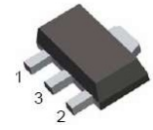


# 2SD1898-HF Series (NPN)

RoHS Device

Halogen Free



## Features

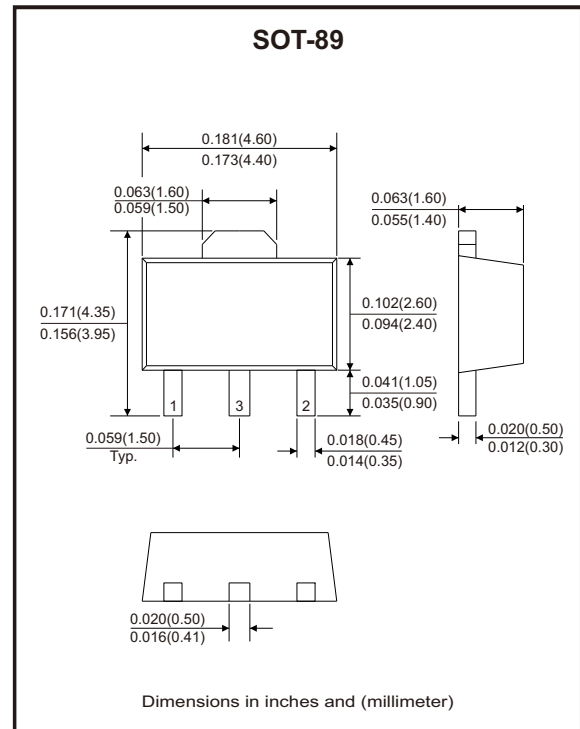
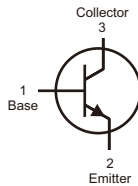
- High  $V_{CEO}$ ,  $V_{CEO}=80$ .
- High  $I_C$ ,  $I_C=1A(DC)$ .
- Good HFE linearity.
- Low  $V_{CE(sat)}$ .

## Mechanical data

- Case: SOT-89, molded plastic.
- Mounting position: Any.

## Circuit Diagram

1. Base  
2. Emitter  
3. Collector



## Maximum Ratings (at $T_A=25^{\circ}C$ unless otherwise noted)

| Parameter                                            | Symbol          | Value       | Unit          |
|------------------------------------------------------|-----------------|-------------|---------------|
| Collector-base voltage                               | $V_{CBO}$       | 100         | V             |
| Collector-emitter voltage                            | $V_{CEO}$       | 80          | V             |
| Emitter-base voltage                                 | $V_{EBO}$       | 5           | V             |
| Collector current                                    | $I_C$           | 1           | A             |
| Total power dissipation                              | $P_{tot}$       | 0.5         | W             |
| Thermal resistance from junction to ambient (Note 1) | $R_{\theta JA}$ | 250         | $^{\circ}C/W$ |
| Junction temperature                                 | $T_J$           | 150         | $^{\circ}C$   |
| Storage temperature range                            | $T_{STG}$       | -55 to +150 | $^{\circ}C$   |

Notes: 1. Device mounted on FR-4 substrate PC board, with minimum recommended pad layout.

## Electrical Characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter                                                    | Symbol        | Conditions                                                        | Min              | Typ | Max               | Unit          |
|--------------------------------------------------------------|---------------|-------------------------------------------------------------------|------------------|-----|-------------------|---------------|
| DC current gain<br>2SD1898P-HF<br>2SD1898Q-HF<br>2SD1898R-HF | $h_{FE}$      | $V_{CE} = 3\text{V}$ , $I_C = 500\text{mA}$                       | 82<br>120<br>180 |     | 180<br>270<br>390 |               |
| Collector-base breakdown voltage                             | $V_{(BR)CBO}$ | $I_C = 50\mu\text{A}$                                             | 100              |     |                   | V             |
| Collector-emitter breakdown voltage                          | $V_{(BR)CEO}$ | $I_C = 1\text{mA}$                                                | 80               |     |                   | V             |
| Emitter-base breakdown voltage                               | $V_{(BR)EBO}$ | $I_E = 50\mu\text{A}$                                             | 5                |     |                   | V             |
| Collector-base cut-off current                               | $I_{CBO}$     | $V_{CB} = 80\text{V}$                                             |                  |     | 1                 | $\mu\text{A}$ |
| Emitter-base cut-off current                                 | $I_{EBO}$     | $V_{EB} = 4\text{V}$                                              |                  |     | 1                 | $\mu\text{A}$ |
| Collector-emitter saturation voltage                         | $V_{CE(sat)}$ | $I_C = 500\text{mA}$ , $I_B = 20\text{mA}$                        |                  |     | 0.4               | V             |
| Transition frequency                                         | $f_T$         | $V_{CE} = 10\text{V}$ , $I_C = 50\text{mA}$ , $f = 100\text{MHz}$ |                  | 100 |                   | MHz           |

