

## TO-92S Plastic-Encapsulate Transistors

### 2SA1267 TRANSISTOR (PNP)

#### FEATURES

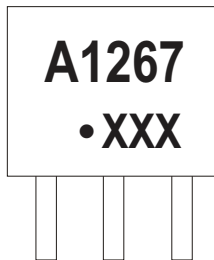
- High  $h_{FE}$
- Excellent  $h_{FE}$  linearing

#### TO-92S

1. EMITTER
2. COLLECTOR
3. BASE

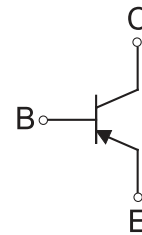


#### MARKING



A1267=Device code  
Solid dot= Green molding compound device,  
if none, the normal device  
XXX=Code

#### Equivalent Circuit



#### ORDERING INFORMATION

| Part Number | Package | Packing Method | Pack Quantity |
|-------------|---------|----------------|---------------|
| 2SA1267     | TO-92S  | Bulk           | 1000pcs/Bag   |
| 2SA1267-TA  | TO-92S  | Tape           | 3000pcs/Box   |

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

| Symbol    | Parameter                     | Value   | Unit               |
|-----------|-------------------------------|---------|--------------------|
| $V_{CBO}$ | Collector- Base Voltage       | -50     | V                  |
| $V_{CEO}$ | Collector-Emitter Voltage     | -50     | V                  |
| $V_{EBO}$ | Emitter-Base Voltage          | -5      | V                  |
| $I_C$     | Collector Current -Continuous | -0.15   | A                  |
| $P_C$     | Collector Power Dissipation   | 0.4     | W                  |
| $T_J$     | Junction Temperature          | 150     | $^{\circ}\text{C}$ |
| $T_{stg}$ | Storage Temperature           | -55-150 | $^{\circ}\text{C}$ |

