

HORIZONTAL DEFLECTION

| Type | V _{CEO} | V _{CBO} | I _C | P _{tot} | Package | V _{CE(sat)} @ I _C / I _B | | | Resistive Switching | | Typical application | | |
|------------|------------------|------------------|----------------|------------------|------------|--|-------|--------|-------------------------|-------------------------|---------------------|-----|-----|
| | (V) | (V) | (A) | (W) | | (V) | (A) | (A) | t _s typ (μs) | t _f typ (μs) | CTV | MON | B&W |
| BU808DFI* | 700 | 1400 | 8 | 52 | ISOWATT218 | 1.6 | 5 | 0.5 | 3.0 ♦ | 0.8 ♦ | x | | |
| BUH315 | 700 | 1500 | 6 | 44 | ISOWATT218 | 1.5 | 3.0 | 0.75 | 1.6 | 0.11 | x | | |
| BUH315D | 700 | 1500 | 6 | 50 | ISOWATT218 | 2.0 | 3.0 | 1.0 | 1.8 | 0.2 | x | | |
| THD218DHI | 700 | 1500 | 7 | 50 | ISOWATT218 | 1.5 | 4.0 | 1.0 | 4.7 ♦ | 0.48 ♦ | x | | |
| THD277HI | 700 | 1500 | 8 | 50 | ISOWATT218 | 0.9 | 4.0 | 1.0 | 2.1 | 0.14 | x | x | |
| BU508AFI | 700 | 1500 | 8 | 50 | ISOWATT218 | 1.0 | 4.5 | 2.0 | 7.0 ♦ | 0.55 ♦ | x | | |
| BU508DFI | 700 | 1500 | 8 | 50 | ISOWATT218 | 1.0 | 4.5 | 2.0 | 7.0 ♦ | 0.55 ♦ | x | | |
| S2000AFI | 700 | 1500 | 8 | 50 | ISOWATT218 | 1.0 | 4.5 | 2.0 | 7.0 ♦ | 0.55 ♦ | x | | |
| THD219HI | 700 | 1500 | 8 | 54 | ISOWATT218 | 1.5 | 6.0 | 1.5 | 2.3 | 0.21 | x | x | |
| BU508A | 700 | 1500 | 8 | 125 | SOT-93 | 1.0 | 4.5 | 2.0 | 7.0 ♦ | 0.55 ♦ | x | | |
| BU508D | 700 | 1500 | 8 | 125 | SOT-93 | 1.0 | 4.5 | 2.0 | 7.0 ♦ | 0.55 ♦ | x | | |
| BU208A | 700 | 1500 | 8 | 150 | TO-3 | 1.0 | 4.5 | 2.0 | 7.0 ♦ | 0.55 ♦ | x | | |
| BU208D | 700 | 1500 | 8 | 150 | TO-3 | 1.0 | 4.5 | 2.0 | 7.0 ♦ | 0.55 ♦ | x | | |
| BUH615D | 700 | 1500 | 8 | 55 | ISOWATT218 | 1.5 | 6.0 | 1.5 | 2.7 | 0.19 | x | | |
| THD215HI | 700 | 1500 | 8 | 55 | ISOWATT218 | 1.3 | 6.0 | 1.2 | 3.3 ♦ | 0.16 ♦ | x | x | |
| BUH1015HI | 700 | 1500 | 14 | 70 | ISOWATT218 | 1.5 | 10 | 2.0 | 1.5 | 0.11 | x | x | |
| BUH1015 | 700 | 1500 | 14 | 160 | SOT-93 | 1.5 | 10 | 2.0 | 1.5 | 0.11 | x | x | |
| BUH1215 | 700 | 1500 | 16 | 200 | SOT-93 | 1.5 | 12 | 2.4 | 1.5 | 0.11 | | x | |
| BUH417 | 700 | 1700 | 7 | 50 | ISOWATT218 | 1.5 | 4.0 | 1.0 | 2.1 | 0.14 | x | | |
| BUH2M20AP▲ | 1200 | 2000 | 0.03 | 40 | TO-220 | 5.0 | 0.002 | 0.0004 | - | - | x | x | |
| BU807* | 150 | 330 | 8 | 60 | TO-220 | 1.5 | 5.0 | 0.05 | 0.55 | 0.2 | | | x |
| BU806FI* | 200 | 400 | 8 | 30 | ISOWATT220 | 1.5 | 5.0 | 0.05 | 0.55 | 0.2 | | | x |
| BU406 | 200 | 400 | 7 | 60 | TO-220 | 1.0 | 5.0 | 0.5 | 1.0 | 0.3 | | | x |
| BU406D | 200 | 400 | 7 | 60 | TO-220 | 1.0 | 5.0 | 0.65 | 1.0 | 0.3 | | | x |
| BU806* | 200 | 400 | 8 | 60 | TO-220 | 1.5 | 5.0 | 0.05 | 0.55 | 0.2 | | | x |
| BU426A | 400 | 900 | 6 | 114 | SOT-93 | 1.5 | 2.5 | 0.5 | 2.5 | 0.2 | | | x |
| BU326A | 400 | 900 | 6 | 75 | TO-3 | 3.0 | 4.0 | 1.25 | 3.5 | 0.5 | | | x |

* Darlington

▲ Dynamic focus

♦ Induct. load

CTV - Colour TV

MON - Monitors

B&W - Black and White TV

SWITCH MODE POWER SUPPLIES

| Type | V _{CEO} | V _{CBO} V _{CES} | I _C | P _{tot} | Package | V _{CE(sat)} @ I _C / I _B | | | Resistive Switching | |
|---------------------------|------------------|--------------------------------------|----------------|------------------|------------|--|------|------|----------------------------|----------------------------|
| | (V) | (V) | (A) | (W) | | (V) | (A) | (A) | t _s typ (μs) | t _f typ (μs) |
| SGSF441 | 400 | 850 | 10 | 95 | SOT-93 | 1.5 | 6.0 | 1.2 | 1.1 | 0.2 |
| SGSIF461 | 400 | 850 | 15 | 57 | ISOWATT218 | 1.5 | 10 | 2.0 | 1.0 | 0.15 |
| SGSF461 | 400 | 850 | 15 | 125 | SOT-93 | 1.5 | 10 | 2.0 | 1.0 | 0.15 |
| BUF405 | 450 | 850 | 7.5 | 80 | TO-220 | 0.5 # | 5.0 | 1.0 | 0.8 ♦ | 0.05 ♦ |
| BUF410FI | 450 | 850 | 15 | 55 | ISOWATT218 | 0.5 # | 10 | 2.0 | 1.9 ♦ | 0.06 ♦ |
| BUF410 | 450 | 850 | 15 | 125 | SOT-93 | 0.5 # | 10 | 2.0 | 1.9 ♦ | 0.06 ♦ |
| BUF420 | 450 | 850 | 30 | 200 | SOT-93 | 0.5 # | 20 | 4.0 | 1.1 ♦ | 0.05 ♦ |
| BUF420M | 450 | 850 | 30 | 200 | TO-3 | 0.5 # | 20 | 4.0 | 1.0 ♦ | 0.05 ♦ |
| BUX87 | 450 | 1000 | 0.5 | 40 | SOT-32 | 1.0 | 0.2 | 0.02 | 4.5 | 0.5 |
| SGSF313PI | 450 | 1000 | 5 | 35 | ISOWATT220 | 0.75 | 2.5 | 0.5 | 1.1 | 0.13 |
| BUF405A | 450 | 1000 | 7.5 | 80 | TO-220 | 0.5 # | 5.0 | 1.0 | 0.8 ♦ | 0.05 ♦ |
| SGSF463 | 450 | 1000 | 12 | 125 | SOT-93 | 1.5 | 7.0 | 1.4 | 1.0 | 0.15 |
| BUF410A | 450 | 1000 | 15 | 125 | SOT-93 | 0.5 # | 10 | 2.0 | 1.9 ♦ | 0.06 ♦ |
| BUF420A | 450 | 1000 | 30 | 200 | SOT-93 | 0.5 # | 20 | 4.0 | 1.0 ♦ | 0.05 ♦ |
| BUL310PI | 500 | 1000 | 5 | 35 | ISOWATT220 | 1.1 | 3.0 | 0.6 | 1.2 ♦ | 0.08 ♦ |
| SGSF324 | 600 | 1200 | 4 | 70 | TO-220 | 1.5 | 1.75 | 0.35 | 1.0 | 0.5 |
| SGSIF344 | 600 | 1200 | 7 | 40 | ISOWATT220 | 1.5 | 3.5 | 0.7 | 1.0 | 0.2 |
| SGSIF444 | 600 | 1200 | 7 | 50 | ISOWATT218 | 1.5 | 3.5 | 0.7 | 1.5 | 0.2 |
| SGSF344 | 600 | 1200 | 7 | 72 | TO-220 | 1.5 | 3.5 | 0.7 | 1.0 | 0.2 |
| SGSF464 | 600 | 1200 | 10 | 125 | SOT-93 | 1.5 | 6.0 | 1.2 | 1.3 | 0.2 |
| SGSIF465 | 600 | 1300 | 10 | 57 | ISOWATT218 | 1.5 | 5.0 | 1.0 | 1.3 | 0.2 |
| SGSF465 | 600 | 1300 | 10 | 125 | SOT-93 | 1.5 | 5.0 | 1.0 | 1.3 | 0.2 |
| BUH315 | 700 | 1500 | 6 | 44 | ISOWATT218 | 1.5 | 3.0 | 0.75 | 1.6 | 0.11 |
| THD277HI | 700 | 1500 | 8 | 50 | ISOWATT218 | 0.9 | 4.0 | 1.0 | 2.1 | 0.14 |

