



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SA2016/2SC5569 — PNP / NPN Epitaxial Planar Silicon Transistor DC / DC Converter Applications

Applications

- Relay drivers, lamp drivers, motor drivers, flash

Features

- Adoption of FBET and MBIT processes
- Low collector-to-emitter saturation voltage
- Ultrasmall package facilitates miniaturization in end products
- High allowable power dissipation
- Large current capacity
- High-speed switching

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Specifications

Absolute Maximum Ratings at Ta=25°C

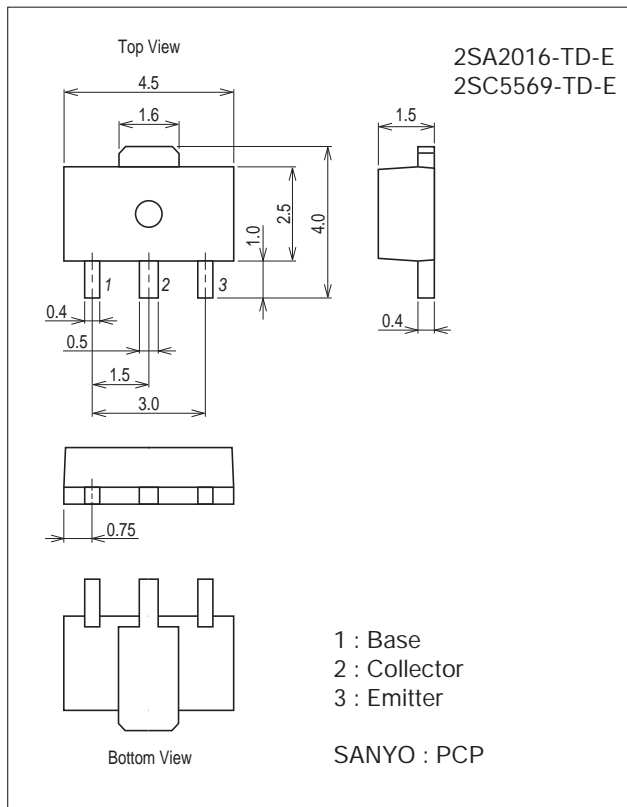
| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|------------------|------------|----------|------|
| Collector-to-Base Voltage | V _{CB0} | | (-50)100 | V |
| Collector-to-Emitter Voltage | V _{CES} | | (-50)100 | V |
| Collector-to-Emitter Voltage | V _{CEO} | | (-)50 | V |
| Emitter-to-Base Voltage | V _{EB0} | | (-)6 | V |

Continued on next page.

Package Dimensions

unit : mm (typ)

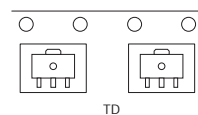
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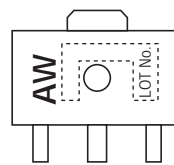
Product & Package Information

- Package : PCP
- JEITA, JEDEC : SC-62, SOT-89, TO-243
- Minimum Packing Quantity : 1,000 pcs./reel

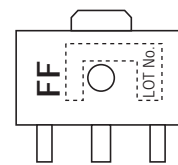
Packing Type: TD



Marking

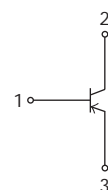


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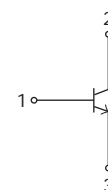


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Electrical Connection



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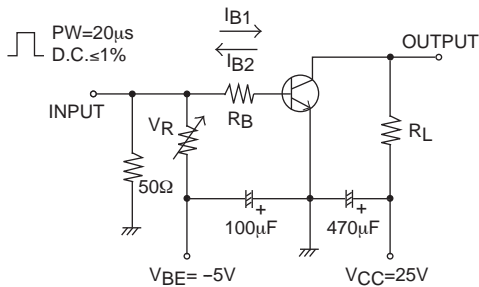
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| Parameter | Symbol | Conditions | Ratings | Unit |
|---------------------------|-----------|---|-------------|------|
| Collector Current | I_C | | (-)7 | A |
| Collector Current (Pulse) | I_{CP} | | (-)10 | A |
| Base Current | I_B | | (-)1.2 | A |
| Collector Dissipation | P_C | When mounted on ceramic substrate (250mm ² ×0.8mm) | 1.3 | W |
| | | $T_c=25^\circ\text{C}$ | 3.5 | W |
| Junction Temperature | T_J | | 150 | °C |
| Storage Temperature | T_{stg} | | -55 to +150 | °C |