## Rating and Characteristic Curves (2SD1898-HF Series)

Fig.1 - Output Characteristics Curve

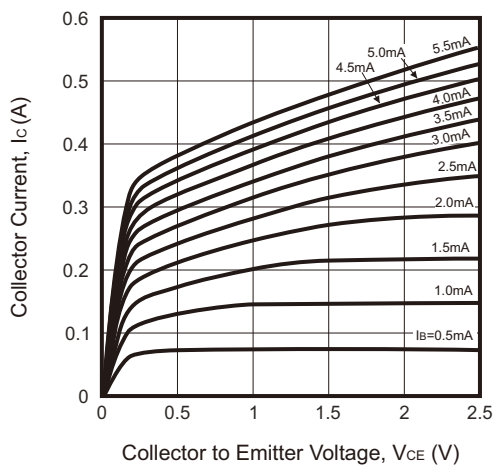
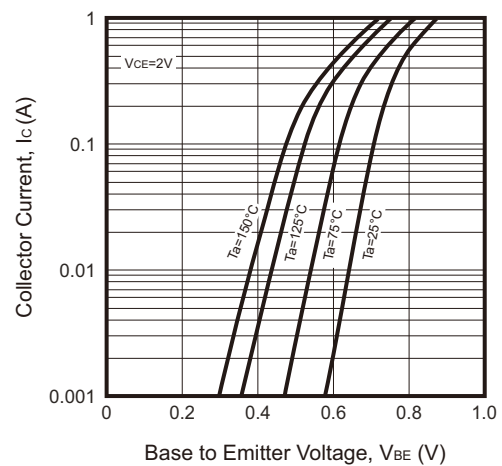


