



2SA1708/2SC4488

Bipolar Transistor (-)-100V, (-)-1A, Low $V_{CE(sat)}$, (PNP)NPN Single NMP

ON Semiconductor®

<http://onsemi.com>

Features

- Adoption of FBET, MBIT processes
- High breakdown voltage, large current capacity
- Fast switching speed

()2SA1708

Specifications

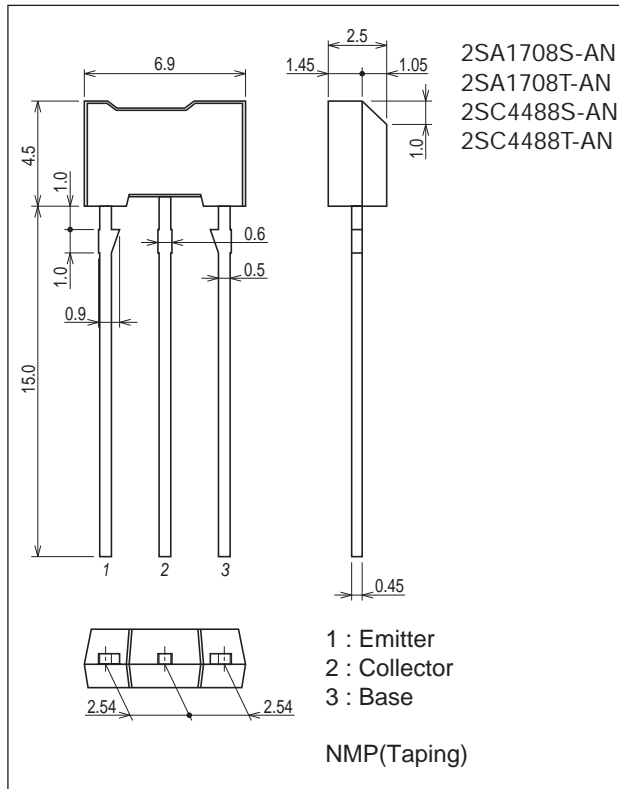
Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|------------|-------------|------------------|
| Collector-to-Base Voltage | V_{CBO} | | (-)-120 | V |
| Collector-to-Emitter Voltage | V_{CEO} | | (-)-100 | V |
| Emitter-to-Base Voltage | V_{EBO} | | (-)-6 | V |
| Collector Current | I_C | | (-)-1 | A |
| Collector Current (Pulse) | I_{CP} | | (-)-2 | A |
| Collector Dissipation | P_C | | 1 | W |
| Junction Temperature | T_j | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

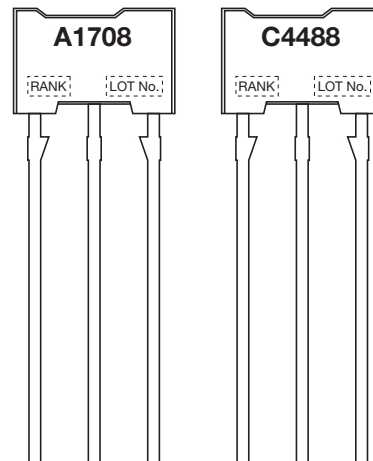
unit : mm (typ)
7540-001



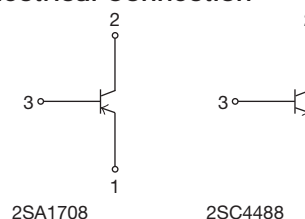
Product & Package Information

- Package : NMP(Taping)
- JEITA, JEDEC : SC-71
- Minimum Packing Quantity : 2,500 pcs./box

Marking(NMP(Taping))



Electrical Connection



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Electrical Characteristics at Ta=25°C

