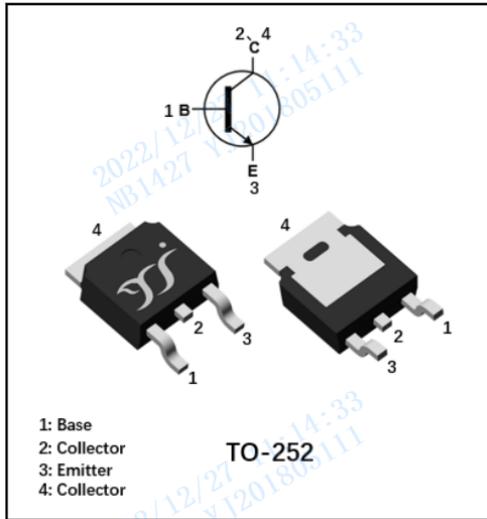


## NPN Power Transistor



### Features

- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 1

### Applications

- Designed for general purpose amplifier and low speed switching applications.

### Mechanical Data

- Package: TO-252
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102

### ■ Maximum Ratings (Ta=25°C unless otherwise noted)

| Item  | Symbol     | Unit | Value       |
|---|------------|------|-------------|
| Device marking code                             |            |      | MJD31C      |
| Collector-Base Voltage                          | $V_{CBO}$  | V    | 100         |
| Collector-Emitter Voltage                       | $V_{CEO}$  | V    | 100         |
| Emitter-Base Voltage                            | $V_{EBO}$  | V    | 5           |
| Collector Current -Continuous                   | $I_C$      | A    | 3           |
| Collector Base -Continuous                      | $I_B$      | A    | 1           |
| Total Device Dissipation (*)                    | $P_D$      | W    | 1.25        |
| Thermal Resistance, Junction to Ambient Air (*) | $R_{thJA}$ | °C/W | 100         |
| Junction Temperature                            | $T_j$      | °C   | -55 to +150 |
| Storage Temperature                             | $T_{STG}$  | °C   | -55 to +150 |

(\*) Device mounted on FR-4 PCB 15 x 17 x 0.8 mm



# MJD31C

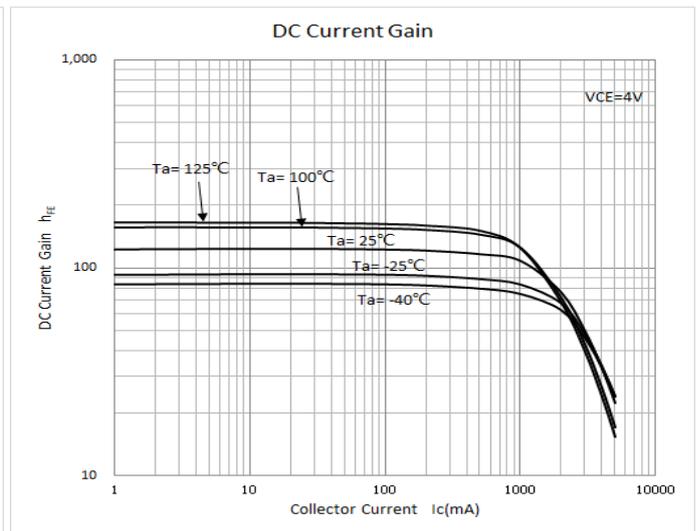
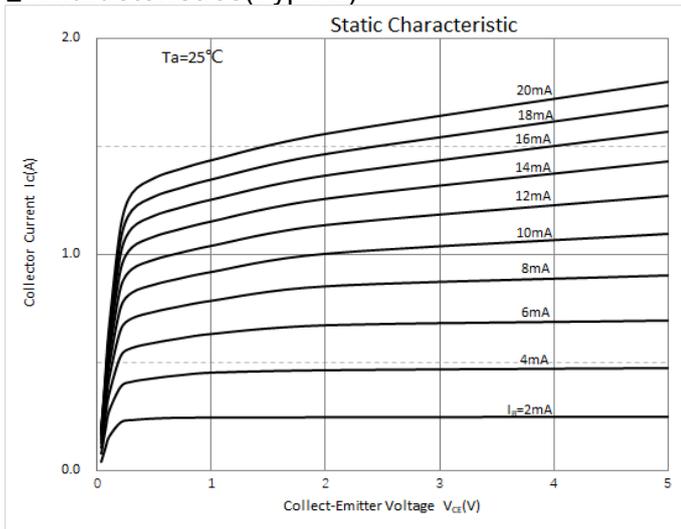
## ■ Electrical Characteristics (Ta=25°C unless otherwise noted)

