

## TO-92 Plastic-Encapsulate Transistors

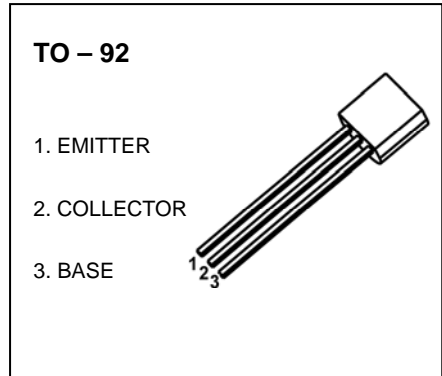
### 2SA608N TRANSISTOR (PNP)

#### FEATURES

- Large Current Capacity and Wide ASO.

#### APPLICATIONS

- Capable of Being Used in The Low Frequency to High Frequency Range.



#### MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted)

| Symbol          | Parameter                                   | Value    | Unit                      |
|-----------------|---|----------|---------------------------|
| $V_{CBO}$       | Collector-Base Voltage                      | -60      | V                         |
| $V_{CEO}$       | Collector-Emitter Voltage                   | -50      | V                         |
| $V_{EBO}$       | Emitter-Base Voltage                        | -6       | V                         |
| $I_C$           | Collector Current                           | -0.15    | A                         |
| $P_C$           | Collector Power Dissipation                 | 500      | mW                        |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient | 250      | $^\circ\text{C}/\text{W}$ |
| $T_j$           | Junction Temperature                        | 150      | $^\circ\text{C}$          |
| $T_{stg}$       | Storage Temperature                         | -55~+150 | $^\circ\text{C}$          |