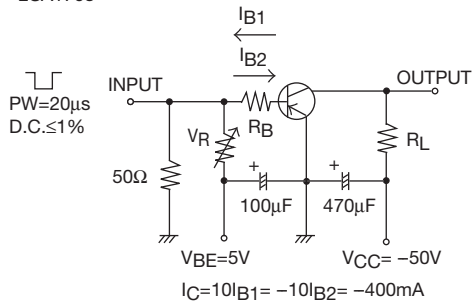
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|-------------------------------|---------|-----------|-----------|------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=(-)100V, I_E=0A$ | | | (-)100 | nA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=(-)4V, I_C=0A$ | | | (-)100 | nA |
| DC Current Gain | h_{FE} | $V_{CE}=(-)5V, I_C=(-)100mA$ | 140* | | 400* | |
| Gain-Bandwidth Product | f_T | $V_{CE}=(-)10V, I_C=(-)100mA$ | | 120 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=(-)10V, f=1MHz$ | | (13)8.5 | | pF |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)400mA, I_B=(-)40mA$ | | (-0.2)0.1 | (-0.6)0.4 | V |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | | | (-)0.85 | (-)1.2 | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=(-)10\mu A, I_E=0A$ | (-)120 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=(-)1mA, R_{BE}=\infty$ | (-)100 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=(-)10\mu A, I_C=0A$ | (-)6 | | | V |
| Turn-ON Time | t_{on} | See specified Test Circuit. | | (80)80 | | ns |
| Storage Time | t_{stg} | | | (700)850 | | ns |
| Fall Time | t_f | | | (40)50 | | ns |

* : The 2SA1708/2SC4488 are classified by 100mA h_{FE} as follows :

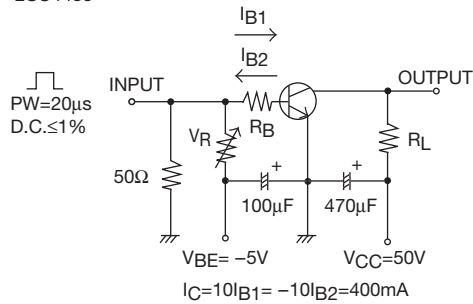
| Rank | S | T |
|----------|------------|------------|
| h_{FE} | 140 to 280 | 200 to 400 |

