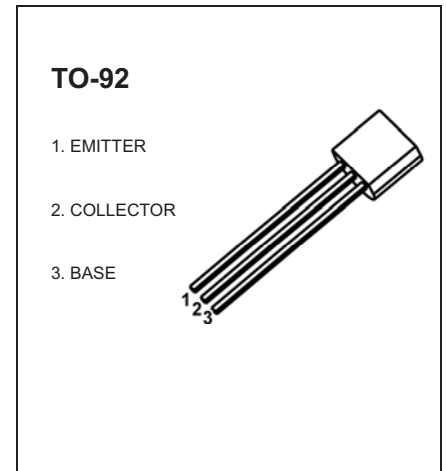


## TO-92 Plastic-Encapsulate Transistors

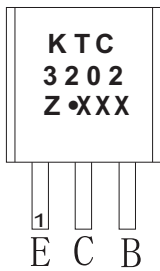
### KTC3202 TRANSISTOR (NPN)

#### FEATURES

- General Purpose Application Switching Application

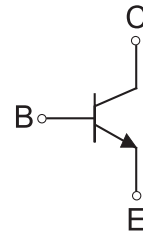


#### MARKING



KTC3202=Device code  
 Solid dot=Green molding compound device,  
 if none,the normal device  
 Z=Rank of  $h_{FE}$ ,  
 XXX=Code

#### Equivalent Circuit



#### ORDERING INFORMATION

| Part Number | Package | Packing Method | Pack Quantity |
|-------------|---------|----------------|---------------|
| KTC3202     | TO-92   | Bulk           | 1000pcs/Bag   |
| KTC3202-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 -Continuous               | 0.5      | A                             |
| $P_D$           | Collector Power Dissipation                 | 625      | mW                            |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient | 200      | $^{\circ}\text{C} / \text{W}$ |
| $T_j$           | Junction Temperature                        | 150      | $^{\circ}\text{C}$            |
| $T_{stg}$       | Storage Temperature                         | -55~+150 | $^{\circ}\text{C}$            |

## ELECTRICAL CHARACTERISTICS

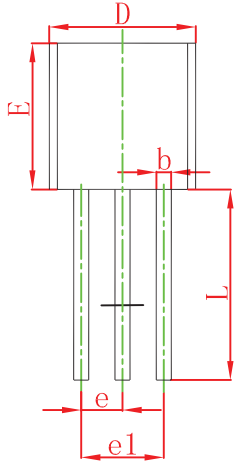
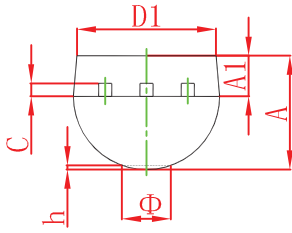
$T_a=25^\circ\text{C}$  unless otherwise specified

| Parameter                            | Symbol        | Test conditions                             | Min | Typ | Max  | Unit          |
|--------------------------------------|---------------|---|-----|-----|------|---------------|
| Collector-BASE breakdown voltage     | $V_{(BR)CBO}$ | $I_C = 0.1\text{mA}, I_B=0$                 | 35  |     |      | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C = 1\text{mA}, I_B=0$                   | 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  | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}= 5\text{V}, I_C=0$                  |     |     | 0.1  | $\mu\text{A}$ |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE}= 1\text{V}, I_C= 100\text{mA}$      | 70  |     | 400  |               |
|                                      | $h_{FE(2)}$   | $V_{CE}= 6\text{V}, I_C= 400\text{mA}$      | 25  |     |      |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=100\text{mA}, I_B= 10\text{mA}$        |     |     | 0.25 | V             |
| Base-Emitter Saturation Voltage      | $V_{BE}$      | $V_{CE}=1\text{V}, I_C= 100\text{mA}$       |     |     | 1.0  | V             |
| Transition frequency                 | $f_T$         | $V_{CE}= 6\text{V}, I_C= 20\text{mA}$       |     | 300 |      | MHz           |
| Collector Output Capacitance         | $C_{ob}$      | $V_{CB}= 6\text{V}, I_E= 0, f=1\text{ MHz}$ |     | 7.0 |      | pF            |

### CLASSIFICATION OF $h_{FE}$

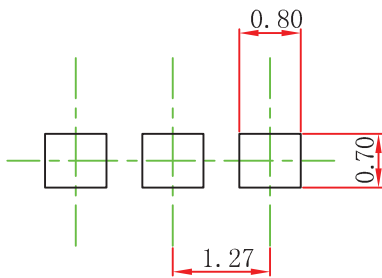
| Rank              | O      | Y       | GR |
|-------------------|--------|---------|----|
| Range $h_{FE(1)}$ | 70-140 | 120-240 |    |
| Range $h_{FE(2)}$ | 25     | 40      |    |

