



# TO-92 Plastic-Encapsulate Transistors

## **MPSA93** TRANSISTOR ( NPN )

### FEATURES

Power dissipation

$$P_{CM}: 0.625 \text{ W (Tamb=25}^\circ\text{C)}$$

Collector current

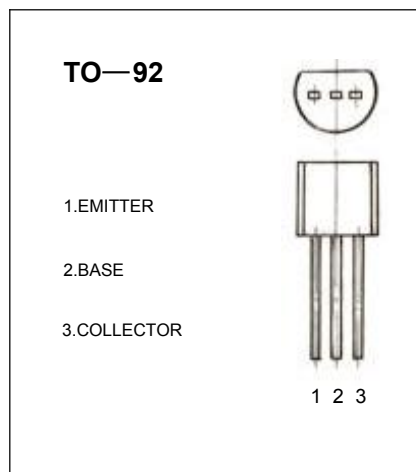
$$I_{CM}: 0.5 \text{ A}$$

Collector-base voltage

$$V_{(BR)CBO}: 200 \text{ V}$$

Operating and storage junction temperature range

$$T_J, T_{stg}: -55^\circ\text{C to } +150^\circ\text{C}$$



### ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)

| Parameter                            | Symbol        | Test conditions   | MIN | TYP | MAX  | UNIT          |
|--------------------------------------|---------------|---|-----|-----|------|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=0.1\text{mA}, I_E=0$                                 | 200 |     |      | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=1\text{mA}, I_B=0$                                   | 200 |     |      | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=0.1\text{mA}, I_C=0$                                 | 5   |     |      | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=160\text{V}, I_E=0$                               |     |     | 0.25 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=3\text{V}, I_C=0$                                 |     |     | 0.1  | $\mu\text{A}$ |
| DC current gain(note)                | $H_{FE(1)}$   | $V_{CE}=10\text{V}, I_C=1\text{mA}$                       | 25  |     |      |               |
| DC current gain(note)                | $H_{FE(2)}$   | $V_{CE}=10\text{V}, I_C=30\text{mA}$                      | 25  |     |      |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=20\text{mA}, I_B=2\text{mA}$                         |     |     | 0.4  | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_B=2\text{mA}, I_C=20\text{mA}$                         |     |     | 0.9  | V             |
| Transition frequency                 | $f_T$         | $V_{CE}=20\text{V}, I_C=10\text{mA}$<br>$f=100\text{MHz}$ | 50  |     |      | MHz           |

### CLASSIFICATION OF HFE

| Rank  | 1     | 2      | 3       |
|-------|-------|--------|---------|
| Range | 25-50 | 50-100 | 100-200 |