Type

♦ Induct. load

ELECTRONIC LIGHTING

| Type | V _{CEO} | V _{CES} | I _C | P _{tot} | Package | h _{FE} @ I _C / V _{CE} | | | Inductive Switching | | Typical application | | |
|--------------------------|------------------|------------------|----------------|------------------|---------|--|------|-----|---------------------|-------------|---------------------|-------|------------|
| | (V) | (V) | (A) | (W) | | | (A) | (V) | ts typ (μs) | tf typ (μs) | CFL | H. F. | Hal Trasf. |
| BULT118 | 400 | 700 | 2 | 40 | SOT-32 | 8 | 2 | 5 | 0.8 | 0.16 | x | | |
| BULT118D | 400 | 700 | 2 | 40 | SOT-32 | 8 | 2 | 5 | 0.8 | 0.16 | x | | |
| BULK128D | 400 | 700 | 4 | 50 | SOT-82 | 8 | 2 | 5 | 2.0 • | 0.2 • | x | x | |
| BUL128 | 400 | 700 | 4 | 60 | TO-220 | 8 | 2 | 5 | 0.6 | 0.10 | x | x | |
| BUL128D | 400 | 700 | 4 | 60 | TO-220 | 8 | 2 | 5 | 1.8 • | 0.2 • | x | x | |
| BUL57 | 400 | 700 | 7 | 75 | TO-220 | 6 | 4 | 5 | 1.8 | 0.06 | | x | |
| BUL67 | 400 | 700 | 8 | 80 | TO-220 | 15 | 1.5 | 3 | 2.1 | 0.10 | | | x |
| BUL87 | 400 | 700 | 10 | 90 | TO-220 | 8 | 5 | 5 | 2.2 | 0.10 | | | x |
| BULD38-1 | 400 | 800 | 5 | 30 | DPAK | 8 | 2 | 5 | 0.6 | 0.04 | x | | |
| BUL138 | 400 | 800 | 5 | 70 | TO-220 | 8 | 2 | 5 | 0.7 | 0.05 | x | x | |
| BUL381 | 400 | 800 | 5 | 70 | TO-220 | 8 | 2 | 5 | 1.4 / 2.2 • | 0.8 • | x | x | |
| BUL381D | 400 | 800 | 5 | 70 | TO-220 | 8 | 2 | 5 | 1.5 / 2.5 • | 0.8 • | x | x | |
| BUL382 | 400 | 800 | 5 | 70 | TO-220 | 8 | 2 | 5 | 1.7 / 2.5 • | 0.8 • | x | x | |
| BUL382D | 400 | 800 | 5 | 70 | TO-220 | 8 | 2 | 5 | 1.7 / 2.6 • | 0.8 • | x | x | |
| BUL38D | 450 | 800 | 5 | 70 | TO-220 | 8 | 2 | 5 | 1.0 | 0.06 | | | x |
| BULK38D | 450 | 800 | 5 | 70 | SOT-82 | 8 | 2 | 5 | 1.0 | 0.06 | | | x |
| BUL58D | 450 | 800 | 8 | 75 | TO-220 | 5 | 5 | 5 | 1.0 | 0.09 | | | x |
| BUL510 | 450 | 1000 | 8 | 80 | TO-220 | 15 | 1 | 5 | 2.2 | 0.08 | | | x |
| BUL810 | 450 | 1000 | 15 | 125 | SOT-93 | 10 | 5 | 5 | 1.5 | 0.06 | | | x |
| BUL310 | 500 | 1000 | 5 | 75 | TO-220 | 10 # | 3 | 2.5 | 1.2 | 0.08 | | x | |
| BUL213 | 600 | 1300 | 3 | 60 | TO-220 | 16 | 0.35 | 3 | 4.0 | 0.25 | | x | |
| BUL216 | 800 | 1600 | 4 | 70 | TO-220 | 12 | 0.4 | 5 | 2.1 | 0.45 | | x | |
| BUL416 | 800 | 1600 | 6 | 85 | TO-220 | 12 | 0.7 | 5 | 2.3 | 0.65 | | x | |

• Resistive load # Typ CFL - Compact Fluorescent Lamp HF - High Frequency Ballast Hal Trasf. - Electronic transformer for halogen lamps

ELECTRONIC IGNITION

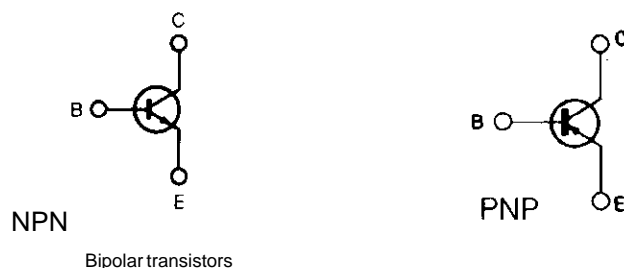
| Type | V _{CEO} | V _{CBO} V _{CES} | I _{C(cont)} | P _{tot} | Package | h _{FE} @ I _C / V _{CE} | | | V _{CE(sat)} @ I _C / I _B | | |
|---------------------------|------------------|--------------------------------------|----------------------|------------------|------------|--|-----|-----|--|-----|------|
| | (V) | (V) | (A) | (W) | | | (A) | (V) | (V) | (A) | (A) |
| ST931ZT | 350 | 350 / 450 | 10 | 125 | TO-220 | 300 | 5 | 10 | 1.8 | 8 | 0.10 |
| BUB941ZT | 350 | 350 / 500 | 15 | 150 | D2PAK | 300 | 5 | 10 | 1.8 | 10 | 0.25 |
| BU941ZTFI | 350 | 350 / 500 | 15 | 55 | ISOWATT220 | 300 | 5 | 10 | 1.8 | 10 | 0.25 |
| BU941ZPFI | 350 | 350 / 500 | 15 | 65 | ISOWATT218 | 300 | 5 | 10 | 1.8 | 10 | 0.25 |
| BU941ZT | 350 | 350 / 500 | 15 | 150 | TO-220 | 300 | 5 | 10 | 1.8 | 10 | 0.25 |
| BU941ZP | 350 | 350 / 500 | 15 | 155 | SOT-93 | 300 | 5 | 10 | 1.8 | 10 | 0.25 |
| BU941Z | 350 | 350 / 500 | 15 | 180 | TO-3 | 300 | 5 | 10 | 1.8 | 10 | 0.25 |
| ST901T | 350 | 500 | 8 | 30 | TO-220 | 500 | 4 | 2 | 1.3 | 2 | 0.02 |
| BU911 | 400 | 450 | 6 | 60 | TO-220 | 20 | 4 | 1.8 | 1.8 | 2.5 | 0.05 |
| BU931PFI | 400 | 500 | 15 | 60 | ISOWATT218 | 300 | 5 | 10 | 1.8 | 8 | 0.1 |
| BU931T | 400 | 500 | 10 | 125 | TO-220 | 300 | 5 | 10 | 1.8 | 8 | 0.1 |
| BUB931T | 400 | 500 | 10 | 125 | D2PAK | 300 | 5 | 10 | 1.8 | 8 | 0.1 |
| BU931P | 400 | 500 | 15 | 135 | SOT-93 | 300 | 5 | 10 | 1.8 | 8 | 0.1 |
| BU931 | 400 | 500 | 15 | 175 | TO-3 | 300 | 5 | 10 | 1.8 | 8 | 0.1 |
| BU941PFI | 400 | 500 | 15 | 65 | ISOWATT218 | 300 | 5 | 10 | 1.8 | 10 | 0.25 |
| BU941T | 400 | 500 | 15 | 150 | TO-220 | 300 | 5 | 10 | 1.8 | 10 | 0.25 |
| BUB941T | 400 | 500 | 15 | 150 | TO-220 | 300 | 5 | 10 | 1.8 | 10 | 0.25 |
| BU941P | 400 | 500 | 15 | 155 | SOT-93 | 300 | 5 | 10 | 1.8 | 10 | 0.25 |
| BU941 | 400 | 500 | 15 | 180 | TO-3 | 300 | 5 | 10 | 1.8 | 10 | 0.25 |

“FASTSWITCH” SERIES (Hollow Emitter, Easy - To - Drive)

