



# 2SD1628

## Bipolar Transistor 20V, 5A, Low $V_{CE(sat)}$ , 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 high density, small-sized hybrid IC's
- Halogen free compliance
- High  $h_{FE}$

### Specifications

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

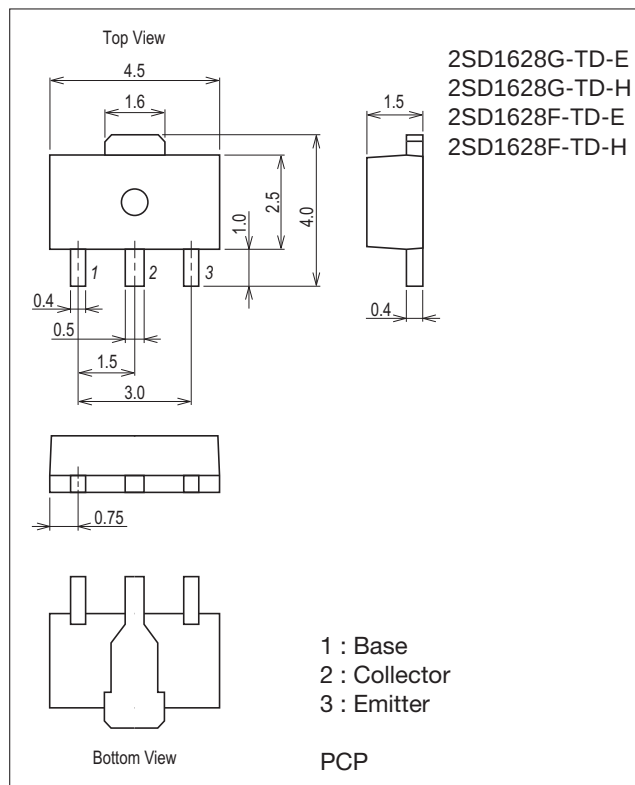
| Parameter                    | Symbol    | Conditions | Ratings | Unit |
|------------------------------|-----------|------------|---------|------|
| Collector-to-Base Voltage    | $V_{CBO}$ |            | 60      | V    |
| Collector-to-Emitter Voltage | $V_{CEO}$ |            | 20      | V    |
| Emitter-to-Base Voltage      | $V_{EBO}$ |            | 6       | V    |
| Collector Current            | $I_C$     |            | 5       | A    |
| Collector Current (Pulse)    | $I_{CP}$  |            | 8       | A    |

Continued on next page.

### Package Dimensions

unit : mm (typ)

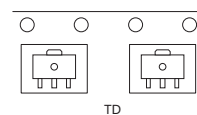
7007B-004



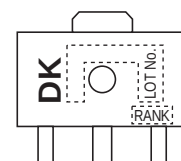
### Product & Package Information

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

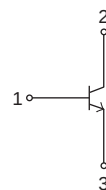
### Packing Type: TD



### Marking



### Electrical Connection



## 2SD1628

Continued from preceding page.

| Parameter             | Symbol           | Conditions                                                    | Ratings     | Unit |
|-----------------------|------------------|---------------------------------------------------------------|-------------|------|
| Collector Dissipation | P <sub>C</sub>   |                                                               | 500         | mW   |
|                       |                  | When mounted on ceramic substrate (250mm <sup>2</sup> ×0.8mm) | 1.5         | W    |
| Junction Temperature  | T <sub>j</sub>   |                                                               | 150         | °C   |
| Storage Temperature   | T <sub>stg</sub> |                                                               | -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.