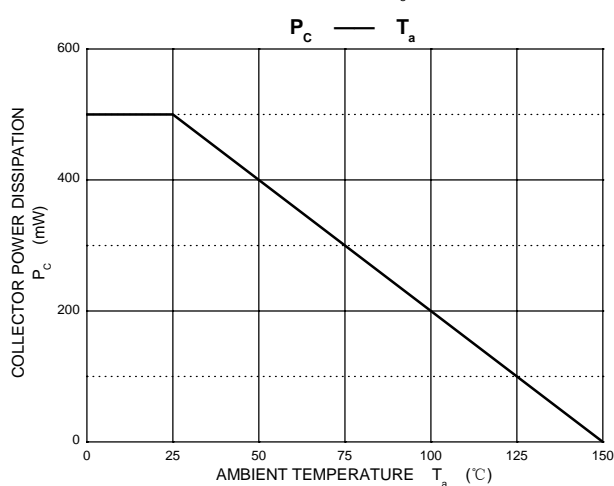
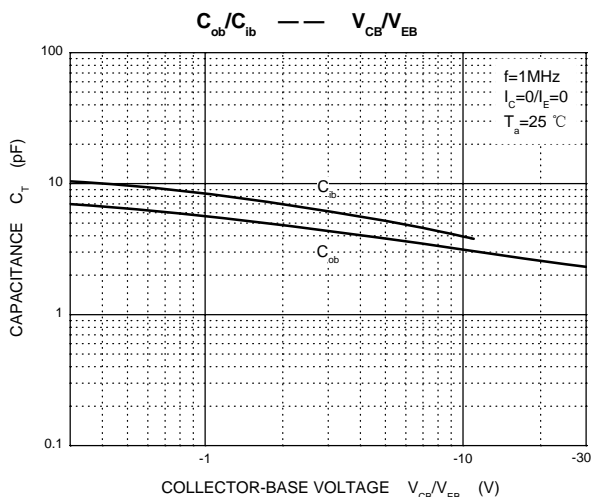
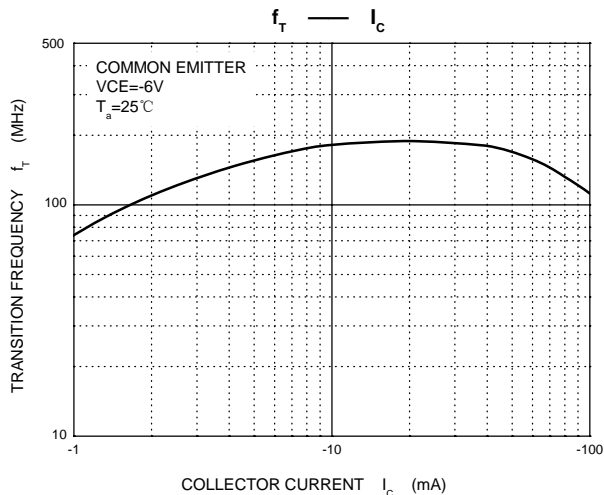
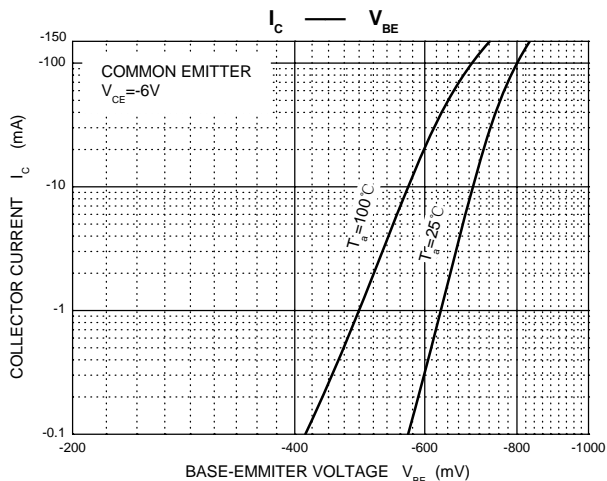
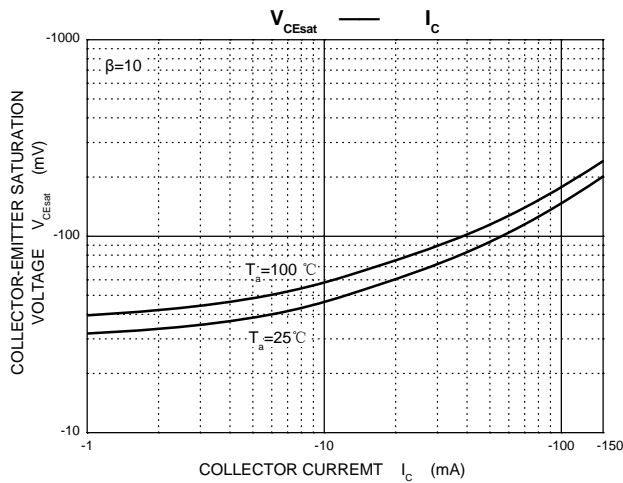
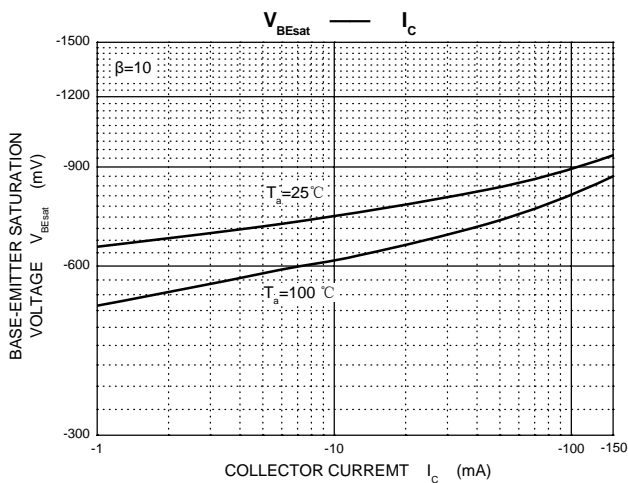
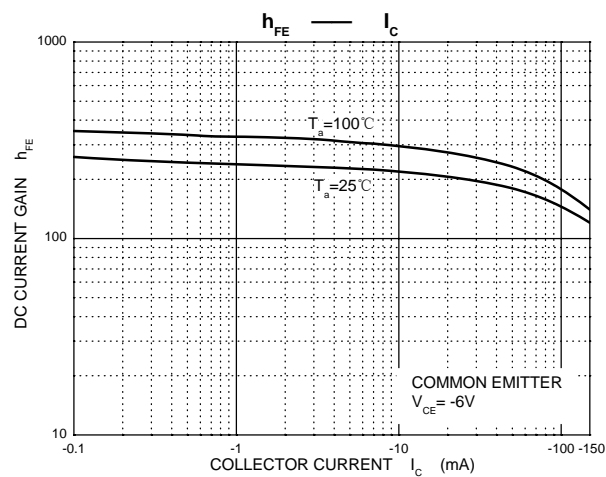
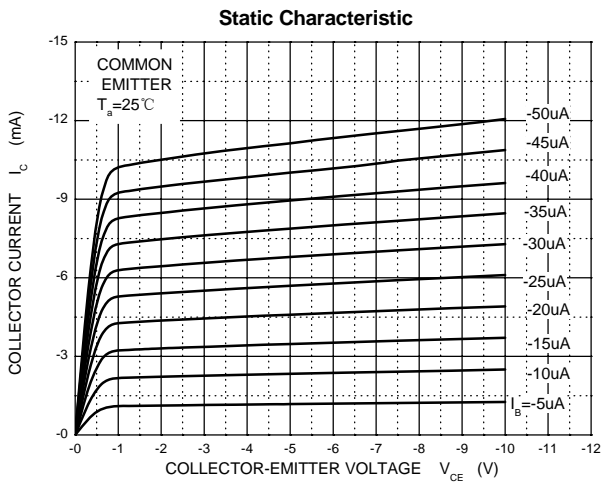
#### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ unless otherwise specified)