| Device | V _{CEO} (V) | V _{CBO} V _{CES} (V) | I _C (A) | P _{tot} (W) | Package NPN | V _{CE(sat)} @ I _C / I _B | | | t _s (μs) | t _f (μs) |
|---------------------------|-------------------------|---|-----------------------|-------------------------|----------------|--|-------|-------|------------------------|------------------------|
| | | | | | | (V) | (A) | (A) | | |
| SGSF465 | 600 | 1300 | 10 | 125 | TO-218 | 1.5 | 5.00 | 1.00 | 3.5 | 0.40 |
| SGSF464 | 600 | 1200 | 10 | 125 | TO-218 | 1.5 | 6.00 | 1.20 | 3.5 | 0.40 |
| SGSIF444 | 600 | 1200 | 7 | 50 | ISOWATT218 | 1.5 | 3.50 | 0.70 | 3.5 | 0.30 |
| SGSIF344 | 600 | 1200 | 7 | 35 | ISOWATT220 | 1.5 | 3.50 | 0.70 | 3.5 | 0.30 |
| SGSF344 | 600 | 1200 | 7 | 85 | TO-220 | 1.5 | 3.50 | 0.70 | 3.5 | 0.30 |
| SGSF324 | 600 | 1200 | 4 | 70 | TO-220 | 1.5 | 1.75 | 0.35 | 4.5 | 0.35 |
| BUF420M | 450 | 850 | 30 | 200 | TO-3 | 0.5 | 20.00 | 4.00 | 2.0 | 0.1 |
| BUF460AV | 450 | 1000 | 80 | 300 | ISOTOP | 2.0 | 60.00 | 12.00 | 2.0 | 0.10 |
| BUF420A | 450 | 1000 | 30 | 200 | TO-218 | 0.5 | 20.00 | 4.00 | 2.0 | 0.10 |
| BUF410A | 450 | 1000 | 15 | 125 | TO-218 | 0.5 | 10.00 | 2.00 | 1.8 | 0.10 |
| SGSF463 | 450 | 1000 | 12 | 125 | TO-218 | 1.5 | 7.00 | 1.40 | 2.3 | 0.50 |
| BUF405A | 450 | 1000 | 7.5 | 80 | TO-220 | 2.0 | 5.00 | 1.00 | 1.8 | 0.10 |
| BUX87 | 450 | 1000 | 0.5 | 40 | SOT-32 | 1.0 | 0.2 | 0.02 | 4.5 | 0.5 |
| SGSF313PI | 450 | 1000 | 5 | 35 | ISOWATT220 | 0.75 | 2.5 | 0.5 | 1.1 | 0.13 |
| BUL310PI | 500 | 1000 | 5 | 35 | ISOWATT220 | 1.1 | 3.0 | 0.6 | 1.2 | 0.08 |
| BUF420 | 450 | 850 | 30 | 200 | TO-218 | 0.5 | 20.00 | 4.00 | 2.0 | 0.10 |
| BUF410 | 450 | 850 | 15 | 125 | TO-218 | 0.5 | 10.00 | 2.00 | 1.8 | 0.10 |
| BUF410FI | 450 | 850 | 15 | 60 | ISOWATT218 | 0.5 | 10.00 | 2.00 | 1.8 | 0.10 |
| BUF405 | 450 | 850 | 7.5 | 80 | TO-220 | 2.0 | 5.00 | 1.00 | 1.8 | 0.10 |
| SGSIF461 | 400 | 850 | 15 | 65 | ISOWATT218 | 1.5 | 10.00 | 2.00 | 2.3 | 0.50 |
| SGSF461 | 400 | 850 | 15 | 125 | TO-218 | 1.5 | 10.00 | 2.00 | 2.3 | 0.50 |
| SGSF441 | 400 | 850 | 10 | 95 | TO-218 | 1.5 | 6.00 | 1.20 | 2.5 | 0.35 |

SWITCHING TRANSISTORS AND DARLINGTONS

Internal schematic diagrams



| Device | V_{CE0} (V) | V_{CBO} V_{CES} (V) | I_c (A) | P_{tot} (W) | Package | $V_{CE(sat)}$ @ I_c / I_B | | | t_s (μs) | t_f (μs) |
|---------------------------|------------------|-------------------------------|--------------|------------------|------------|-----------------------------|-----|------|----------------------|----------------------|
| | | | | | | (V) | (A) | (A) | | |
| BUX98C | 700 | 1200 | 30 | 250 | TO-3 | 1.5 | 12 | 3.00 | 6.0 | 0.60 |
| BUV48CFI | 700 | 1200 | 15 | 50 | ISOWATT218 | 1.5 | 6 | 1.50 | 6.0 | 0.60 |
| BUV48C | 700 | 1200 | 15 | 120 | TO-218 | 1.5 | 6 | 1.50 | 6.0 | 0.60 |
| BUX48C | 700 | 1200 | 15 | 175 | TO-3 | 1.5 | 6 | 1.50 | 6.0 | 0.60 |
| BUV48B | 600 | 1200 | 15 | 150 | TO-218 | 3.0 | 10 | 4.00 | 3.0 | 0.70 |
| ESM6045AV | 450 | 1000 | 72 | 250 | ISOTOP | 2.0 | 60 | 2.40 | 6.0 | 0.60 |
| STF6045AV | 450 | 1000 | 72 | 250 | ISOTOP | 2.0 | 60 | 2.40 | 6.0 | 0.40 |
| BUV298AV | 450 | 1000 | 50 | 250 | ISOTOP | 2.0 | 32 | 6.40 | 4.5 | 0.40 |
| ESM4045AV | 450 | 1000 | 36 | 150 | ISOTOP | 2.0 | 30 | 1.20 | 5.0 | 0.60 |
| BUX98A | 450 | 1000 | 30 | 250 | TO-3 | 1.5 | 16 | 3.20 | 4.5 | 0.40 |
| BUV98AV | 450 | 1000 | 30 | 150 | ISOTOP | 2.5 | 16 | 3.20 | 5.0 | 0.40 |
| BUX98AP | 450 | 1000 | 24 | 200 | TO-218 | 1.2 | 16 | 3.20 | 4.5 | 0.40 |
| BUX48A | 450 | 1000 | 15 | 175 | TO-3 | 1.5 | 10 | 2.00 | 5.0 | 0.40 |
| BUV48A | 450 | 1000 | 15 | 125 | TO-218 | 1.5 | 10 | 2.00 | 5.0 | 0.40 |
| BUV48AFI | 450 | 1000 | 15 | 50 | ISOWATT218 | 1.5 | 8 | 1.60 | 5.0 | 0.40 |
| BUV47A | 450 | 1000 | 9 | 120 | TO-218 | 1.5 | 5 | 1.00 | 4.0 | 0.40 |
| BUV47AFI | 450 | 1000 | 9 | 50 | ISOWATT218 | 1.5 | 5 | 1.00 | 4.0 | 0.40 |
| BUT12AFI | 450 | 1000 | 8 | 50 | ISOWATT220 | 1.5 | 5 | 1.00 | - | - |
| BUV46A | 450 | 1000 | 5 | 70 | TO-220 | 1.5 | 2 | 0.40 | 3.0 | 0.80 |
| BUT11A | 450 | 1000 | 5 | 83 | TO-220 | 1.5 | 2.5 | 0.50 | 4.0 | 0.80 |
| BUX87 | 450 | 1000 | 0.5 | 40 | SOT-32 | 1.0 | 0.2 | 0.02 | 4.5 | 0.35 |
| BUY69A | 400 | 1000 | 10 | 100 | TO-3 | 3.3 | 8 | 2.50 | 1.7 | 0.30 |
| BUV298V | 450 | 850 | 60 | 250 | ISOTOP | 2.0 | 40 | 8.00 | 4.5 | 0.40 |
| BUX348 | 450 | 850 | 45 | 300 | TO-3 | 0.9 | 30 | 6.00 | 4.5 | 0.40 |
| BUX98P | 450 | 850 | 30 | 200 | TO-218 | 0.9 | 20 | 4.00 | 4.5 | 0.40 |
| BUV98V | 450 | 850 | 30 | 150 | ISOTOP | 2.5 | 20 | 4.00 | 5.0 | 0.40 |
| BUX98 | 400 | 850 | 30 | 250 | TO-3 | 1.5 | 20 | 4.00 | 3.0 | 0.80 |
| BUX48 | 400 | 850 | 15 | 175 | TO-3 | 1.5 | 10 | 2.00 | 5.0 | 0.40 |
| 2N6547 | 400 | 850 | 15 | 175 | TO-3 | 1.5 | 10 | 2.00 | 0.0 | 0.00 |
| BUV48FI | 400 | 850 | 15 | 50 | ISOWATT218 | 1.5 | 10 | 2.00 | 5.0 | 0.40 |
| MJE13007A | 400 | 850 | 8 | 80 | TO-220 | 1.5 | 5 | 1.00 | 3.0 | 0.70 |
| BUV46FI | 400 | 850 | 5 | 30 | ISOWATT220 | 1.5 | 2.5 | 0.50 | 3.0 | 0.80 |
| BUV46 | 400 | 850 | 5 | 70 | TO-220 | 1.5 | 2.5 | 0.50 | 3.0 | 0.80 |
| BUX80 | 400 | 800 | 10 | 100 | TO-3 | 3.0 | 8 | 2.50 | 3.5 | 0.50 |
| MJE13009 | 400 | 700 | 12 | 100 | TO-220 | 1.5 | 8 | 1.60 | 3.0 | 0.70 |
| STI3007 | 400 | 700 | 8 | 80 | TO-220 | 1.5 | 5 | 1.00 | 3.0 | 0.70 |
| STI3005 | 400 | 700 | 4 | 75 | TO-220 | 1.0 | 4 | 1.00 | 3.5 | 0.90 |
| STI3003 | 400 | 700 | 1.5 | 50 | SOT-32 | 1.0 | 1 | 0.25 | 1.8 | 0.40 |
| SGS13003 | 400 | 700 | 1.5 | 50 | SOT-82 | 3.0 | 1.5 | 0.50 | 2.5 | 0.50 |
| STF8045DV | 450 | 600 | 100 | 270 | ISOTOP | 2.0 | | 4.90 | 5.5 | 0.50 |
| ESM6045DV | 450 | 600 | 84 | 250 | ISOTOP | 2.0 | 70 | 4.00 | 5.5 | 0.50 |
| ESM5045DV | 450 | 600 | 60 | 175 | ISOTOP | 2.0 | 50 | 2.80 | 5.0 | 0.50 |