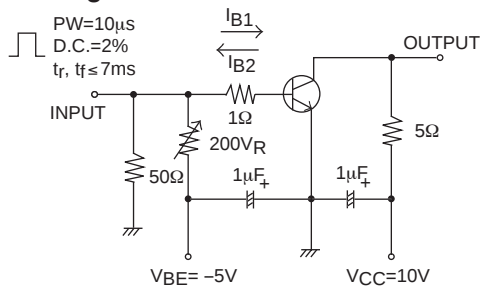
### Electrical Characteristics at T<sub>a</sub>=25°C

| Parameter                               | Symbol               | Conditions                                 | Ratings |     |      | Unit |
|-----------------------------------------|----------------------|--------------------------------------------|---------|-----|------|------|
|                                         |                      |                                            | min     | typ | max  |      |
| Collector Cutoff Current                | I <sub>CBO</sub>     | V <sub>CB</sub> =50V, I <sub>E</sub> =0A   |         |     | 100  | nA   |
| Emitter Cutoff Current                  | I <sub>EBO</sub>     | 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                      | C <sub>ob</sub>      | 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 |

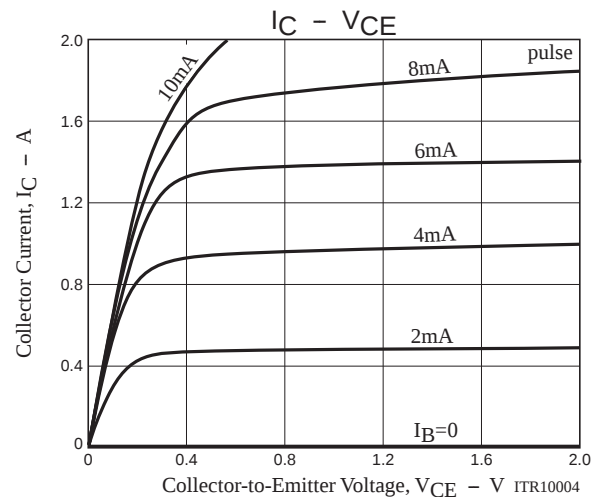
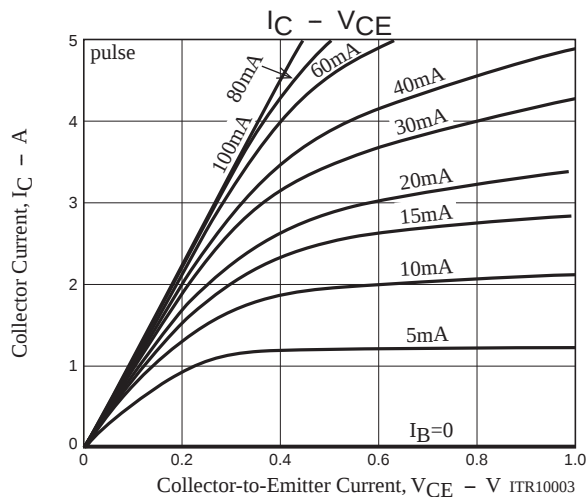
### Switching Time Test Circuit

