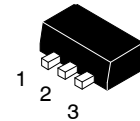


Bipolar Transistor

20 V, 5 A, Low $V_{CE(sat)}$, NPN Single PCP

2SD1628



SOT-89 / PCP-1
CASE 419AU

Features

- Low Saturation Voltage
- High h_{FE}
- Large Current Capacity
- Very Small Size Making it Easy to Provide High-Density Small-Sized Hybrid IC's
- These Devices are Pb-Free and are RoHS Compliant

Applications

- Strobe DC-DC Converters, Relay Drivers, Hammer Drivers, Lamp Drivers, Motor Drivers

SPECIFICATIONS

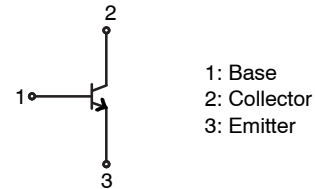
ABSOLUTE MAXIMUM RATINGS at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Value | 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 |
| Collector Dissipation | P_C | 500 | mW |
| | | 1.5 (Note 1) | W |
| Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{STG} | -55 to +150 | $^\circ\text{C}$ |

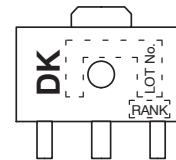
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. When mounted on ceramic substrate (250 mm² x 0.8 mm).

ELECTRICAL CONNECTION



MARKING DIAGRAM



ORDERING INFORMATION

| Device | Package | Shipping [†] |
|---------------|------------------|-----------------------|
| 2SD1628G-TD-E | PCP (Pb-Free) | 1000 / Tape & Reel |

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

2SD1628

ELECTRICAL CHARACTERISTICS at $T_A = 25^\circ\text{C}$

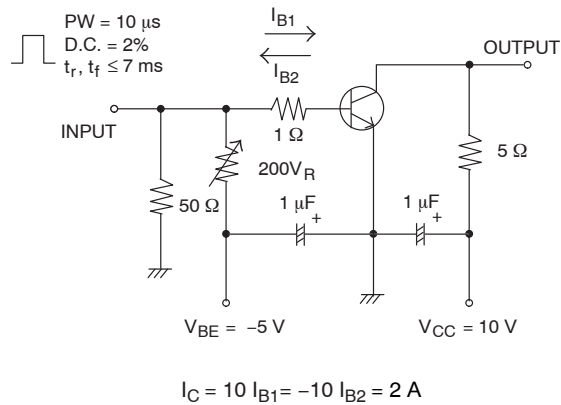
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|--|---------|-----|------|------|
| | | | Min | Typ | Max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB} = 50\text{ V}, I_E = 0\text{ A}$ | | | 100 | nA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 5\text{ V}, I_C = 0\text{ A}$ | | | 100 | nA |
| DC Current Gain | h_{FE1} | $V_{CE} = 2\text{ V}, I_C = 0.5\text{ A}$ | 120* | | 560* | |
| | h_{FE2} | $V_{CE} = 2\text{ V}, I_C = 3\text{ A}$ | 95 | | | |
| Gain-Bandwidth Product | f_T | $V_{CE} = 10\text{ V}, I_C = 50\text{ mA}$ | | 120 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$ | | 45 | | pF |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 3\text{ A}, I_B = 60\text{ mA}$ | | | 500 | mV |
| Base to Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 3\text{ A}, I_B = 60\text{ mA}$ | | | 1.5 | V |
| Turn-On Time | t_{on} | See specified Test Circuit | | 30 | | ns |
| Storage Time | t_{stg} | | | 300 | | ns |
| Fall Time | t_f | | | 40 | | ns |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

*The 2SD1628 is classified by 0.5 A h_{FE} as follows :

| Rank | E | F | G |
|----------|------------|------------|------------|
| h_{FE} | 120 to 200 | 160 to 320 | 280 to 560 |