Switching Time Test Circuit

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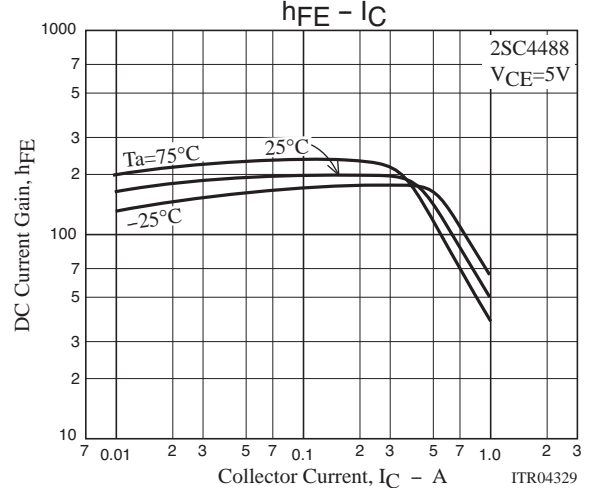
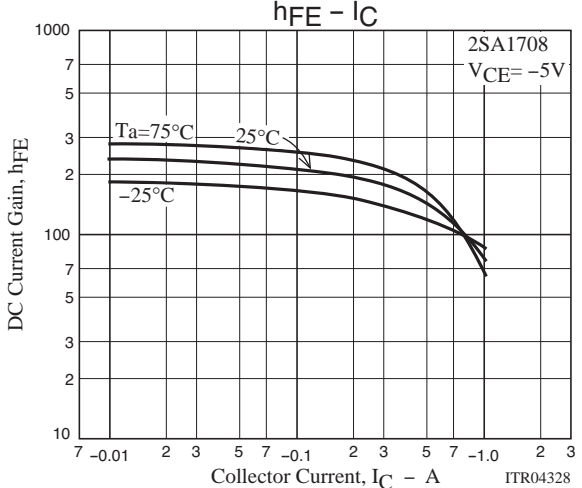
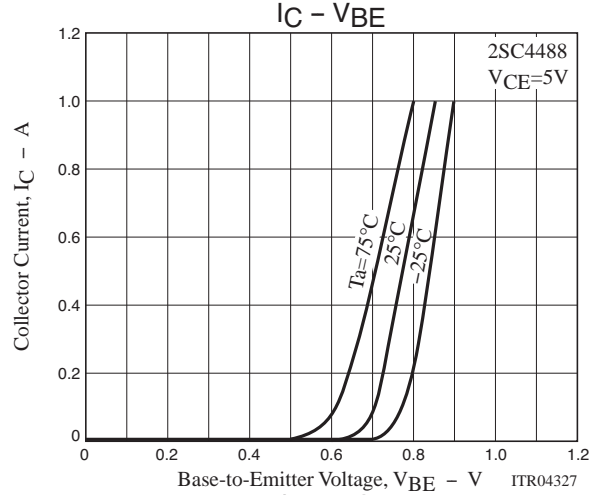
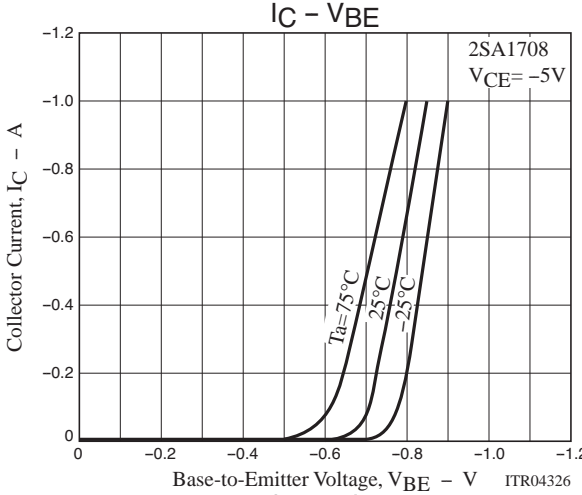
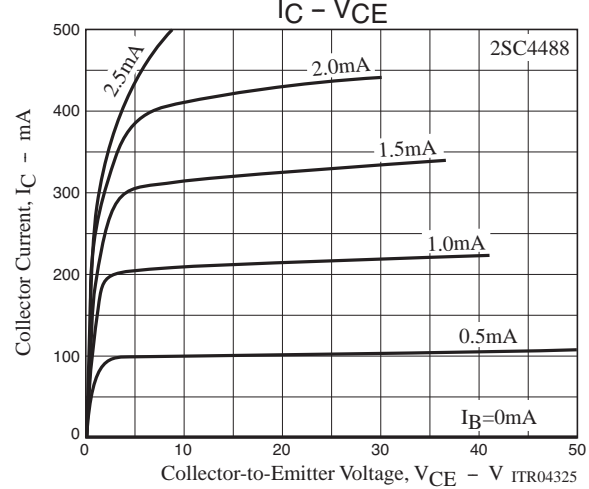
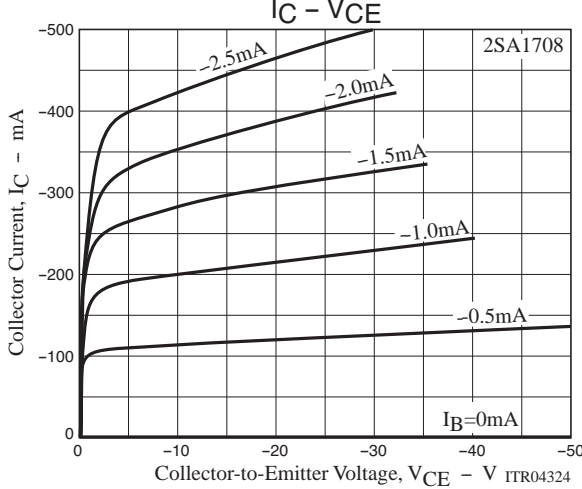
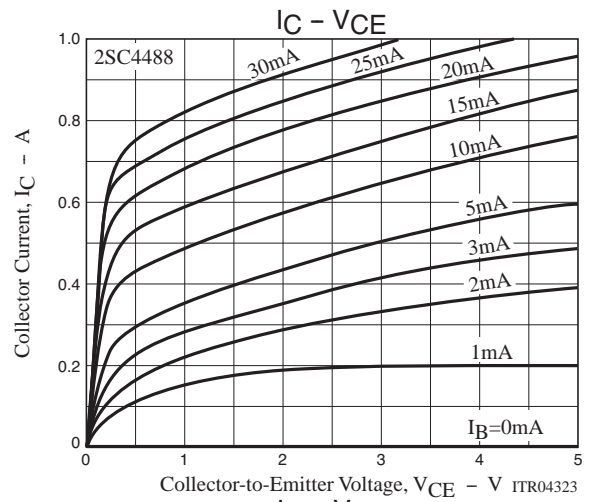
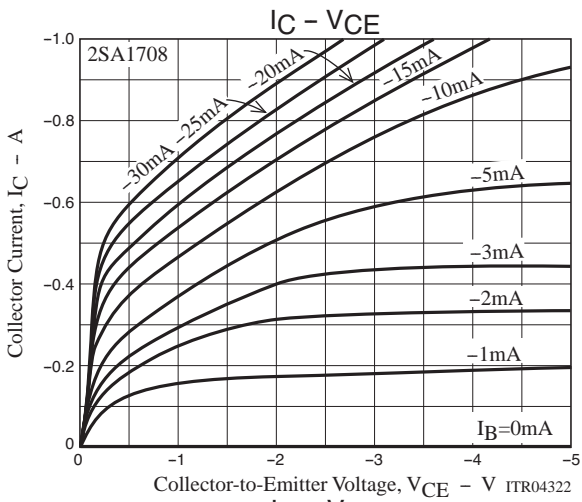


