



# 2SD1628

## Bipolar Transistor 20V, 5A, Low VCE(sat), NPN Single PCP

ON Semiconductor®

<http://onsemi.com>

### Applications

- Strobe DC-DC converters, relay drivers, hammer drivers, lamp drivers, motor drivers

### Features

- Low saturation voltage
- Large current capacity
- Very small size making it easy to provide highdensity, small-sized hybrid IC's
- Halogen free compliance
- High hFE

### Specifications

Absolute Maximum Ratings at Ta=25°C

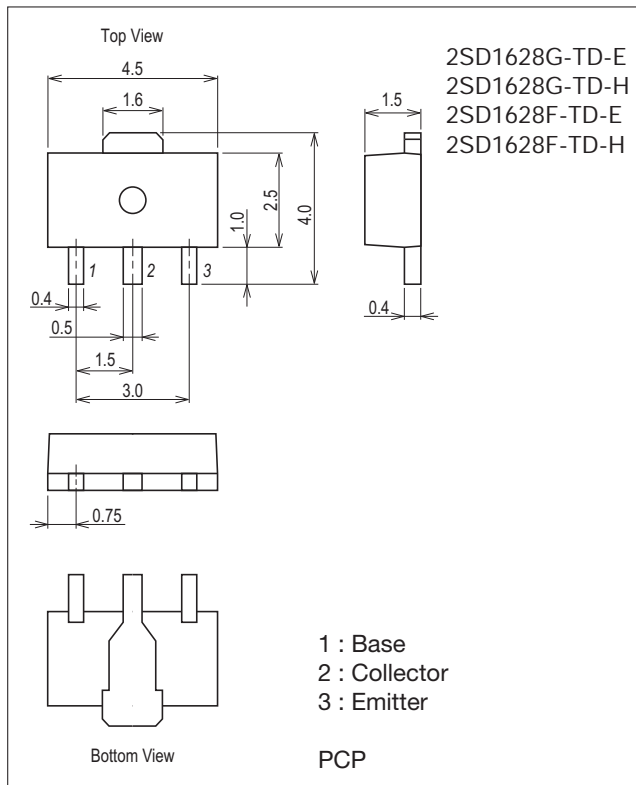
| Parameter                    | Symbol           | Conditions | Ratings | Unit |
|------------------------------|------------------|------------|---------|------|
| Collector-to-Base Voltage    | V <sub>CBO</sub> |            | 60      | V    |
| Collector-to-Emitter Voltage | V <sub>CEO</sub> |            | 20      | V    |
| Emitter-to-Base Voltage      | V <sub>EBO</sub> |            | 6       | V    |
| Collector Current            | I <sub>C</sub>   |            | 5       | A    |
| Collector Current (Pulse)    | I <sub>CP</sub>  |            | 8       | A    |

Continued on next page.

### Package Dimensions

unit : mm (typ)

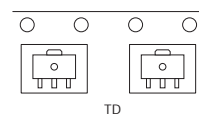
7007B-004



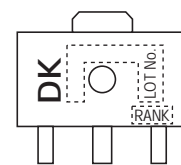
### Product & Package Information

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

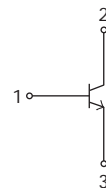
### Packing Type: TD



### Marking



### Electrical Connection



# 2SD1628

Continued from preceding page.

| Parameter             | Symbol | Conditions                                                    | Ratings     | Unit |
|-----------------------|--------|---------------------------------------------------------------|-------------|------|
| Collector Dissipation | PC     |                                                               | 500         | mW   |
|                       |        | When mounted on ceramic substrate (250mm <sup>2</sup> ×0.8mm) | 1.5         | W    |
| Junction Temperature  | Tj     |                                                               | 150         | °C   |
| Storage Temperature   | Tstg   |                                                               | -55 to +150 | °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.