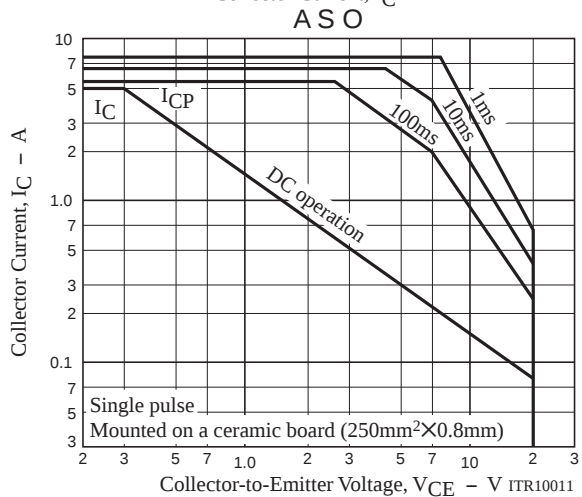
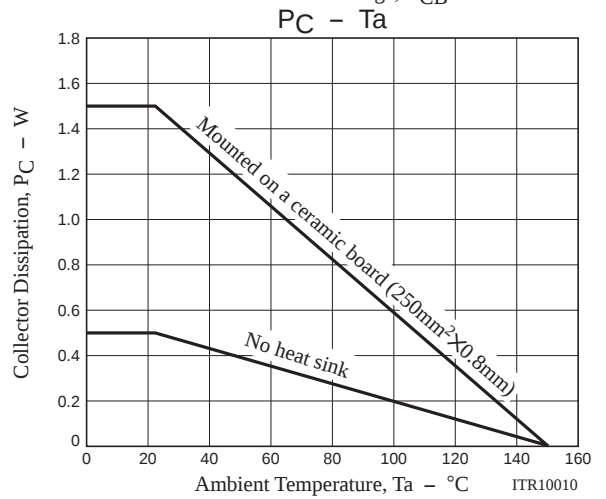
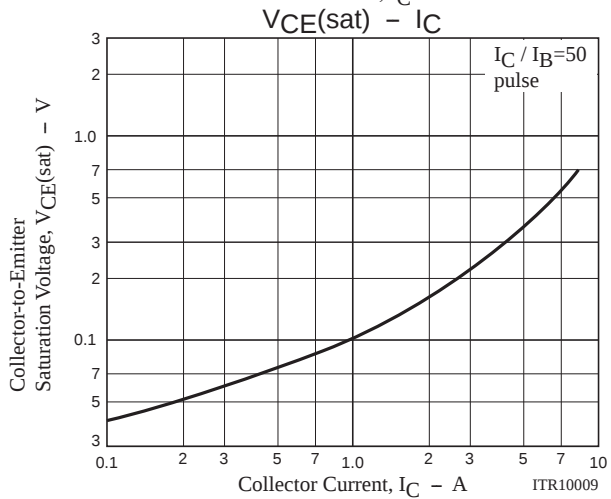
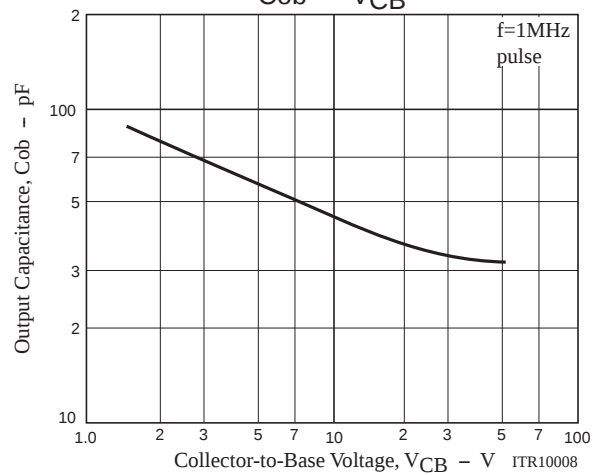
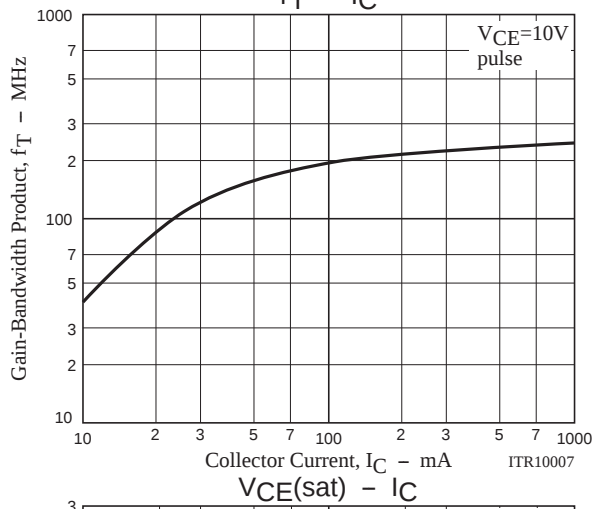
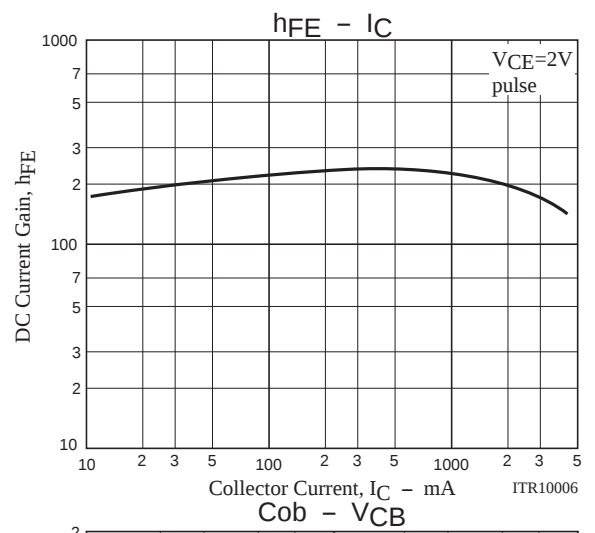
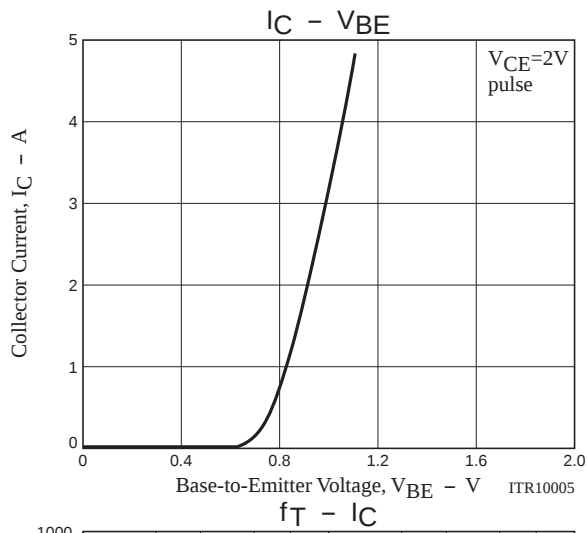