Electrical Characteristics at $T_a=25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|----------------|---|----------|-----------|-----------|---------------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=-40\text{V}, I_E=0\text{A}$ | | | (-)0.1 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=-4\text{V}, I_C=0\text{A}$ | | | (-)0.1 | μA |
| DC Current Gain | h_{FE} | $V_{CE}=-2\text{V}, I_C=-500\text{mA}$ | 200 | | 560 | |
| Gain-Bandwidth Product | f_T | $V_{CE}=-10\text{V}, I_C=-500\text{mA}$ | | (290)330 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=-10\text{V}, f=1\text{MHz}$ | | (50)28 | | pF |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)1}$ | $I_C=-3.5\text{A}, I_B=-175\text{mA}$ | | (-230)160 | (-390)240 | mV |
| | $V_{CE(sat)2}$ | $I_C=-2\text{A}, I_B=-40\text{mA}$ | | (-240)110 | (-400)170 | mV |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=-2\text{A}, I_B=-40\text{mA}$ | | (-)0.83 | (-)1.2 | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=-10\mu\text{A}, I_E=0\text{A}$ | (-50)100 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CES}$ | $I_C=-100\mu\text{A}, R_{BE}=0\Omega$ | (-50)100 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=-1\text{mA}, R_{BE}=\infty$ | (-)50 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=-10\mu\text{A}, I_C=0\text{A}$ | (-)6 | | | V |
| Turn-On Time | t_{on} | See specified Test Circuit. | | (40)30 | | ns |
| Storage Time | t_{stg} | | | (225)420 | | ns |
| Fall Time | t_f | | | 25 | | ns |