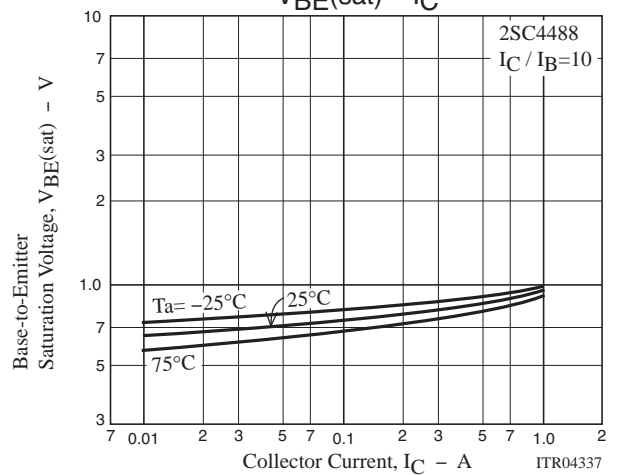
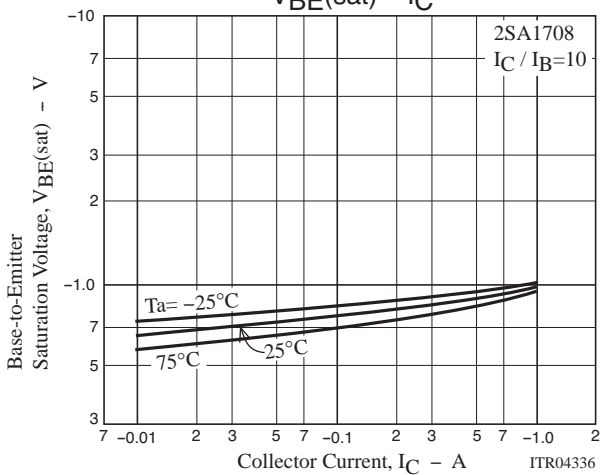
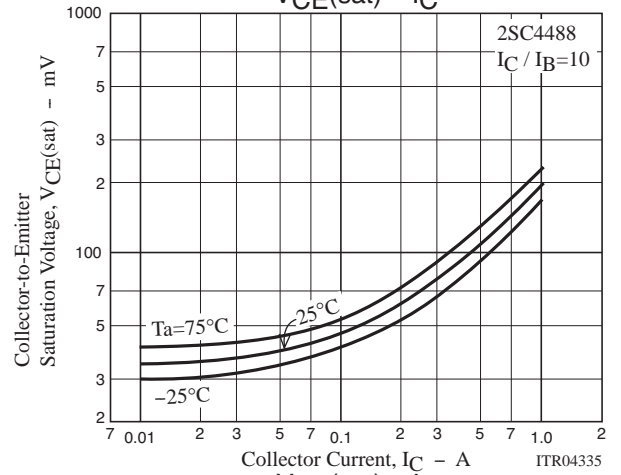
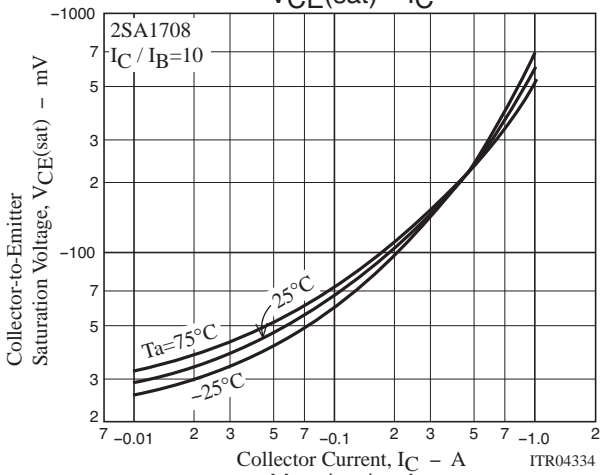
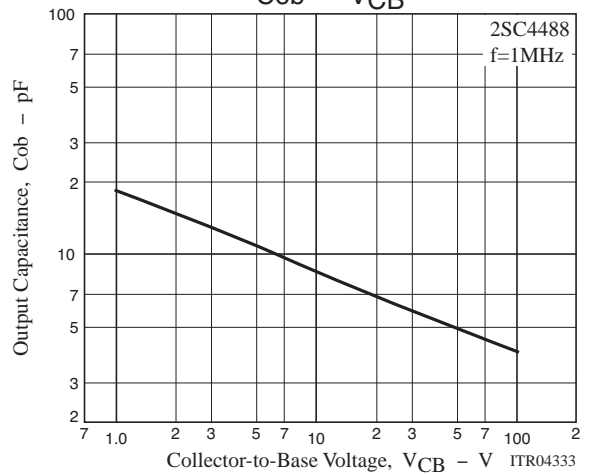
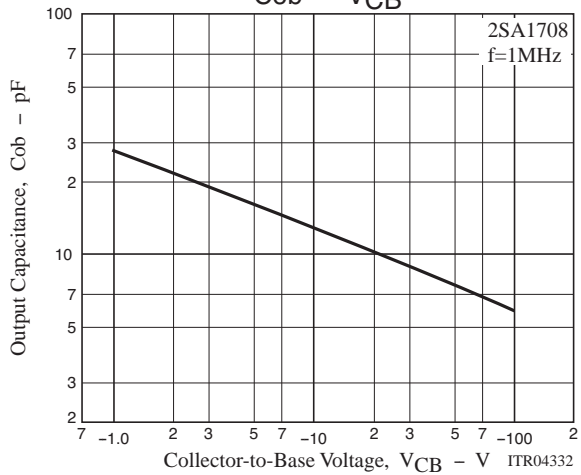
