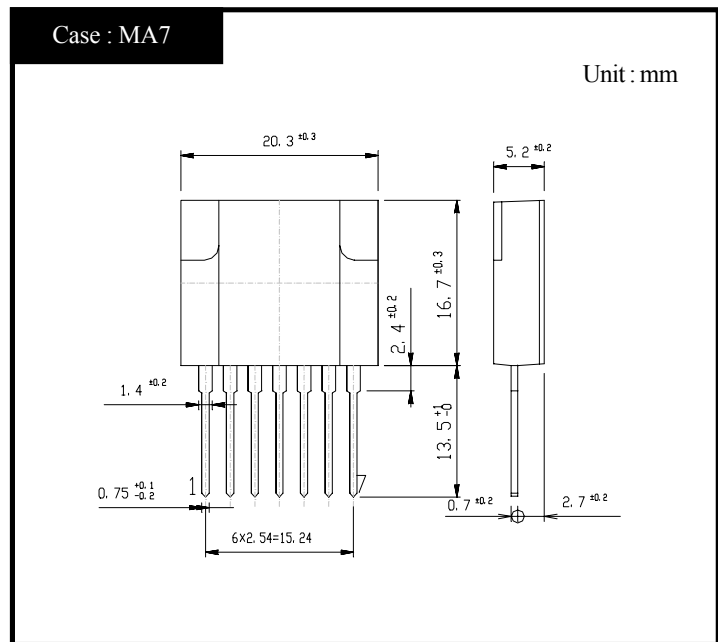


# MA1010

## OUTLINE DIMENSIONS



## RATINGS

### ● Absolute Maximum Ratings

| Item                        | Symbol                 | Conditions   | Ratings |         | Unit |
|-----------------------------|------------------------|--|---------|---------|------|
|                             |                        |  | P Class | N Class |      |
| Storage Temperature         | Tstg                   |  | -30~125 | -30~125 | °C   |
| Operating Temperature       | Top                    | Case Temperature   | -20~125 | -20~125 | °C   |
| Junction Temperature        | Tj                     |  | 150     | 150     | °C   |
| Peak Input Voltage          | Vin                    | ②+,④-,Fig.1 is Measurement Circuit of Peak Input Voltage Vin and Collector Cutoff Current I <sub>CEX</sub> . | 500     | 500     | V    |
| Input Current               | Iin                    | Pulse Pulse Width 150 μs MAX, Duty 1/2, Sawtooth Wave, Peak Value, ②+,④-                                     | 6       | 6       | A    |
| Maximum Operating Frequency | f(max)                 |  | 200     | 200     | kHz  |
| Maximum Power Dissipation   | P <sub>D</sub>         | Ta=25°C  | 3       | 3       | W    |
|                             | P <sub>D</sub>         | Heatsink Tc=100°C  | 12      | 12      | W    |
| Dielectric Strength         | Vdis                   | Terminals To Case AC 1 min   | 2       | 2       | kV   |
| Insulation Resistance       |                        | Terminals To Case 500VDC   | 100     | 100     | MΩ   |
| Fold Back Control Voltage   | V <sub>CONT(max)</sub> | Fold Control Resistance=0Ω Duty 1/2, ④,⑦   | ±8      | ±8      | V    |
| Fold Back Control Current   | I <sub>CONT(max)</sub> | ④-,⑥+  | 100     | 100     | mA   |

### ● Electrical Characteristics (T<sub>c</sub>=25°C)

| Item                       | Symbol                                  | Conditions  | Ratings   |          | Unit     |
|----------------------------|---|---|---|----------|----------|
|                            |   |   | P Class   | N Class  |          |
| Q1                         | Collector Cutoff Current                | I <sub>CEX</sub>                                  | V <sub>CE</sub> =500V, Fig.1 is Measurement Circuit of Peak Input Voltage Vin and Collector Cutoff Current I <sub>CEX</sub> , ②+,④- |          | mA       |
|                            | DC Current Gain                         | h <sub>FE</sub>                                   | 15~30   | 10~20    |          |
|                            | Collector to Emitter Saturation Voltage | V <sub>CE(sat)</sub>                              | I <sub>C</sub> =1.5A, I <sub>B</sub> =0.3A, ②+,④-,⑥I <sub>B</sub>   |          | V        |
|                            | Thermal Resistance                      | θ <sub>jc</sub>                                   | Junction to Case  | MAX 4.17 | MAX 4.17 |
| DI                         | Reverse Current                         | I <sub>R</sub>                                    | MAX 10  | MAX 10   | μA       |
|                            | Forward Voltage                         | V <sub>F</sub>                                    | MAX 1.7   | MAX 1.7  | V        |
| Driving Saturation Voltage | V <sub>D(sat)</sub>                     | I <sub>C</sub> =1.5A, I <sub>B</sub> =0.3A, ⑤+,④- | MIN 1.7   | MIN 1.7  | V        |
|                            |   |   | MAX 2.3   | MAX 2.3  |          |