* PNP Products

SWITCHING TRANSISTORS AND DARLINGTONS (cont'd)

| Device | V _{CEO} (V) | V _{CBO} V _{CES} (V) | I _C (A) | P _{tot} (W) | Package | V _{CE(sat)} @ I _C / I _B | | | t _s (μs) | t _f (μs) |
|---------------------------|-------------------------|---|-----------------------|-------------------------|---------|--|------|-------|------------------------|------------------------|
| | | | | | | (V) | (A) | (A) | | |
| ESM4045DV | 450 | 600 | 42 | 150 | ISOTOP | 2.0 | 35 | 2.00 | 4.5 | 0.50 |
| ESM3045DV | 450 | 600 | 24 | 125 | ISOTOP | 2.0 | 20 | 1.20 | 4.0 | 0.40 |
| BUT13P | 400 | 600 | 28 | 150 | TO-218 | 3.0 | 22 | 2.20 | 1.5 | 0.60 |
| BU810 | 400 | 600 | 7 | 75 | TO-220 | 2.5 | 4 | 0.20 | - | - |
| BU801 | 400 | 600 | 3 | 40 | SOT-32 | 3.0 | 2 | 0.20 | 1.0 | 0.50 |
| MJ10005 | 400 | 500 | 20 | 175 | TO-3 | 1.9 | 10 | 0.40 | 1.5 | 0.50 |
| TIP50 | 400 | 500 | 1 | 40 | TO-220 | 1.0 | 1 | 0.20 | - | - |
| MJE5852* | 400 | 450 | 8 | 80 | TO-220 | 2.0 | 4 | 1.00 | - | - |
| TIP49 | 350 | 450 | 1 | 40 | TO-220 | 1.0 | 1 | 0.20 | - | - |
| 2N3439 | 350 | 450 | 1 | 10 | TO-39 | 0.5 | 0.05 | 4 mA | - | - |
| BUT232V | 300 | 400 | 140 | 300 | ISOTOP | 1.9 | 70 | 7.00 | 5.0 | 0.40 |
| ESM3030DV | 300 | 400 | 100 | 225 | ISOTOP | 2.2 | 85 | 2.40 | 3.5 | 0.60 |
| BUT32V | 300 | 400 | 80 | 250 | ISOTOP | 1.9 | 40 | 4.00 | 3.0 | 0.40 |
| ESM2030DV | 300 | 400 | 67 | 150 | ISOTOP | 2.2 | 56 | 1.60 | 3.0 | 0.60 |
| BUT102 | 300 | 400 | 50 | 300 | TO-3 | 0.9 | 40 | 4.00 | 3.0 | 0.40 |
| BUT92A | 300 | 400 | 50 | 250 | TO-3 | 0.9 | 30 | 3.00 | 3.0 | 0.40 |
| BUT72I | 300 | 400 | 40 | 115 | TOP-3I | 0.9 | 30 | 3.00 | 3.0 | 0.40 |
| TIP48 | 300 | 400 | 1 | 40 | TO-220 | 1.0 | 1 | 0.20 | - | - |
| BUV28 | 200 | 400 | 12 | 85 | TO-220 | 1.5 | 6 | 0.60 | 1.5 | 0.25 |
| 2N5657 | 350 | 375 | 0.5 | 20 | SOT-32 | 2.5 | 0.25 | 0.03 | - | - |
| 2N5416* | 300 | 350 | 1 | 10 | TO-39 | 2.5 | 0.05 | 0.01 | - | - |
| BUR52 | 250 | 350 | 60 | 350 | TO-3 | 1.8 | 25 | 2.00 | 2.0 | 0.60 |
| BUW52I | 250 | 350 | 20 | 75 | TOP-3I | 0.9 | 8 | 0.80 | 1.6 | 0.30 |
| TIP47 | 250 | 350 | 1 | 40 | TO-220 | 1.0 | 1 | 0.20 | - | - |
| MJE3440 | 250 | 350 | 0.3 | 15 | SOT-32 | 0.5 | 0.05 | 4 mA | - | - |
| MJE350* | 300 | 300 | 0.5 | 20 | SOT-32 | - | - | - | - | - |
| MJE340 | 300 | 300 | 0.5 | 20 | SOT-32 | - | - | - | - | - |
| BUX22 | 250 | 300 | 40 | 350 | TO-3 | 1.5 | 20 | 2.50 | 2.0 | 0.50 |
| BUV22 | 250 | 300 | 40 | 250 | TO-3 | 0.6 | 25 | 2.50 | 2.0 | 0.50 |
| BUX12 | 250 | 300 | 20 | 150 | TO-3 | 1.0 | 5 | 0.50 | 2.0 | 0.50 |
| 2N3440 | 250 | 300 | 1 | 10 | TO-39 | 0.5 | 0.05 | 4 mA | - | - |
| BUR51 | 200 | 300 | 60 | 350 | TO-3 | 1.0 | 30 | 2.00 | 2.0 | 0.60 |
| BUV61 | 200 | 300 | 50 | 250 | TO-3 | 1.2 | 40 | 5.00 | 2.4 | 0.25 |
| BUV21 | 200 | 250 | 40 | 250 | TO-3 | 0.6 | 12 | 1.20 | 1.8 | 0.40 |
| BUX41 | 200 | 250 | 15 | 120 | TO-3 | 1.6 | 8 | 1.00 | 1.7 | 0.80 |
| BUY49S | 200 | 250 | 3 | 10 | TO-39 | 0.2 | 0.5 | 0.05 | - | - |
| BUW50 | 125 | 250 | 25 | 150 | TO-218 | 0.9 | 20 | 2.00 | 1.7 | 0.30 |
| BUV50 | 125 | 250 | 25 | 150 | TO-3 | 1.2 | 24 | 3.00 | 1.7 | 0.30 |
| BUV40 | 125 | 250 | 20 | 120 | TO-3 | 1.2 | 15 | 1.90 | 1.7 | 0.30 |
| BUW90 | 125 | 250 | 20 | 125 | TO-218 | 0.9 | 11 | 1.10 | 1.7 | 0.30 |
| BUV27 | 120 | 240 | 12 | 85 | TO-220 | 0.7 | 4 | 0.40 | 2.0 | 0.15 |
| BUX41N | 160 | 220 | 18 | 120 | TO-3 | 1.6 | 12 | 1.50 | 1.5 | 0.80 |
| 2N5415* | 200 | 200 | 1 | 10 | TO-39 | 2.5 | 0.05 | 0.01 | - | - |
| BUY48 | 170 | 200 | 7 | 10 | TO-39 | 1.0 | 5 | 0.50 | - | - |
| BUT230V | 125 | 200 | 200 | 300 | ISOTOP | 1.5 | 200 | 20.00 | 2.0 | 0.30 |
| BUT30V | 125 | 200 | 100 | 250 | ISOTOP | 1.5 | 100 | 10.00 | 2.0 | 0.20 |
| BUR50S | 125 | 200 | 70 | 350 | TO-3 | 1.0 | 35 | 2.00 | 2.0 | 2.00 |
| BUT90 | 125 | 200 | 50 | 250 | TO-3 | 0.9 | 70 | 7.00 | 2.0 | 0.30 |
| BUT100 | 125 | 200 | 50 | 300 | TO-3 | 0.9 | 100 | 10.00 | 2.0 | 0.20 |
| BUT70 | 125 | 200 | 40 | 200 | TO-218 | 0.9 | 70 | 7.00 | 1.8 | 0.20 |
| BUV26 | 90 | 180 | 14 | 85 | TO-220 | 1.5 | 12 | 1.20 | 2.0 | 0.15 |
| BUX20 | 125 | 160 | 50 | 350 | TO-3 | 1.2 | 50 | 5.00 | 1.2 | 0.30 |
| BUV20 | 125 | 160 | 50 | 250 | TO-3 | 0.6 | 25 | 2.50 | 1.2 | 0.30 |
| BUX10 | 125 | 160 | 25 | 150 | TO-3 | 0.6 | 10 | 1.00 | 1.2 | 0.30 |
| BUX40 | 125 | 160 | 20 | 120 | TO-3 | 1.6 | 15 | 1.88 | 1.0 | 0.40 |
| BUX10P | 125 | 160 | 10 | 106 | TO-218 | 0.6 | 10 | 1.00 | 1.2 | 0.30 |
| BUW89 | 90 | 160 | 25 | 125 | TO-218 | 0.9 | 15 | 1.50 | 1.7 | 0.30 |
| BUW49 | 80 | 160 | 30 | 150 | TO-218 | 1.2 | 30 | 3.00 | 1.7 | 0.50 |
| ESM2012DV | 125 | 150 | 120 | 175 | ISOTOP | 2.0 | 100 | 1.00 | 2.0 | 0.30 |

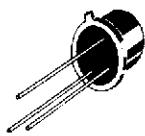
* PNP Products

SWITCHING TRANSISTORS AND DARLINGTONS (cont'd)

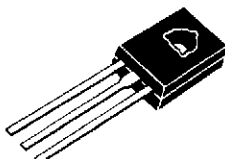
| Device | V _{CEO} (V) | V _{CBO} V _{CES} (V) | I _C (A) | P _{tot} (W) | Package | V _{CE(sat)} @ I _C / I _B | | | t _s (μs) | t _f (μs) |
|------------------------|-------------------------|---|-----------------------|-------------------------|---------|--|-----|------|------------------------|------------------------|
| | | | | | | (V) | (A) | (A) | | |
| 2N5038 | 90 | 150 | 20 | 140 | TO-3 | 2.5 | 20 | 5.00 | 1.5 | 0.50 |
| 2N5682 | 120 | 120 | 1 | 10 | TO-39 | 1.0 | 0.5 | 0.05 | - | - |
| 2N5680* | 120 | 120 | 1 | 10 | TO-39 | 1.0 | 0.5 | 0.05 | - | - |
| BDY90 | 100 | 120 | 10 | 60 | TO-3 | 1.5 | 10 | 1.00 | 1.3 | 0.20 |
| BUV18 | 60 | 120 | 80 | 250 | TO-3 | 1.5 | 80 | 8.00 | 1.1 | 0.25 |
| BUW48 | 60 | 120 | 30 | 150 | TO-218 | 1.4 | 40 | 4.00 | 1.7 | 0.50 |
| BUW38 | 60 | 120 | 30 | 150 | TO-3 | 1.4 | 40 | 4.00 | 1.7 | 0.50 |
| BFX34 | 60 | 120 | 5 | 5 | TO-39 | 1.0 | 5 | 0.50 | - | - |
| 2N5339 | 100 | 100 | 5 | 6 | TO-39 | 1.2 | 5 | 0.50 | 2.0 | 0.20 |
| 2N5681 | 100 | 100 | 1 | 10 | TO-39 | 1.0 | 0.5 | 0.05 | - | - |
| 2N5154 | 80 | 100 | 5 | 10 | TO-39 | 1.5 | 5 | 0.50 | - | - |
| BSS44* | 60 | 65 | 5 | 5 | TO-39 | 1.0 | 5 | 0.50 | - | - |