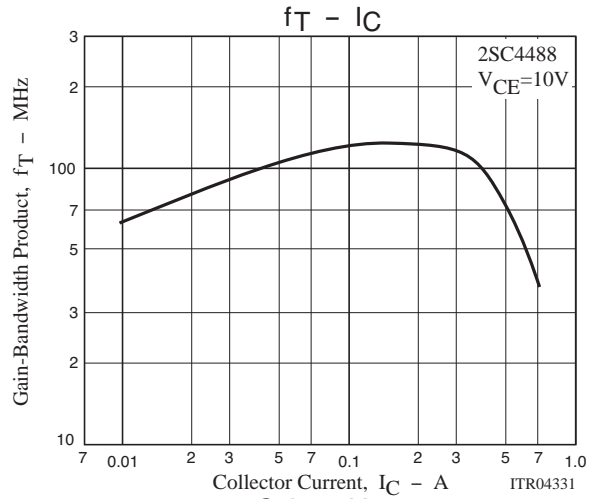
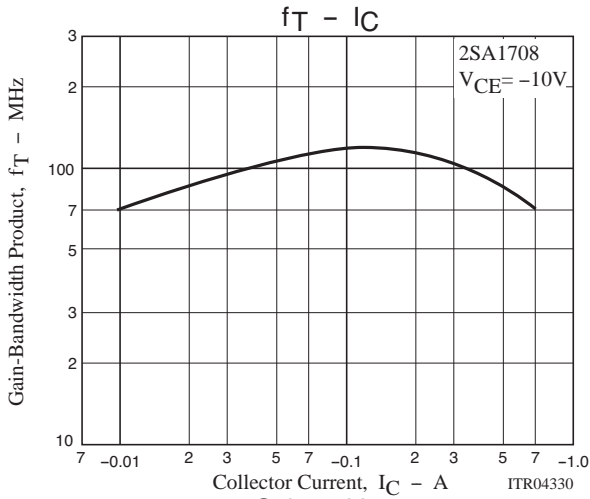
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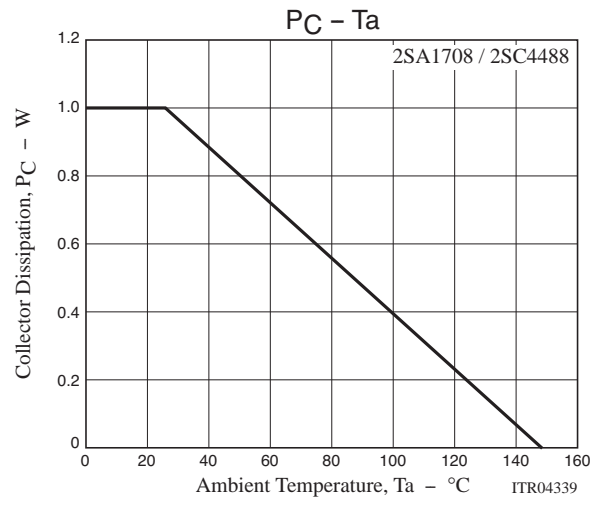
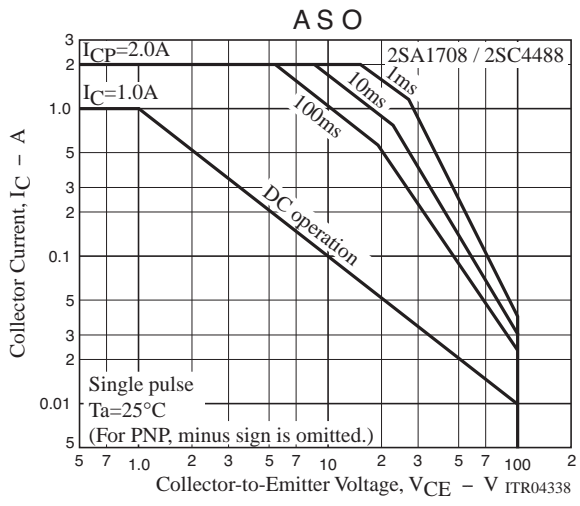
Ordering Information