| Parameter                            | Symbol        | Test conditions                           | Min | Typ | Max  | Unit          |
|--------------------------------------|---------------|---|-----|-----|------|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=-0.01\text{mA}, I_E=0$               | -60 |     |      | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=-1\text{mA}, I_B=0$                  | -50 |     |      | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=-0.01\text{mA}, I_C=0$               | -6  |     |      | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=-40\text{V}, I_E=0$               |     |     | -0.1 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=-5\text{V}, I_C=0$                |     |     | -0.1 | $\mu\text{A}$ |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE}=-6\text{V}, I_C=-1\text{mA}$      | 160 |     | 560  |               |
|                                      | $h_{FE(2)}$   | $V_{CE}=-6\text{V}, I_C=-0.1\text{mA}$    | 70  |     |      |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=-100\text{mA}, I_B=-10\text{mA}$     |     |     | -0.3 | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=-100\text{mA}, I_B=-10\text{mA}$     |     |     | -1   | V             |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=-6\text{V}, I_C=0, f=1\text{MHz}$ |     | 4.5 |      | pF            |
| Transition frequency                 | $f_T$         | $V_{CE}=-6\text{V}, I_C=-10\text{mA}$     |     | 200 |      | MHz           |

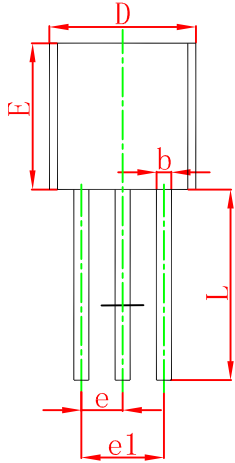
#### CLASSIFICATION OF $h_{FE(1)}$

| RANK  | F       | G       |
|-------|---------|---------|
| RANGE | 160-320 | 280-560 |

# Typical Characteristics

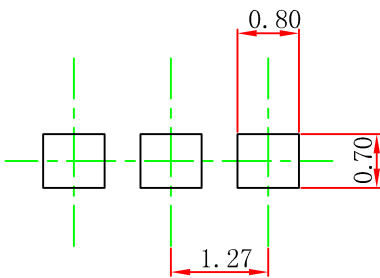


## TO-92 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |        | Dimensions In Inches |       |
|--------|---------------------------|--------|----------------------|-------|
|        | Min                       | Max    | Min                  | Max   |
| A      | 3.300                     | 3.700  | 0.130                | 0.146 |
| A1     | 1.100                     | 1.400  | 0.043                | 0.055 |
| b      | 0.380                     | 0.550  | 0.015                | 0.022 |
| c      | 0.360                     | 0.510  | 0.014                | 0.020 |
| D      | 4.300                     | 4.700  | 0.169                | 0.185 |
| D1     | 3.430                     |        | 0.135                |       |
| E      | 4.300                     | 4.700  | 0.169                | 0.185 |
| e      | 1.270 TYP                 |        | 0.050 TYP            |       |
| e1     | 2.440                     | 2.640  | 0.096                | 0.104 |
| L      | 14.100                    | 14.500 | 0.555                | 0.571 |
| Φ      |                           | 1.600  |                      | 0.063 |
| h      | 0.000                     | 0.380  | 0.000                | 0.015 |