## ELECTRICAL CHARACTERISTICS

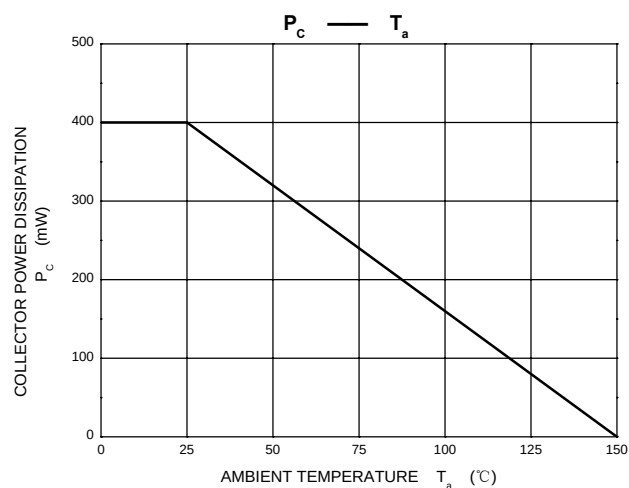
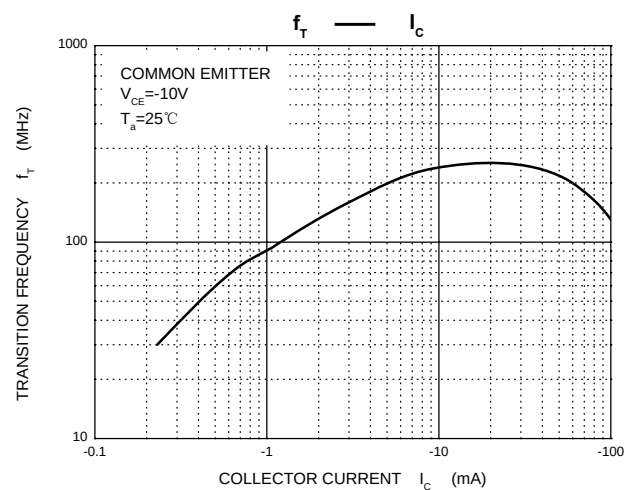
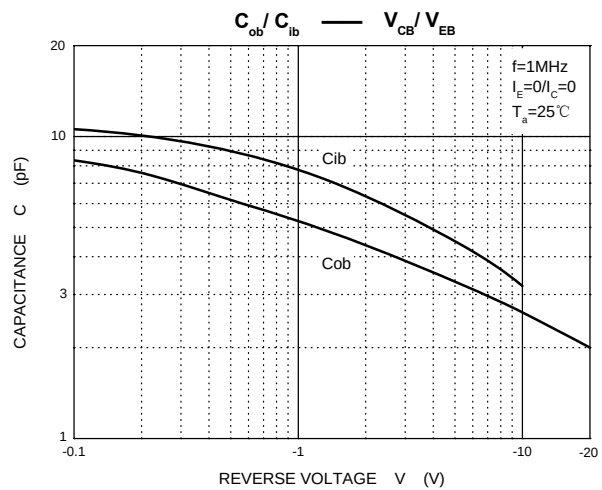
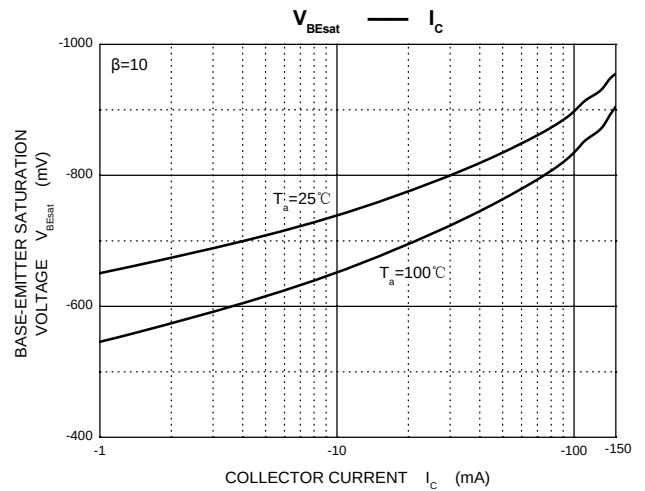
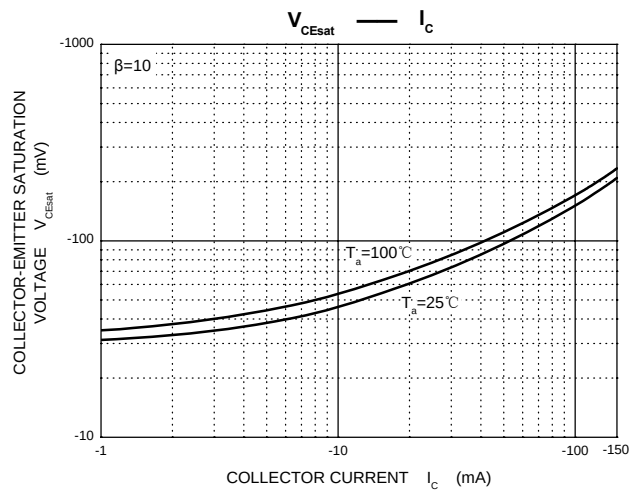
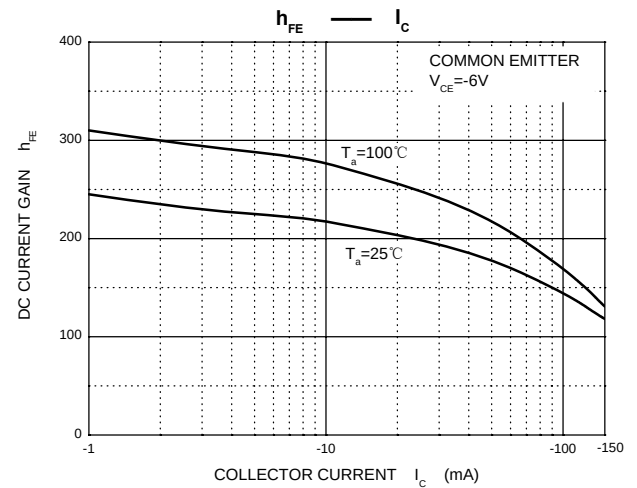
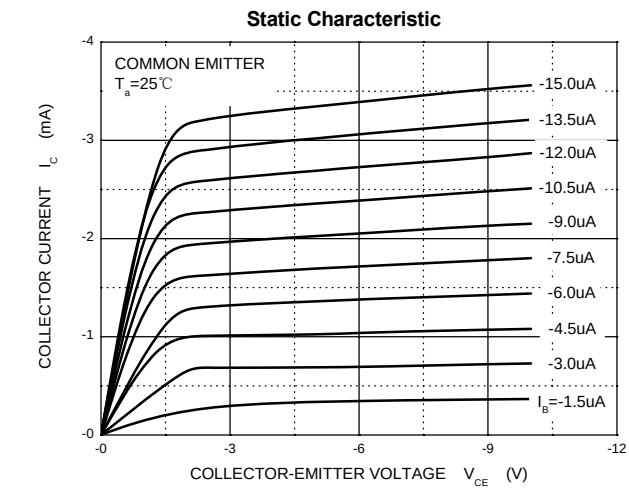
$T_a=25^{\circ}\text{C}$  unless otherwise specified