* PNP Products

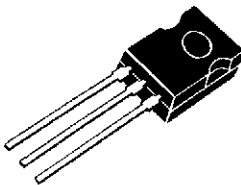
POWER BIPOLAR



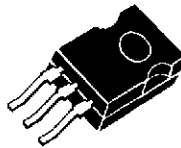
TO - 39



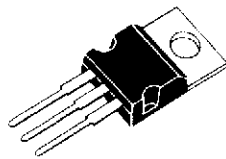
TO - 126/SOT - 32



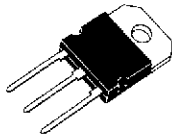
SOT - 82



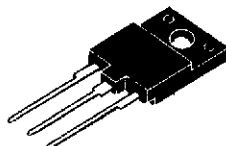
SOT - 194



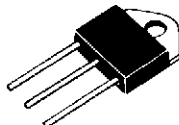
TO - 220



SOT - 93



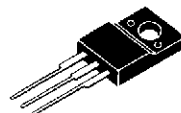
ISOWATT218
(Fully Isolated)



TO - 31



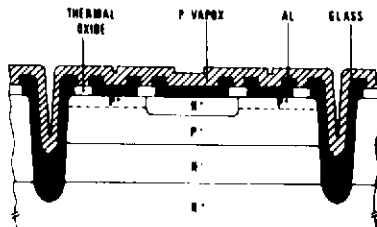
TO - 3



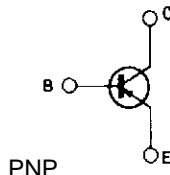
ISOWATT220
(Fully Isolated)

Epitaxial base – $I_{CM} : 1 \rightarrow 3\text{ A}$, $V_{CE0} : 22 \rightarrow 100\text{ V}$

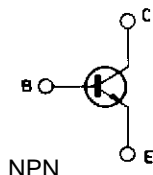
NPN and PNP types (perfect complementary pairs)
Medium V_{CE0} range (22 to 100 V)
Medium switching speed
Medium f_T (2 to 20 MHz)
High ruggedness



Internal schematic diagrams



PNP



NPN

GENERAL PURPOSE TRANSISTORS

| Device | V_{CE0} | V_{CBO} V_{CES} | I_C | P_{tot} | Package | h_{FE} | $I_C / V_{CE(sat)}$ | | $V_{CE} @ I_C / I_B$ | | |
|---------|-----------|------------------------|-------|-----------|---------|----------|---------------------|-----|----------------------|------|------|
| | (V) | (V) | (A) | (W) | | | (A) | (V) | (V) | (A) | (mA) |
| TIP33C | 100 | 140 | 10 | 80 | TO-218 | 20 | 3.0 | 4 | 1.0 | 3.0 | 300 |
| TIP34C* | 100 | 140 | 10 | 80 | TO-218 | 20 | 3.0 | 4 | 1.0 | 3.0 | 300 |
| BD242C* | 100 | 115 | 3 | 40 | TO-220 | 25 | 1.0 | 4 | 1.2 | 3.0 | 600 |
| BD241C | 100 | 115 | 3 | 40 | TO-220 | 25 | 1.0 | 4 | 1.2 | 3.0 | 600 |
| BD239C | 100 | 115 | 2 | 30 | TO-220 | 15 | 1.0 | 4 | 0.7 | 1.0 | 200 |
| BD240C* | 100 | 115 | 2 | 30 | TO-220 | 15 | 1.0 | 4 | 0.7 | 1.0 | 200 |
| TIP35C | 100 | 100 | 25 | 125 | TO-218 | 25 | 1.5 | 4 | 1.8 | 15.0 | 1500 |
| TIP36C* | 100 | 100 | 25 | 125 | TO-218 | 25 | 1.5 | 4 | 1.8 | 15.0 | 1500 |
| BDW52C* | 100 | 100 | 15 | 125 | TO-3 | 20 | 5.0 | 4 | 1.0 | 5.0 | 500 |
| BD912* | 100 | 100 | 15 | 90 | TO-220 | 15 | 5.0 | 4 | 1.0 | 5.0 | 500 |
| BDW51C | 100 | 100 | 15 | 125 | TO-3 | 20 | 5.0 | 4 | 1.0 | 5.0 | 500 |
| BD911 | 100 | 100 | 15 | 90 | TO-220 | 15 | 5.0 | 4 | 1.0 | 5.0 | 500 |
| BD711 | 100 | 100 | 12 | 75 | TO-220 | 15 | 4.0 | 4 | 1.0 | 4.0 | 400 |
| BD712* | 100 | 100 | 12 | 75 | TO-220 | 15 | 4.0 | 4 | 1.0 | 4.0 | 400 |
| TIP42C* | 100 | 100 | 6 | 65 | TO-220 | 15 | 3.0 | 4 | 1.5 | 6.0 | 600 |
| TIP41C | 100 | 100 | 6 | 65 | TO-220 | 15 | 3.0 | 4 | 1.5 | 6.0 | 600 |
| BD243C | 100 | 100 | 6 | 65 | TO-220 | 15 | 3.0 | 4 | 1.5 | 6.0 | 1000 |
| BD244C* | 100 | 100 | 6 | 65 | TO-220 | 15 | 3.0 | 4 | 1.5 | 6.0 | 1000 |
| TIP31C | 100 | 100 | 3 | 40 | TO-220 | 25 | 1.0 | 4 | 1.2 | 3.0 | 375 |
| TIP32C* | 100 | 100 | 3 | 40 | TO-220 | 25 | 1.0 | 4 | 1.2 | 3.0 | 375 |
| TIP29C | 100 | 100 | 1 | 30 | TO-220 | 15 | 1.0 | 4 | 0.7 | 1.0 | 125 |
| TIP30C* | 100 | 100 | 1 | 30 | TO-220 | 15 | 1.0 | 4 | 0.7 | 1.0 | 125 |

* PNP Products

GENERAL PURPOSE TRANSISTORS (cont'd)