Fig.2 - Collector Current vs. Base to Emitter Voltage



## Rating and Characteristic Curves (2SD1898-HF Series)

Fig.3 - DC Current Gain vs. Collector Current

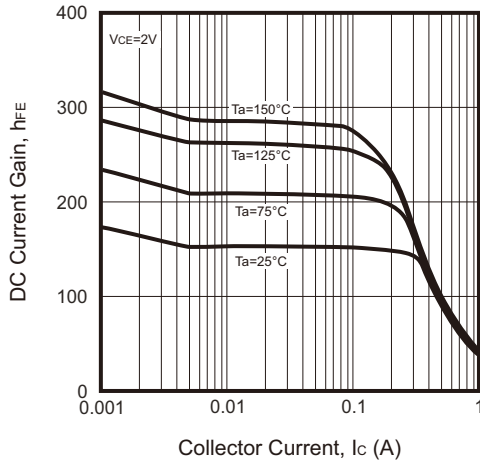


Fig.4 -  $V_{BE(sat)}$  vs. Collector Current

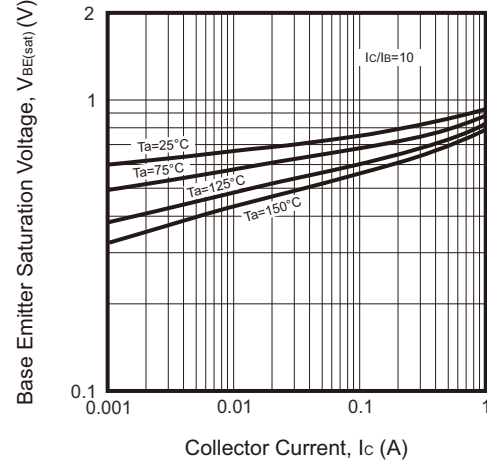


Fig.5 -  $V_{CE(sat)}$  vs. Collector Current

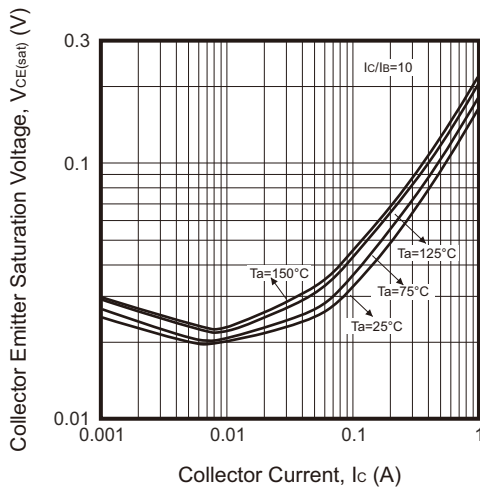


Fig.6 - Output Capacitance

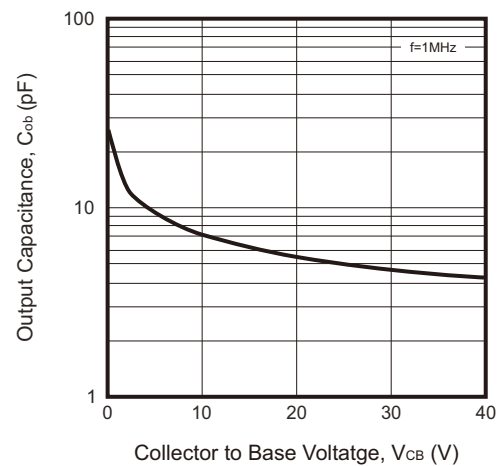
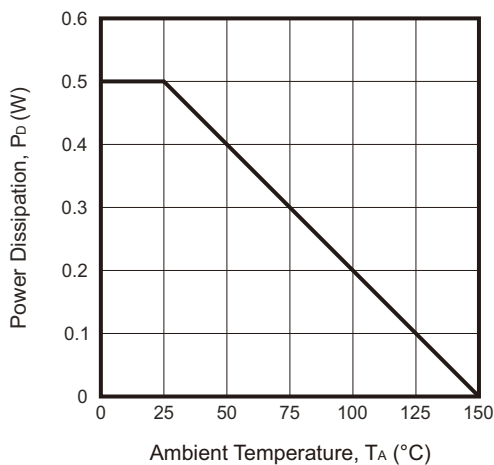
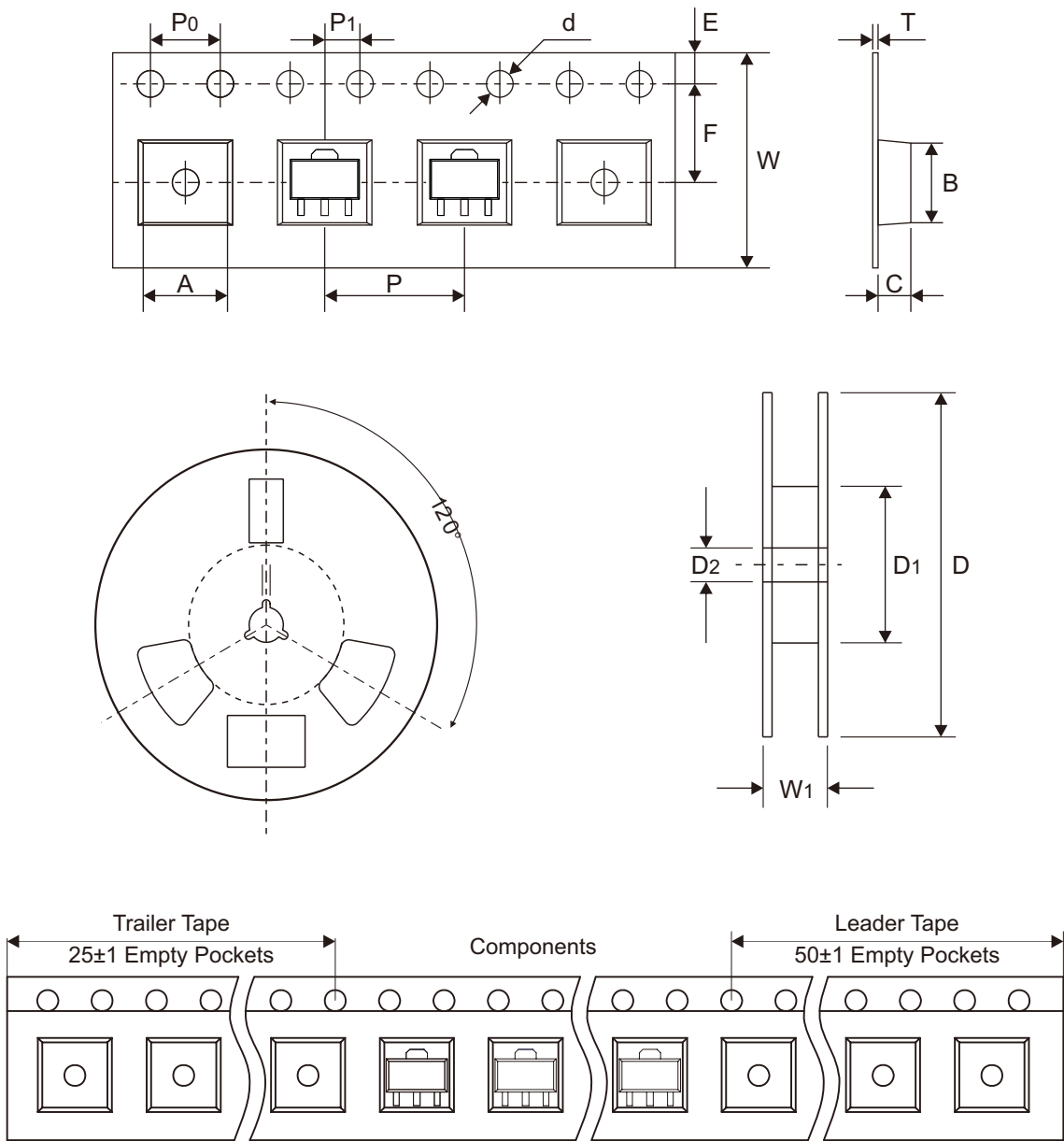