| Parameter                            | Symbol        | Test conditions                                                                          | Min | Typ | Max   | Unit          |
|--------------------------------------|---------------|------------------------------------------------------------------------------------------|-----|-----|-------|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=-100\text{ }\mu\text{A}$ , $I_E=0$                                                  | -50 |     |       | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=-1\text{mA}$ , $I_B=0$                                                              | -50 |     |       | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=-100\text{ }\mu\text{A}$ , $I_C=0$                                                  | -5  |     |       | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=-50\text{ V}$ , $I_E=0$                                                          |     |     | -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                      | $h_{FE}$      | $V_{CE}=-6\text{ V}$ , $I_C=-2\text{mA}$                                                 | 70  |     | 700   |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=-100\text{mA}$ , $I_B=-10\text{mA}$                                                 |     |     | -0.25 | V             |
| Transition frequency                 | $f_T$         | $V_{CE}=-10\text{ V}$ , $I_C=-1\text{mA}$ , $f=30\text{MHz}$                             | 80  |     |       | MHz           |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=-10\text{ V}$ , $I_E=0$ , $f=1\text{kHz}$                                        |     |     | 3.5   | pF            |
| Noise figure                         | NF            | $V_{CE}=-6\text{V}$ , $I_C=-0.1\text{mA}$ ,<br>$f=1\text{kHz}$ , $R_g=10\text{ k}\Omega$ |     |     | 10    | dB            |

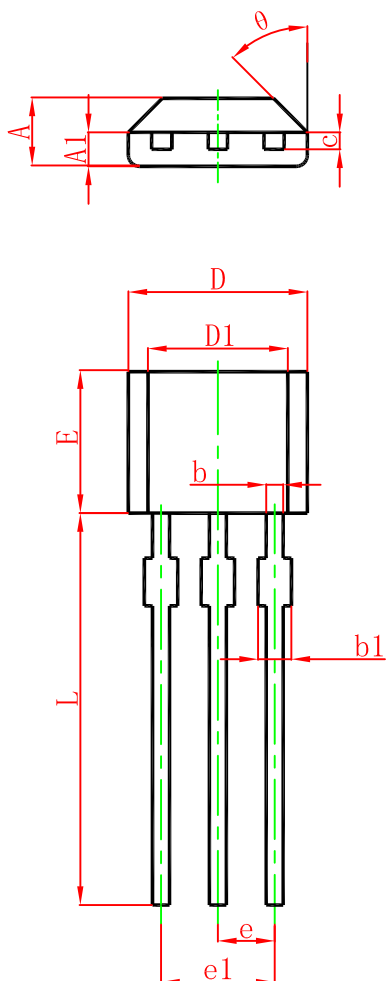
### CLASSIFICATION OF $h_{FE}$

| Rank  | O      | Y       | GR      | BL      |
|-------|--------|---------|---------|---------|
| Range | 70-140 | 120-240 | 200-400 | 300-700 |

# Typical Characteristics

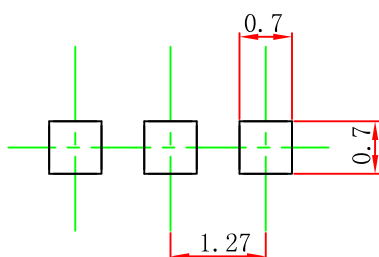


## TO-92S Package Outline Dimensions



| Symbol | Dimensions In Millimeters |        | Dimensions In Inches |       |
|--------|---------------------------|--------|----------------------|-------|
|        | Min.                      | Max.   | Min.                 | Max.  |
| A      | 1.420                     | 1.620  | 0.056                | 0.064 |
| A1     | 0.660                     | 0.860  | 0.026                | 0.034 |
| b      | 0.330                     | 0.480  | 0.013                | 0.019 |
| b1     | 0.400                     | 0.510  | 0.016                | 0.020 |
| c      | 0.330                     | 0.510  | 0.013                | 0.020 |
| D      | 3.900                     | 4.100  | 0.154                | 0.161 |
| D1     | 2.280                     | 2.680  | 0.090                | 0.106 |
| E      | 3.050                     | 3.250  | 0.120                | 0.128 |
| e      | 1.270 TYP.                |        | 0.050 TYP.           |       |
| e1     | 2.440                     | 2.640  | 0.096                | 0.104 |
| L      | 15.100                    | 15.500 | 0.594                | 0.610 |
| θ      | 45° TYP.                  |        | 45° TYP.             |       |