## TO-92 Suggested Pad Layout



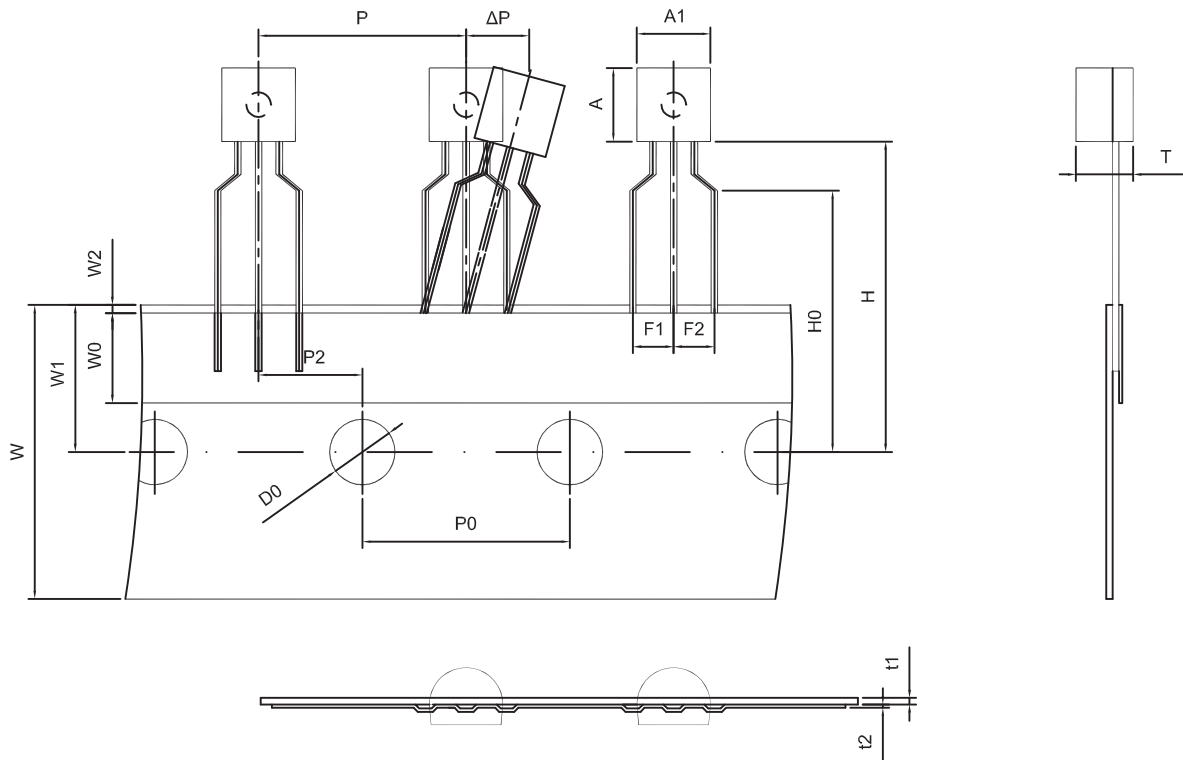
### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

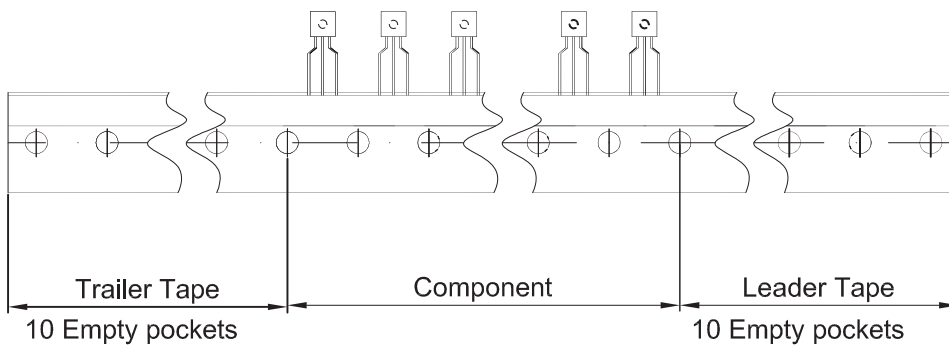
### NOTICE

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TO-92 PACKAGE TAPEING DIMENSION



| Dimiensions are in millimeter |     |          |      |      |      |     |     |      |
|-------------------------------|-----|----------|------|------|------|-----|-----|------|
| A1                            | A   | T        | P    | P0   | P2   | F1  | F2  | W    |
| 4.5                           | 4.5 | 3.5      | 12.7 | 12.7 | 6.35 | 2.5 | 2.5 | 18.0 |
| W0                            | W1  | W2       | H    | H0   | D0   | t1  | t2  | ΔP   |
| 6.0                           | 9.0 | 1.0 MAX. | 19.0 | 16.0 | 4.0  | 0.4 | 0.2 | 0    |



| Package | Box      | Box Size(mm) | Carton     | Carton Size(mm) |
|---------|----------|--------------|------------|-----------------|
| TO-92   | 2000 pcs | 333×162×43   | 20,000 pcs | 350×340×250     |