● Standard Operating Condition\*Design Standard For Application Circuit

| Item                   | Conditions | Ratings  |          | Unit |
|------------------------|------------|----------|----------|------|
|                        |            | P Class  | N Class  |      |
| Input Rated Voltage    |            | AC90~132 | AC90~132 | V    |
| Output Nominal Wattage |            | 12       | 12       | W    |
| Output Nominal Voltage |            | 12       | 12       | V    |
| Output Nominal Current |            | 1        | 1        | A    |

● Standard Operating Condition\*Standard Operating Characteristics (Ta=25°C)

| Item                                    | Conditions                          | Ratings                        |  | Unit      |                |                |
|---|-------------------------------------|--------------------------------|--|-----------|----------------|----------------|
|   |                                     | P Class                        | N Class  |           |                |                |
| Minimum Input Full Load Output Voltage  | Vin=90V, I <sub>O</sub> =1A         | 12.0±0.6                       | 12.0±0.6                                       | V         | Fig 2, ① Refer |                |
| Maximum Input Light Load Output Voltage | Vin=132V, I <sub>O</sub> =0.1A      | 12.0±0.6                       | 12.0±0.6                                       | V         | Fig 2, ② Refer |                |
| AC Input Voltage                        | I <sub>O</sub> =1A                  | MAX 85                         | MAX 85   | V         |                |                |
| Over Current Protection                 | Foldback Current                    | Vin=132V, V <sub>O</sub> =10V  | MAX 1.5  | MAX 1.5   | A              | Fig 2, ③ Refer |
|   | Short Circuit                       | Vin=132V, R <sub>O</sub> =0.5Ω | Nodamage To Any Device,<br>Automatic Recovery. |           | -              | Fig 2, ④ Refer |
| Output Ripple Noise                     | Vin=90~132V, I <sub>O</sub> =0.1~1A | MAX 150                        | MAX 150  | mV<br>P-P |                |                |