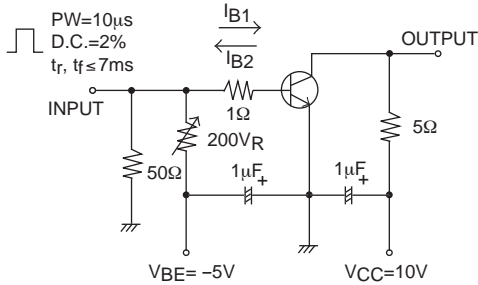
## Electrical Characteristics at Ta=25°C

| Parameter                               | Symbol               | Conditions                                 | Ratings |     |      | Unit |
|-----------------------------------------|----------------------|--------------------------------------------|---------|-----|------|------|
|                                         |                      |                                            | min     | typ | max  |      |
| Collector Cutoff Current                | ICBO                 | V <sub>CB</sub> =50V, I <sub>E</sub> =0A   |         |     | 100  | nA   |
| Emitter Cutoff Current                  | IEBO                 | V <sub>EB</sub> =5V, I <sub>C</sub> =0A    |         |     | 100  | nA   |
| DC Current Gain                         | h <sub>FE1</sub>     | V <sub>CE</sub> =2V, I <sub>C</sub> =0.5A  | 120*    |     | 560* |      |
|                                         | h <sub>FE2</sub>     | V <sub>CE</sub> =2V, I <sub>C</sub> =3A    | 95      |     |      |      |
| Gain-Bandwidth Product                  | f <sub>T</sub>       | V <sub>CE</sub> =10V, I <sub>C</sub> =50mA |         | 120 |      | MHz  |
| Output Capacitance                      | Cob                  | V <sub>CB</sub> =10V, f=1MHz               |         | 45  |      | pF   |
| Collector-to-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =3A, I <sub>B</sub> =60mA   |         |     | 500  | mV   |
| Base-to-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> =3A, I <sub>B</sub> =60mA   |         |     | 1.5  | V    |
| Turn-ON Time                            | t <sub>on</sub>      | See specified Test Circuit.                |         | 30  |      | ns   |
| Storage Time                            | t <sub>stg</sub>     |                                            |         | 300 |      | ns   |
| Fall Time                               | t <sub>f</sub>       |                                            |         | 40  |      | ns   |

\* : The 2SD1628 is classified by 0.5A h<sub>FE</sub> as follows :

| Rank            | E          | F          | G          |
|-----------------|------------|------------|------------|
| h <sub>FE</sub> | 120 to 200 | 160 to 320 | 280 to 560 |

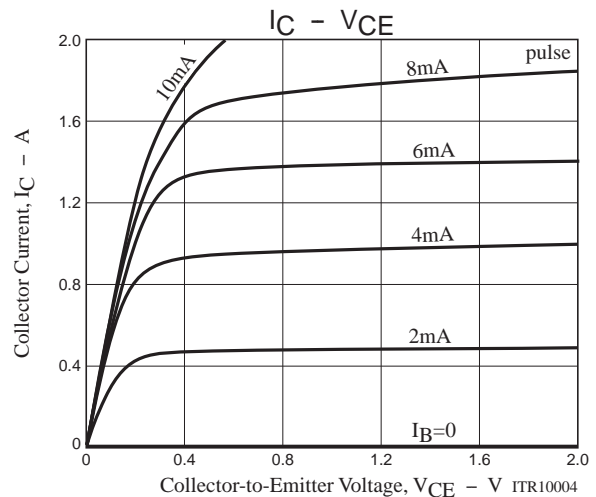
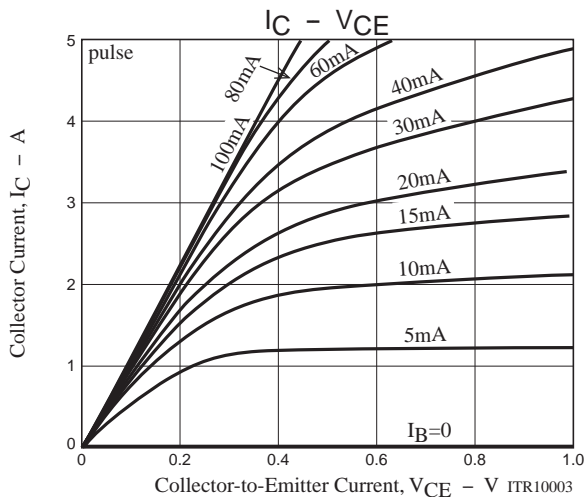
## Switching Time Test Circuit