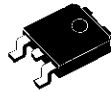
| Device | V _{CEO} | V _{CBO} V _{CES} | I _C | P _{tot} | Package | h _{FE} I _C / V _{CE(sat)} | | | V _{CE} @ I _C / I _B | | |
|---------------------------|------------------|--------------------------------------|----------------|------------------|------------|---|------|-----|---|------|------|
| | (V) | (V) | (A) | (W) | | | (A) | (V) | (V) | (A) | (mA) |
| MJ802 | 90 | 100 | 30 | 200 | TO-3 | 25 | 7.5 | 2 | 0.8 | 7.5 | 750 |
| MJ4502* | 90 | 100 | 30 | 200 | TO-3 | 25 | 7.5 | 2 | 0.8 | 7.5 | 750 |
| 2N3792* | 80 | 100 | 10 | 150 | TO-3 | 30 | 3.0 | 2 | 0.8 | 5.0 | 500 |
| MJE182 | 80 | 100 | 3 | 12.5 | SOT-32 | 12 | 1.5 | 1 | 0.9 | 1.5 | 150 |
| MJE172* | 80 | 100 | 3 | 12.5 | SOT-32 | 12 | 1.5 | 1 | 0.9 | 1.5 | 150 |
| BD380* | 80 | 100 | 2 | 25 | SOT-32 | 30 | 0.5 | 4 | - | - | - |
| BD238* | 80 | 100 | 2 | 25 | SOT-32 | 25 | 1.0 | 2 | 0.6 | 1.0 | 100 |
| BD237 | 80 | 100 | 2 | 25 | SOT-32 | 25 | 1.0 | 2 | 0.6 | 1.0 | 100 |
| MJ2955* | 60 | 100 | 15 | 115 | TO-3 | 20 | 4.0 | 4 | 1.1 | 4.0 | 400 |
| 2N3055 | 60 | 100 | 15 | 115 | TO-3 | 20 | 4.0 | 4 | 1.1 | 4.0 | 400 |
| BDX18* | 60 | 100 | 7 | 117 | TO-3 | 20 | 4.0 | 4 | - | - | - |
| 2N6488 | 90 | 90 | 15 | 75 | TO-220 | 20 | 5.0 | 4 | 1.3 | 5.0 | 500 |
| BD241B | 80 | 90 | 3 | 40 | TO-220 | 25 | 1.0 | 4 | 1.2 | 3.0 | 600 |
| BD242B* | 80 | 90 | 3 | 40 | TO-220 | 25 | 1.0 | 4 | 1.2 | 3.0 | 600 |
| MJ14003* | 80 | 80 | 60 | 300 | TO-3 | 5 | 60.0 | 3 | 3.0 | 60.0 | 12 |
| MJ14002 | 80 | 80 | 60 | 300 | TO-3 | 5 | 60.0 | 3 | 3.0 | 60.0 | 12 |
| 2N5884* | 80 | 80 | 25 | 200 | TO-3 | 35 | 3.0 | 4 | 1.0 | 15.0 | 1500 |
| 2N5886 | 80 | 80 | 25 | 200 | TO-3 | 35 | 3.0 | 4 | 1.0 | 15.0 | 1500 |
| TIP35B | 80 | 80 | 25 | 125 | TO-218 | 25 | 1.5 | 4 | 1.8 | 15.0 | 1500 |
| TIP36B* | 80 | 80 | 25 | 125 | TO-218 | 25 | 1.5 | 4 | 1.8 | 15.0 | 1500 |
| BD909 | 80 | 80 | 15 | 90 | TO-220 | 15 | 5.0 | 4 | 1.0 | 5.0 | 500 |
| BD910* | 80 | 80 | 15 | 90 | TO-220 | 15 | 5.0 | 4 | 1.0 | 5.0 | 500 |
| BD710* | 80 | 80 | 12 | 75 | TO-220 | 15 | 4.0 | 4 | 1.0 | 4.0 | 400 |
| BD709 | 80 | 80 | 12 | 75 | TO-220 | 15 | 4.0 | 4 | 1.0 | 4.0 | 400 |
| D44H11 | 80 | 80 | 10 | 50 | TO-220 | 40 | 4.0 | 1 | 1.0 | 8.0 | 400 |
| BD537 | 80 | 80 | 8 | 50 | TO-220 | 15 | 2.0 | 2 | 0.8 | 2.0 | 200 |
| BD538* | 80 | 80 | 8 | 50 | TO-220 | 15 | 2.0 | 2 | 0.8 | 2.0 | 200 |
| BD243B | 80 | 80 | 6 | 65 | TO-220 | 15 | 3.0 | 4 | 1.5 | 6.0 | 1000 |
| TIP41B | 80 | 80 | 6 | 65 | TO-220 | 15 | 3.0 | 4 | 1.5 | 6.0 | 600 |
| TIP42B* | 80 | 80 | 6 | 65 | TO-220 | 15 | 3.0 | 4 | 1.5 | 6.0 | 600 |
| BD244B* | 80 | 80 | 6 | 65 | TO-220 | 15 | 3.0 | 4 | 1.5 | 6.0 | 1000 |
| BD441 | 80 | 80 | 4 | 36 | SOT-32 | 15 | 2.0 | 1 | 0.8 | 2.0 | 200 |
| BD442* | 80 | 80 | 4 | 36 | SOT-32 | 15 | 2.0 | 1 | 0.8 | 2.0 | 200 |
| 2N5192 | 80 | 80 | 4 | 40 | SOT-32 | 20 | 1.5 | 2 | 0.6 | 1.5 | 150 |
| 2N5195* | 80 | 80 | 4 | 40 | SOT-32 | 20 | 1.5 | 2 | 0.6 | 1.5 | 150 |
| BD179 | 80 | 80 | 3 | 30 | SOT-32 | 40 | 0.2 | 2 | 0.8 | 1.0 | 100 |
| BD179-16 | 80 | 80 | 3 | 30 | SOT-32 | 100 | 0.2 | 2 | 0.8 | 1.0 | 100 |
| TIP32B* | 80 | 80 | 3 | 40 | TO-220 | 25 | 1.0 | 4 | 1.2 | 3.0 | 375 |
| BD139 | 80 | 80 | 1.5 | 12.5 | SOT-32 | 40 | 0.2 | 2 | 0.5 | 0.5 | 50 |
| BD140* | 80 | 80 | 1.5 | 12.5 | SOT-32 | 40 | 0.2 | 2 | 0.5 | 0.5 | 50 |
| BD140-10* | 80 | 80 | 1.5 | 12.5 | SOT-32 | 63 | 0.2 | 2 | 0.5 | 0.5 | 50 |
| BD139-10 | 80 | 80 | 1.5 | 12.5 | SOT-32 | 63 | 0.2 | 2 | 0.5 | 0.5 | 50 |
| 2N4920* | 80 | 80 | 1 | 30 | SOT-32 | 30 | 0.5 | 1 | 0.6 | 1.0 | 100 |
| 2N6107* | 70 | 80 | 7 | 40 | TO-220 | 30 | 4.0 | 2 | 1.0 | 2.0 | 200 |
| 2N6487 | 70 | 70 | 15 | 75 | TO-220 | 20 | 5.0 | 4 | 1.3 | 5.0 | 500 |
| 2N6490* | 70 | 70 | 15 | 75 | TO-220 | 20 | 5.0 | 4 | 1.3 | 5.0 | 500 |
| 2N3772 | 60 | 100 | 10 | 150 | TO-3 | 15 | 10.0 | 4 | 2.0 | 15.0 | 1500 |
| TIP2955* | 60 | 70 | 15 | 90 | TO-218 | 20 | 4.0 | 4 | 1.1 | 4.0 | 400 |
| TIP3055 | 60 | 70 | 15 | 90 | TO-218 | 20 | 4.0 | 4 | 1.1 | 4.0 | 400 |
| MJE2955T* | 60 | 70 | 10 | 75 | TO-220 | 20 | 4.0 | 4 | 1.1 | 4.0 | 400 |
| MJE3055T | 60 | 70 | 10 | 75 | TO-220 | 20 | 4.0 | 4 | 1.1 | 4.0 | 400 |
| BD241A | 60 | 70 | 3 | 40 | TO-220 | 25 | 1.0 | 4 | 1.2 | 3.0 | 600 |
| BD242A* | 60 | 70 | 3 | 40 | TO-220 | 25 | 1.0 | 4 | 1.2 | 3.0 | 600 |
| BD908FI* | 60 | 60 | 15 | 35 | ISOWATT220 | 15 | 5.0 | 4 | 1.0 | 5.0 | 500 |
| BD707 | 60 | 60 | 12 | 75 | TO-220 | 15 | 4.0 | 4 | 1.0 | 4.0 | 400 |
| BD708* | 60 | 60 | 12 | 75 | TO-220 | 15 | 4.0 | 4 | 1.0 | 4.0 | 400 |
| D44H8 | 60 | 60 | 10 | 50 | TO-220 | 40 | 4.0 | 1 | 1.0 | 8.0 | 400 |
| D45H8* | 60 | 60 | 10 | 50 | TO-220 | 40 | 4.0 | 1 | 1.0 | 8.0 | 400 |
| BD535 | 60 | 60 | 8 | 50 | TO-220 | 25 | 2.0 | 2 | 0.8 | 2.0 | 200 |

* PNP Products

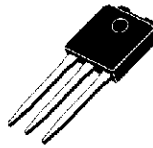
GENERAL PURPOSE TRANSISTORS (cont'd)

| Device | V _{CEO} | V _{CBO} V _{CES} | I _C | P _{tot} | Package | h _{FE} I _C / V _{CE(sat)} | | | V _{CE} @ I _C / I _B | | |
|------------------------|------------------|--------------------------------------|----------------|------------------|------------|---|------|-----|---|------|------|
| | (V) | (V) | (A) | (W) | | | (A) | (V) | (V) | (A) | (mA) |
| BD536* | 60 | 60 | 8 | 50 | TO-220 | 25 | 2.0 | 2 | 0.8 | 2.0 | 200 |
| TIP42A* | 60 | 60 | 6 | 65 | TO-220 | 15 | 3.0 | 4 | 1.5 | 6.0 | 600 |
| TIP41A | 60 | 60 | 6 | 65 | TO-220 | 15 | 3.0 | 4 | 1.5 | 6.0 | 600 |
| 2N5191 | 60 | 60 | 4 | 40 | SOT-32 | 25 | 1.5 | 2 | 0.6 | 1.5 | 150 |
| BD440* | 60 | 60 | 4 | 36 | SOT-32 | 25 | 2.0 | 1 | 0.8 | 2.0 | 200 |
| BD439 | 60 | 60 | 4 | 36 | SOT-32 | 25 | 2.0 | 1 | 0.8 | 2.0 | 200 |
| TIP31A | 60 | 60 | 3 | 40 | TO-220 | 25 | 1.0 | 4 | 1.2 | 3.0 | 375 |
| TIP32A* | 60 | 60 | 3 | 40 | TO-220 | 25 | 1.0 | 4 | 1.2 | 3.0 | 375 |
| BD236* | 60 | 60 | 2 | 25 | SOT-32 | 25 | 1.0 | 2 | 0.6 | 1.0 | 100 |
| BD235 | 60 | 60 | 2 | 25 | SOT-32 | 25 | 1.0 | 2 | 0.6 | 1.0 | 100 |
| BD138* | 60 | 60 | 1.5 | 12.5 | SOT-32 | 40 | 0.2 | 2 | 0.5 | 0.5 | 50 |
| BD137 | 60 | 60 | 1.5 | 12.5 | SOT-32 | 40 | 0.2 | 2 | 0.5 | 0.5 | 50 |
| TIP30A* | 60 | 60 | 1 | 30 | TO-220 | 15 | 1.0 | 4 | 0.7 | 1.0 | 125 |
| TIP29A | 60 | 60 | 1 | 30 | TO-220 | 15 | 1.0 | 4 | 0.7 | 1.0 | 125 |
| 2N6489* | 50 | 50 | 15 | 75 | TO-220 | 20 | 5.0 | 4 | 1.3 | 5.0 | 500 |
| 2N3771 | 40 | 50 | 15 | 150 | TO-3 | 15 | 15.0 | 4 | 1.4 | 10.0 | 1000 |
| D45H5* | 45 | 45 | 10 | 50 | TO-220 | 40 | 4.0 | 1 | 1.0 | 8.0 | 400 |
| BD534* | 45 | 45 | 8 | 50 | TO-220 | 25 | 2.0 | 2 | 0.8 | 2.0 | 200 |
| BD534FI* | 45 | 45 | 8 | 22 | ISOWATT220 | 25 | 2.0 | 2 | 0.8 | 2.0 | 200 |
| BD437 | 45 | 45 | 4 | 36 | SOT-32 | 40 | 2.0 | 1 | 0.6 | 2.0 | 200 |
| BD438* | 45 | 45 | 4 | 36 | SOT-32 | 40 | 2.0 | 1 | 0.6 | 2.0 | 200 |
| BD135 | 45 | 45 | 1.5 | 12.5 | SOT-32 | 40 | 0.2 | 2 | 0.5 | 0.5 | 50 |
| BD136* | 45 | 45 | 1.5 | 12.5 | SOT-32 | 40 | 0.2 | 2 | 0.5 | 0.5 | 50 |
| MJE521 | 40 | 40 | 4 | 40 | SOT-32 | 40 | 1.0 | 1 | - | - | - |
| 2N5193* | 40 | 40 | 4 | 40 | SOT-32 | 25 | 1.5 | 2 | 0.6 | 1.5 | 150 |
| 2N4918* | 40 | 40 | 1 | 30 | SOT-32 | 30 | 0.5 | 1 | 0.6 | 1.0 | 100 |
| 2N6111* | 30 | 40 | 7 | 40 | TO-220 | 30 | 4.0 | 3 | 1.0 | 3.0 | 300 |
| MJE210* | 25 | 40 | 5 | 15 | SOT-32 | 70 | 0.5 | 1 | 0.3 | 0.5 | 50 |
| BD435 | 32 | 32 | 4 | 36 | SOT-32 | 50 | 2.0 | 1 | 0.5 | 2.0 | 200 |
| BD436* | 32 | 32 | 4 | 36 | SOT-32 | 50 | 2.0 | 1 | 0.5 | 2.0 | 200 |
| BD433 | 22 | 22 | 4 | 36 | SOT-32 | 50 | 2.0 | 1 | 0.5 | 2.0 | 200 |
| BD434* | 22 | 22 | 4 | 36 | SOT-32 | 50 | 2.0 | 1 | 0.5 | 2.0 | 200 |