Figure in ○=Terminal Sign

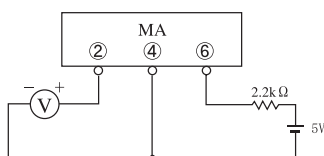


Fig1. Measurement Circuit

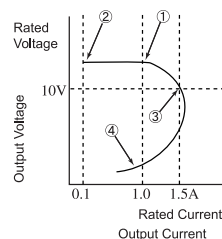
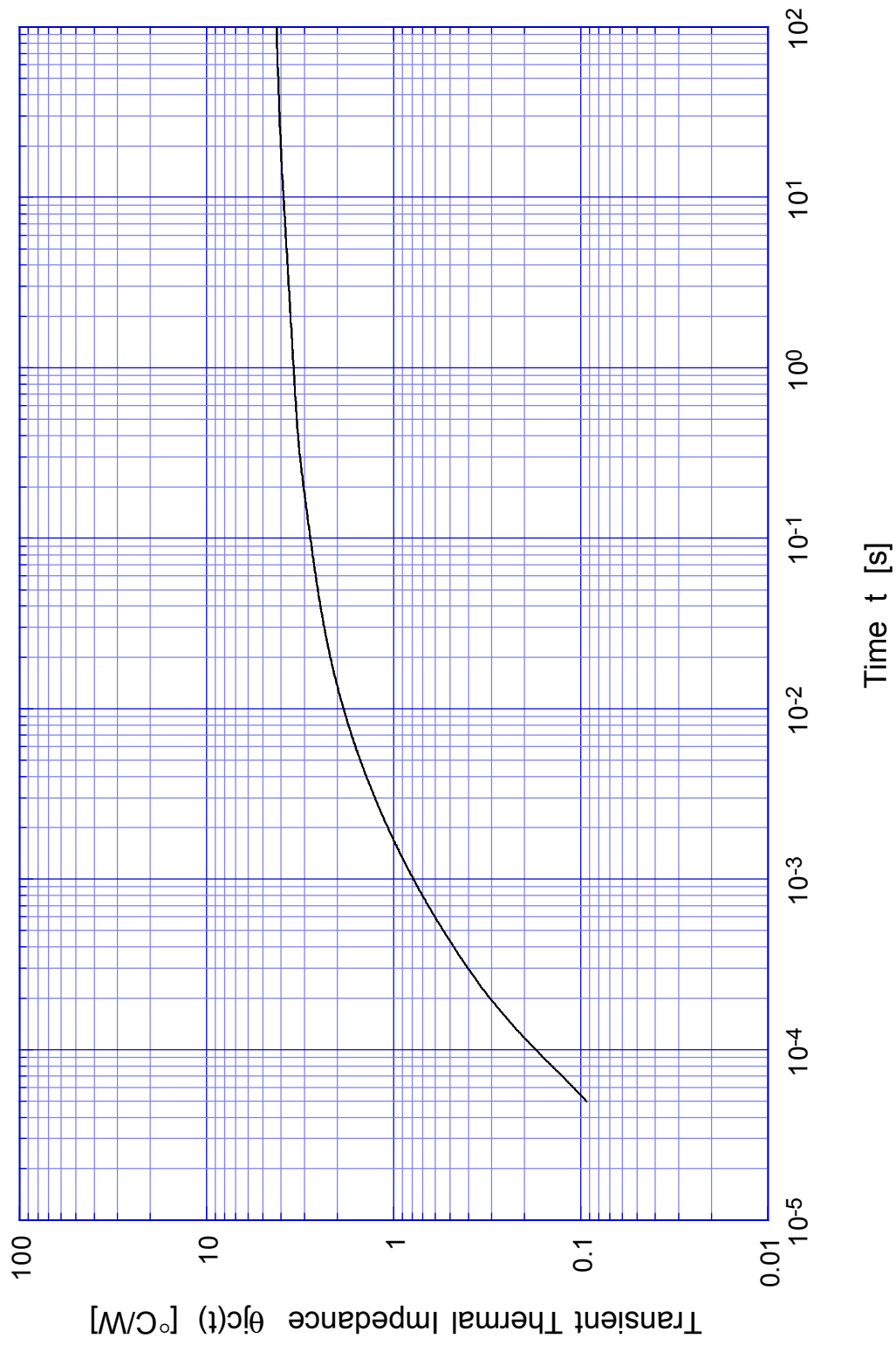


