

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## MMBTA42

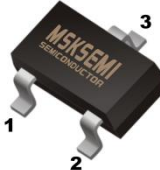

Product specification

## TRANSISTOR (NPN)

**FEATURES**

- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary to MMBTA92 (PNP)

**Reference News**

| PACKAGE OUTLINE                                                                                                                  | MARKING                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  <p>1. BASE<br/>2. EMITTER<br/>3. COLLECTOR</p> |  |
| SOT-23                                                                                                                           |                                                                                     |

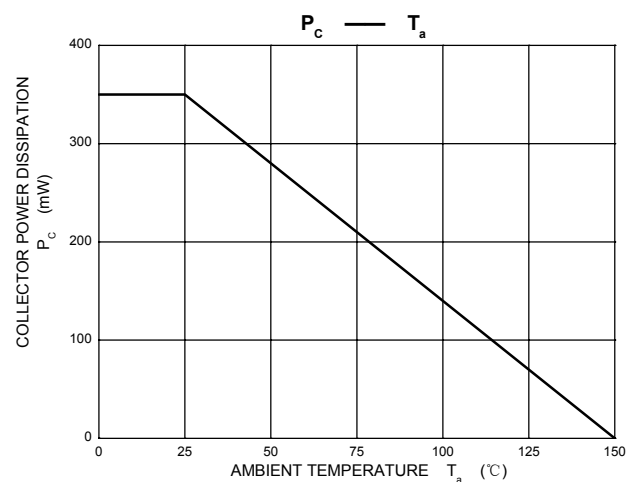
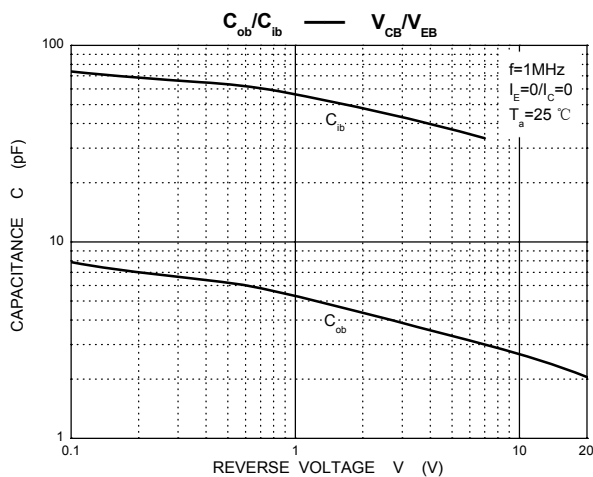
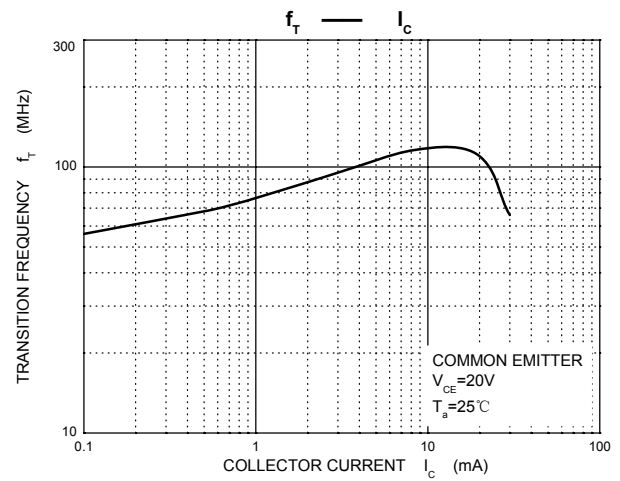
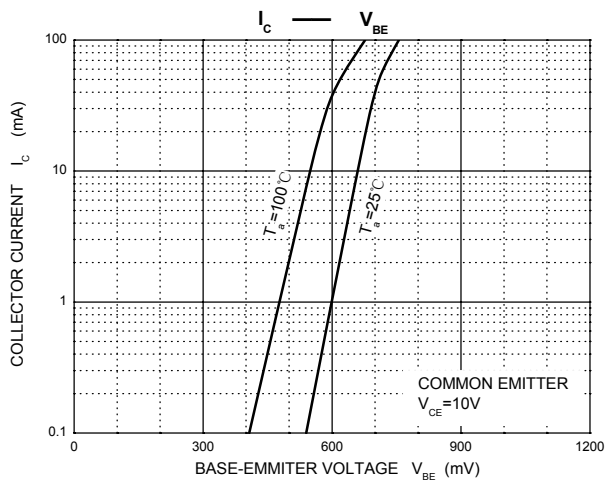
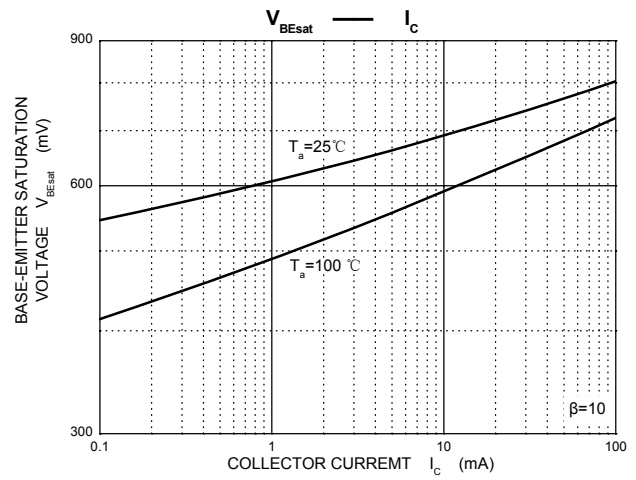
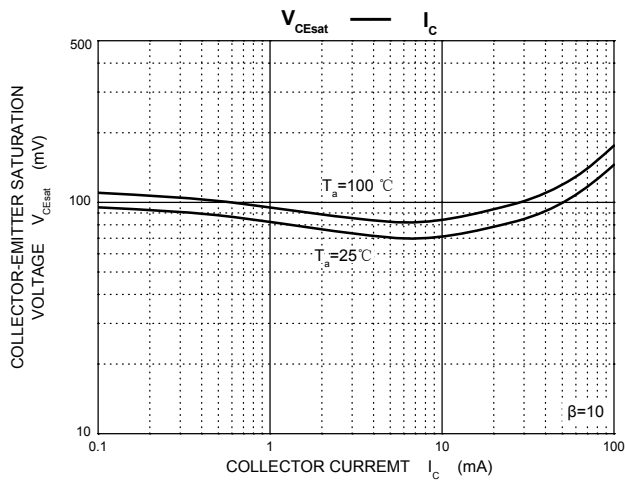
