

MJ900 – MJ901 PNP
MJ1000 – MJ1001 NPN

COMPLEMENTARY POWER DARLINGTONS

The MJ900, MJ901, MJ1000 and MJ1001 are silicon epitaxial-bas transistors in monolithic Darlington configuration, and are mounted in JEDEC TO-3 metal case. They are intended for use in power linear and switching applications.

PNP types are the MJ900 and MJ901, and their complementary NPN types are the MJ1000 and MJ1001 respectively.

ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | Value | Unit |
|-----------|-----------------------------------|-----------------|------|
| V_{CBO} | Collector-Base Voltage | MJ900 MJ1000 | 60 |
| | | MJ901 MJ1001 | 80 |
| V_{CEO} | Collector-Emitter Voltage $I_B=0$ | MJ900 MJ1000 | 60 |
| | | MJ901 MJ1001 | 80 |
| V_{EBO} | Emitter-Base Voltage | MJ900 MJ1000 | 5.0 |
| | | MJ901 MJ1001 | 5.0 |
| I_C | Collector Current $I_{C(RMS)}$ | MJ900 MJ1000 | 8.0 |
| | | MJ901 MJ1001 | 8.0 |



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MJ900 – MJ901 PNP
MJ1000 – MJ1001 NPN

| Symbol | Ratings | | Value | Unit | |
|--------|----------------------|------------------------------------|-----------------|-------|-------|
| I_B | Base Current | MJ900 MJ1000 MJ901 MJ1001 | 0.1 | Adc | |
| P_T | Power Dissipation | @ $T_c < 25^\circ$ | MJ900 MJ1000 | 90 | Watts |
| | | Derate above 25°C | MJ901 MJ1001 | 0.515 | W/°C |
| T_J | Junction Temperature | MJ900 MJ1000 MJ901 MJ1001 | -65 to +200 | °C | |
| T_S | Storage Temperature | MJ900 MJ1000 MJ901 MJ1001 | | | |

THERMAL CHARACTERISTICS

| Symbol | Ratings | | Value | Unit |
|-------------|--------------------------------------|------------------------------------|-------|------|
| R_{thJ-C} | Thermal Resistance, Junction to Case | MJ900 MJ1000 MJ901 MJ1001 | 1.94 | °C/W |

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol | Ratings | Test Condition(s) | Min | Typ | Mx | Unit | |
|-----------|---|--------------------------|-----------------|-----|----|------|------|
| V_{CE0} | Collector-Emitter Breakdown Voltage (**) | $I_C=100$ mAdc, $I_B=0$ | MJ900 MJ1000 | 60 | - | - | Vdc |
| | | | MJ901 MJ1001 | 80 | - | - | |
| I_{CE0} | Collector Cutoff Current | $V_{CE}=30$ Vdc, $I_B=0$ | MJ900 MJ1000 | - | - | 500 | μAdc |
| | | $V_{CE}=40$ Vdc, $I_B=0$ | MJ901 MJ1001 | - | - | | |

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| Symbol | Ratings | Test Condition(s) | Min | Typ | Mx | Unit |
|---------------|--|--|-----|-----|-----|------|
| I_{EBO} | Emitter Cutoff Current | $V_{BE}=5.0 \text{ Vdc}, I_C=0$ | - | - | 2.0 | mAdc |
| I_{CER} | Collector-Emitter Leakage Current | $V_{CB}=60 \text{ V}, R_{BE}=1.0 \text{ k ohm}$ | - | - | 1.0 | mAdc |
| | | $V_{CB}=80 \text{ V}, R_{BE}=1.0 \text{ k ohm}$ | - | - | 1.0 | |
| | | $V_{CB}=60 \text{ V}, R_{BE}=1.0 \text{ k ohm}, T_C=150^\circ\text{C}$ | - | - | 5.0 | mAdc |
| | | $V_{CB}=80 \text{ V}, R_{BE}=1.0 \text{ k ohm}, T_C=150^\circ\text{C}$ | - | - | 5.0 | |
| $V_{CE(SAT)}$ | Collector-Emitter saturation Voltage (*) | $I_C=3.0 \text{ A}, I_B=12 \text{ mAdc}$ | - | - | 2.0 | Vdc |
| | | $I_C=8.0 \text{ A}, I_B=40 \text{ mAdc}$ | - | - | 4.0 | |

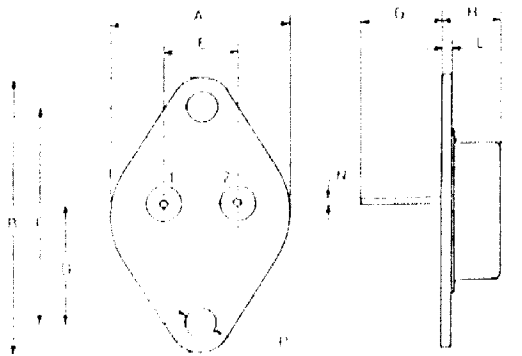
| Symbol | Ratings | Test Condition(s) | Min | Typ | Mx | Unit |
|----------|--------------------------------|---|------|-----|-----|------|
| V_F | Forward Voltage (pulse method) | $I_F=3 \text{ A}$ | - | 1.8 | - | V |
| V_{BE} | Base-Emitter Voltage (*) | $I_C=3.0 \text{ Adc}, V_{CE}=3.0 \text{ Vdc}$ | - | - | 2.5 | V |
| H_{FE} | DC Current Gain (*) | $V_{CE}=3.0 \text{ Vdc}, I_C=3.0 \text{ Adc}$ | 1000 | - | - | - |
| | | $V_{CE}=3.0 \text{ Vdc}, I_C=4.0 \text{ Adc}$ | 750 | - | - | |

(*) Pulse Width $\approx 300 \mu\text{s}$, Duty Cycle $\angle 2.0\%$

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MECHANICAL DATA CASE TO-3

| DIMENSIONS | | |
|------------|-------|--------|
| | mm | inches |
| A | 25,51 | 1,004 |
| B | 38,93 | 1,53 |
| C | 30,12 | 1,18 |
| D | 17,25 | 0,68 |
| E | 10,89 | 0,43 |
| G | 11,62 | 0,46 |
| H | 8,54 | 0,34 |
| L | 1,55 | 0,6 |
| M | 19,47 | 0,77 |
| N | 1 | 0,04 |
| P | 4,06 | 0,16 |



| | |
|---------|-----------|
| Pin 1 : | Base |
| Pin 2 : | Emitter |
| Case : | Collector |