## 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



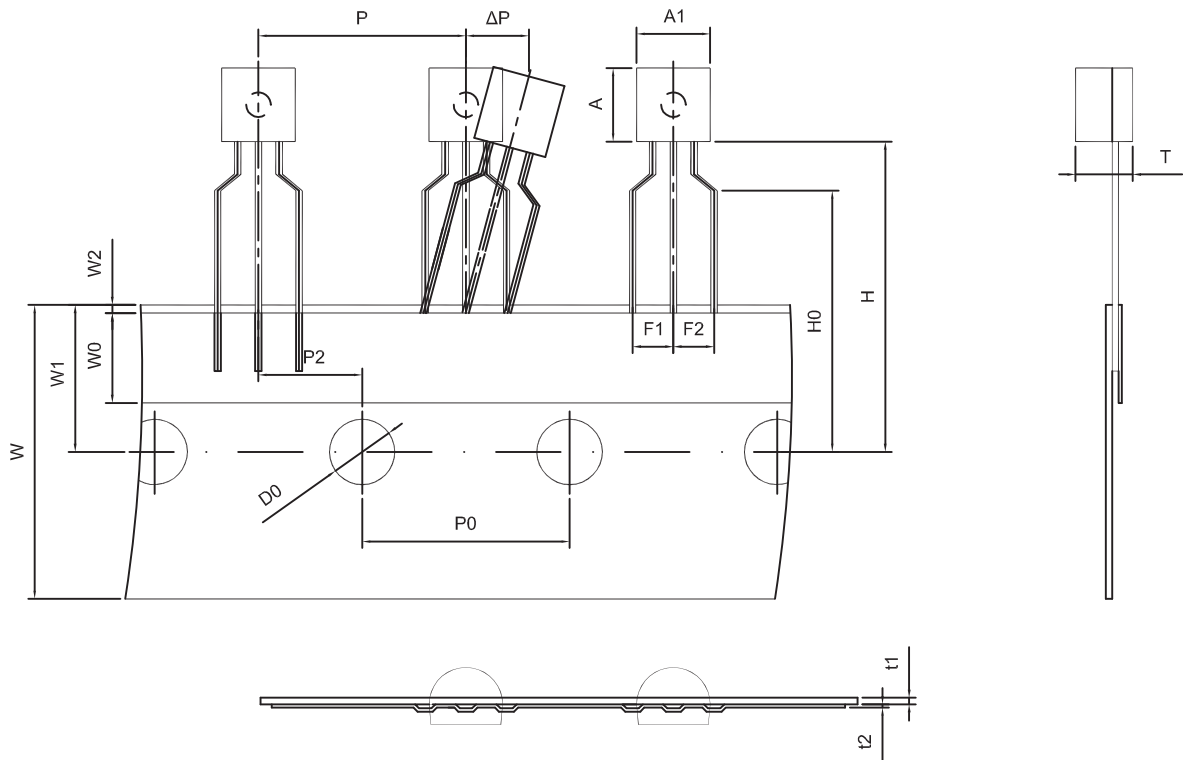
### Note:

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

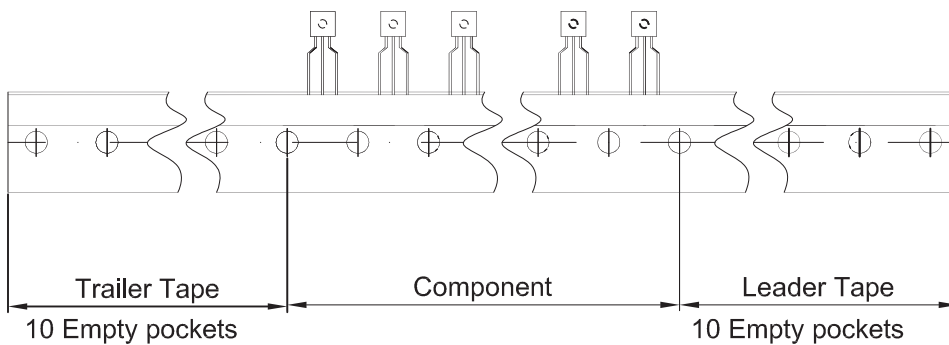
### NOTICE

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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     |