| Item                                 | Symbol        | Unit          | Conditions                         | Min | Typ | Max |
|--------------------------------------|---------------|---------------|------------------------------------|-----|-----|-----|
| Collector-base breakdown voltage     | $V_{CBO}$     | V             | $I_C=1\text{mA}, I_E=0$            | 100 | -   | -   |
| Collector-emitter breakdown voltage  | $V_{CEO}$     | V             | $I_C=30\text{mA}, I_B=0$           | 100 | -   | -   |
| Emitter-base breakdown voltage       | $V_{EBO}$     | V             | $I_E=1\text{mA}, I_C=0$            | 5   | -   | -   |
| Collector- emitter cut-off current   | $I_{CEO}$     | $\mu\text{A}$ | $V_{CE}=60\text{V}, I_B=0$         | -   | -   | 50  |
| Collector- emitter cut-off current   | $I_{CES}$     | $\mu\text{A}$ | $V_{CE}=100\text{V}, V_{EB}=0$     | -   | -   | 20  |
| Emitter-base cut-off current         | $I_{EBO}$     | mA            | $V_{EB}=5\text{V}, I_C=0$          | -   | -   | 1   |
| DC current gain                      | $h_{FE}$      |               | $V_{CE}=4\text{V}, I_C=1\text{A}$  | 25  | -   | -   |
|                                      |               |               | $V_{CE}=4\text{V}, I_C=3\text{A}$  | 10  | -   | 75  |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | V             | $I_C=3\text{A}, I_B=0.375\text{A}$ | -   | -   | 1.2 |
| Base-emitter voltage                 | $V_{BE}$      | V             | $I_C=3\text{A}, V_{CE}=4\text{V}$  | -   | -   | 1.8 |