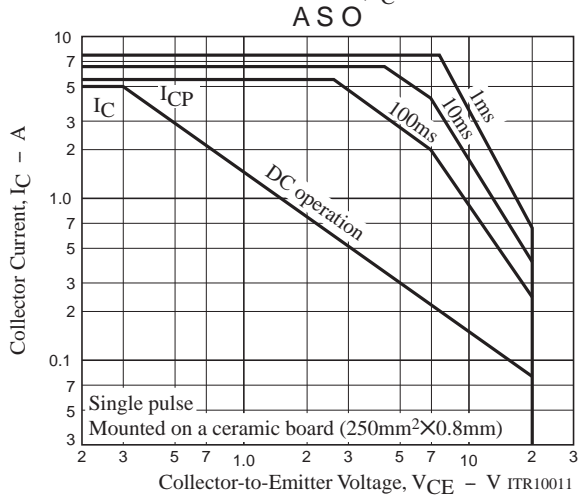
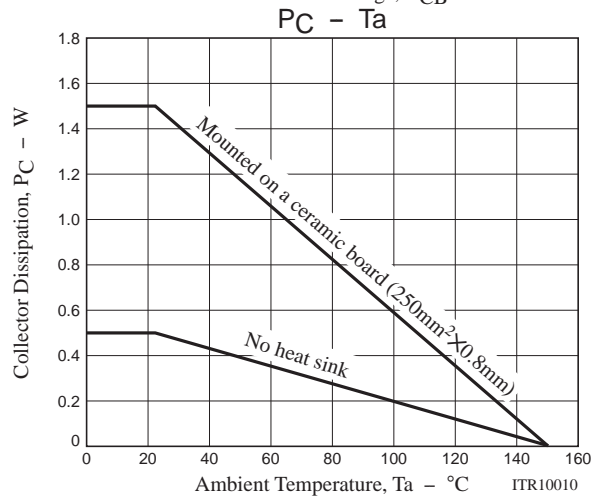
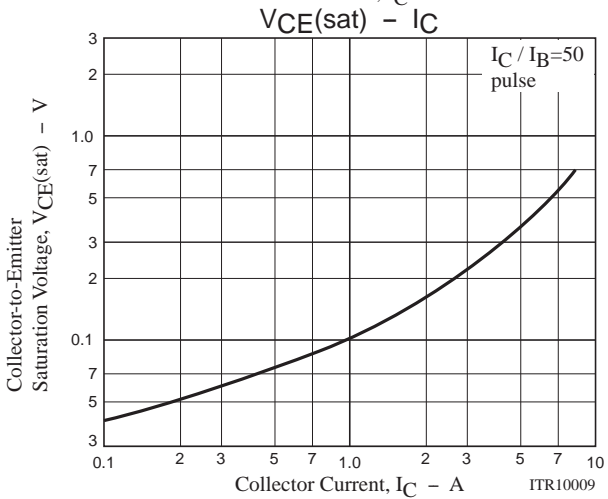
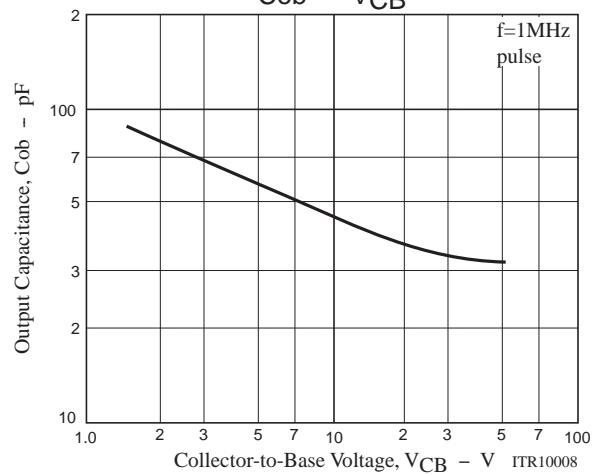
