

## PNP SWITCHING SILICON TRANSISTOR

Qualified per MIL-PRF-19500/396

### Devices

|         |         |        |        |
|---------|---------|--------|--------|
| 2N3762  | 2N3763  | 2N3764 | 2N3765 |
| 2N3762L | 2N3763L |        |        |

### Qualified Level

JAN  
JANTX  
JANTXV

### MAXIMUM RATINGS

| Ratings                                               | Symbol            | 2N3762*<br>2N3764               | 2N3763*<br>2N3765             | Unit               |
|-------------------------------------------------------|-------------------|---------------------------------|-------------------------------|--------------------|
| Collector-Emitter Voltage                             | $V_{CEO}$         | 40                              | 60                            | Vdc                |
| Collector-Base Voltage                                | $V_{CBO}$         | 40                              | 60                            | Vdc                |
| Emitter-Base Voltage                                  | $V_{EBO}$         | 5.0                             |                               | Vdc                |
| Collector Current                                     | $I_C$             | 1.5                             |                               | Adc                |
|                                                       |                   | 2N3762* <sup>1</sup><br>2N3763* | 2N3764 <sup>2</sup><br>2N3765 |                    |
| Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$ | $P_T$             | 1.0                             | 0.5                           | W                  |
| Operating & Storage Junction Temp. Range              | $T_{op}, T_{stg}$ | -55 to +200                     |                               | $^{\circ}\text{C}$ |

### THERMAL CHARACTERISTICS

| Characteristics                     | Symbol          | Max.               |                  | Unit                 |
|-------------------------------------|-----------------|--------------------|------------------|----------------------|
|                                     |                 | 2N3762*<br>2N3763* | 2N3764<br>2N3765 |                      |
| Thermal Resistance Junction-to-Case | $R_{\theta JC}$ | 60                 | 88               | $^{\circ}\text{C/W}$ |

\*Electrical characteristics for "L" suffix devices are identical to the "non L" corresponding devices

1) Derate linearly at 5.71 mW/ $^{\circ}\text{C}$  for  $T_A > +25^{\circ}\text{C}$

2) Derate linearly at 2.86 mW/ $^{\circ}\text{C}$  for  $T_A > +25^{\circ}\text{C}$



TO-39\* (TO-205AD)  
2N3762, 2N3763



TO-5\*  
2N3762L, 2N3763L



TO-46\* (TO-206AB)  
2N3764, 2N3765

\*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 Current<br>$I_C = 10 \text{ mAdc}$                                                                                    | 2N3762, 2N3764<br>2N3763, 2N3765                                     | $V_{(BR)CEO}$ | 40<br>60               | Vdc                                 |
| Collector-Base Cutoff Current<br>$V_{CB} = 20 \text{ Vdc}$<br>$V_{CB} = 30 \text{ Vdc}$<br>$V_{CB} = 40 \text{ Vdc}$<br>$V_{CB} = 60 \text{ Vdc}$ | 2N3762, 2N3764<br>2N3763, 2N3765<br>2N3762, 2N3764<br>2N3763, 2N3765 | $I_{CBO}$     | 100<br>100<br>10<br>10 | $\eta\text{Adc}$<br>$\mu\text{Adc}$ |

**ELECTRICAL CHARACTERISTICS (con't)**

| Characteristics                                                                                                                                      | Symbol    | Min. | Max.            | Unit                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|-----------------|-------------------------------------|
| Collector-Emitter Cutoff Current<br>$V_{EB} = 2.0 \text{ Vdc}$ , $V_{CE} = 20 \text{ Vdc}$<br>$V_{EB} = 2.0 \text{ Vdc}$ , $V_{CE} = 30 \text{ Vdc}$ | $I_{CEX}$ |      | 100<br>100      | $\eta\text{Adc}$                    |
| Emitter-Base Cutoff Current<br>$V_{EB} = 2.0 \text{ Vdc}$<br>$V_{EB} = 5.0 \text{ Vdc}$                                                              | $I_{EBO}$ |      | 200<br>10<br>10 | $\eta\text{Adc}$<br>$\mu\text{Adc}$ |