Switching Time Test Circuit

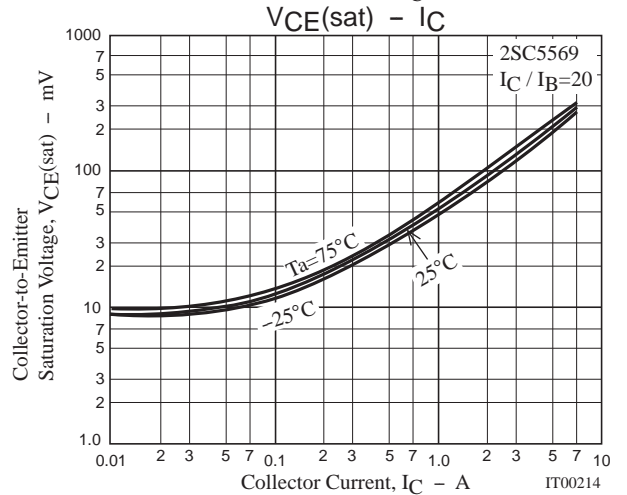
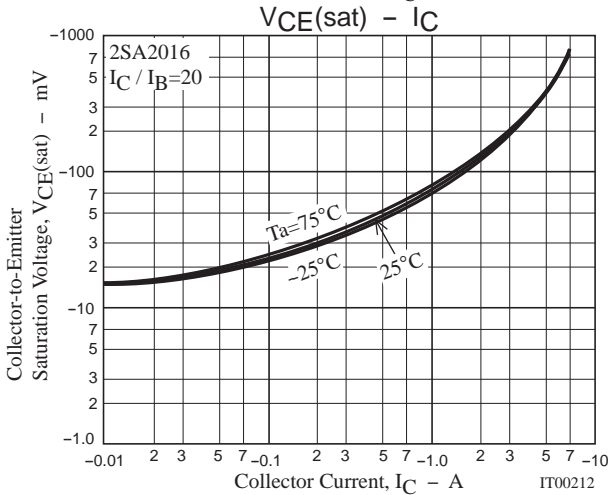
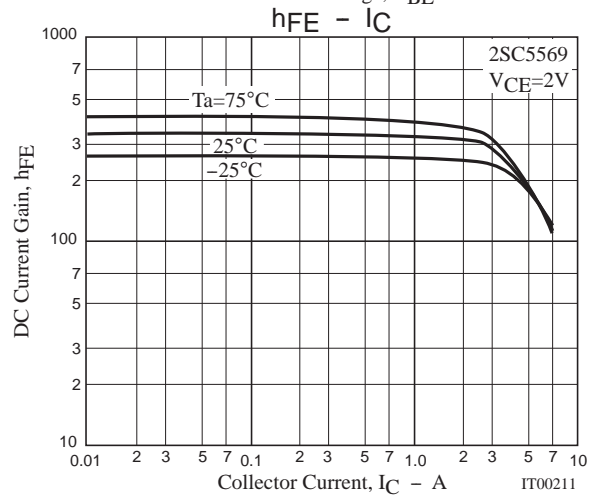
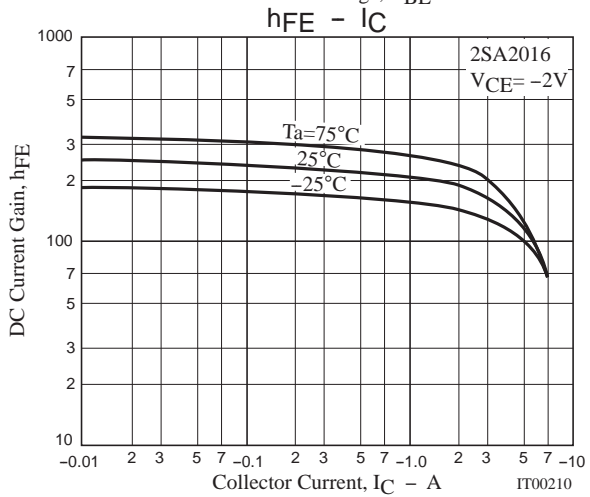
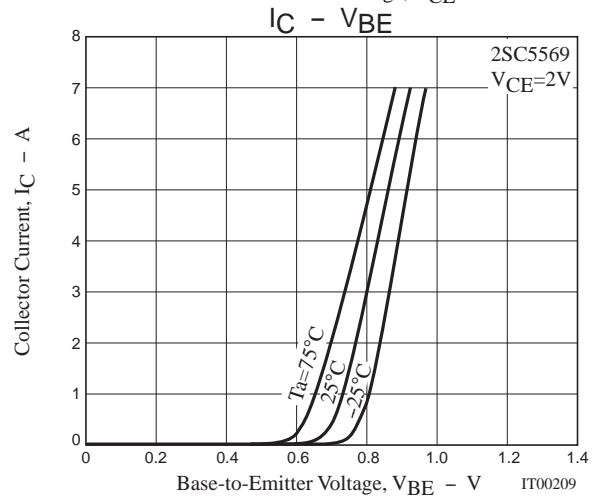
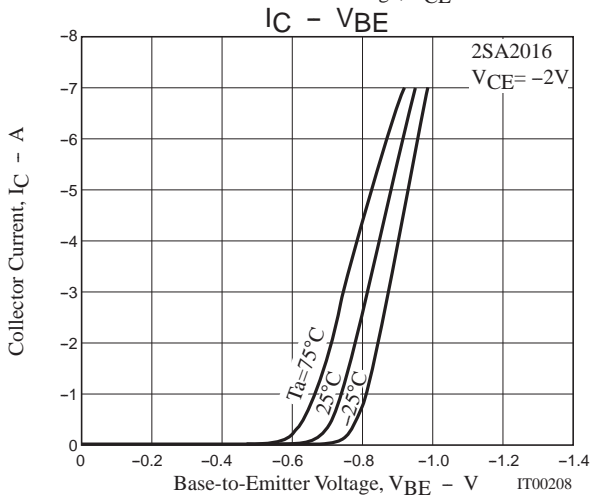
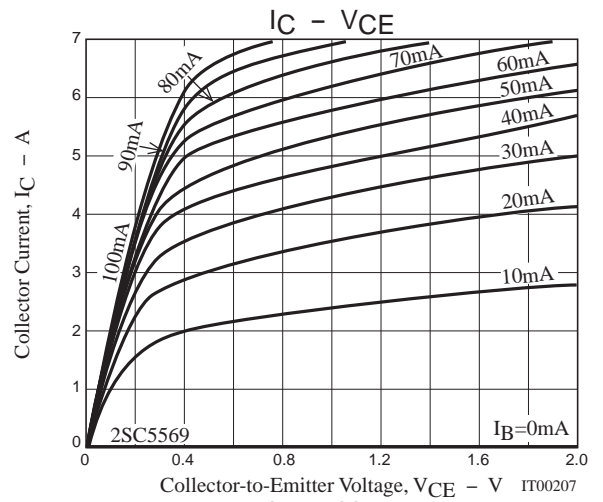
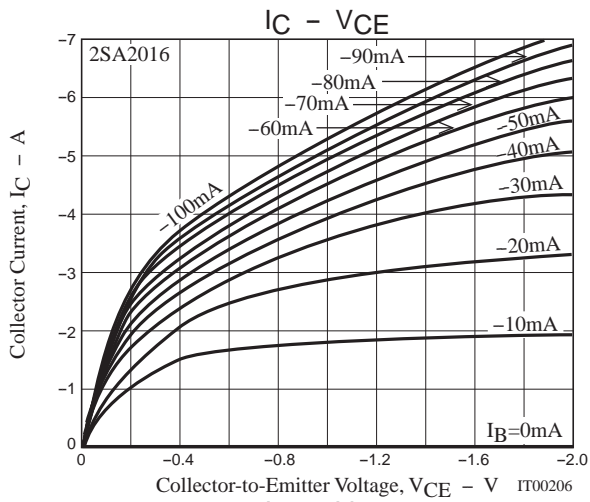


