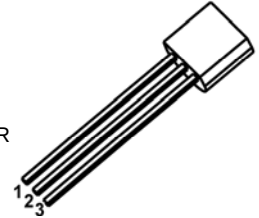
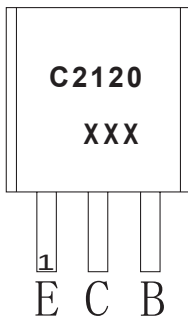


**TO-92 Plastic-Encapsulate Transistors****2SC2120** TRANSISTOR (NPN)**FEATURES**

- High DC Current Gain
- Complementary to 2SA950

**TO - 92**

1. EMITTER
2. COLLECTOR
3. BASE

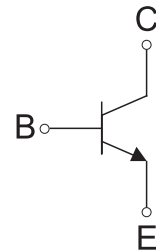
**MARKING**

C2120=Device code

XXX=Code

GXX=Green molding compound device

CXX=Normal molding compound device

**Equivalent Circuit****ORDERING INFORMATION**

| Part Number | Package | Packing Method | Pack Quantity |
|-------------|---------|----------------|---------------|
| 2SC2120     | TO-92   | Bulk           | 1000pcs/Bag   |
| 2SC2120-TA  | TO-92   | Tape           | 2000pcs/Box   |

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

| Symbol          | Parameter                                        | Value    | Unit                        |
|-----------------|--------------------------------------------------|----------|-----------------------------|
| $V_{CBO}$       | Collector-Base Voltage                           | 35       | V                           |
| $V_{CEO}$       | Collector-Emitter Voltage                        | 30       | V                           |
| $V_{EBO}$       | Emitter-Base Voltage                             | 5        | V                           |
| $I_C$           | Collector Current                                | 0.8      | A                           |
| $P_C$           | Collector Power Dissipation                      | 600      | mW                          |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient      | 208      | $^{\circ}\text{C}/\text{W}$ |
| $T_J, T_{stg}$  | Operation Junction and Storage Temperature Range | -55~+150 | $^{\circ}\text{C}$          |