**ON CHARACTERISTICS (3)**

|                                                                                                                                                                                                                                                                                                                          |               |                                        |                           |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------------|---------------------------|-----|
| Forward-Current Transfer Ratio<br>$I_C = 10 \text{ mAdc}$ , $V_{CE} = 1.0 \text{ Vdc}$<br>$I_C = 150 \text{ mAdc}$ , $V_{CE} = 1.0 \text{ Vdc}$<br>$I_C = 500 \text{ mAdc}$ , $V_{CE} = 1.0 \text{ Vdc}$<br>$I_C = 1.0 \text{ Adc}$ , $V_{CE} = 1.5 \text{ Vdc}$<br>$I_C = 1.5 \text{ Adc}$ , $V_{CE} = 5.0 \text{ Vdc}$ | $h_{FE}$      | 35<br>40<br>40<br>30<br>20<br>30<br>20 | 140<br>120<br>80          |     |
| Collector-Emitter Saturation Voltage<br>$I_C = 10 \text{ mAdc}$ , $I_B = 1.0 \text{ mAdc}$<br>$I_C = 150 \text{ mAdc}$ , $I_B = 15 \text{ mAdc}$<br>$I_C = 500 \text{ mAdc}$ , $I_B = 50 \text{ mAdc}$<br>$I_C = 1.0 \text{ Adc}$ , $I_B = 100 \text{ mAdc}$                                                             | $V_{CE(sat)}$ |                                        | 0.1<br>0.22<br>0.5<br>0.9 | Vdc |
| Base-Emitter Saturation Voltage<br>$I_C = 10 \text{ mAdc}$ , $I_B = 1.0 \text{ mAdc}$<br>$I_C = 150 \text{ mAdc}$ , $I_B = 15 \text{ mAdc}$<br>$I_C = 500 \text{ mAdc}$ , $I_B = 50 \text{ mAdc}$<br>$I_C = 1.0 \text{ Adc}$ , $I_B = 100 \text{ mAdc}$                                                                  | $V_{BE(sat)}$ | 0.9                                    | 0.8<br>1.0<br>1.2<br>1.4  | Vdc |

**DYNAMIC CHARACTERISTICS**

|                                                                                                                          |            |            |            |    |
|--------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|----|
| Forward Current Transfer Ratio, Magnitude<br>$I_C = 50 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ , $f = 100 \text{ MHz}$ | $ h_{fe} $ | 1.8<br>1.5 | 6.0<br>6.0 |    |
| Output Capacitance<br>$V_{CB} = 10 \text{ Vdc}$ , $I_E = 0$ , $100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$              | $C_{obo}$  |            | 25         | pF |
| Input Capacitance<br>$V_{EB} = 0.5 \text{ Vdc}$ , $I_C = 0$ , $100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$              | $C_{ibo}$  |            | 80         | pF |

**SWITCHING CHARACTERISTICS**

|              |                                                        |       |     |                |
|--------------|--------------------------------------------------------|-------|-----|----------------|
| Delay Time   | $V_{CC} = 30 \text{ Vdc}$ , $V_{EB} = 0$ ,             | $t_d$ | 8.0 | $\eta\text{s}$ |
| Rise Time    | $I_C = 1.0 \text{ mAdc}$ , $I_{B1} = 100 \text{ mAdc}$ | $t_r$ | 35  | $\eta\text{s}$ |
| Storage Time | $V_{CC} = 30 \text{ Vdc}$ , $V_{EB} = 0$ ,             | $t_s$ | 80  | $\eta\text{s}$ |
| Fall Time    | $I_C = 1.0 \text{ mAdc}$ , $I_{B1} = 100 \text{ mAdc}$ | $t_f$ | 35  | $\eta\text{s}$ |

(3) Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

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