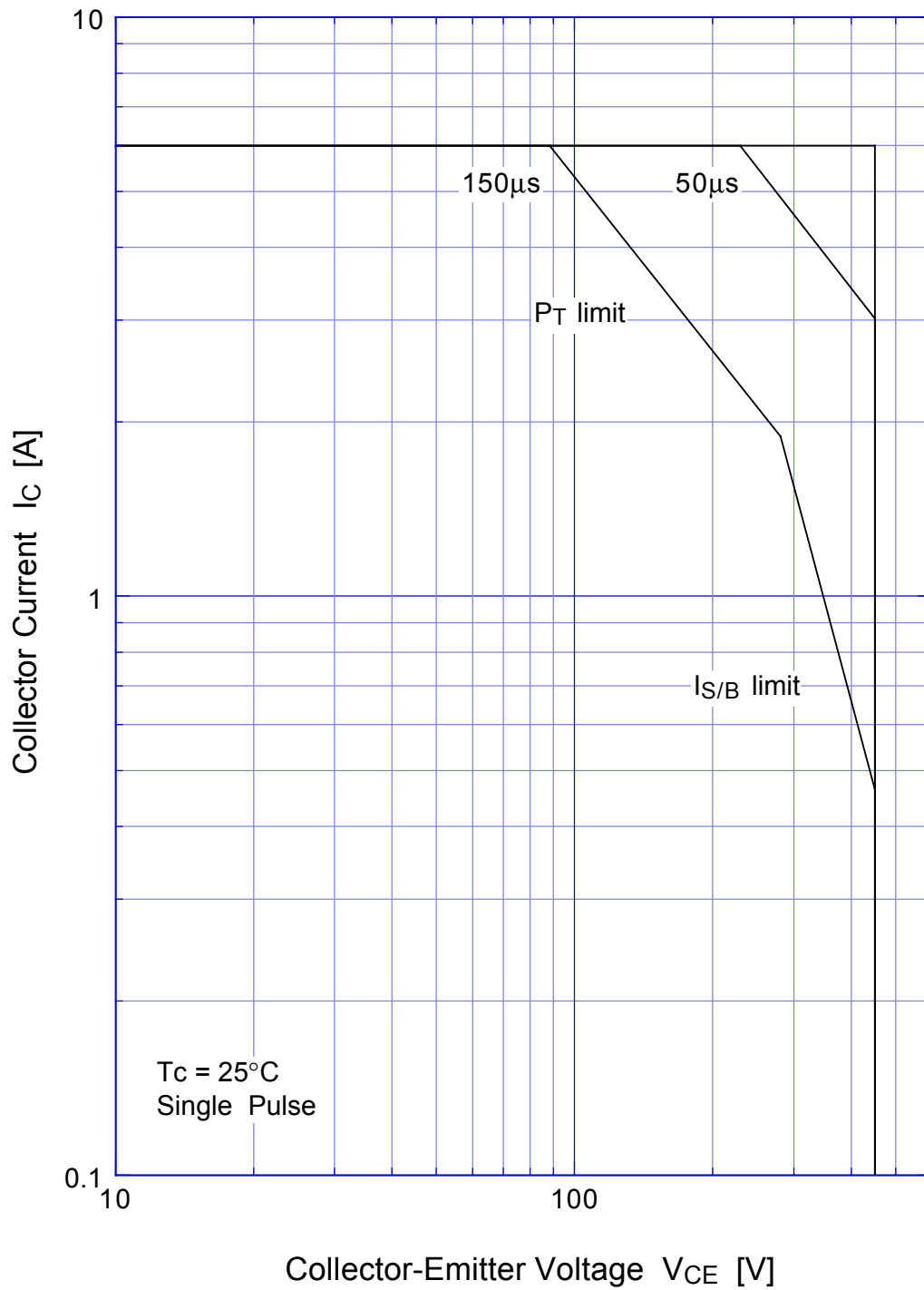
Fig2. Output Voltage/Current

# MA1010 Transient Thermal Impedance

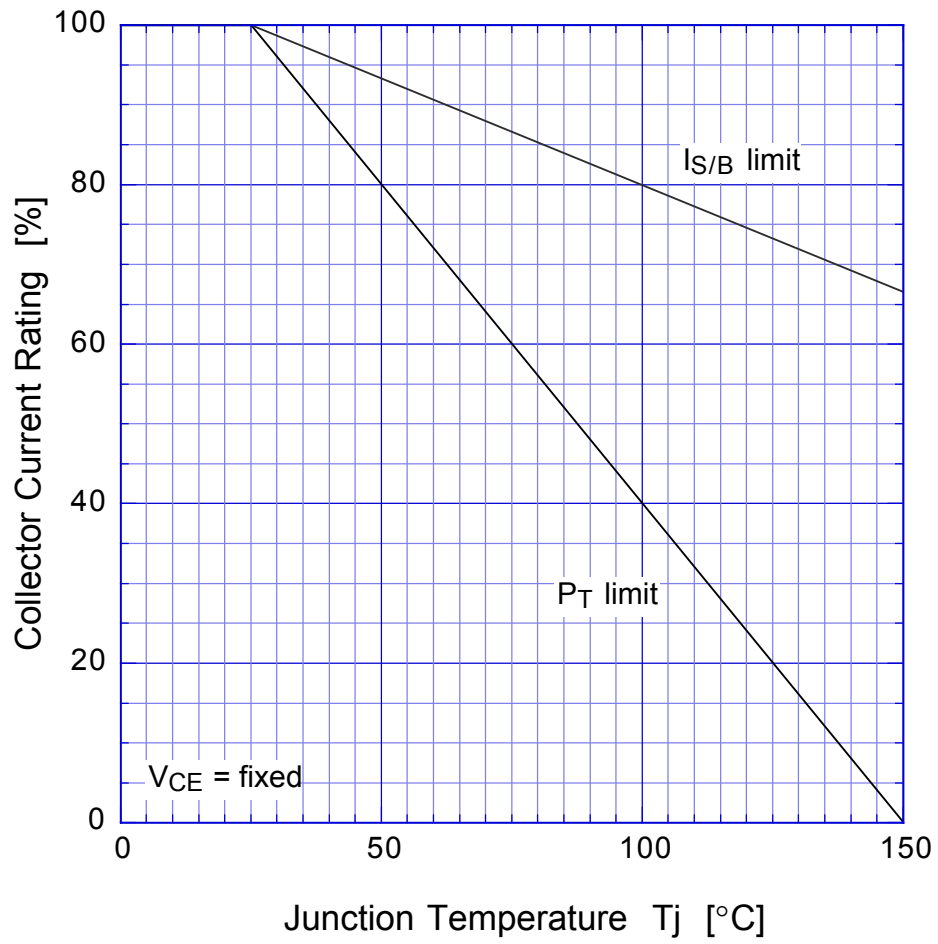