Switching Time Test Circuit



TYPICAL CHARACTERISTICS

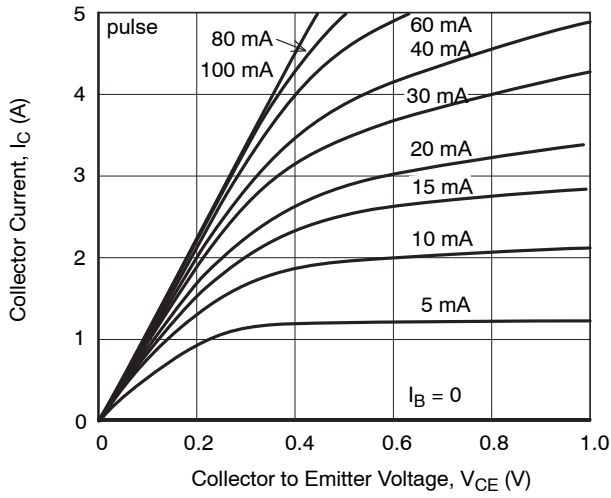


Figure 1. $I_C - V_{CE}$

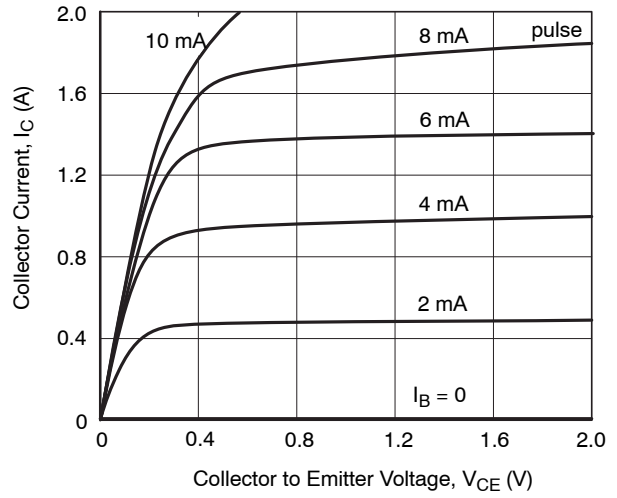


Figure 2. $I_C - V_{CE}$

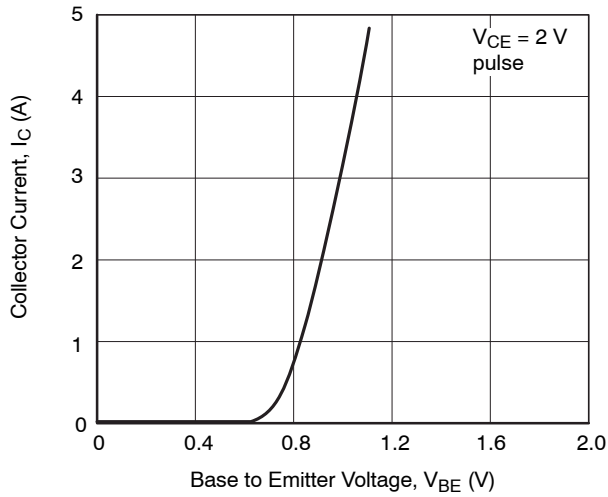


Figure 3. $I_C - V_{BE}$

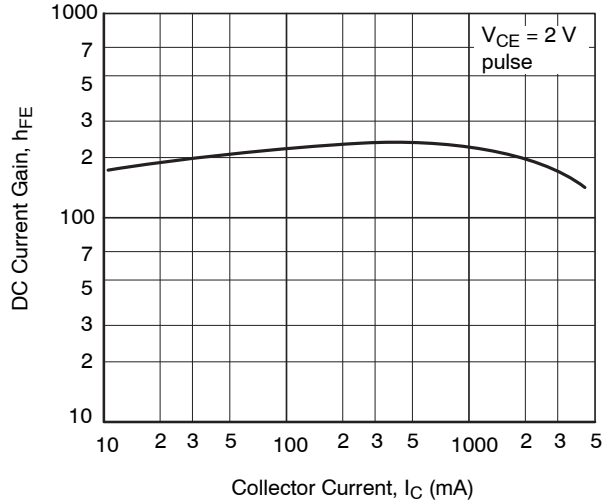


Figure 4. $h_{FE} - I_C$

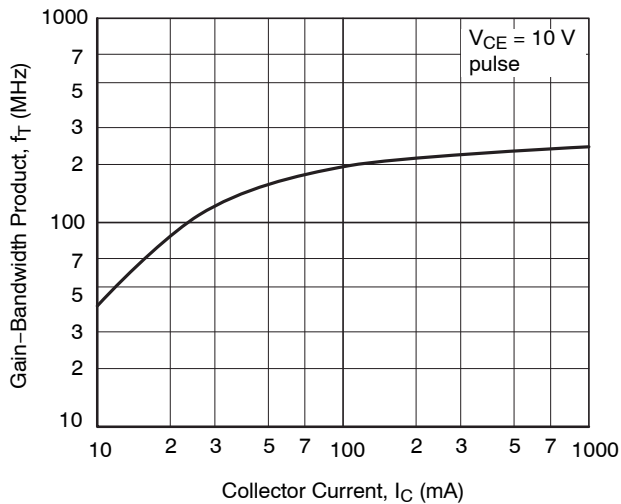


Figure 5. $f_T - I_C$

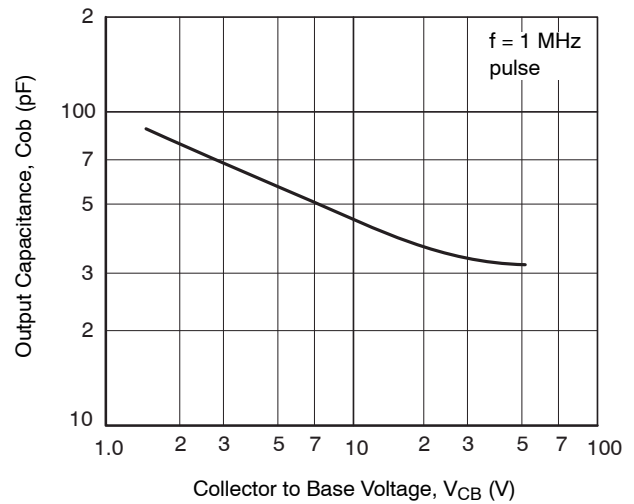


Figure 6. $C_{ob} - V_{CB}$

TYPICAL CHARACTERISTICS (continued)

