



2SB1202/2SD1802

Bipolar Transistor (-50V, (-)3A, Low VCE(sat) (PNP)NPN Single TP/TP-FA

ON Semiconductor®

<http://onsemi.com>

Applications

- Voltage regulators, relay drivers, lamp drivers, electrical equipment

Features

- Adoption of FBET and MBIT processes
- Low collector to emitter saturation voltage
- Small and slim package making it easy to make 2SB1202/2SD1802-used sets smaller
- Large current capacitance and wide ASO
- Fast switching speed

Specifications () : 2SB1202

Absolute Maximum Ratings at Ta=25°C

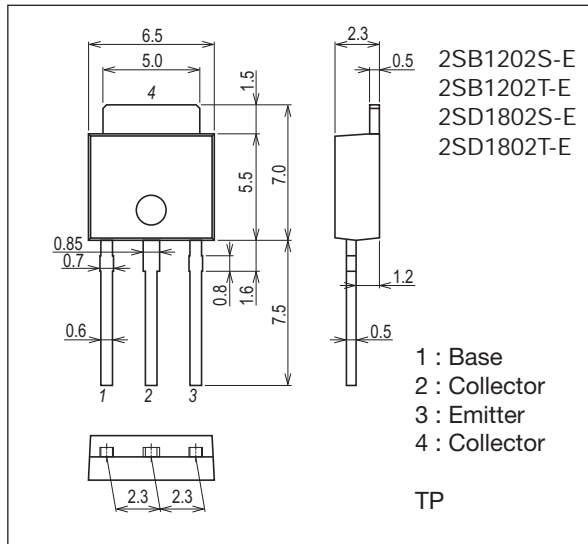
| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|------------------|------------|---------|------|
| Collector to Base Voltage | V _{CB0} | | (-)60 | V |
| Collector to Emitter Voltage | V _{CE0} | | (-)50 | V |
| Emitter to Base Voltage | V _{EB0} | | (-)6 | V |
| Collector Current | I _C | | (-)3 | A |
| Collector Current (Pulse) | I _{CP} | | (-)6 | A |

Continued on next page.

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.

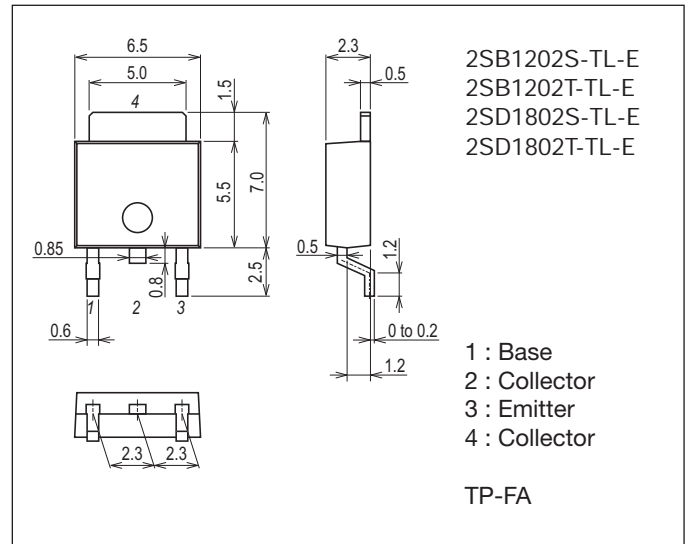
Package Dimensions unit : mm (typ)

7518-003



Package Dimensions unit : mm (typ)

7003-003

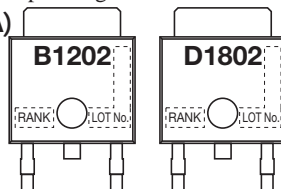


Product & Package Information

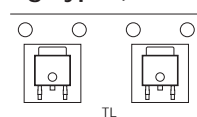
- Package : TP
- JEITA, JEDEC : SC-64, TO-251, SOT-553, DPAK
- Minimum Packing Quantity : 500 pcs./bag

- Package : TP-FA
- JEITA, JEDEC : SC-63, TO-252, SOT-428, DPAK
- Minimum Packing Quantity : 700 pcs./reel

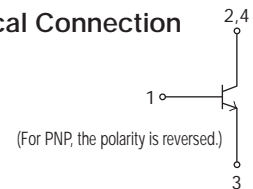
Marking (TP, TP-FA)



Packing Type (TP-FA) : TL



Electrical Connection



2SB1202/2SD1802

Continued from preceding page.