* PNP Products



DPAK



IPAK

DPAK/IPAK

| Type | V _{CEO} | V _{CBO} V _{CES} | I _{C(cont)} | P _{tot} | h _{FE} @ I _C / V _{CE} | | | V _{CE(sat)} @ I _C / I _B | | | Application |
|------------|------------------|--------------------------------------|----------------------|------------------|--|------|-----|--|-----|-------|-----------------|
| NPN | (V) | (V) | (A) | (W) | | (A) | (V) | (V) | (A) | (A) | |
| MJD3055T4 | 60 | 70 | 10.0 | 20 | 20 | 4 | 4 | 1.1 | 4.0 | 0.4 | GEN. PURP. TRAN |
| MJD31BT4 | 80 | 80 | 3.0 | 15 | 10 | 3 | 4 | 1.2 | 3.0 | 0.375 | GEN. PURP. TRAN |
| STD909T4 | 80 | 80 | 15.0 | 20 | 15 | 5 | 4 | 1.0 | 5.0 | 0.5 | GEN. PURP. TRAN |
| MJD112T4 | 100 | 100 | 2.0 | 20 | 1000 | 2 | 3 | 2.0 | 2.0 | 0.008 | GEN. PURP. TRAN |
| MJD31CT4 | 100 | 100 | 3.0 | 15 | 10 | 3 | 4 | 1.2 | 3.0 | 0.375 | GEN. PURP. TRAN |
| MJD122T4 | 100 | 100 | 5.0 | 20 | 1000 | 4 | 4 | 2.0 | 4.0 | 0.016 | GEN. PURP. TRAN |
| MJD47T4 | 250 | 350 | 1.0 | 15 | 10 | 1 | 10 | 1.0 | 1.0 | 0.2 | SWITCHING |
| MJD340T4 | 300 | 300 | 0.5 | 15 | 30 | 0.05 | 10 | - | - | - | SWITCHING |
| BULD38-1 | 400 | 800 | 5.0 | 30 | 8 | 2 | 5 | 1.1 | 3.0 | 0.8 | LIGHTING |
| BUXD87-1 | 450 | 1000 | 0.5 | 20 | 12 | 0.04 | 5 | 1.0 | 0.2 | 0.02 | SMPS |
| MJD2955T4* | 60 | 70 | 10.0 | 20 | 20 | 4 | 4 | 1.1 | 4.0 | 0.4 | GEN. PURP. TRAN |
| MJD32BT4* | 80 | 80 | 3.0 | 15 | 10 | 3 | 4 | 1.2 | 3.0 | 0.375 | GEN. PURP. TRAN |
| STD910T4* | 80 | 80 | 15.0 | 20 | 15 | 5 | 4 | 1.0 | 5.0 | 0.5 | GEN. PURP. TRAN |
| MJD117T4* | 100 | 100 | 2.0 | 20 | 1000 | 2 | 3 | 2.0 | 2.0 | 0.008 | GEN. PURP. TRAN |
| MJD32CT4* | 100 | 100 | 3.0 | 15 | 10 | 3 | 4 | 1.2 | 3.0 | 0.375 | GEN. PURP. TRAN |
| MJD127T4* | 100 | 100 | 5.0 | 20 | 1000 | 4 | 4 | 2.0 | 4.0 | 0.016 | GEN. PURP. TRAN |
| MJD350T4* | 300 | 300 | 0.5 | 15 | 30 | 0.05 | 10 | - | - | - | SWITCHING |

Suffix : T4 = DPAK in tape & reel

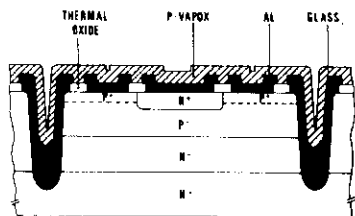
Suffix: -1 = IPAK in tubes

* PNP Products

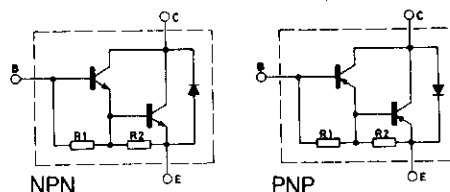
POWER BIPOLAR

Epitaxial base – I_{CM} : 2 → 3 A, V_{CEO} : 45 → 180V

NPN and PNP types
Medium V_{CEO} range (45 to 180 V)
Medium switching speed
Medium f_T (2 to 20 MHz)
High ruggedness
Monolithic Darlingtons