## TO-92S Suggested Pad Layout



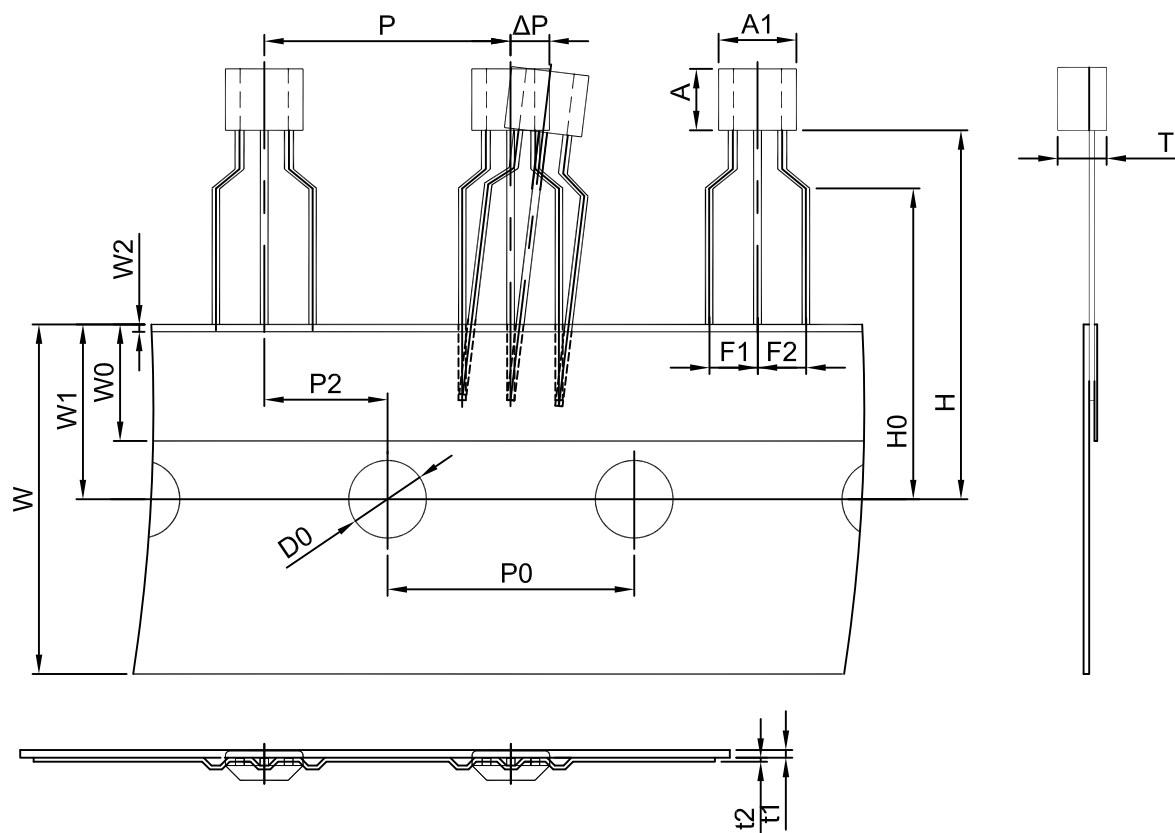
Note:

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

### NOTICE

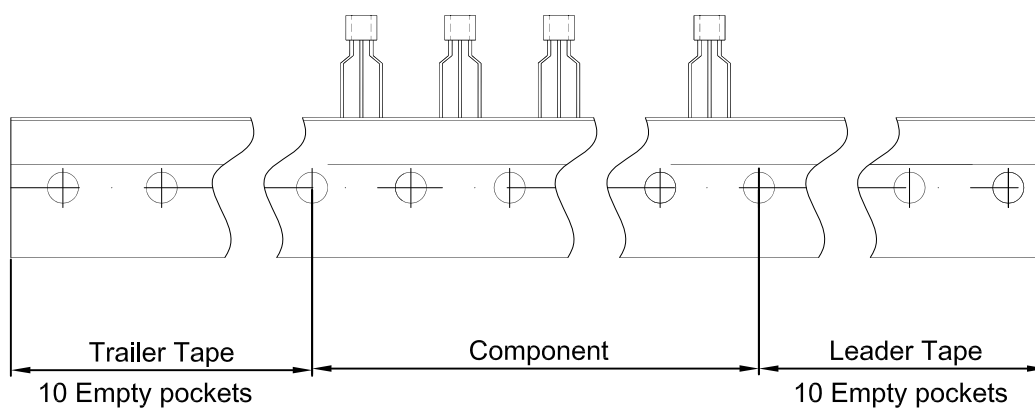
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## TO-92S PACKAGE TAPEING DIMENSION



Dimiensions are in millimeter

| A1  | A    | T    | P    | P0   | P2   | F1  | F2  | W    |
|-----|------|------|------|------|------|-----|-----|------|
| 4.0 | 3.15 | 1.52 | 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  | 19.0 | 16.0 | 4.0  | 0.4 | 0.2 | 0    |



| Package | Box      | Box Size(mm) | Carton     | Carton Size(mm) |
|---------|----------|--------------|------------|-----------------|
| TO-92S  | 3000 pcs | 333×162×43   | 30,000 pcs | 350×340×250     |