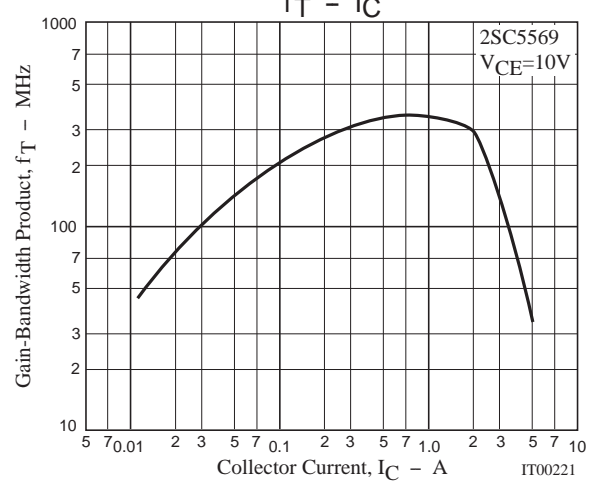
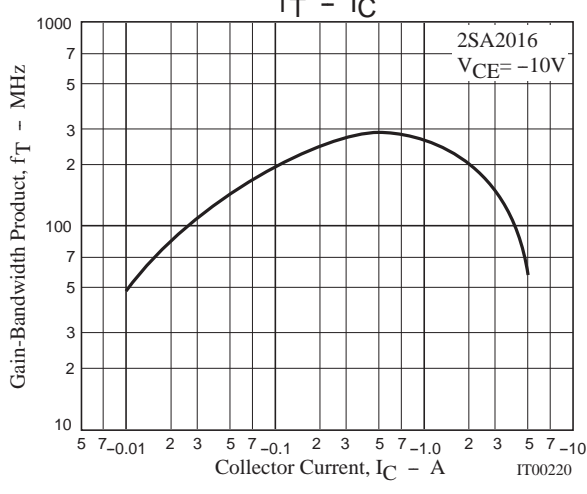
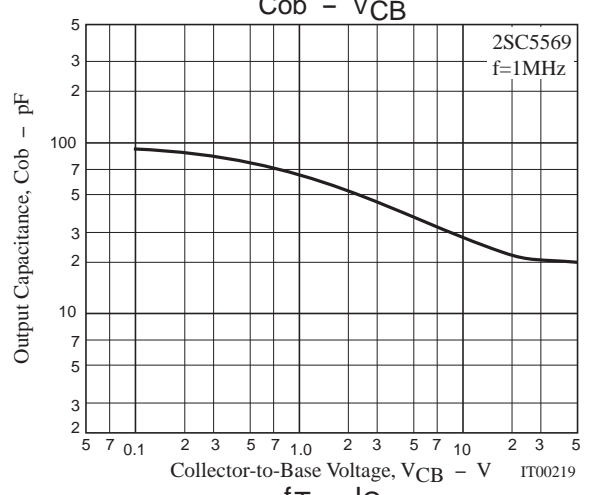
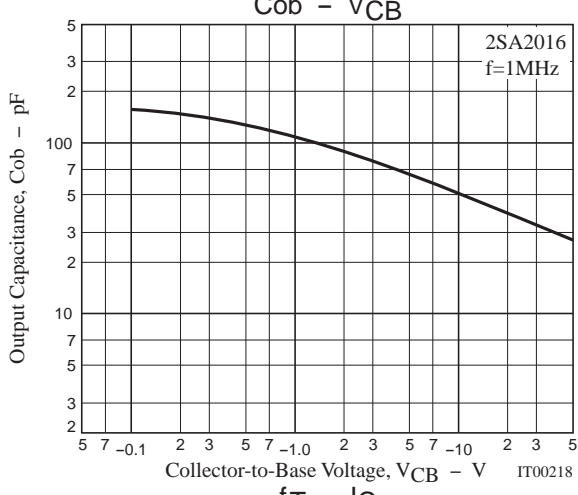
