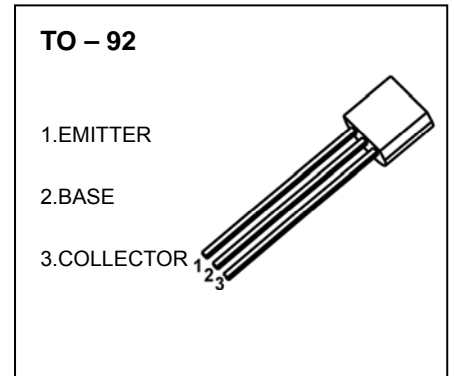


TO-92 Plastic-Encapsulate Transistors

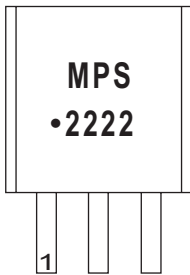
MPS2222 TRANSISTOR (NPN)

FEATURES

- General Purpose Switching and Amplification

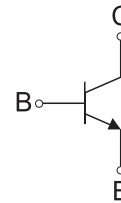


MARKING



MPS2222 = Device code
Solid dot = Green molding compound device,
if none, the normal device

Equivalent Circuit



ORDERING INFORMATION

| Part Number | Package | Packing Method | Pack Quantity |
|-------------|---------|----------------|---------------|
| MPS2222 | TO-92 | Bulk | 1000pcs/Bag |
| MPS2222-TA | TO-92 | Tape | 2000pcs/Box |

MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

| Symbol | Parameter | Value | Unit |
|-----------------------------------|--|----------|------|
| V _{CBO} | Collector-Base Voltage | 60 | V |
| V _{CEO} | Collector-Emitter Voltage | 30 | V |
| V _{EBO} | Emitter-Base Voltage | 5 | V |
| I _C | Collector Current -Continuous | 0.6 | A |
| P _C | Collector Power Dissipation | 625 | mW |
| R _{θJA} | Thermal Resistance From Junction To Ambient | 200 | °C/W |
| T _J , T _{stg} | Operation Junction and Storage Temperature Range | -55~+150 | °C |

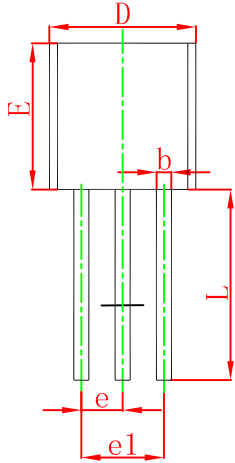
ELECTRICAL CHARACTERISTICS

$T_a=25^\circ\text{C}$ 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 | $V_{(BR)CEO}$ | $I_C=10\text{mA}, I_B=0$ | 30 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=0.01\text{mA}, I_C=0$ | 5 | | | V |
| Collector cut-off current | I_{CBO} | $V_{CB}=50\text{V}, I_E=0$ | | | 0.01 | μA |
| Collector cut-off current | I_{CEX} | $V_{CE}=60\text{V}, V_{EB(off)}=3\text{V}$ | | | 0.01 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=3\text{V}, I_C=0$ | | | 0.1 | μA |
| DC current gain | $h_{FE(1)}^*$ | $V_{CE}=10\text{V}, I_C=150\text{mA}$ | 100 | | 300 | |
| | $h_{FE(2)}$ | $V_{CE}=10\text{V}, I_C=0.1\text{mA}$ | 35 | | | |
| | $h_{FE(3)}$ | $V_{CE}=10\text{V}, I_C=500\text{mA}$ | 30 | | | |
| Collector-emitter saturation voltage | $V_{CE(sat)}^*$ | $I_C=500\text{mA}, I_B=50\text{mA}$ | | | 1 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}^*$ | $I_C=500\text{mA}, I_B=50\text{mA}$ | | | 2 | V |
| Collector output capacitance | C_{ob} | $V_{CB}=10\text{V}, I_E=0, f=100\text{MHz}$ | | | 8 | pF |
| Transition frequency | f_T | $V_{CE}=20\text{V}, I_C=20\text{mA}, f=100\text{MHz}$ | 250 | | | MHz |
| Delay time | t_d | $V_{CC}=30\text{V}, V_{BE(off)}=-0.5\text{V}$ | | | 10 | nS |
| Rise time | t_r | $I_C=150\text{mA}, I_{B1}=15\text{mA}$ | | | 25 | nS |
| Storage time | t_s | $V_{CC}=30\text{V}, I_C=150\text{mA}$ | | | 225 | nS |
| Fall time | t_f | $I_{B1}=I_{B2}=15\text{mA}$ | | | 60 | nS |

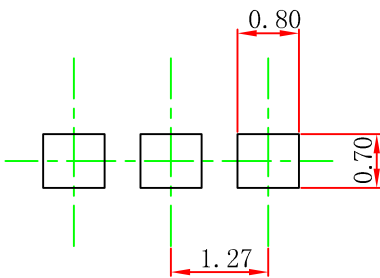
*Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2.0\%$.