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------|------------------|----------------------|-------------|------|
| Collector Dissipation | PC | | 1 | W |
| | | T _c =25°C | 15 | W |
| Junction Temperature | T _j | | 150 | °C |
| Storage Temperature | T _{stg} | | -55 to +150 | °C |

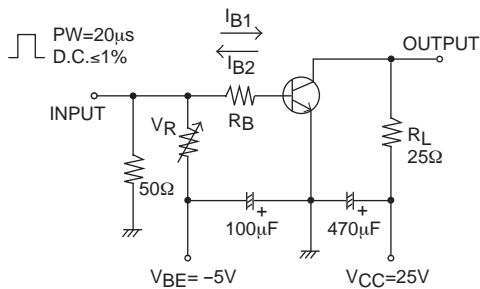
Electrical Characteristics at T_a=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit | |
|---|----------------------|--|---------|-------------|-----------|------|----|
| | | | min | typ | max | | |
| Collector Cutoff Current | I _{CBO} | V _{CB} =(-)40V, I _E =0A | | | (-)1 | μA | |
| Emitter Cutoff Current | I _{EBO} | V _{EB} =(-)4V, I _C =0A | | | (-)1 | μA | |
| DC Current Gain | h _{FE1} | V _{CE} =(-)2V, I _C =(-)100mA | 100* | | 560* | | |
| | h _{FE2} | V _{CE} =(-)2V, I _C =(-)3A | 35 | | | | |
| Gain-Bandwidth Product | f _T | V _{CE} =(-)10V, I _C =(-)50mA | | 150 | | MHz | |
| Output Capacitance | C _{ob} | V _{CB} =(-)10V, f=1MHz | | (39)25 | | pF | |
| Collector to Emitter Saturation Voltage | V _{CE(sat)} | I _C =(-)2A, I _B =(-)100mA | | (-0.35)0.19 | (-0.7)0.5 | mV | |
| Base to Emitter Saturation Voltage | V _{BE(sat)} | V _{CE} =(-)2V, I _C =(-)100mA | | (-)0.94 | (-)1.2 | V | |
| Collector to Base Breakdown Voltage | V(BR)CBO | I _C =(-)10μA, I _E =0A | (-)60 | | | V | |
| Collector to Emitter Breakdown Voltage | V(BR)CEO | I _C =(-)1mA, R _{BE} =∞ | (-)50 | | | V | |
| Emitter to Base Breakdown Voltage | V(BR)EBO | I _E =(-)10μA, I _C =0A | (-)6 | | | V | |
| Turn-On Time | t _{on} | See specified Test Circuit. | | 70 | | ns | |
| Storage Time | t _{stg} | | | (450)650 | | | ns |
| Fall Time | t _f | | | 35 | | | ns |

* : The 2SB1202/2SD1802 are classified by 100mA hFE as follows :

| Rank | R | S | T | U |
|------|------------|------------|------------|------------|
| hFE | 100 to 200 | 140 to 280 | 200 to 400 | 280 to 560 |

