

PNP SILICON SMALL SIGNAL TRANSISTOR

Qualified per MIL-PRF-19500/382

Devices

2N2944A

2N2945A

2N2946A

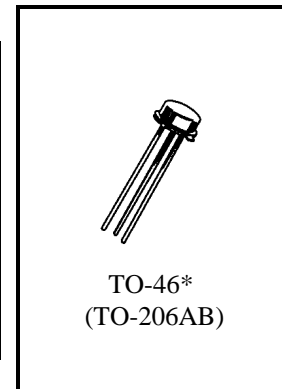
Qualified Level

JAN
JANTX
JANTV

MAXIMUM RATINGS

| Ratings | Sym | 2N2944A | 2N2945A | 2N2946A | Unit |
|--|----------------|-------------|---------|---------|--------------------|
| Collector-Emitter Voltage | V_{CEO} | 10 | 20 | 35 | Vdc |
| Emitter-Collector Voltage | V_{ECO} | 10 | 20 | 35 | Vdc |
| Collector-Base Voltage | V_{CBO} | 15 | 25 | 40 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 15 | 25 | 40 | Vdc |
| Collector Current | I_C | 100 | | | mAdc |
| Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$ | $P_T^{(1)}$ | 400 | | | mW |
| Operating & Storage Junction Temperature Range | T_J, T_{stg} | -65 to +200 | | | $^{\circ}\text{C}$ |

1) Derate linearly 2.30 mW/ $^{\circ}\text{C}$ above $T_A = +25^{\circ}\text{C}$



*See appendix A for package outline

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

| Characteristics | Symbol | Min. | Max. | Unit |
|--|---------------|------|------|-----------------|
| OFF CHARACTERISTICS | | | | |
| Collector-Emitter Breakdown Voltage $I_C = 10 \mu\text{Adc}$ | $V_{(BR)CEO}$ | 10 | | Vdc |
| 2N2944A | | 20 | | |
| 2N2945A 2N2946A | | 35 | | |
| Emitter-Collector Breakdown Voltage $I_E = 10 \mu\text{Adc}$ | $V_{(BR)ECO}$ | 10 | | Vdc |
| 2N2944A | | 20 | | |
| 2N2945A 2N2946A | | 35 | | |
| Collector-Base Cutoff Current $I_C = 10 \mu\text{Adc}, V_{CB} = -15 \text{Vdc}$ | I_{CBO} | 10 | | μAdc |
| $I_C = 10 \mu\text{Adc}, V_{CB} = -25 \text{Vdc}$ | | 10 | | μAdc |
| $I_C = 10 \mu\text{Adc}, V_{CB} = -40 \text{Vdc}$ | | 10 | | μAdc |

2N2944A, 2N2945A, 2N2946A JAN SERIES

ELECTRICAL CHARACTERISTICS (con't)

| Characteristics | Symbol | Min. | Max. | Unit |
|--------------------------------------|-----------|------|------|------------------|
| Emitter-Base Cutoff Current | | | | |
| $V_{EB} = 15 \text{ Vdc}$ 2N2944A | I_{EBO} | | 0.1 | ηAdc |
| $V_{EB} = 25 \text{ Vdc}$ 2N2945A | | 0.2 | | |
| $V_{EB} = 40 \text{ Vdc}$ 2N2946A | | 0.5 | | |

ON CHARACTERISTICS ⁽²⁾

| | | | | |
|---|---------------|-----------------|----------------|---|
| Forward-Current Transfer Ratio | | | | |
| $I_C = 1.0 \text{ mAdc}, V_{CE} = 0.5 \text{ Vdc}$ 2N2944A 2N2945A 2N2946A | h_{FE} | 100 70 50 | | |
| Forward-Current Transfer Ratio | | | | |
| $I_B = 200 \mu\text{Adc}, V_{EC} = -0.5 \text{ Vdc}$ 2N2944A 2N2945A 2N2946A | | $h_{FE(INV)}$ | 50 30 20 | |
| Emitter-Collector Offset Voltage | | | | |
| $I_B = 200 \mu\text{Adc}, I_E = 0$ 2N2944A 2N2945A 2N2946A $I_B = 1.0 \text{ mAdc}, I_E = 0$ 2N2944A 2N2945A 2N2946A $I_B = 2.0 \text{ mAdc}, I_E = 0$ 2N2944A 2N2945A 2N2946A | $V_{EC(OFS)}$ | | | 0.3 0.5 0.8 0.6 1.0 2.0 1.0 1.6 2.5 |

DYNAMIC CHARACTERISTICS

| | | | | | |
|---|--------------|----------|-------------------------------------|-------------|----------------|
| Emitter-Collector On-State Resistance | | | | | |
| $I_B = 100 \mu\text{Adc}, I_E = 0, I_c = 100 \mu\text{Adc (rms)}$ $f = 1.0 \text{ kHz}$ 2N2944A 2N2945A 2N2946A $I_B = 1.0 \text{ mAdc}, I_E = 0, I_c = 100 \mu\text{Adc (rms)}$ $f = 1.0 \text{ kHz}$ 2N2944A 2N2945A 2N2946A | $r_{ec(on)}$ | | 10 12 14 4.0 6.0 8.0 | Ω | |
| Magnitude of Small-Signal Forward Current Transfer Ratio | | | | | |
| $I_C = 1.0 \text{ mAdc}, V_{CE} = 6.0\text{Vdc}, f = 1.0 \text{ MHz}$ 2N2944A 2N2945A 2N2946A | | h_{fe} | 15 10 5.0 | | 55 55 55 |
| Output Capacitance | | | | | |
| $V_{CB} = 6.0 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$ | C_{obo} | | | 10 | pF |
| Input Capacitance | | | | | |
| $V_{EB} = 6.0 \text{ Vdc}, I_C = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$ | C_{ibo} | | 6.0 | pF | |

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



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