| Device | Package | Shipping | memo |
|-------------|-------------|---------------|---------|
| 2SA1708S-AN | NMP(Taping) | 2,500pcs./box | Pb Free |
| 2SA1708T-AN | NMP(Taping) | 2,500pcs./box | |
| 2SC4488S-AN | NMP(Taping) | 2,500pcs./box | |
| 2SC4488T-AN | NMP(Taping) | 2,500pcs./box | |





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Bag Packing Specification

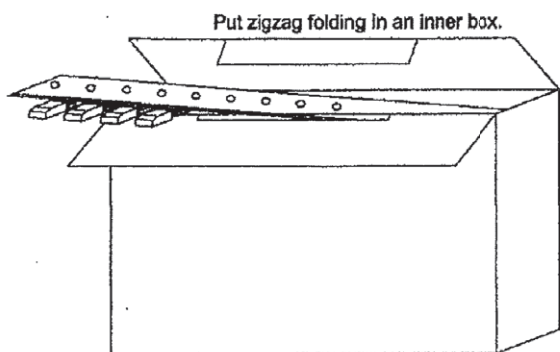
2SA1708S-AN, 2SA1708T-AN, 2SC4488S-AN, 2SC4488T-AN

NMP (Zigzag folding)

| Storage package Outline name | Package type | Maximum Number of devices contained (pcs.) | | Packing format | |
|------------------------------|--------------|---|------------------|---|---|
| | | Inner box No. | Storage quantity | Outer box (C-6) | Outer box (C-8) |
| NMP | AN/AZ | C-3 Inner box Dimensions :mm(external) 330×45×125 | 2,500 | 8 inner boxes contained(20,000pcs.) Outer box Dimensions:mm(external) 585×345×195 | 4 inner boxes contained(10,000pcs.) Outer box Dimensions:mm(external) 345×300×195 |