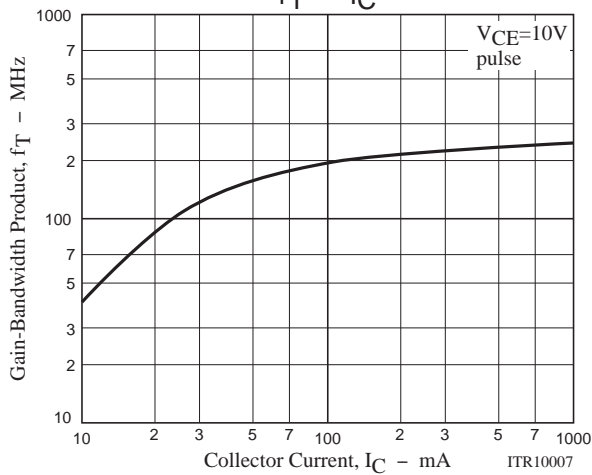
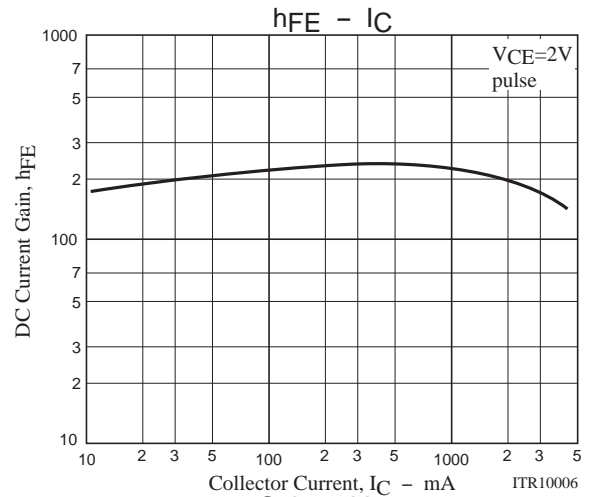
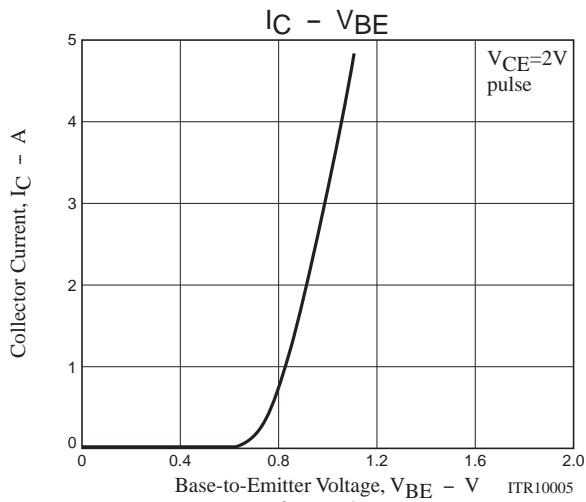