Switching Time Test Circuit

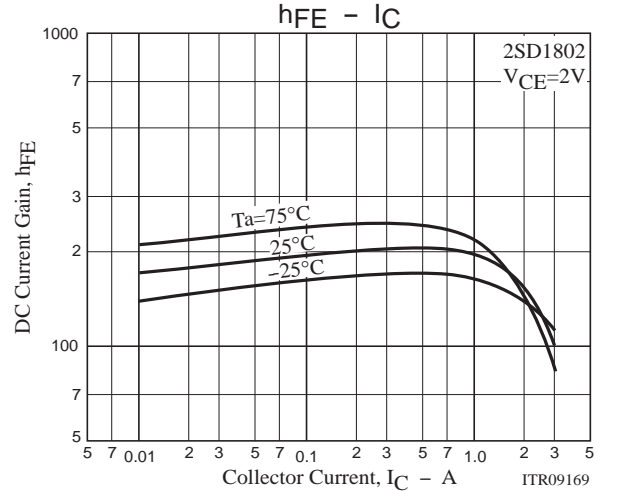
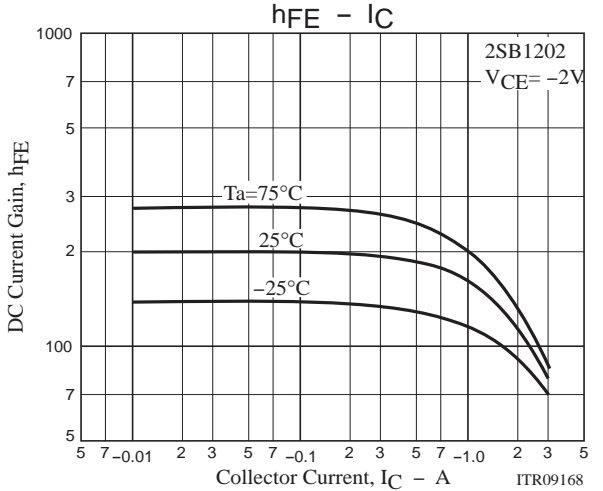
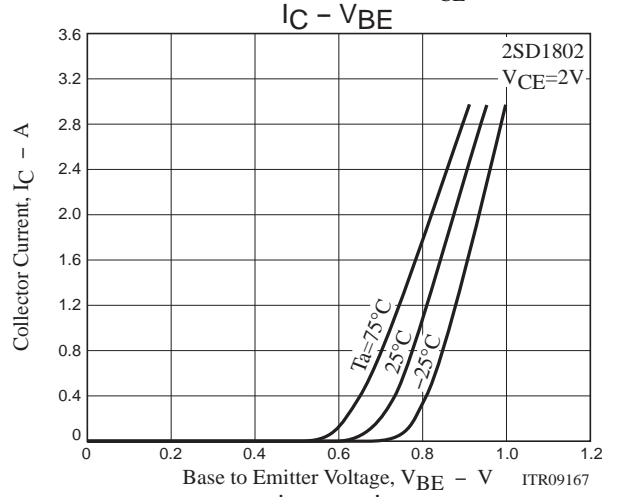
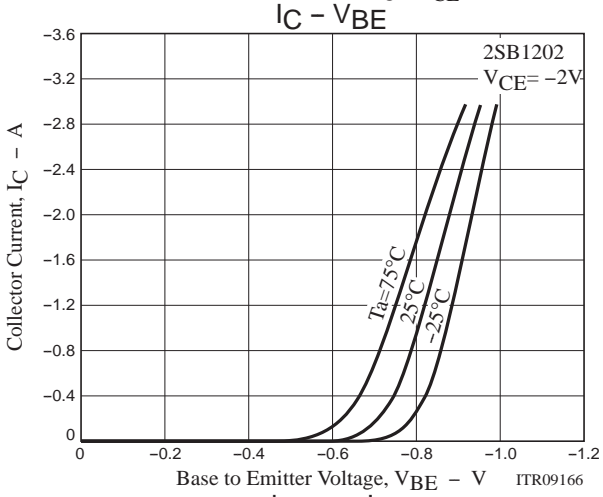
