E = 0, f \geq 0.1 \text{ MHz}$ | C_{obo} | | 15 | pF |
| Input Capacitance $V_{EB} = 1.0 \text{ Vdc}, I_C = 0, f \geq 0.1 \text{ MHz}$ | C_{ibo} | | 400 | pF |

SAFE OPERATING AREA

| | |
|--|-----------|
| DC Tests | |
| $T_C = +25^\circ\text{C}, 1 \text{ Cycle}, t \geq 1.0 \text{ s}$ | |
| Test 1 | |
| $V_{CE} = 20 \text{ Vdc}, I_C = 50 \text{ mAdc}$ | All Types |
| Test 2 | |
| $V_{CE} = 100 \text{ Vdc}, I_C = 10 \text{ mAdc}$ | All Types |
| Test 3 | |
| $V_{CE} = 300 \text{ Vdc}, I_C = 3.3 \text{ mAdc}$ | 2N3743 |
| $V_{CE} = 200 \text{ Vdc}, I_C = 5.0 \text{ mAdc}$ | 2N4930 |
| $V_{CE} = 250 \text{ Vdc}, I_C = 4.0 \text{ mAdc}$ | 2N4931 |

(3) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

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