$$I_C = 10I_{B1} = -10I_{B2} = 2A$$

## Ordering Information

| Device        | Package | Shipping       | memo                     |
|---------------|---------|----------------|--------------------------|
| 2SD1628G-TD-E | PCP     | 1,000pcs./reel | Pb Free                  |
| 2SD1628G-TD-H | PCP     | 1,000pcs./reel | Pb Free and Halogen Free |
| 2SD1628F-TD-E | PCP     | 1,000pcs./reel | Pb Free                  |
| 2SD1628F-TD-H | PCP     | 1,000pcs./reel | Pb Free and Halogen Free |





Bag Packing Specification

2SD1628G-TD-E, 2SD1628G-TD-H, 2SD1628F-TD-E, 2SD1628F-TD-H

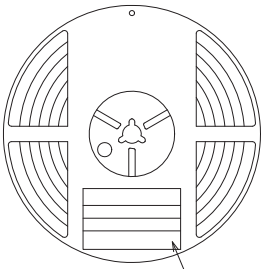
1. Packing Format

| 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<br>Dimensions:mm (external)<br>183×72×185 | 6 inner boxes contained<br>Dimensions:mm (external)<br>440×195×210 |

Reel label, Inner box label  
(unit : mm)

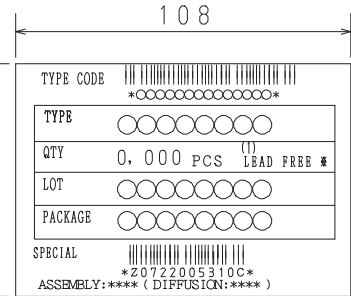
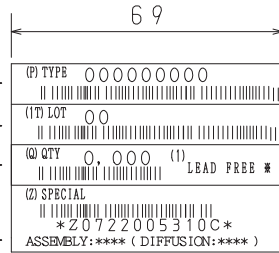
Outer box label  
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

Packing method



Type No.  
LOT No.  
Quantity  
Origin

Reel label



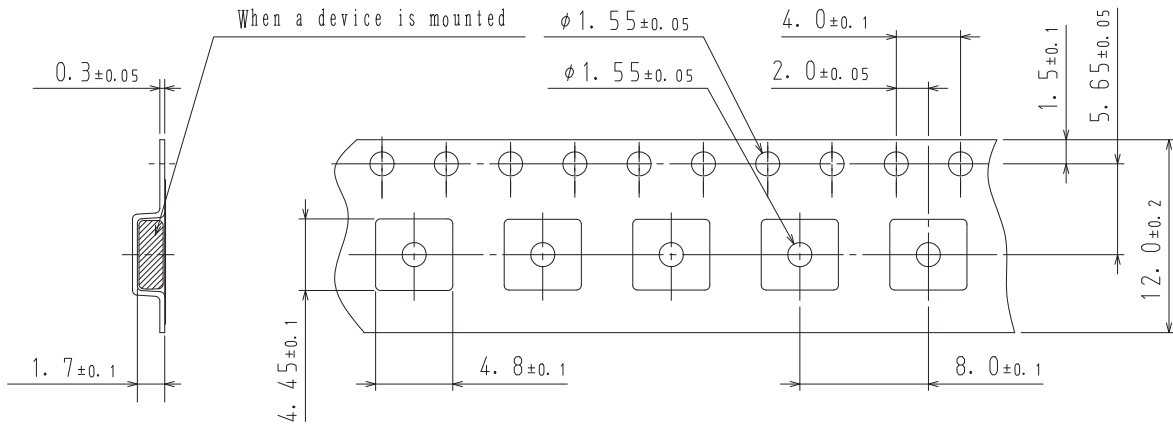
NOTE (1)

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

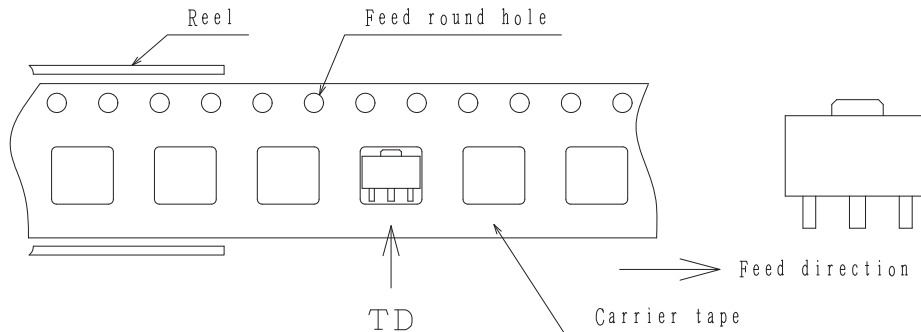
| Label       | JEITA Phase    |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3  |