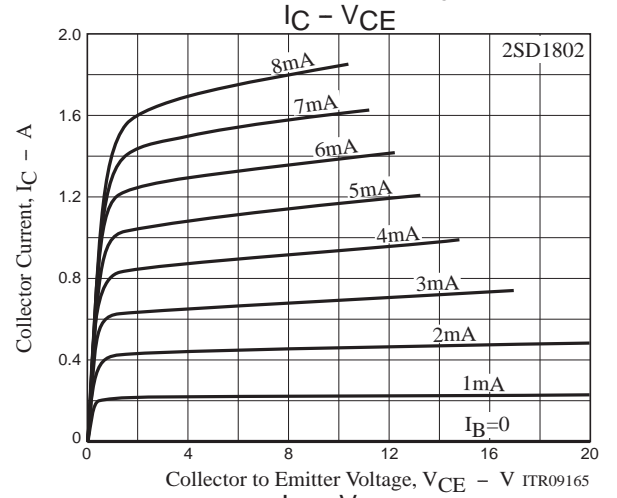
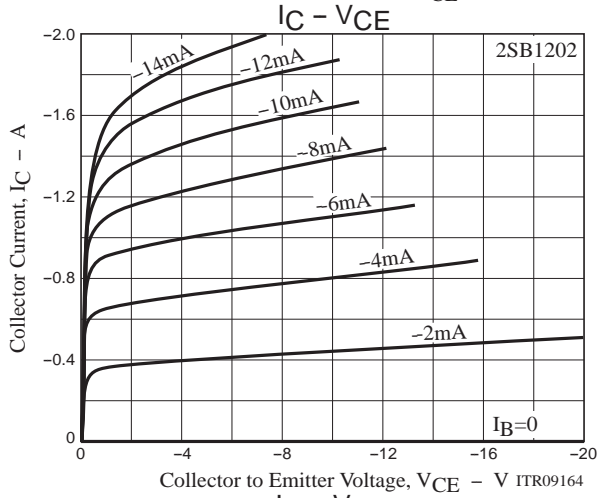
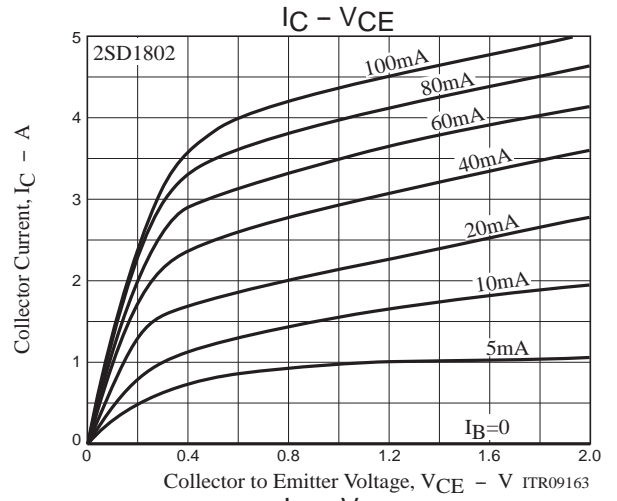
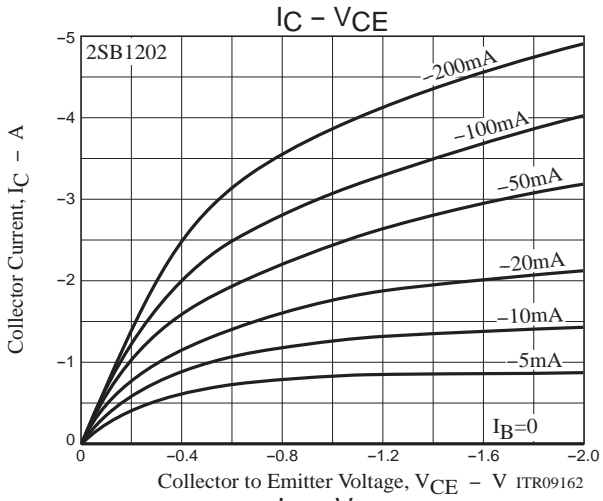


