*New Jersey Semi-Conductor Products, Inc.*

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

(TO-39) (TO-46)
2N3762 2N3764
2N3763 2N3765

**Collector connected to case**

## MAXIMUM RATINGS ($T_A$ = 25°C unless otherwise noted)

| Rating | Symbol | 2N3762 2N3764 | 2N3763 2N3765 | Unit |
|---|---|---|---|---|
| Collector-Base Voltage | $V_{CB}$ | 40 | 60 | Vdc |
| Collector-Emitter Voltage | $V_{CEO}$ | 40 | 60 | Vdc |
| Emitter-Base Voltage | $V_{EB}$ | 5.0 | | Vdc |
| Collector Current | $I_C$ | 1.5 | | Adc |
| | | TO-39 2N3762 2N3763 | TO-46 2N3764 2N3765 | |
| Total Device Dissipation @ $T_A$ = 25°C<br>Derating Factor Above 25°C | $P_D$ | 1.0<br>5.71 | 0.5<br>2.86 | Watt<br>mW/°C |
| Total Device Dissipation @ $T_C$ = 25°C<br>Derating Factor Above 25°C | $P_D$ | 4.0<br>22.8 | 2.0<br>11.4 | Watts<br>mW/°C |
| Thermal Resistance<br>Junction to Ambient<br>Junction to Case | <br>$\theta_{JA}$<br>$\theta_{JC}$ | <br>0.175<br>0.044 | <br>0.35<br>0.088 | °C/mW |
| Junction Temperature, Operating | $T_J$ | +200 | | °C |
| Storage Temperature Range | $T_{stg}$ | -65 to +200 | | °C |

| Characteristic | | Symbol | Min | Max | Unit |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | |
| Collector-Base Breakdown Voltage<br>($I_C$ = 10 μAdc, $I_E$ = 0) | <br>2N3762, 2N3764<br>2N3763, 2N3765 | $BV_{CBO}$ | <br>40<br>60 | <br>—<br>— | Vdc |
| Collector-Emitter Breakdown Voltage[1]<br>($I_C$ = 10 mAdc, $I_B$ = 0) | <br>2N3762, 2N3764<br>2N3763, 2N3765 | $BV_{CEO}$ | <br>40<br>60 | <br>—<br>— | Vdc |
| Emitter-Base Breakdown Voltage<br>($I_E$ = 10 μAdc, $I_C$ = 0) | | $BV_{EBO}$ | 5.0 | — | Vdc |
| Collector Cutoff Current<br>($V_{CE}$ = 20 Vdc, $V_{EB}$ = 2 Vdc)<br>($V_{CE}$ = 20 Vdc, $V_{EB}$ = 2 Vdc, $T_A$ = 100°C)<br>($V_{CE}$ = 30 Vdc, $V_{EB}$ = 2 Vdc)<br>($V_{CE}$ = 30 Vdc, $V_{EB}$ = 2 Vdc, $T_A$ = 100°C) | <br>2N3762, 2N3764<br><br>2N3763, 2N3765<br> | $I_{CEX}$ | <br>—<br>—<br>—<br>— | <br>0.10<br>10<br>0.10<br>10 | μAdc |
| Base Cutoff Current<br>($V_{CE}$ = 20 Vdc, $V_{EB}$ = 2 Vdc)<br>($V_{CE}$ = 30 Vdc, $V_{EB}$ = 2 Vdc) | <br>2N3762, 2N3764<br>2N3763, 2N3765 | $I_{BL}$ | <br>—<br>— | <br>0.2<br>0.2 | μAdc |

## ON CHARACTERISTICS

| | | | | | |
|---|---|---|---|---|---|
| DC Current Gain[1] | | $h_{FE}$ | | | — |
| ($I_C$ = 10 mAdc, $V_{CE}$ = 1 Vdc) | | | 35 | — | |
| ($I_C$ = 150 mAdc, $V_{CE}$ = 1 Vdc) | | | 40 | — | |
| ($I_C$ = 500 mAdc, $V_{CE}$ = 1 Vdc) | | | 35 | — | |
| ($I_C$ = 1 Adc, $V_{CE}$ = 1.5 Vdc) | 2N3762, 2N3764 | | 30 | 120 | |
| | 2N3763, 2N3765 | | 20 | 80 | |
| ($I_C$ = 1.5 Adc, $V_{CE}$ = 5 Vdc) | 2N3762, 2N3764 | | 30 | — | |
| | 2N3763, 2N3765 | | 20 | — | |
| Collector Saturation Voltage[1] | | $V_{CE(sat)}$ | | | Vdc |
| ($I_C$ = 10 mAdc, $I_B$ = 1 mAdc) | | | — | 0.1 | |
| ($I_C$ = 150 mAdc, $I_B$ = 15 mAdc) | | | — | 0.22 | |
| ($I_C$ = 500 mAdc, $I_B$ = 50 mAdc) | | | — | 0.5 | |
| ($I_C$ = 1 Adc, $I_B$ = 100 mAdc) | | | — | 0.9 | |
| Base-Emitter Saturation Voltage[1] | | $V_{BE(sat)}$ | | | Vdc |
| ($I_C$ = 10 mAdc, $I_B$ = 1 mAdc) | | | — | 0.8 | |
| ($I_C$ = 150 mAdc, $I_B$ = 15 mAdc) | | | — | 1.0 | |
| ($I_C$ = 500 mAdc, $I_B$ = 50 mAdc) | | | — | 1.2 | |
| ($I_C$ = 1 Adc, $I_B$ = 100 mAdc) | | | 0.9 | 1.4 | |

## TRANSIENT CHARACTERISTICS

| | | | | | |
|---|---|---|---|---|---|
| Output Capacitance ($V_{CB}$ = 10 Vdc, $I_E$ = 0, f = 100 kHz) | | $C_{ob}$ | — | 15 | pF |
| Input Capacitance ($V_{BE}$ = 0.5 Vdc, $I_C$ = 0, f = 100 kHz) | | $C_{ib}$ | — | 80 | pF |
| High Frequency Current Gain ($I_C$ = 50 mAdc, $V_{CE}$ = 10 Vdc, f = 100 MHz) | 2N3762, 2N3764 | $\lvert h_{fe} \rvert$ | 1.8 | — | — |
| | 2N3763, 2N3765 | | 1.5 | — | |
| Delay Time | ($V_{CC}$ = 30 V, $V_{BE(off)}$ = 2 V, $I_C$ = 1 Amp, $I_{B1}$ = 100 mA) | $t_d$ | — | 8.0 | ns |
| Rise Time | | $t_r$ | — | 35 | ns |
| Storage Time | ($V_{CC}$ = 30 V, $I_C$ = 1 Amp, $I_{B1}$ = $-I_{B2}$ = 100 mA) | $t_s$ | — | 80 | ns |
| Fall Time | | $t_f$ | — | 35 | ns |
| Total Control Charge ($I_C$ = 1 Amp, $I_B$ = 100 mA, $V_{CC}$ = 30 V) | | $Q_T$ | — | 30 | nC |

[1] Pulse Test: PW ≤ 300 μs, Duty Cycle ≤ 2%