

NPN DARLINGTON POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/504

Devices

2N6283

2N6284

Qualified Level

JAN
JANTX
JANTXV

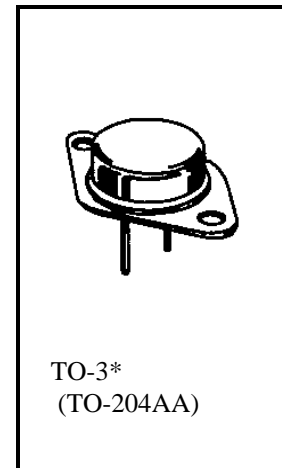
MAXIMUM RATINGS

| Ratings | Symbol | 2N6583 | 2N6284 | Unit |
|--|----------------|-------------------------|--------|-------------|
| Collector-Emitter Voltage | V_{CEO} | 80 | 100 | Vdc |
| Collector-Base Voltage | V_{CBO} | 80 | 100 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 7.0 | | Vdc |
| Base Current | I_B | 0.5 | | Adc |
| Collector Current | I_C | 20 | | Adc |
| Total Power Dissipation ⁽¹⁾ | P_T | @ $T_C = +25^{\circ}C$ | 175 | W |
| | | @ $T_C = +100^{\circ}C$ | 87.5 | 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 | $R_{\theta JC}$ | 0.857 | $^{\circ}C/W$ |

1) Derate linearly @ 1.17 W/ $^{\circ}C$ above $T_C > +25^{\circ}C$



*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 $I_C = 100$ mAdc | 2N6283 2N6284 | $V_{(BR)CEO}$ | 80 100 | Vdc |
| Collector-Emitter Cutoff Current $V_{CE} = 40$ Vdc $V_{CE} = 50$ Vdc | 2N6283 2N6284 | I_{CEO} | 1.0 1.0 | mAdc |
| Collector-Emitter Cutoff Current $V_{CE} = 80$ Vdc, $V_{BE} = 1.5$ Vdc $V_{CE} = 100$ Vdc, $V_{BE} = 1.5$ Vdc | 2N6283 2N6284 | I_{CEX} | 5.0 5.0 | mAdc |
| Emitter-Base Cutoff Current $V_{EB} = 7.0$ Vdc | | I_{EBO} | 2.5 | mAdc |

ELECTRICAL CHARACTERISTICS (con't)

| Characteristics | Symbol | Min. | Max. | Unit |
|---|----------------------|-----------------------|------------|------|
| ON CHARACTERISTICS ⁽²⁾ | | | | |
| Forward-Current Transfer Ratio I _C = 1.0 Adc, V _{CE} = 3.0 Vdc I _C = 10 Adc, V _{CE} = 3.0 Vdc I _C = 20 Adc, V _{CE} = 3.0 Vdc | h _{FE} | 1,500 1,250 500 | 18,000 | |
| Collector-Emitter Saturation Voltage I _C = 20 Adc, I _B = 200 mAcd I _C = 10 Adc, I _B = 40 mAcd | V _{CE(sat)} | | 3.0 2.0 | Vdc |
| Base-Emitter Saturation Voltage I _C = 20 Adc, I _B = 200 mAcd | V _{BE(sat)} | | 4.0 | Vdc |
| Base-Emitter Voltage I _C = 10 Adc, V _{CE} = 3.0Vdc | V _{BE} | | 2.8 | Vdc |

DYNAMIC CHARACTERISTICS

| | | | | |
|--|------------------|-----|-----|----|
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I _C = 10 Adc, V _{CE} = 3.0 Vdc, f = 1.0 MHz | h _{fe} | 8.0 | 80 | |
| Small-Signal Short-Circuit Forward Current Transfer Ratio I _C = 10 Adc, V _{CE} = 3.0 Vdc, f = 1.0 kHz | h _{fe} | 700 | | |
| Output Capacitance V _{CB} = 10 Vdc, I _E = 0, 100 kHz ≤ f ≤ 1.0 MHz | C _{obo} | | 300 | pF |

SWITCHING CHARACTERISTICS

| | | | | |
|---|------------------|--|-----|----|
| Turn-On Time V _{CC} = 30 Vdc; I _C = 10 Adc; I _B = 40 mAcd | t _{on} | | 2.0 | μs |
| Turn-Off Time V _{CC} = 30 Vdc; I _C = 10 Adc; I _{B1} = I _{B2} = 40 mAcd | t _{off} | | 10 | μs |

SAFE OPERATING AREA

| | | | | |
|--|--|--------|--|--|
| DC Tests | | | | |
| T _C = +25°C, 1 Cycle, t = 1.0 s | | | | |
| Test 1 | | | | |
| V _{CE} = 8.75 Vdc, I _C = 20 Adc | | | | |
| Test 2 | | | | |
| V _{CE} = 30 Vdc, I _C = 5.8 Adc | | | | |
| Test 3 | | | | |
| V _{CE} = 80 Vdc, I _C = 100 mAcd | | 2N6283 | | |
| V _{CE} = 100 Vdc, I _C = 100 mAcd | | 2N6284 | | |

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