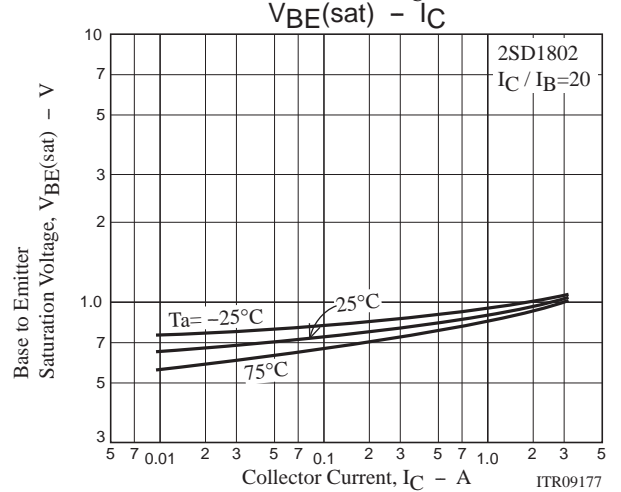
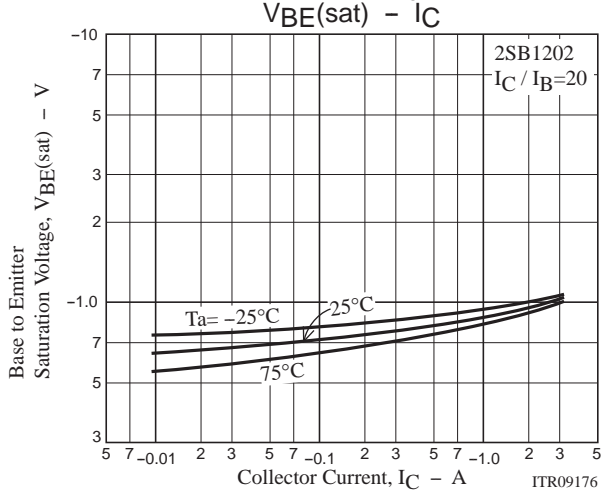
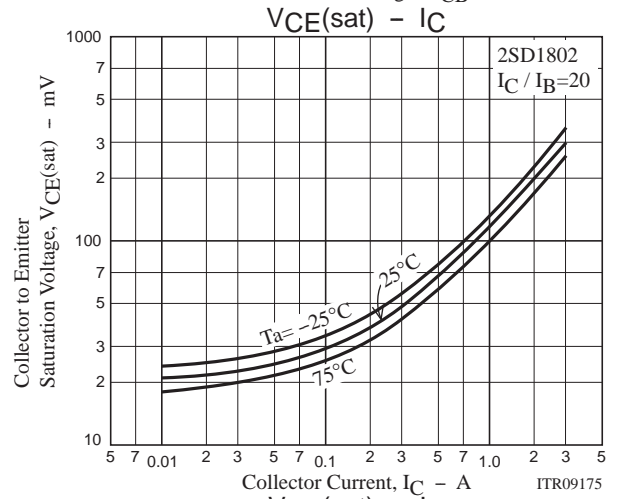
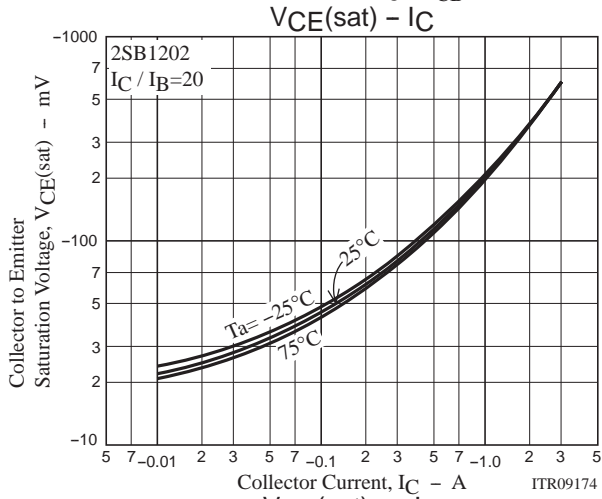
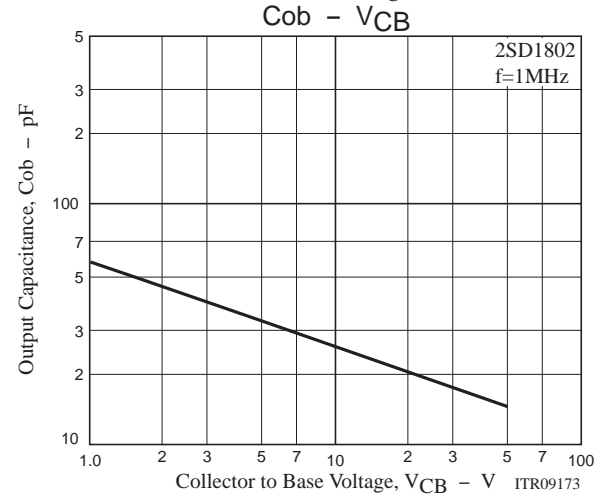
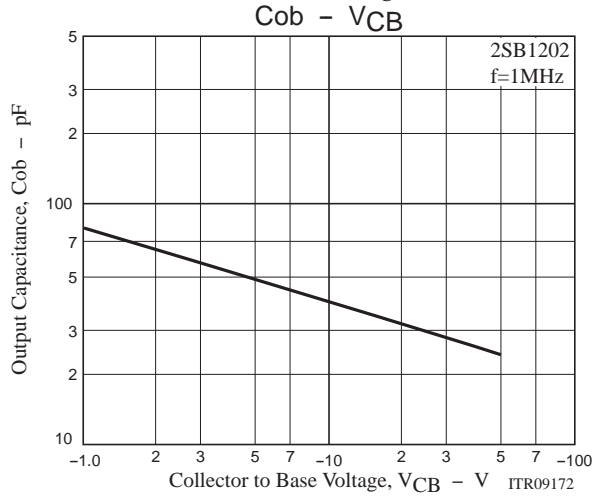
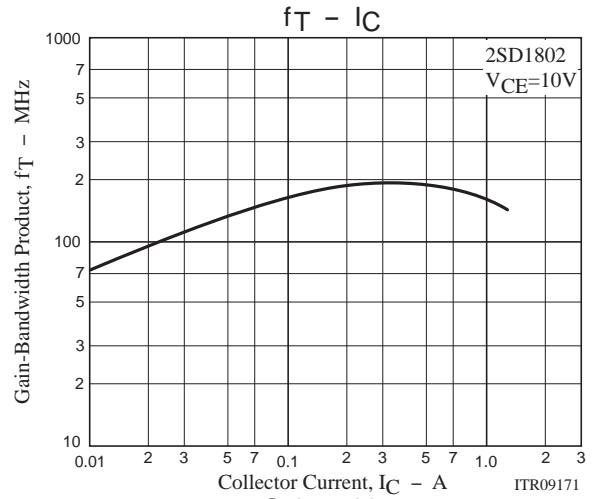
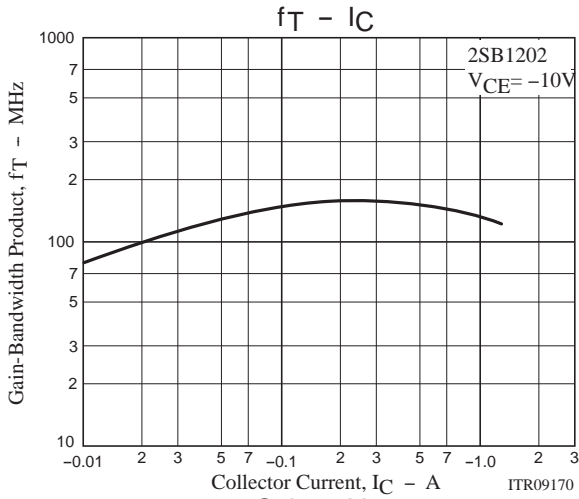
$$I_C = 10I_{B1} = -10I_{B2} = 1A$$