## ELECTRICAL CHARACTERISTICS

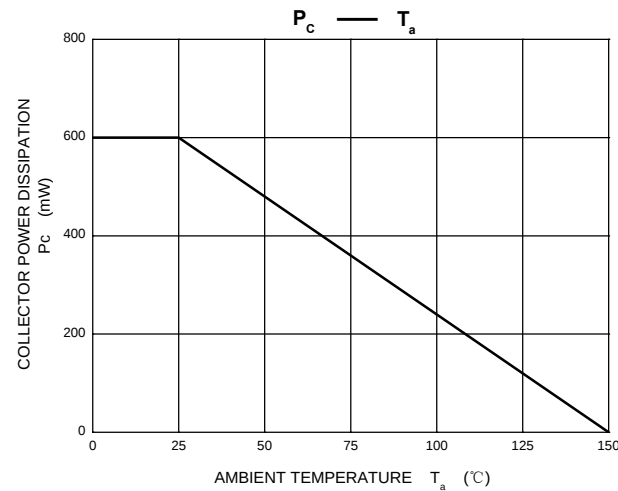
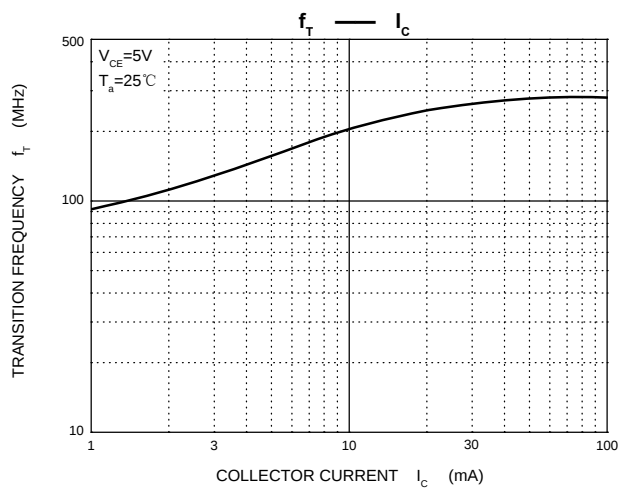
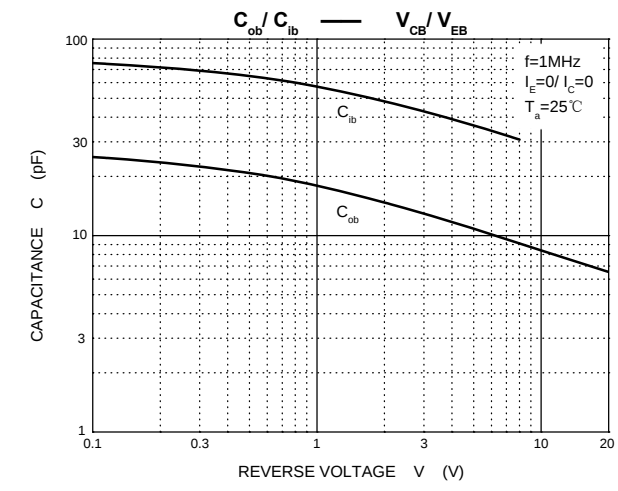
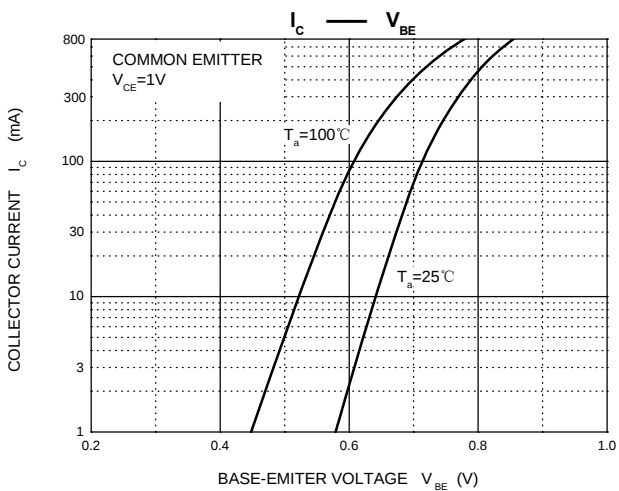
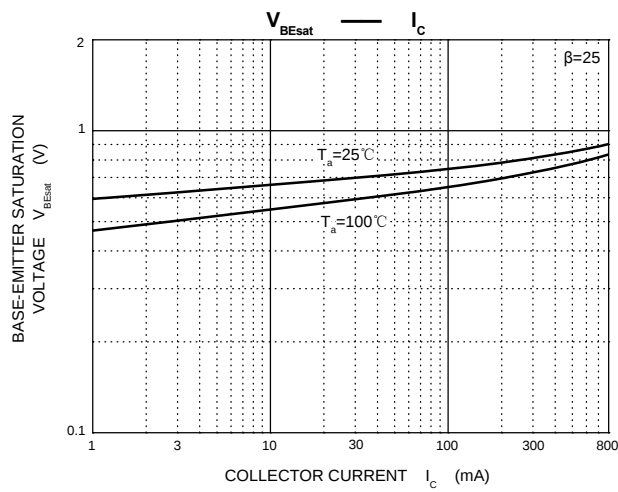
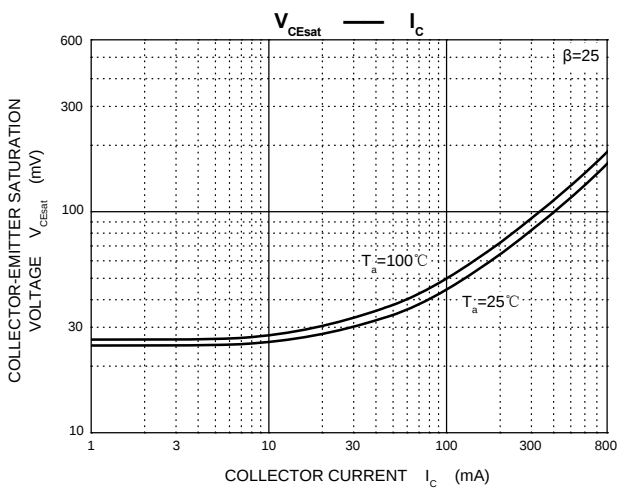
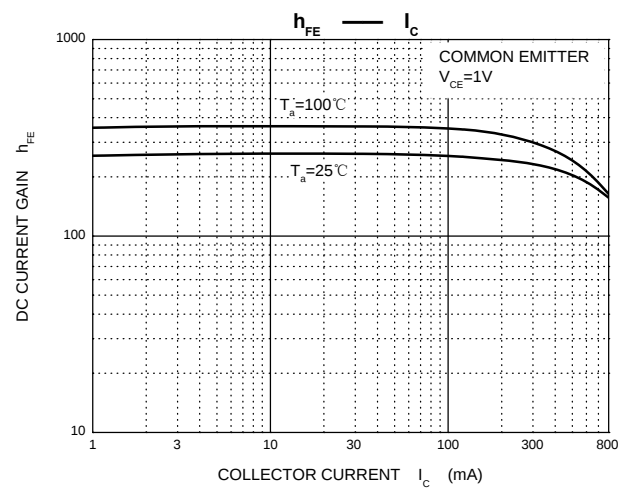
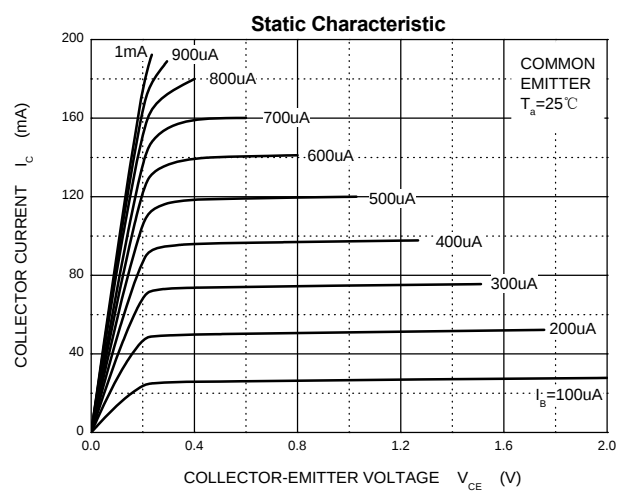
$T_a=25^{\circ}\text{C}$  unless otherwise specified