## ■ Other Characteristics (Ta=25°C unless otherwise noted)

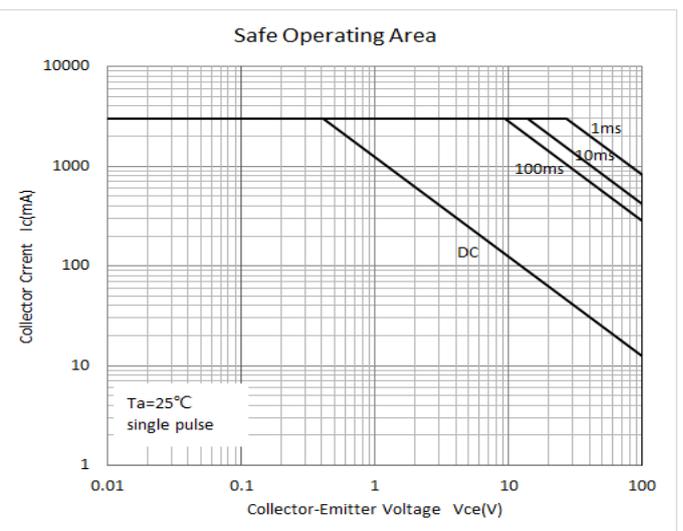
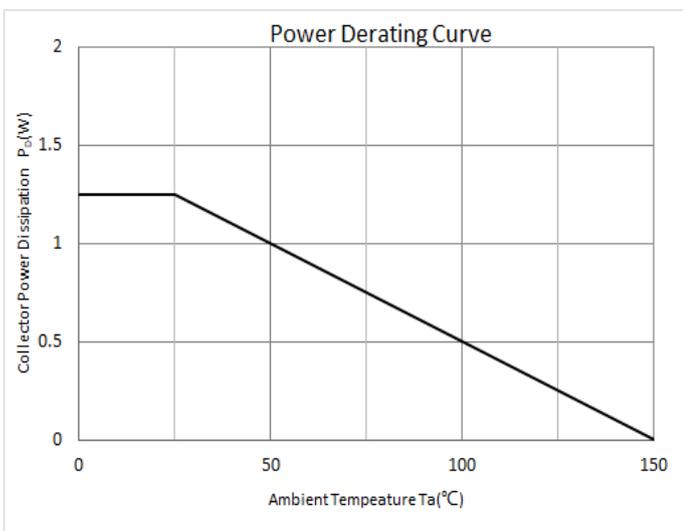
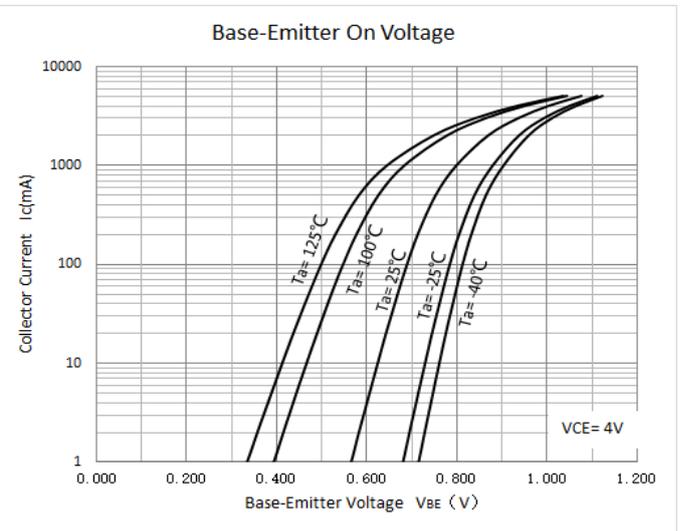
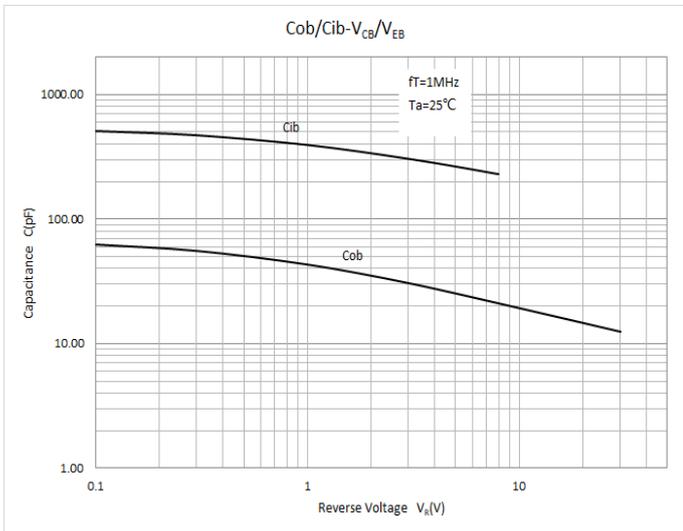
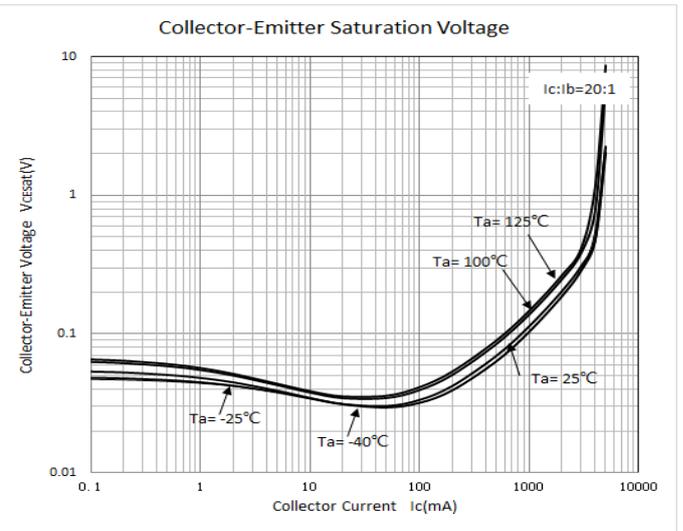
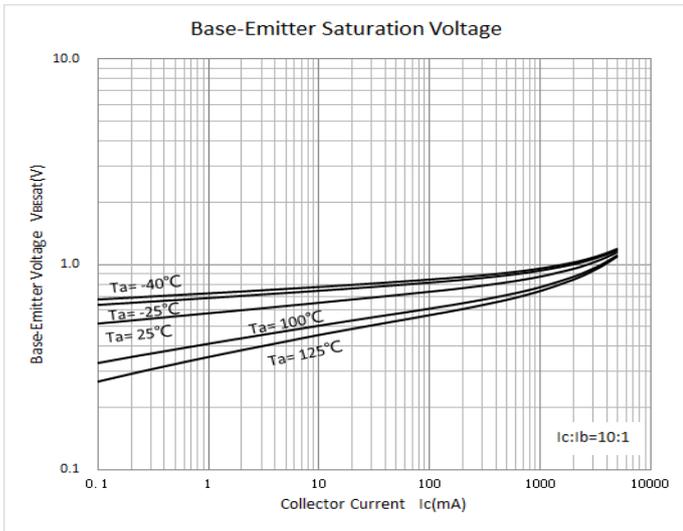
| Item                 | Symbol | Unit | Conditions  | Min | Typ | Max |
|----------------------|--------|------|---|-----|-----|-----|
| Transition frequency | $f_T$  | MHZ  | $V_{CE}=10\text{V}, I_C=0.5\text{A}, f=1\text{KHZ}$ | 3   | -   | -   |