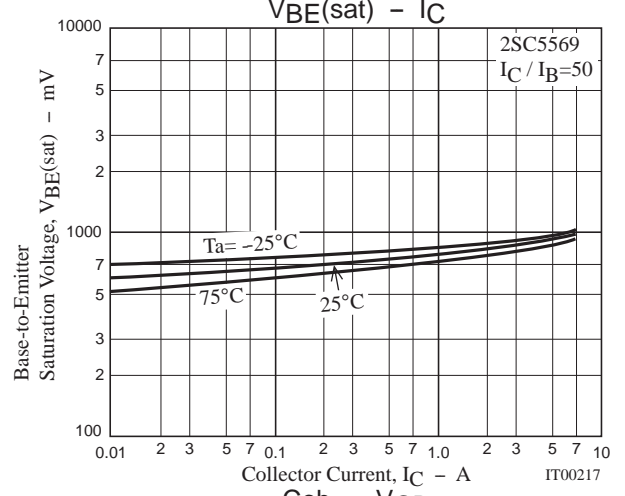
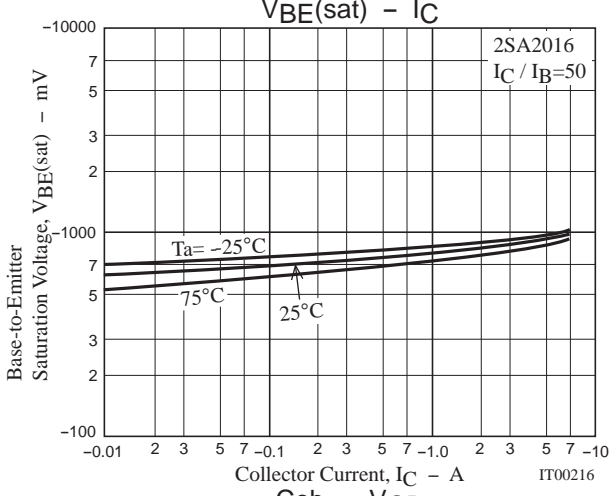
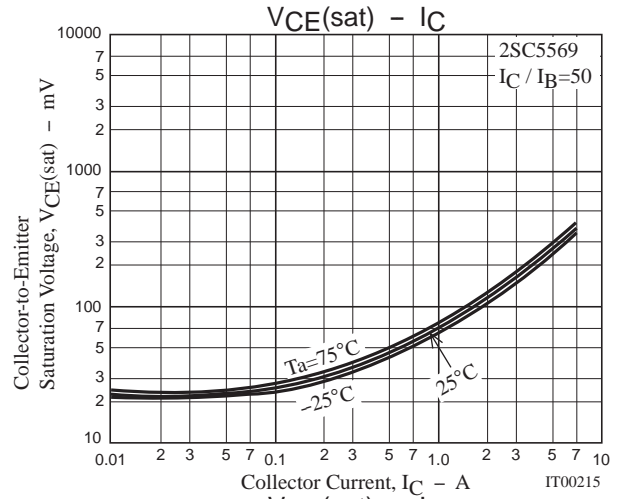
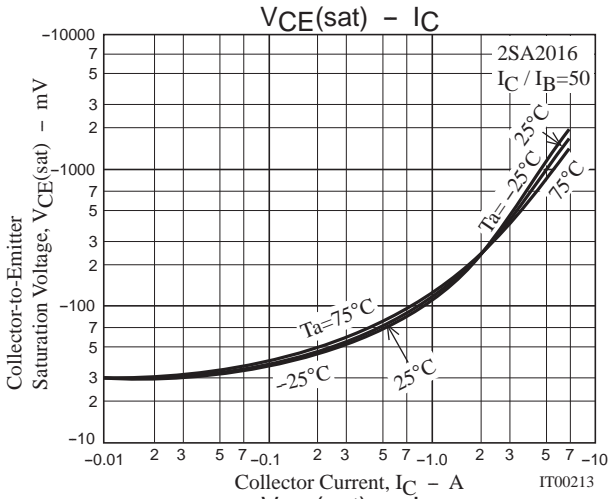
$I_C=20I_{B1} = -20I_{B2}=2.5\text{A}$