| Parameter                            | Symbol        | Test conditions                           | Min | Typ | Max | Unit          |
|--------------------------------------|---------------|-------------------------------------------|-----|-----|-----|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=0.1\text{mA}, I_E=0$                 | 35  |     |     | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=10\text{mA}, I_B=0$                  | 30  |     |     | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=0.1\text{mA}, I_C=0$                 | 5   |     |     | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=35\text{V}, I_E=0$                |     |     | 0.1 | $\mu\text{A}$ |
| Collector cut-off current            | $I_{CEO}$     | $V_{CE}=25\text{V}, I_B=0$                |     |     | 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                      | $h_{FE}$      | $V_{CE}=1\text{V}, I_C=100\text{mA}$      | 100 |     | 320 |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=500\text{mA}, I_B=20\text{mA}$       |     |     | 0.5 | V             |
| Base-emitter voltage                 | $V_{BE}$      | $V_{CE}=1\text{V}, I_C=10\text{mA}$       |     |     | 0.8 | V             |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$ |     |     | 13  | pF            |
| Transition frequency                 | $f_T$         | $V_{CE}=5\text{V}, I_C=10\text{mA}$       | 100 |     |     | MHz           |

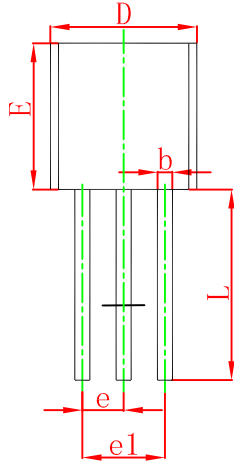
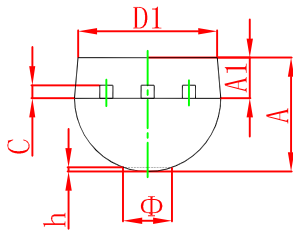
### CLASSIFICATION OF $h_{FE}$