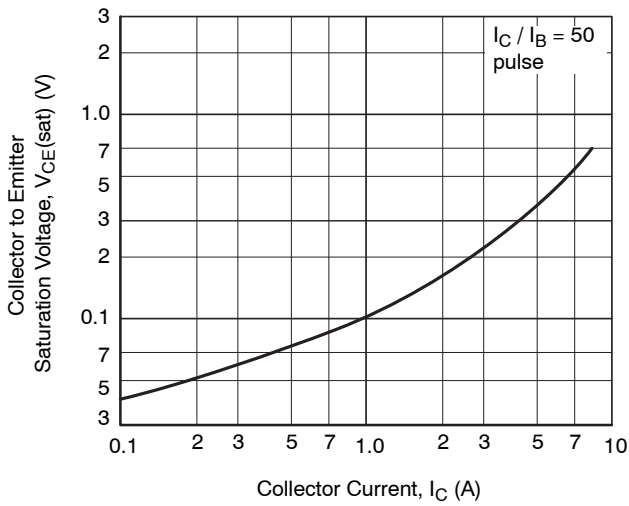


Figure 7. $V_{CE(sat)} - I_C$

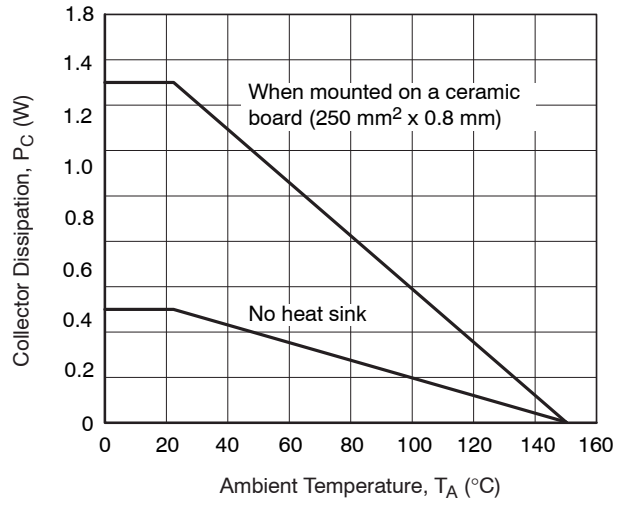


Figure 8. $P_C - T_A$

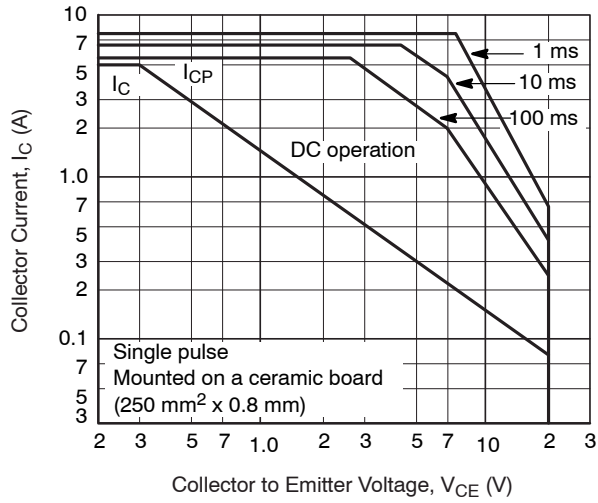