For PNP, the polarity is reversed.

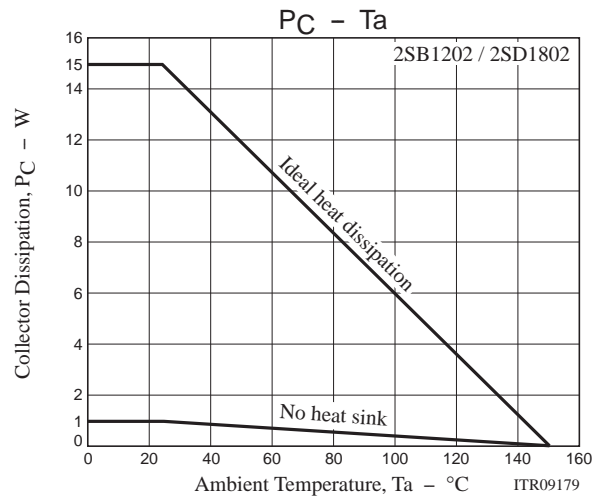
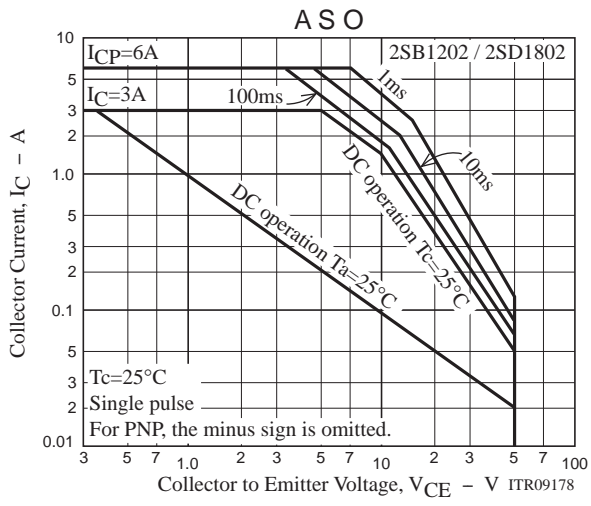
Ordering Information