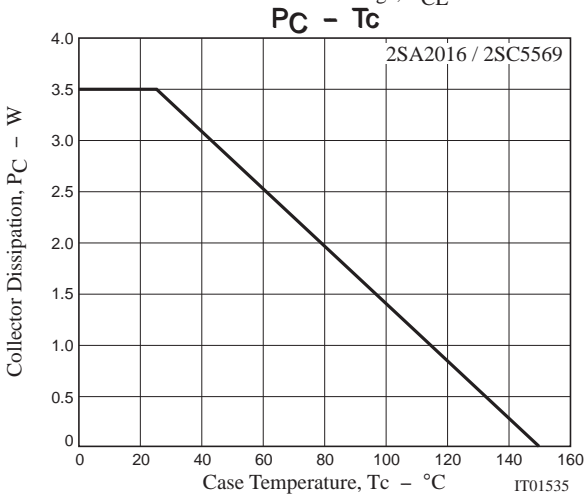
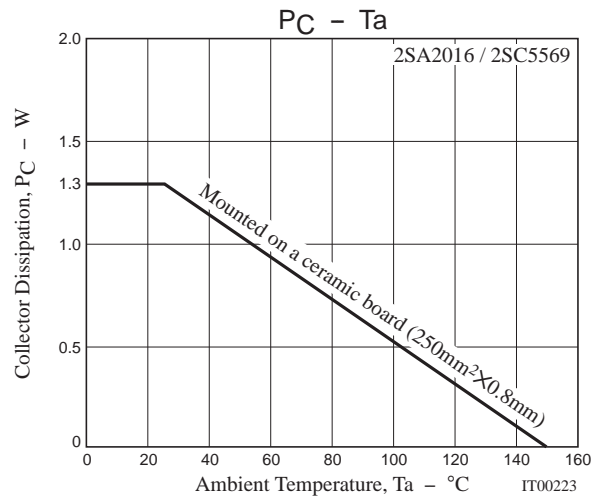
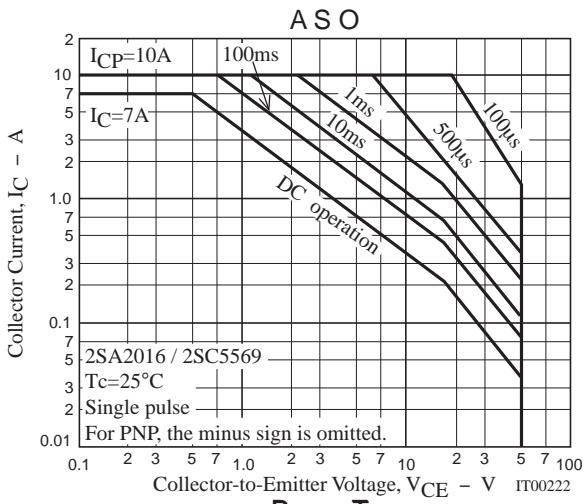
For PNP, the polarity is reversed.