Fig.7 - Power Derating Curve



Reel Taping Specification

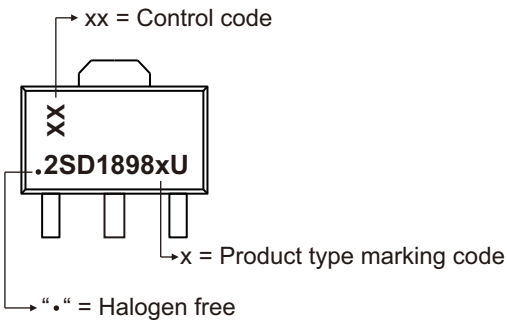


| SOT-89 | SYMBOL | A             | B             | C             | d                        | D              | D1    | D2            |
|--------|--------|---------------|---------------|---------------|--------------------------|----------------|-------|---------------|
|        | (mm)   | 4.85 ± 0.10   | 4.45 ± 0.10   | 1.85 ± 0.10   | 1.50 + 0.25<br>- 0.00    | 330.00 ± 2.00  | 100   | 13.00 ± 0.50  |
|        | (inch) | 0.191 ± 0.004 | 0.175 ± 0.004 | 0.073 ± 0.004 | 0.059 + 0.010<br>- 0.000 | 12.992 ± 0.079 | 3.937 | 0.512 ± 0.020 |

| SOT-89 | SYMBOL | E             | F             | P             | P0            | P1            | T             | W                        | W1         |
|--------|--------|---------------|---------------|---------------|---------------|---------------|---------------|--------------------------|------------|
|        | (mm)   | 1.75 ± 0.10   | 5.50 ± 0.05   | 8.00 ± 0.10   | 4.00 ± 0.10   | 2.00 ± 0.05   | 0.292 ± 0.013 | 12.00 + 0.30<br>- 0.10   | 20 Max.    |
|        | (inch) | 0.069 ± 0.004 | 0.217 ± 0.002 | 0.315 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.002 | 0.011 ± 0.001 | 0.472 + 0.012<br>- 0.004 | 0.787 Max. |

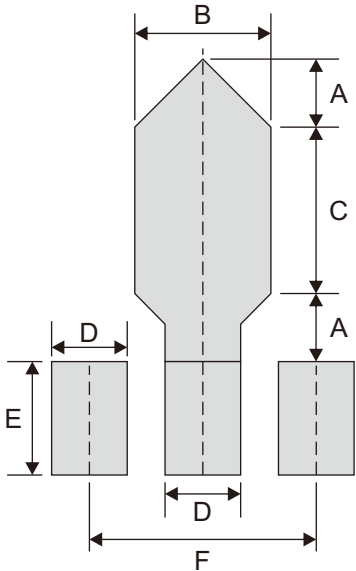
## Marking Code

| Part Number | Marking Code |
|-------------|--------------|
| 2SD1898P-HF | 2SD1898PU    |
| 2SD1898Q-HF | 2SD1898QU    |
| 2SD1898R-HF | 2SD1898RU    |



## Suggested P.C.B. PAD Layout

| SIZE | SOT-89 |        |
|------|--------|--------|
|      | (mm)   | (inch) |
| A    | 0.90   | 0.035  |
| B    | 1.80   | 0.071  |
| C    | 2.20   | 0.087  |
| D    | 1.00   | 0.039  |
| E    | 1.50   | 0.059  |
| F    | 3.00   | 0.118  |



## Standard Packaging

| Case Type | REEL PACK  |                  |
|-----------|------------|------------------|
|           | REEL (pcs) | Reel Size (inch) |
| SOT-89    | 4,000      | 13               |