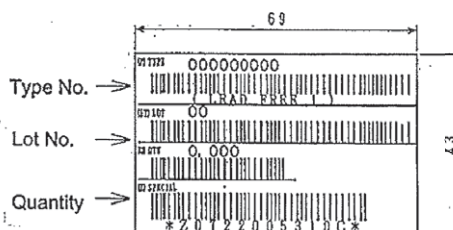
1. Packing format

Packing method



2. Bar code label

(Unit : mm)

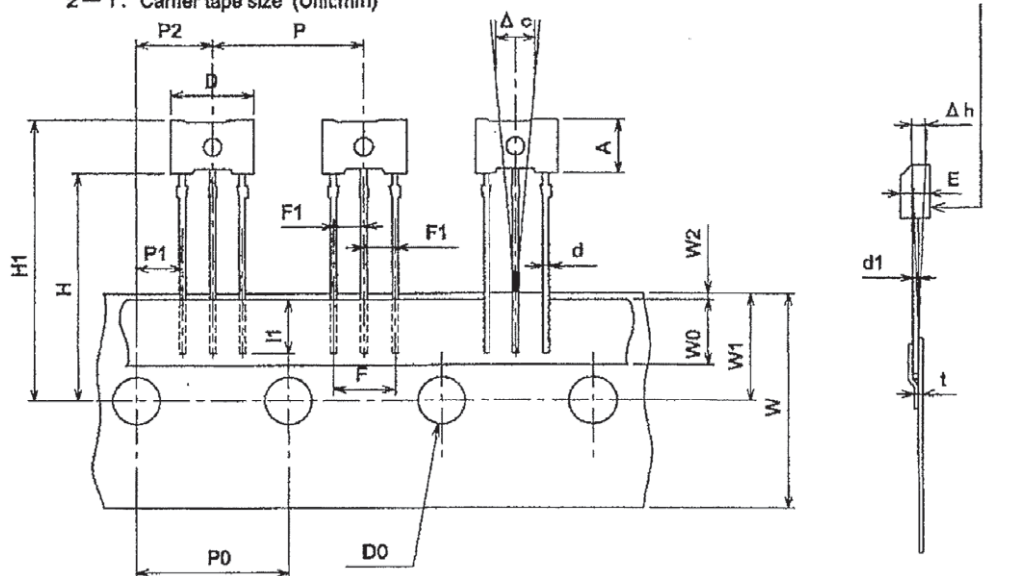


*LEAD FREE 1:

Lead-free External terminal surface treatment product.

2. Taping specifications

2-1. Carrier tape size (Unit:mm)