Internal schematic diagrams



GENERAL PURPOSE DARLINGTONS

| Device | V_{CEO} | V_{CBO} V_{CES} | I_C | P_{tot} | Package | h_{FE} $I_C / V_{CE(sat)}$ | | | $V_{CE} @ I_C / I_B$ | | |
|-----------|-----------|------------------------|-------|-----------|------------|------------------------------|-----|-----|----------------------|-----|-----|
| | (V) | (V) | (A) | (W) | | | (A) | (V) | (V) | (V) | (A) |
| BDW91 | 180 | 180 | 4 | 10 | TO-39 | 1000 | 2 | 5 | 2.0 | 2 | 4 |
| BDW92* | 180 | 180 | 4 | 10 | TO-39 | 1000 | 2 | 5 | 2.0 | 2 | 4 |
| BDX53F | 160 | 160 | 6 | 60 | TO-220 | 500 | 2 | 5 | 2.0 | 2 | 10 |
| BDX54F* | 160 | 160 | 6 | 60 | TO-220 | 500 | 2 | 5 | 2.0 | 2 | 10 |
| MJ11016 | 120 | 120 | 30 | 200 | TO-3 | 1000 | 20 | 5 | 4.0 | 30 | 300 |
| 2N6284 | 100 | 100 | 20 | 160 | TO-3 | 750 | 10 | 3 | 3.0 | 20 | 200 |
| 2N6287* | 100 | 100 | 20 | 160 | TO-3 | 750 | 10 | 3 | 3.0 | 20 | 200 |
| MJ4032* | 100 | 100 | 16 | 150 | TO-3 | 1000 | 10 | 3 | 4.0 | 16 | 80 |
| MJ4035 | 100 | 100 | 16 | 150 | TO-3 | 1000 | 10 | 3 | 4.0 | 16 | 80 |
| BDW83C | 100 | 100 | 15 | 130 | TO-218 | 750 | 6 | 3 | 4.0 | 15 | 150 |
| 2N6059 | 100 | 100 | 12 | 150 | TO-3 | 750 | 6 | 3 | 3.0 | 12 | 120 |
| BDW93C | 100 | 100 | 12 | 80 | TO-220 | 750 | 5 | 3 | 2.0 | 5 | 20 |
| BDW93CFI | 100 | 100 | 12 | 40 | ISOWATT220 | 750 | 5 | 3 | 2.0 | 5 | 20 |
| BDW94C* | 100 | 100 | 12 | 80 | TO-220 | 750 | 5 | 3 | 2.0 | 5 | 20 |
| BDW94CFI* | 100 | 100 | 12 | 40 | ISOWATT220 | 750 | 5 | 3 | 2.0 | 5 | 20 |
| BDX87C | 100 | 100 | 12 | 120 | TO-3 | 1000 | 5 | 3 | 2.0 | 6 | 24 |
| BDX88C* | 100 | 100 | 12 | 120 | TO-3 | 1000 | 5 | 3 | 2.0 | 6 | 24 |
| BDX33C | 100 | 100 | 10 | 70 | TO-220 | 750 | 3 | 3 | 2.5 | 3 | 6 |
| BDX34C* | 100 | 100 | 10 | 70 | TO-220 | 750 | 3 | 3 | 2.5 | 3 | 6 |
| TIP142 | 100 | 100 | 10 | 125 | TO-218 | 1000 | 5 | 4 | 3.0 | 10 | 40 |
| TIP142T | 100 | 100 | 10 | 75 | TO-220 | 500 | 10 | 4 | 3.0 | 10 | 40 |
| TIP147* | 100 | 100 | 10 | 125 | TO-218 | 1000 | 5 | 4 | 3.0 | 10 | 40 |
| BDX53C | 100 | 100 | 8 | 60 | TO-220 | 750 | 3 | 3 | 2.0 | 3 | 12 |
| BDX54C* | 100 | 100 | 8 | 60 | TO-220 | 750 | 3 | 3 | 2.0 | 3 | 12 |
| TIP102 | 100 | 100 | 8 | 80 | TO-220 | 1000 | 3 | 4 | 2.0 | 3 | 6 |
| TIP107* | 100 | 100 | 8 | 80 | TO-220 | 1000 | 3 | 4 | 2.0 | 3 | 6 |
| TIP132 | 100 | 100 | 8 | 70 | TO-220 | 1000 | 4 | 4 | 2.0 | 4 | 16 |
| TIP137* | 100 | 100 | 8 | 70 | TO-220 | 1000 | 4 | 4 | 2.0 | 4 | 16 |
| BD336* | 100 | 100 | 6 | 60 | SOT-82 | 750 | 3 | 3 | 2.0 | 3 | 12 |
| SGS122 | 100 | 100 | 5 | 65 | SOT-82 | 1000 | 3 | 3 | 2.0 | 3 | 12 |
| TIP122 | 100 | 100 | 5 | 65 | TO-220 | 1000 | 3 | 3 | 2.0 | 3 | 12 |
| TIP127* | 100 | 100 | 5 | 65 | TO-220 | 1000 | 3 | 3 | 2.0 | 3 | 12 |
| BD681 | 100 | 100 | 4 | 40 | SOT-32 | 750 | 1.5 | 3 | 2.5 | 1.5 | 30 |
| BD682* | 100 | 100 | 4 | 40 | SOT-32 | 750 | 1.5 | 3 | 2.5 | 1.5 | 30 |
| SGS112 | 100 | 100 | 2 | 50 | SOT-82 | 1000 | 1 | 4 | 2.5 | 2 | 8 |
| TIP112 | 100 | 100 | 2 | 50 | TO-220 | 1000 | 1 | 4 | 2.5 | 2 | 8 |
| TIP117* | 100 | 100 | 2 | 50 | TO-220 | 1000 | 1 | 4 | 2.5 | 2 | 8 |
| MJ11031 | 90 | 90 | 50 | 300 | TO-3 | 400 | 50 | 5 | 3.5 | 50 | 500 |

* PNP Products

GENERAL PURPOSE DARLINGTONS (cont'd)

| Device | V _{CEO} | V _{CBO} V _{CEs} | I _C | P _{tot} | Package | h _{FE} | I _C / V _{CE(sat)} | | V _{CE} @ I _C / I _B | | |
|-----------|------------------|--------------------------------------|----------------|------------------|------------|-----------------|---------------------------------------|-----|---|-----|-----|
| | (V) | (V) | (A) | (W) | | | (A) | (V) | (V) | (V) | (A) |
| MJ11013* | 90 | 90 | 30 | 200 | TO-3 | 1000 | 20 | 5 | 4.0 | 30 | 300 |
| MJ11014 | 90 | 90 | 30 | 200 | TO-3 | 1000 | 20 | 5 | 4.0 | 30 | 300 |
| SGSD100 | 80 | 80 | 25 | 130 | TO-218 | 300 | 20 | 3 | 1.8 | 10 | 40 |
| SGSD200* | 80 | 80 | 25 | 130 | TO-218 | 300 | 20 | 3 | 1.8 | 10 | 40 |
| BDW93B | 80 | 80 | 12 | 80 | TO-220 | 750 | 5 | 3 | 2.0 | 5 | 20 |
| BDW94B* | 80 | 80 | 12 | 80 | TO-220 | 750 | 5 | 3 | 2.0 | 5 | 20 |
| 2N6388 | 80 | 80 | 10 | 65 | TO-220 | 1000 | 5 | 3 | 2.0 | 5 | 10 |
| BDX33B | 80 | 80 | 10 | 70 | TO-220 | 750 | 3 | 3 | 2.5 | 3 | 6 |
| BDX34B* | 80 | 80 | 10 | 70 | TO-220 | 750 | 3 | 3 | 2.5 | 3 | 6 |
| MJ2501* | 80 | 80 | 10 | 150 | TO-3 | 1000 | 5 | 3 | 2.0 | 5 | 20 |
| MJ3001 | 80 | 80 | 10 | 150 | TO-3 | 1000 | 5 | 3 | 2.0 | 5 | 20 |
| TIP141 | 80 | 80 | 10 | 125 | TO-218 | 1000 | 5 | 4 | 3.0 | 10 | 40 |
| TIP141FI | 80 | 80 | 10 | 50 | ISOWATT218 | 500 | 10 | 4 | 3.0 | 10 | 40 |
| TIP146* | 80 | 80 | 10 | 125 | TO-218 | 1000 | 5 | 4 | 3.0 | 10 | 40 |
| TIP146FI* | 80 | 80 | 10 | 50 | ISOWATT218 | 500 | 10 | 4 | 3.0 | 10 | 40 |
| BDX53B | 80 | 80 | 8 | 60 | TO-220 | 750 | 3 | 3 | 2.0 | 3 | 12 |
| BDX54B* | 80 | 80 | 8 | 60 | TO-220 | 750 | 3 | 3 | 2.0 | 3 | 12 |
| TIP106* | 80 | 80 | 8 | 80 | TO-220 | 1000 | 3 | 4 | 2.0 | 3 | 6 |
| TIP131 | 80 | 80 | 8 | 70 | TO-220 | 1000 | 4 | 4 | 2.0 | 4 | 16 |
| TIP121 | 80 | 80 | 5 | 65 | TO-220 | 1000 | 3 | 3 | 2.0 | 3 | 12 |
| TIP126* | 80 | 80 | 5 | 65 | TO-220 | 1000 | 3 | 3 | 2.0 | 3 | 12 |
| 2N6036* | 80 | 80 | 4 | 40 | SOT-32 | 500 | 0.5 | 3 | 2.0 | 2 | 8 |
| BD679 | 80 | 80 | 4 | 40 | SOT-32 | 750 | 1.5 | 3 | 2.5 | 1.5 | 30 |
| BD679A | 80 | 80 | 4 | 40 | SOT-32 | 750 | 2 | 3 | 2.8 | 2 | 40 |
| BD680* | 80 | 80 | 4 | 40 | SOT-32 | 750 | 1.5 | 3 | 2.5 | 1.5 | 30 |
| BD680A* | 80 | 80 | 4 | 40 | SOT-32 | 750 | 2 | 3 | 2.8 | 2 | 40 |
| MJE802 | 80 | 80 | 4 | 40 | SOT-32 | 100 | 4 | 3 | 3.0 | 4 | 40 |
| MJE803 | 80 | 80 | 4 | 40 | SOT-32 | 100 | 4 | 3 | 3.0 | 4 | 40 |
| 2N6050* | 60 | 60 | 12 | 150 | TO-3 | 750 | 6 | 3 | 3.0 | 12 | 120 |
| TIP100 | 60 | 60 | 8 | 80 | TO-220 | 1000 | 3 | 4 | 2.0 | 3 | 6 |
| TIP105* | 60 | 60 | 8 | 80 | TO-220 | 1000 | 3 | 4 | 2.0 | 3 | 6 |
| TIP135* | 60 | 60 | 8 | 70 | TO-220 | 1000 | 4 | 4 | 2.0 | 4 | 16 |
| SGS125* | 60 | 60 | 5 | 65 | SOT-82 | 1000 | 3 | 3 | 2.0 | 3 | 12 |
| TIP120 | 60 | 60 | 5 | 65 | TO-220 | 1000 | 3 | 3 | 2.0 | 3 | 12 |
| TIP125* | 60 | 60 | 5 | 65 | TO-220 | 1000 | 3 | 3 | 2.0 | 3 | 12 |
| BD677 | 60 | 60 | 4 | 40 | SOT-32 | 750 | 1.5 | 3 | 2.5 | 1.5 | 30 |
| BD677A | 60 | 60 | 4 | 40 | SOT-32 | 750 | 2 | 3 | 2.8 | 2 | 40 |
| BD678* | 60 | 60 | 4 | 40 | SOT-32 | 750 | 1.5 | 3 | 2.5 | 1.5 | 30 |
| BD678A* | 60 | 60 | 4 | 40 | SOT-32 | 750 | 2 | 3 | 2.8 | 2 | 40 |
| SGS110 | 60 | 60 | 2 | 50 | SOT-82 | 1000 | 1 | 4 | 2.5 | 2 | 8 |
| SGS115* | 60 | 60 | 2 | 50 | SOT-82 | 1000 | 1 | 4 | 2.5 | 2 | 8 |
| TIP110 | 60 | 60 | 2 | 50 | TO-220 | 1000 | 1 | 4 | 2.5 | 2 | 8 |
| TIP115* | 60 | 60 | 2 | 50 | TO-220 | 1000 | 1 | 4 | 2.5 | 2 | 8 |

* PNP Products