2. Taping configuration

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



2-2. Device placement direction

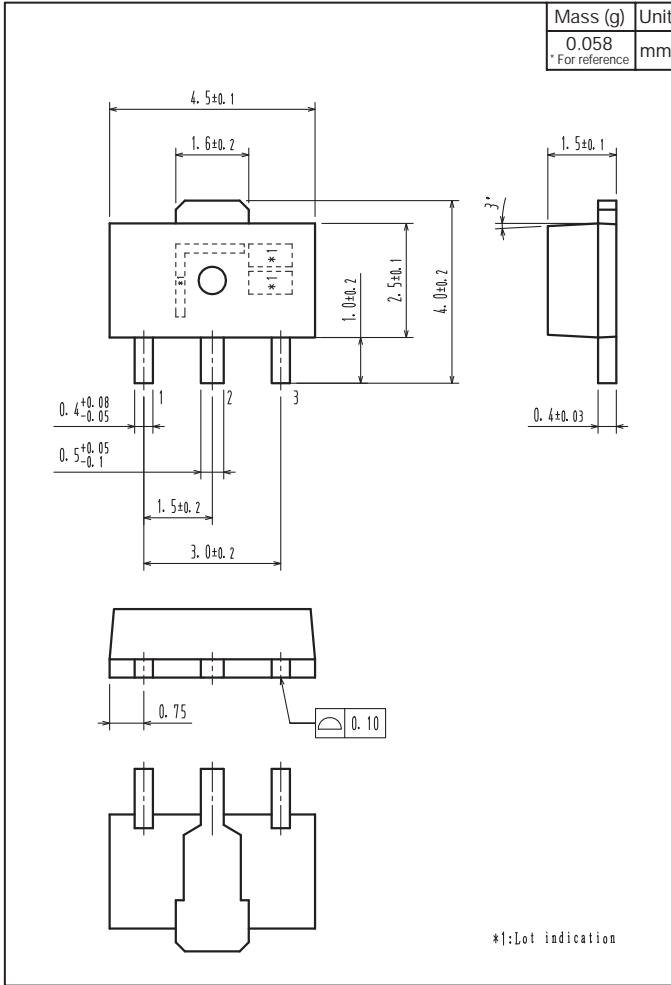


Those with pin 1 index on the feed hole side.....TD

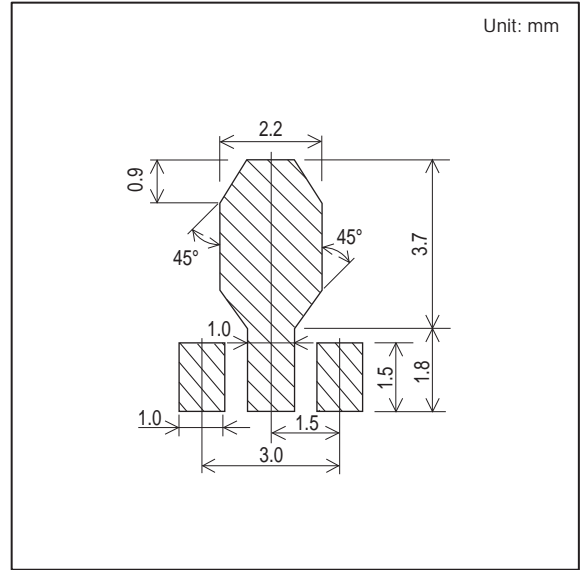
# 2SD1628

## Outline Drawing

2SD1628G-TD-E, 2SD1628G-TD-H, 2SD1628F-TD-E, 2SD1628F-TD-H



## Land Pattern Example



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