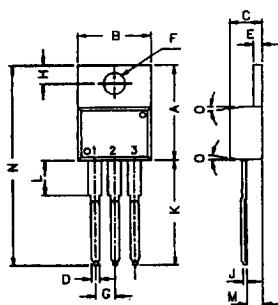
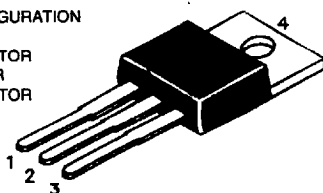


TIP120, 121, 122 NPN PLASTIC POWER TRANSISTORS
 TIP125, 126, 127 PNP PLASTIC POWER TRANSISTORS
 Power Darlingtons for Linear and Switching Applications

PIN CONFIGURATION
 1. BASE
 2. COLLECTOR
 3. EMITTER
 4. COLLECTOR



ALL DIMENSIONS ARE IN M.M.

| DIM | MIN | MAX |
|-----|-------|-------|
| A | 14,42 | 16,51 |
| B | 9,63 | 10,67 |
| C | 3,56 | 4,83 |
| D | - | 0,90 |
| E | 1,15 | 1,40 |
| F | 3,75 | 3,88 |
| G | 2,29 | 2,79 |
| H | 2,54 | 3,43 |
| J | - | 0,56 |
| K | 12,70 | 14,73 |
| L | - | 6,35 |
| M | 2,03 | 2,92 |
| N | - | 31,24 |
| O | - | 7 DEG |

ABSOLUTE MAXIMUM RATINGS

| | | 120 | 121 | 122 | |
|--|------------------|-----|-----|-----|------------------|
| | | 125 | 126 | 127 | |
| Collector-base voltage (open emitter) | V_{CB0} max. | 60 | 80 | 100 | V |
| Collector-emitter voltage (open base) | V_{CE0} max. | 60 | 80 | 100 | V |
| Collector current | I_C max. | | 5.0 | | A |
| Total power dissipation up to $T_C = 25^\circ\text{C}$ | P_{tot} max. | | 65 | | W |
| Junction temperature | T_j max. | | 150 | | $^\circ\text{C}$ |
| Collector-emitter saturation voltage $I_C = 3\text{ A}; I_B = 12\text{ mA}$ | V_{CEsat} max. | | 2.0 | | V |
| D.C. current gain $I_C = 0.5\text{ A}; V_{CE} = 3\text{ V}$ | h_{FE} min. | | 1.0 | | K |

RATINGS (at $T_A = 25^\circ\text{C}$ unless otherwise specified)

| | | 120 | 121 | 122 | |
|---------------------------------------|----------------|-----|-----|-----|---|
| | | 125 | 126 | 127 | |
| Collector-base voltage (open emitter) | V_{CB0} max. | 60 | 80 | 100 | V |
| Collector-emitter voltage (open base) | V_{CE0} max. | 60 | 80 | 100 | V |
| Emitter-base voltage (open collector) | V_{EB0} max. | | 5.0 | | V |

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| | | | | |
|--|-----------|------|-------------|---------------------|
| Collector current | I_C | max. | 5.0 | A |
| Collector current (peak) | I_{CM} | max. | 8 | A |
| Base current | I_B | max. | 120 | mA |
| Total power dissipation up to $T_C = 25^\circ\text{C}$ | P_{tot} | max. | 65 | W |
| Derate above 25°C | | max | 0.52 | W/ $^\circ\text{C}$ |
| Total power dissipation up to $T_A = 25^\circ\text{C}$ | P_{tot} | max. | 2 | W |
| Derate above 25°C | | max | 0.016 | W/ $^\circ\text{C}$ |
| Junction temperature | T_j | max. | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | | -65 to +150 | $^\circ\text{C}$ |

THERMAL RESISTANCE

| | | | | |
|--------------------------|---------------|--|------|---------------------------|
| From junction to ambient | $R_{th\ j-a}$ | | 62.5 | $^\circ\text{C}/\text{W}$ |
| From junction to case | $R_{th\ j-c}$ | | 1.92 | $^\circ\text{C}/\text{W}$ |

CHARACTERISTICS

$T_{amb} = 25^\circ\text{C}$ unless otherwise specified

| | | | 120 | 121 | 122 | |
|---|------------------|------|-----|-----|-----|----|
| | | | 125 | 126 | 127 | |
| Collector cutoff current | | | | | | |
| $I_E = 0; V_{CB} = 60\text{ V}$ | I_{CBO} | max. | 0.2 | - | - | mA |
| $I_E = 0; V_{CB} = 80\text{ V}$ | I_{CBO} | max. | - | 0.2 | - | mA |
| $I_E = 0; V_{CB} = 100\text{ V}$ | I_{CBO} | max. | - | - | 0.2 | mA |
| $I_B = 0; V_{CE} = 30\text{V}$ | I_{CEO} | max. | 0.5 | - | - | mA |
| $I_B = 0; V_{CE} = 40\text{V}$ | I_{CEO} | max. | - | 0.5 | - | mA |
| $I_B = 0; V_{CE} = 50\text{V}$ | I_{CEO} | max. | - | - | 0.5 | mA |
| Emitter cut-off current | | | | | | |
| $I_C = 0; V_{EB} = 5\text{ V}$ | I_{EBO} | max. | | 2.0 | | mA |
| Breakdown voltages | | | | | | |
| $I_C = 100\text{ mA}; I_E = 0$ | $V_{CEO(sus)}^*$ | min. | 60 | 80 | 100 | V |
| $I_C = 1\text{ mA}; I_E = 0$ | V_{CBO} | min. | 60 | 80 | 100 | V |
| $I_E = 1\text{ mA}; I_C = 0$ | V_{EBO} | min. | | 5.0 | | V |
| Saturation voltages | | | | | | |
| $I_C = 3.0\text{ A}; I_B = 12\text{ mA}$ | V_{CEsat}^* | max. | | 2.0 | | V |
| $I_C = 5.0\text{ A}; I_B = 20\text{ mA}$ | V_{CEsat}^* | max. | | 4.0 | | V |
| Base-emitter on voltage | | | | | | |
| $I_C = 3\text{A}; V_{CE} = 3\text{V}$ | $V_{BE(on)}^*$ | max. | | 2.5 | | V |
| D.C. current gain | | | | | | |
| $I_C = 0.5\text{A}; V_{CE} = 3\text{V}$ | h_{FE}^* | min. | | 1.0 | | K |
| $I_C = 3\text{A}; V_{CE} = 3\text{V}$ | h_{FE}^* | min. | | 1.0 | | K |
| Small signal current gain | | | | | | |
| $I_C = 3\text{A}; V_{CE} = 4\text{V}; f = 1\text{ MHz}$ | $ h_{fe} $ | min. | | 4.0 | | |
| Output capacitance at $f = 0.1\text{ MHz}$ | | | | | | |
| $I_E = 0; V_{CB} = 10\text{V}$ | PNP C_o | max. | | 300 | | pF |
| | NPN C_o | max. | | 200 | | pF |

* Pulse test: pulse width $\leq 300\ \mu\text{s}$; duty cycle $\leq 2\%$.