Ordering Information

| Device | Package | Shipping | memo |
|--------------|---------|----------------|---------|
| 2SA2016-TD-E | PCP | 1,000pcs./reel | Pb Free |
| 2SC5569-TD-E | PCP | 1,000pcs./reel | |







Bag Packing Specification

2SA2016-TD-E, 2SC5569-TD-E

1. Packing Format

| Package Name | Carrier Tape Type | Maximum Number of devices contained (pcs) | | | Packing format | |
|--------------|-------------------|---|-----------|-----------|---|--|
| | | Reel | Inner box | Outer box | Inner BOX (C-1) | Outer BOX (A-7) |
| PCP | PCP | 1,000 | 4,000 | 24,000 | 4 reels contained Dimensions:mm (external) 183×72×185 | 6 inner boxes contained Dimensions:mm (external) 440×195×210 |

Reel label, Inner box label
(unit : mm)

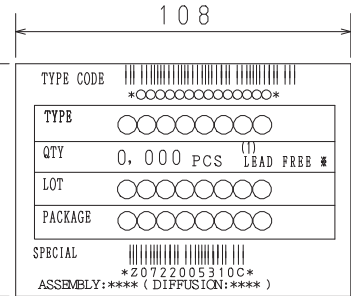
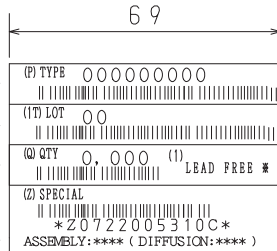
Outer box label
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.

Packing method



Type No.
LOT No.
Quantity
Origin

Reel label



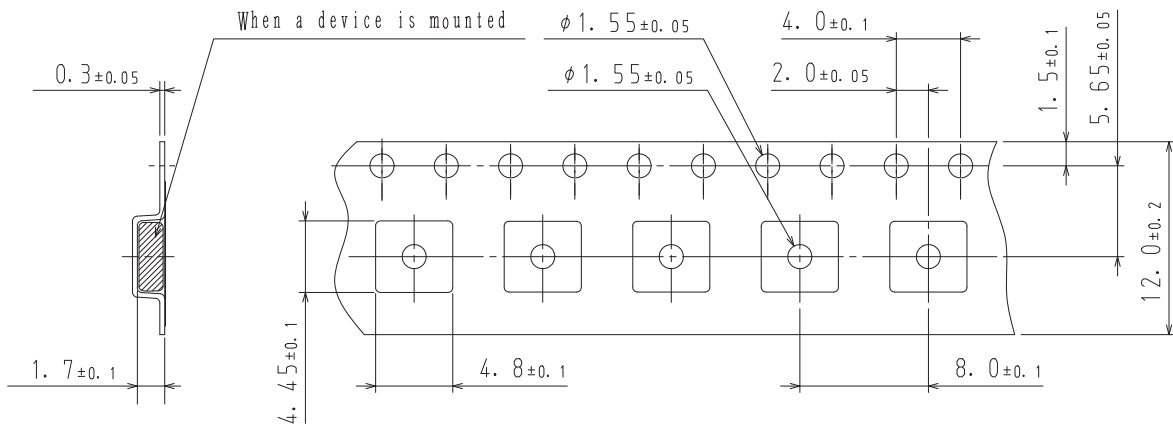
NOTE (1)