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



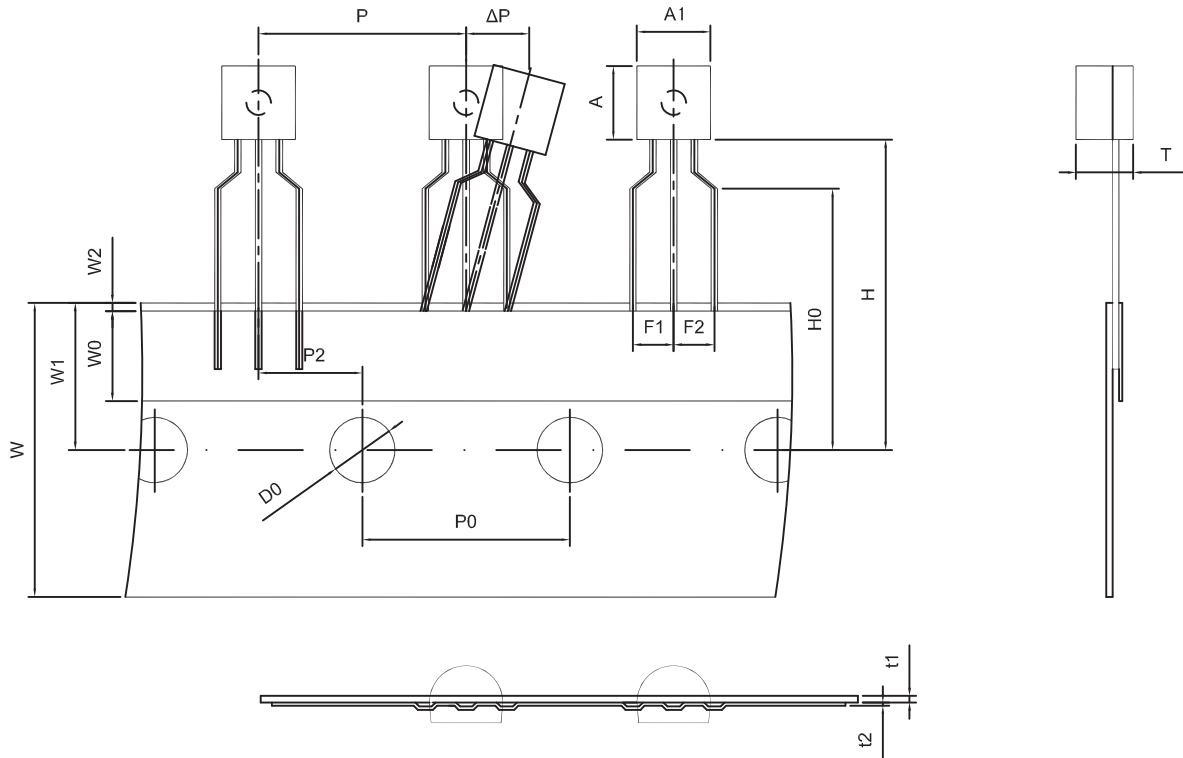
Note:

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

NOTICE

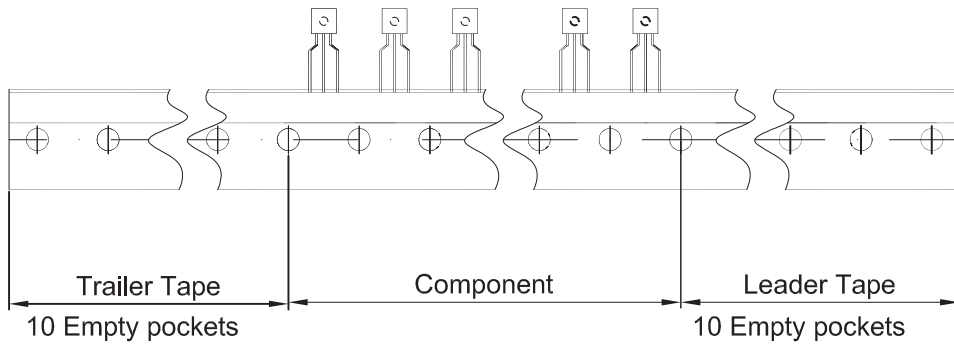
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TO-92 Tape and Reel



Dimensions 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 |