# MA1010

## Forward Bias SOA

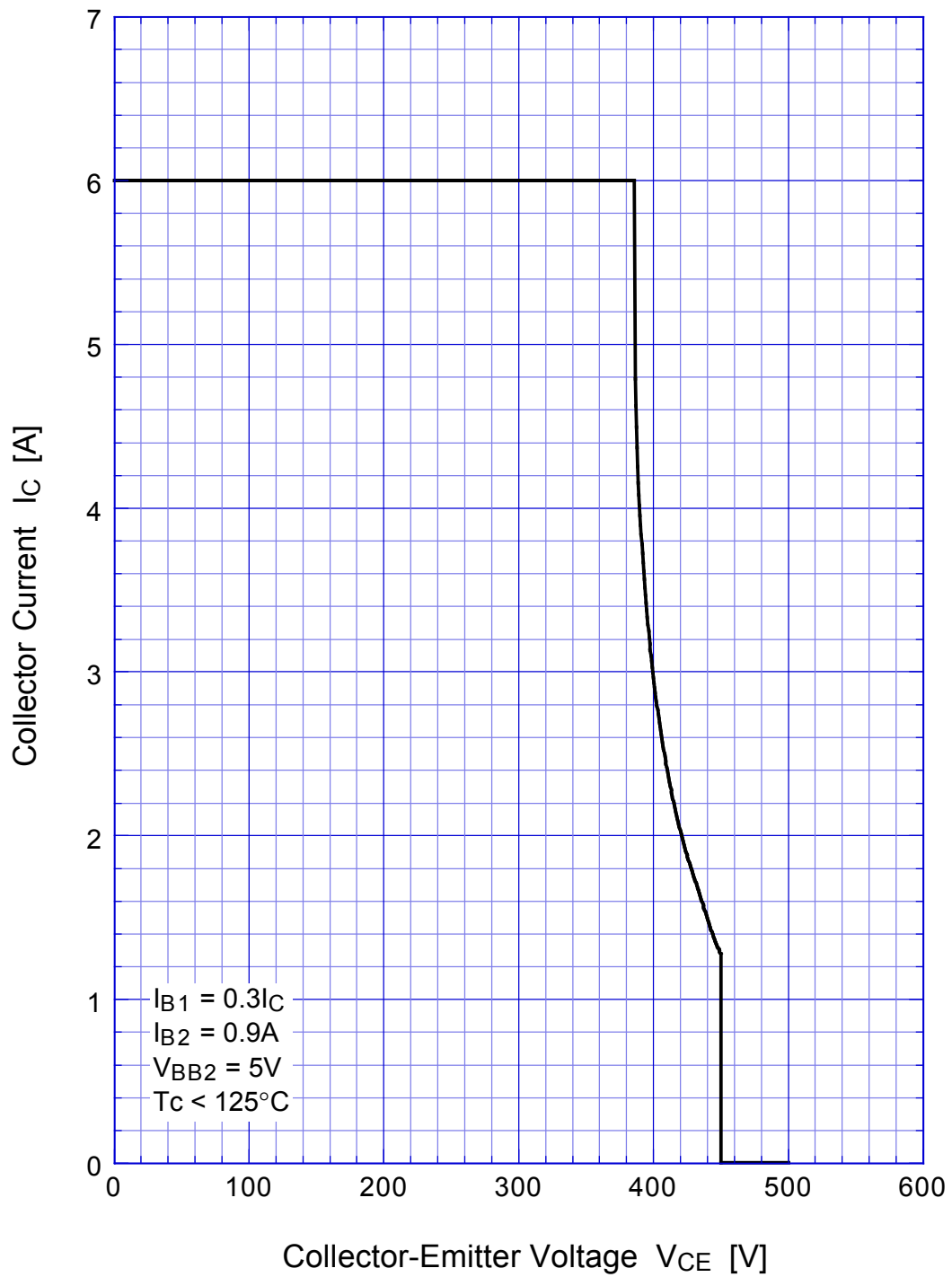


# MA1010 Collector Current Derating



# MA1010

## Reverse Bias SOA



MA1010

$h_{FE} - I_C$