$$I_C = 10I_{B1} = -10I_{B2} = 2A$$

### 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 |







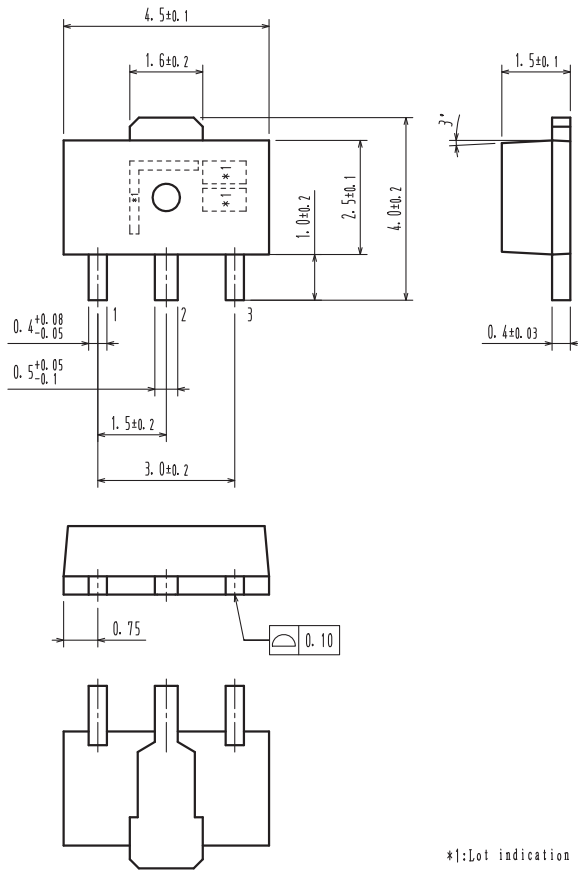
**2SD1628**

## Outline Drawing

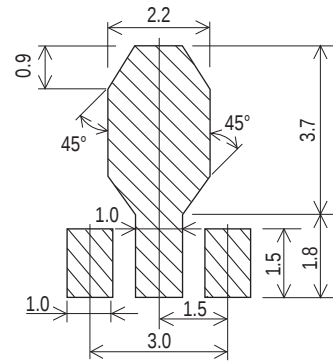
2SD1628G-TD-E, 2SD1628G-TD-H, 2SD1628F-TD-E, 2SD1628F-TD-H

### Land Pattern Example

|                          |      |
|--------------------------|------|
| Mass (g)                 | Unit |
| 0.058<br>* For reference | mm   |



Unit: mm



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