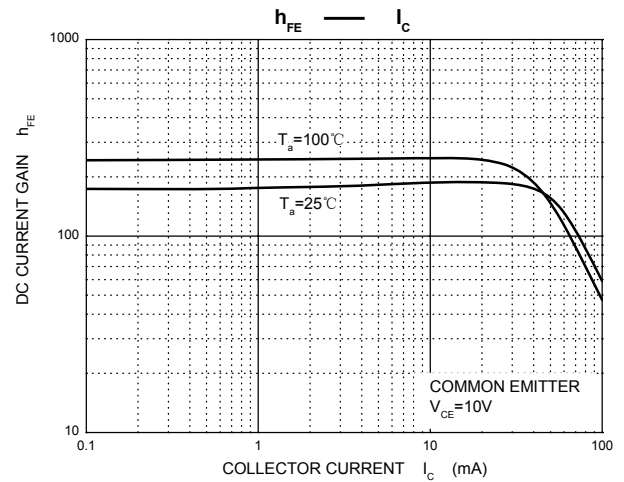
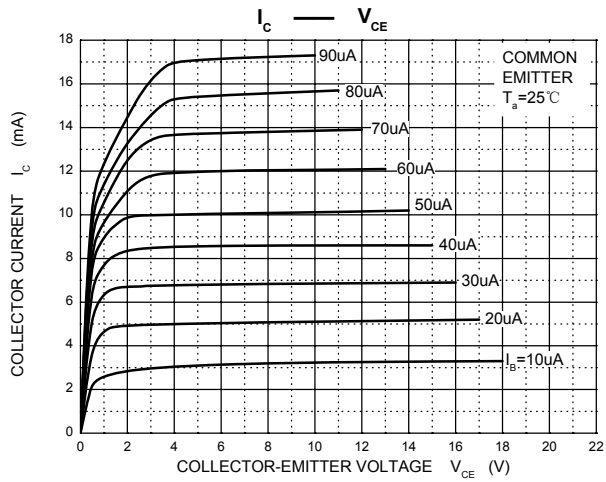
**MAXIMUM RATINGS (Ta=25°C unless otherwise noted)**

| Symbol           | Parameter                               | Value    | Unit |
|------------------|-----------------------------------------|----------|------|
| V <sub>CBO</sub> | Collector-Base Voltage                  | 300      | V    |
| V <sub>CEO</sub> | Collector-Emitter Voltage               | 300      | V    |
| V <sub>EBO</sub> | Emitter-Base Voltage                    | 5        | V    |
| I <sub>C</sub>   | Collector Current -Continuous           | 0.3      | A    |
| I <sub>CM</sub>  | Collector Current-Peak                  | 0.5      | A    |
| P <sub>C</sub>   | Collector Power dissipation             | 0.35     | W    |
| R <sub>θJA</sub> | Thermal Resistance, junction to Ambient | 357      | °C/W |
| T <sub>J</sub>   | Junction Temperature                    | 150      | °C   |
| T <sub>stg</sub> | Storage Temperature                     | -55~+150 | °C   |