| RANK  | O       | Y       |
|-------|---------|---------|
| RANGE | 100-200 | 160-320 |

Typical Characteristics

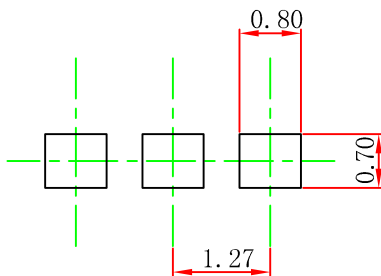


## TO-92 Package Outline Dimensions



| 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



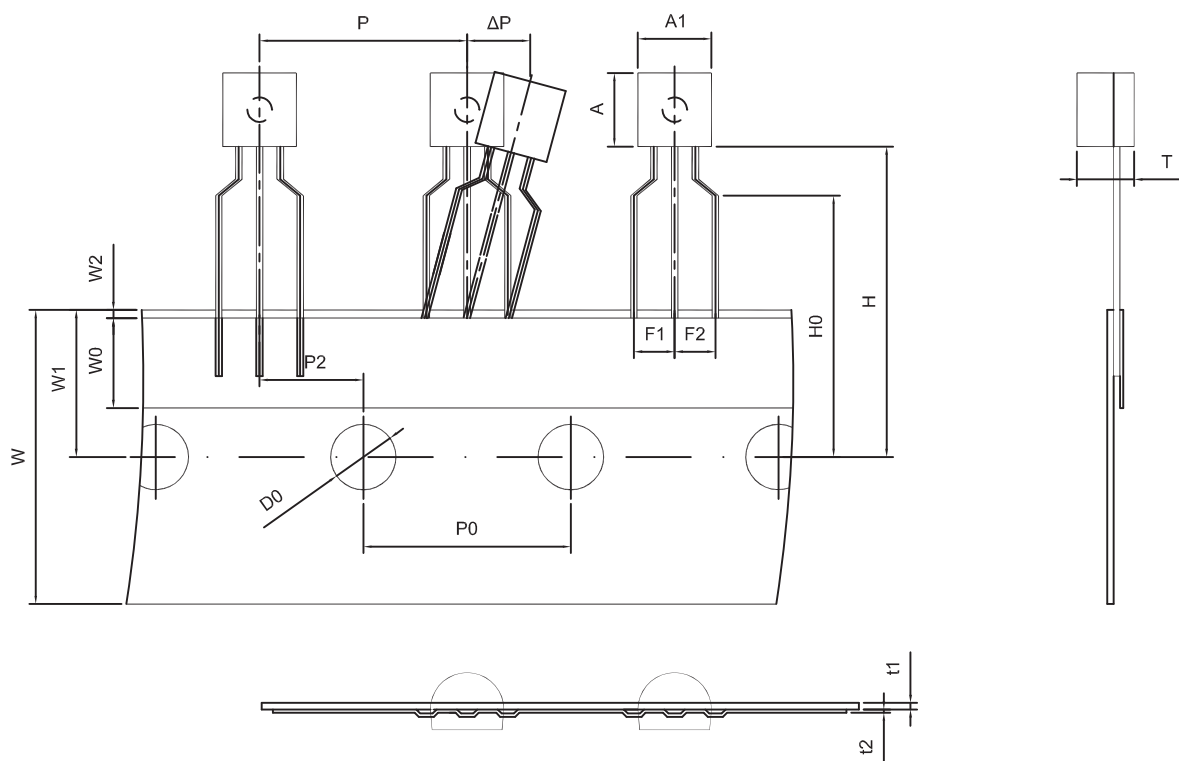
Note:

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

### NOTICE

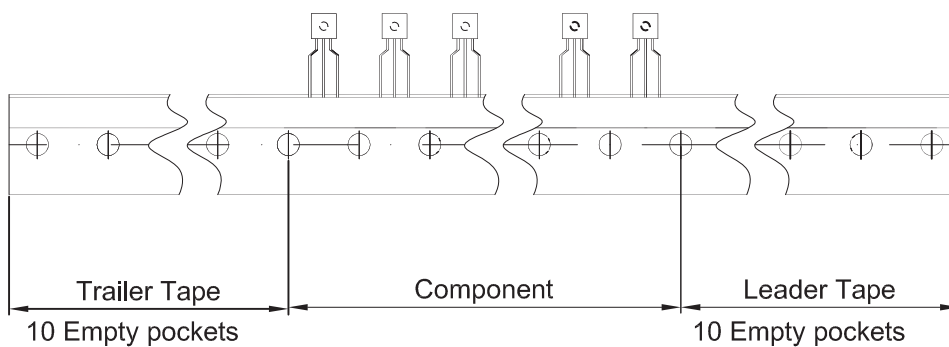
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## TO-92 Tape and Reel



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  | $\Delta P$ |
| 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     |