Figure 9. SOA

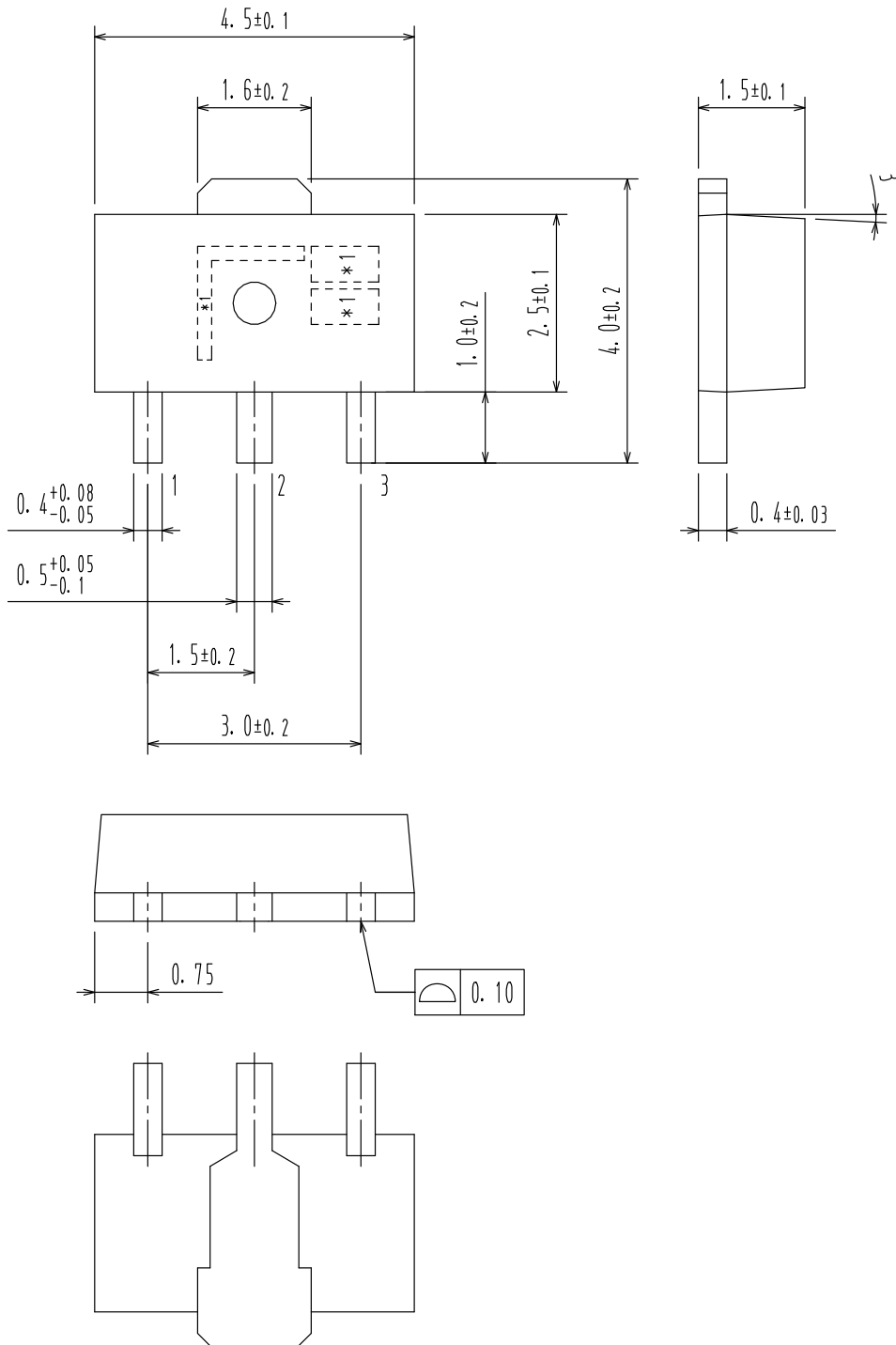
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

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