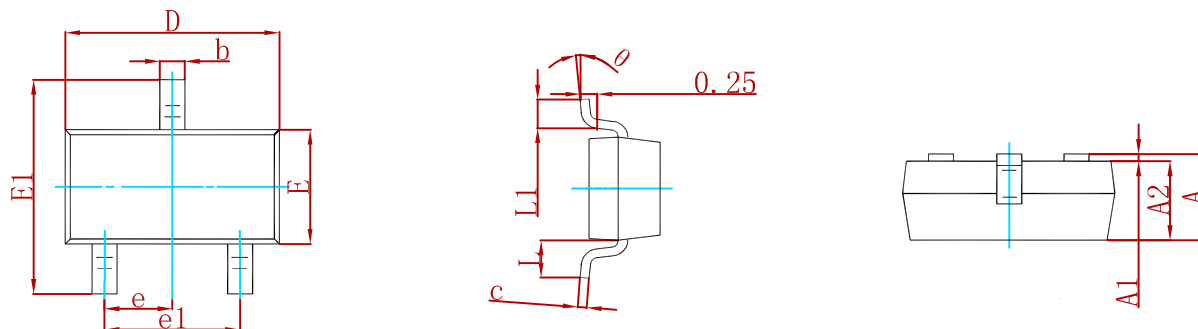
**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

| Parameter                            | Symbol               | Test conditions                                       | Min | Max  | Unit |
|--------------------------------------|----------------------|-------------------------------------------------------|-----|------|------|
| Collector-base breakdown voltage     | V <sub>(BR)CBO</sub> | I <sub>C</sub> = 100μA, I <sub>E</sub> =0             | 300 |      | V    |
| Collector-emitter breakdown voltage  | V <sub>(BR)CEO</sub> | I <sub>C</sub> = 1mA, I <sub>B</sub> =0               | 300 |      | V    |
| Emitter-base breakdown voltage       | V <sub>(BR)EBO</sub> | I <sub>E</sub> = 100μA, I <sub>C</sub> =0             | 5   |      | V    |
| Collector cut-off current            | I <sub>CBO</sub>     | V <sub>CB</sub> =200V, I <sub>E</sub> =0              |     | 0.25 | μA   |
| Emitter cut-off current              | I <sub>EBO</sub>     | V <sub>EB</sub> = 5V, I <sub>C</sub> =0               |     | 0.1  | μA   |
| DC current gain                      | h <sub>FE(1)</sub>   | V <sub>CE</sub> = 10V, I <sub>C</sub> = 1mA           | 60  |      |      |
|                                      | h <sub>FE(2)</sub>   | V <sub>CE</sub> = 10V, I <sub>C</sub> =10mA           | 100 | 200  |      |
|                                      | h <sub>FE(3)</sub>   | V <sub>CE</sub> =10V, I <sub>C</sub> =30mA            | 60  |      |      |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =20mA, I <sub>B</sub> = 2mA            |     | 0.2  | V    |
| Base-emitter saturation voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> = 20mA, I <sub>B</sub> =2mA            |     | 0.9  | V    |
| Transition frequency                 | f <sub>T</sub>       | V <sub>CE</sub> = 20V, I <sub>C</sub> = 10mA, f=30MHz | 50  |      | MHz  |

# Typical Characteristics

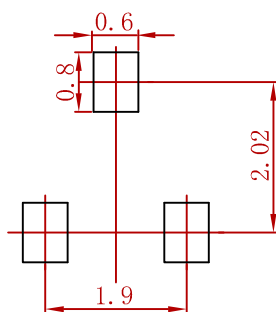


## PACKAGE MECHANICAL DATA



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                     | 2.550 | 0.089                | 0.100 |
| e      | 0.950 TYP                 |       | 0.037 TYP            |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550 REF                 |       | 0.022 REF            |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

## 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.

## REEL SPECIFICATION

| P/N     | PKG    | QTY  |
|---------|--------|------|
| MMBTA42 | SOT-23 | 3000 |

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