



## NPN MJ1000 – MJ1001

### COMPLEMENTARY POWER DARLINGTONS

The MJ1000, 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. Their complementary PNP types are the MJ900 and MJ901 respectively. Compliance to RoHS

#### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Ratings                   |                           |        | Value       | Unit |
|-----------|---------------------------|---------------------------|--------|-------------|------|
| $V_{CBO}$ | Collector-Base Voltage    |                           | MJ1000 | 60          | V    |
|           |                           |                           | MJ1001 | 80          |      |
| $V_{CEO}$ | Collector-Emitter Voltage | $I_B=0$                   | MJ1000 | 60          | V    |
|           |                           |                           | MJ1001 | 80          |      |
| $V_{EBO}$ | Emitter-Base Voltage      |                           | MJ1000 | 5.0         | V    |
|           |                           |                           | MJ1001 |             |      |
| $I_C$     | Collector Current         | $I_{C(RMS)}$              | MJ1000 | 8.0         | A    |
|           |                           |                           | MJ1001 |             |      |
| $I_B$     | Base Current              |                           | MJ1000 | 0.1         | A    |
|           |                           |                           | MJ1001 |             |      |
| $P_T$     | Power Dissipation         | @ $T_C < 25^\circ$        | MJ1000 | 90          | W    |
|           |                           | Derate above $25^\circ C$ | MJ1001 | 0.515       | W/°C |
| $T_J$     | Junction Temperature      |                           | MJ1000 | -65 to +200 | °C   |
|           |                           |                           | MJ1001 |             |      |
| $T_S$     | Storage Temperature       |                           | MJ1000 | -65 to +200 | °C   |
|           |                           |                           | MJ1001 |             |      |

#### THERMAL CHARACTERISTICS

| Symbol      | Ratings                              | Value | Unit         |
|-------------|--------------------------------------|-------|--------------|
| $R_{thJ-C}$ | Thermal Resistance, Junction to Case | 1.94  | $^\circ C/W$ |