The LEAD FREE * description shows that the surface treatment of the terminal is lead free.

| Label | JEITA Phase |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3 |

2. Taping configuration

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



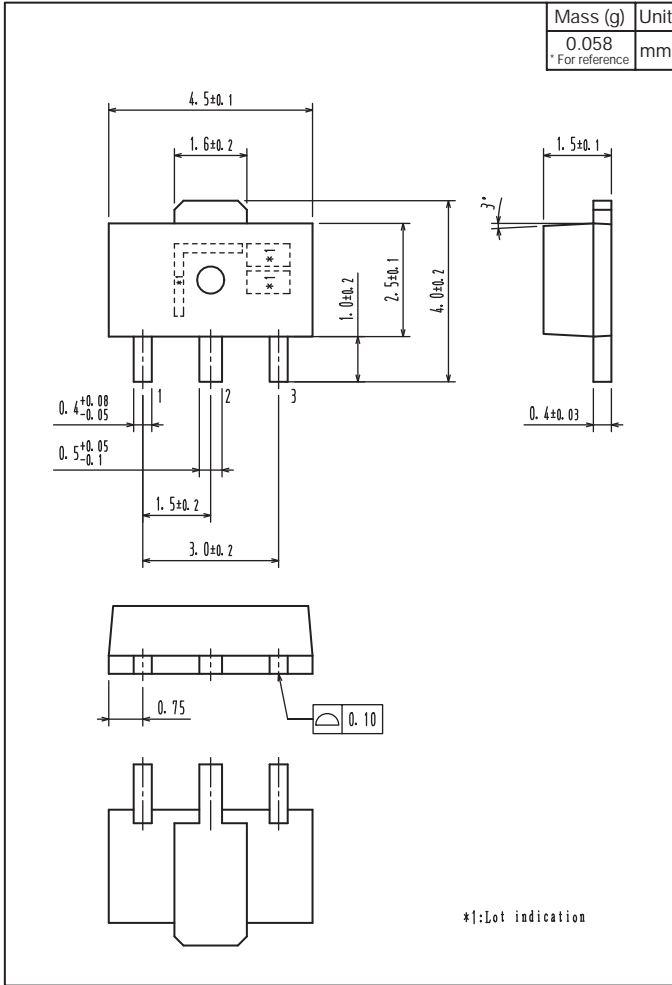
2-2. Device placement direction



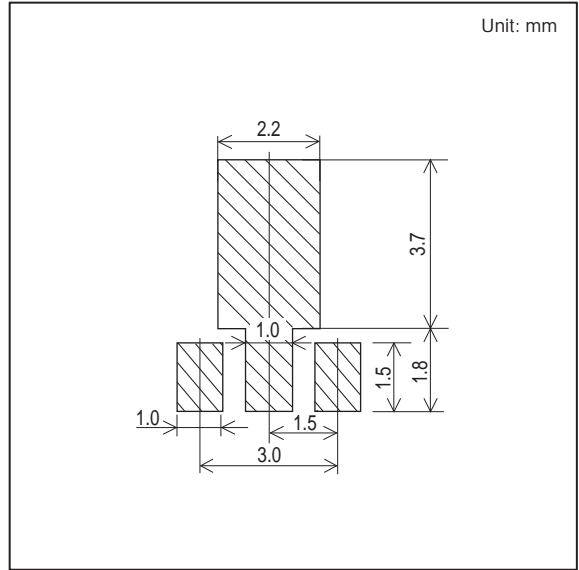
Those with pin 1 index on the feed hole side.....TD

Outline Drawing

2SA2016-TD-E, 2SC5569-TD-E



Land Pattern Example



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- Подбор аналогов;
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- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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