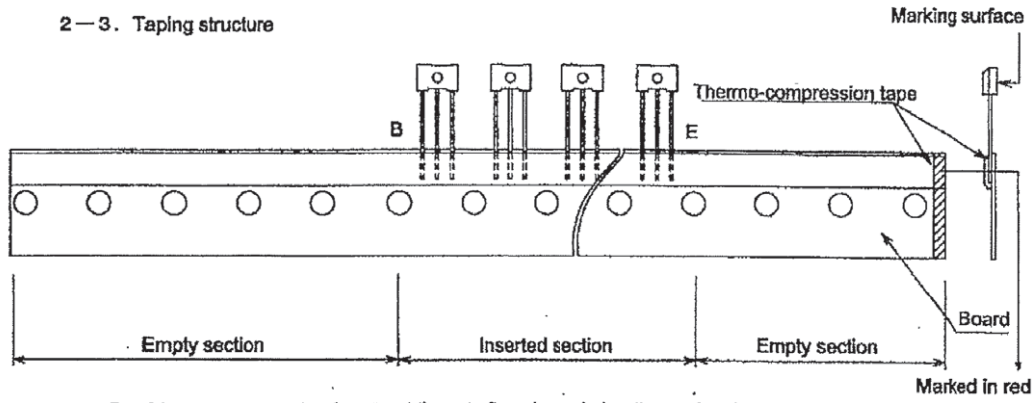
2-2. Taping size standard

| Item | Symbol | Standard | Tolerance |
|---------------------------------|--------|----------|--------------|
| Work piece outside diameter | D | 6.9 | ±0.2 |
| | E | 2.5 | ±0.2 |
| Work piece height | A | 4.5 | ±0.2 |
| Lead wire diameter | d | 0.5 | ±0.1 |
| Lead wire thickness | d1 | 0.45 | ±0.1 |
| Bonded lead wire | l1 | 3.0MIN | |
| Pitch between products | P | 12.7 | ±0.5 |
| Pitch between perforations | P0 | 12.7 | ±0.2 |
| Total pitch for 21 perforations | P0×20 | 254.0 | ±1.0 |
| Distance between lead wire | F | 5.0 | +0.8 -0.2 |
| Lead wire pitch distance | F1 | 2.54 | +0.4 -0.1 |
| Displacement of perforations | P1 | 3.81 | ±0.3 |
| | P2 | 6.35 | ±0.3 |
| Displacement of tape | W2 | 0~0.5 | |

Unit:mm

| Item | Symbol | Standard | Tolerance |
|------------------------------------|--------|----------|--------------|
| Tape width | W | 18.0 | ±0.5 |
| Adhesive tape | W0 | 6.0 | ±0.5 |
| Displacement of perforations | W1 | 9.0 | ±0.5 |
| Work piece bottom surface position | H | 19.0 | +1.0 -0.5 |
| Work piece upper limit position | H1 | 23.5 | ±1.0 |
| Perforations diameter | D0 | φ4.0 | ±0.2 |
| Tape thickness (total thickness) | t | 0.6 | ±0.2 |
| Product inclination | Δc | 0 | ±0.7 |
| Product inclination | Δh | 0 | ±1.0 |

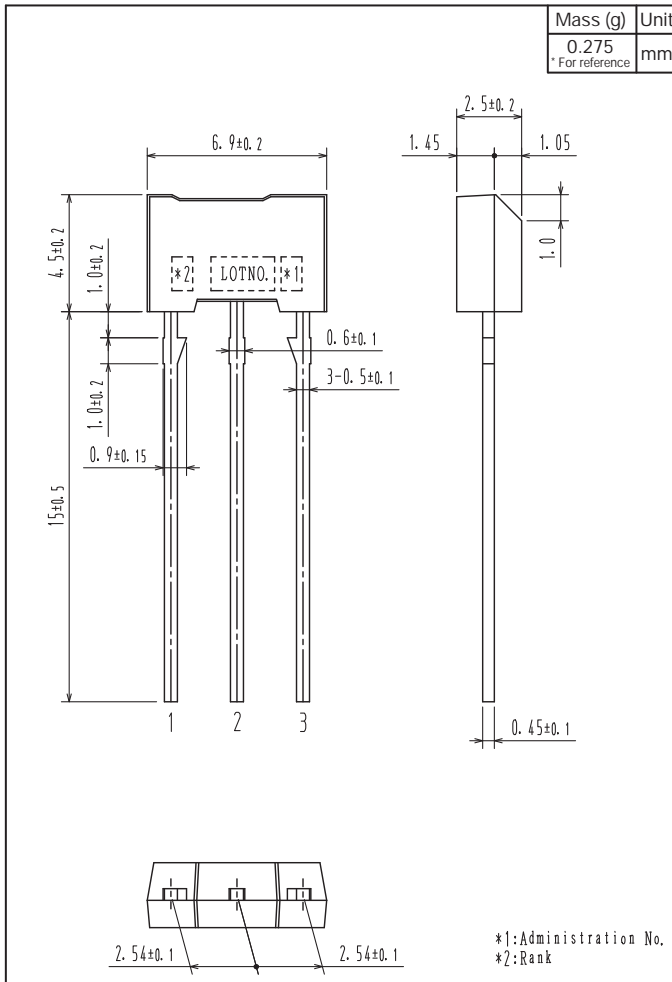
2—3. Taping structure



- Provide an empty section for about three to five pieces in leading and end portions of the tape.
- Provide an empty section in the fold-back portion.
- Provide marking in red to the E-side end of the board.

Outline Drawing

2SA1708S-AN, 2SA1708T-AN, 2SC4488S-AN, 2SC4488T-AN



*1: Administration No.
*2: Rank

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