## NPN MJ1000 – MJ1001

### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

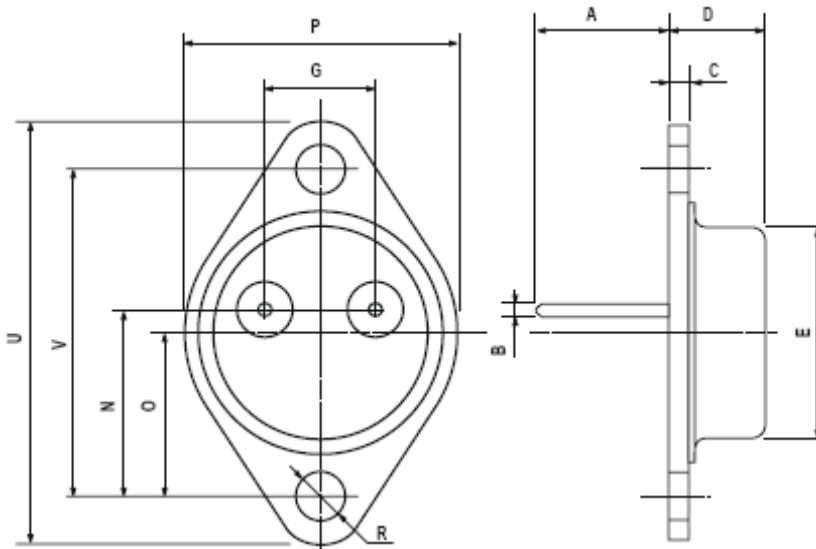
| Symbol        | Ratings                                  | Test Condition(s)                                                      |        | Min  | Typ | Max | Unit          |
|---------------|------------------------------------------|------------------------------------------------------------------------|--------|------|-----|-----|---------------|
| $V_{CEO}$     | Collector-Emitter Breakdown Voltage (*)  | $I_C=100\text{ mA}, I_B=0$                                             | MJ1000 | 60   | -   | -   | V             |
|               |                                          |                                                                        | MJ1001 | 80   | -   | -   |               |
| $I_{CEO}$     | Collector Cutoff Current                 | $V_{CE}=30\text{ V}, I_B=0$                                            | MJ1000 | -    | -   | 500 | $\mu\text{A}$ |
|               |                                          | $V_{CE}=40\text{ V}, I_B=0$                                            | MJ1001 | -    | -   |     |               |
| $I_{EBO}$     | Emitter Cutoff Current                   | $V_{BE}=5.0\text{ V}, I_C=0$                                           | MJ1000 | -    | -   | 2.0 | mA            |
|               |                                          |                                                                        | MJ1001 |      |     |     |               |
| $I_{CER}$     | Collector-Emitter Leakage Current        | $V_{CB}=60\text{ V}, R_{BE}=1.0\text{ k}\Omega$                        | MJ1000 | -    | -   | 1.0 | mA            |
|               |                                          | $V_{CB}=80\text{ V}, R_{BE}=1.0\text{ k}\Omega$                        | MJ1001 | -    | -   |     |               |
|               |                                          | $V_{CB}=60\text{ V}, R_{BE}=1.0\text{ k}\Omega, T_C=150^\circ\text{C}$ | MJ1000 | -    | -   | 5.0 |               |
|               |                                          | $V_{CB}=80\text{ V}, R_{BE}=1.0\text{ k}\Omega, T_C=150^\circ\text{C}$ | MJ1001 | -    | -   |     |               |
| $V_{CE(SAT)}$ | Collector-Emitter saturation Voltage (*) | $I_C=3.0\text{ A}, I_B=2\text{ mA}$                                    | MJ1000 | -    | -   | 2.0 | V             |
|               |                                          |                                                                        | MJ1001 |      |     |     |               |
|               |                                          | $I_C=8.0\text{ A}, I_B=40\text{ mA}$                                   | MJ1000 | -    | -   | 4.0 |               |
|               |                                          |                                                                        | MJ1001 |      |     |     |               |
| $V_F$         | Forward Voltage (pulse method)           | $I_F=3\text{ A}$                                                       | MJ1000 | -    | 1.8 | -   | V             |
|               |                                          |                                                                        | MJ1001 |      |     |     |               |
| $V_{BE}$      | Base-Emitter Voltage (*)                 | $I_C=3.0\text{ A}, V_{CE}=3.0\text{ V}$                                | MJ1000 | -    | -   | 2.5 | V             |
|               |                                          |                                                                        | MJ1001 |      |     |     |               |
| $H_{FE}$      | DC Current Gain (*)                      | $V_{CE}=3.0\text{ V}, I_C=3.0\text{ A}$                                | MJ1000 | 1000 | -   | -   | -             |
|               |                                          |                                                                        | MJ1001 |      |     |     |               |
|               |                                          | $V_{CE}=3.0\text{ V}, I_C=4.0\text{ A}$                                | MJ1000 | 750  | -   | -   |               |
|               |                                          |                                                                        | MJ1001 |      |     |     |               |

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

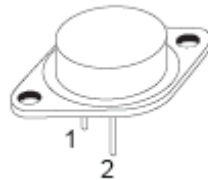
## NPN MJ1000 – MJ1001

### MECHANICAL DATA CASE TO-3

| DIMENSIONS (mm) |       |       |
|-----------------|-------|-------|
|                 | min   | max   |
| A               | 11    | 13.10 |
| B               | 0.97  | 1.15  |
| C               | 1.5   | 1.65  |
| D               | 8.32  | 8.92  |
| F               | 19    | 20    |
| G               | 10.70 | 11.1  |
| N               | 16.50 | 17.20 |
| P               | 25    | 26    |
| R               | 4     | 4.09  |
| U               | 38.50 | 39.30 |
| V               | 30    | 30.30 |



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



Revised September 2012

Information furnished is believed to be accurate and reliable. However, Comset Semiconductors assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may results from its use. Data are subject to change without notice. Comset Semiconductors makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Comset Semiconductors assume any liability arising out of the application or use of any product and specifically disclaims any and all liability, including without limitation consequential or incidental damages. Comset Semiconductors' products are not authorized for use as critical components in life support devices or systems.