## ■ Characteristics(Typical)





# MJD31C



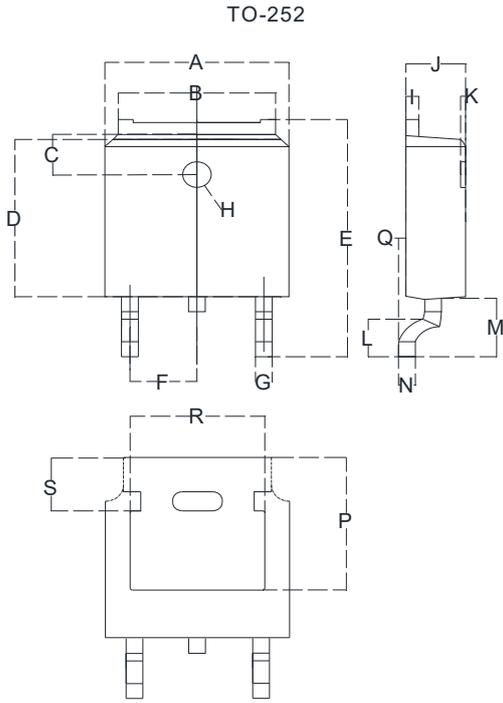


# MJD31C

## ■ Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|----------------------|-------------------------|----------------------------|---------------|
| MJD31C        | F1           | 2500                 | 2500                    | 25000                      | 13"Reel       |

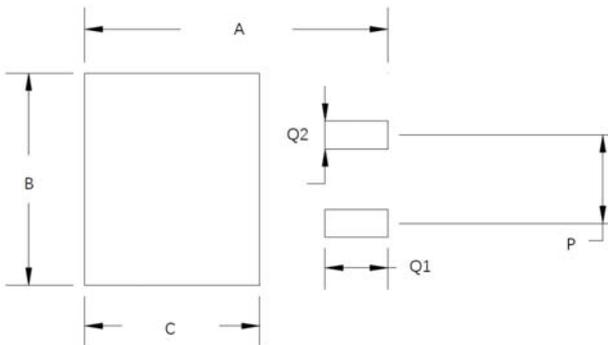
## ■ TO-252 Package information



Dimensions in millimeters

| TO-252 |         |         |
|--------|---------|---------|
| Dim    | Min     | Max     |
| A      | 6.500   | 6.700   |
| B      | 5.100   | 5.460   |
| C      | 1.400   | 1.800   |
| D      | 6.000   | 6.200   |
| E      | 10.000  | 10.400  |
| F      | 2.166   | 2.366   |
| G      | 0.660   | 0.860   |
| H      | Φ 1.050 | Φ 1.350 |
| I      | 0.460   | 0.580   |
| J      | 2.200   | 2.400   |
| K      | 0       | 0.300   |
| L      | 0.890   | 2.290   |
| M      | 2.730   | 3.080   |
| N      | 0.430   | 0.580   |
| P      | 5.15    | 5.45    |
| Q      | 0       | 0.2     |
| R      | 4.50    | 5.10    |
| S      | 1.60    | 2.40    |

## ■ Suggested Pad Layout



| Dim | Millimeters |
|-----|-------------|
| A   | 11.4        |
| B   | 6.74        |
| C   | 6.23        |
| P   | 4.56        |
| Q1  | 2.28        |
| Q2  | 1.52        |



## MJD31C

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