| Device | Package | Shipping | memo |
|---------------|---------|--------------|---------|
| 2SB1202S-E | TP | 500pcs./bag | Pb Free |
| 2SB1202T-E | TP | 500pcs./bag | |
| 2SD1802S-E | TP | 500pcs./bag | |
| 2SD1802T-E | TP | 500pcs./bag | |
| 2SB1202S-TL-E | TP-FA | 700pcs./reel | |
| 2SB1202T-TL-E | TP-FA | 700pcs./reel | |
| 2SD1802S-TL-E | TP-FA | 700pcs./reel | |
| 2SD1802T-TL-E | TP-FA | 700pcs./reel | |





2SB1202/2SD1802

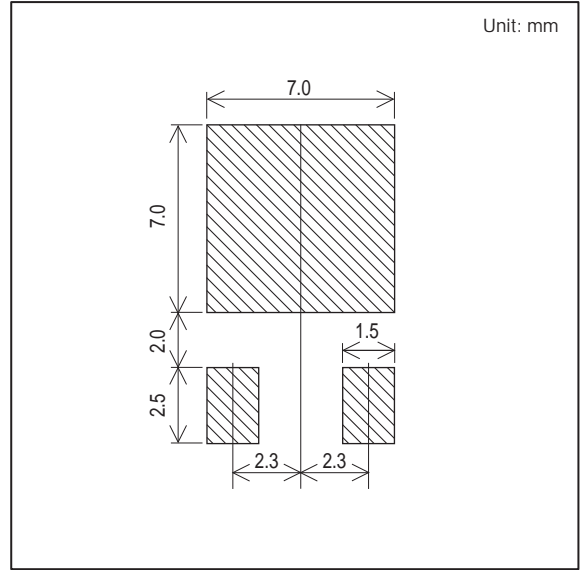
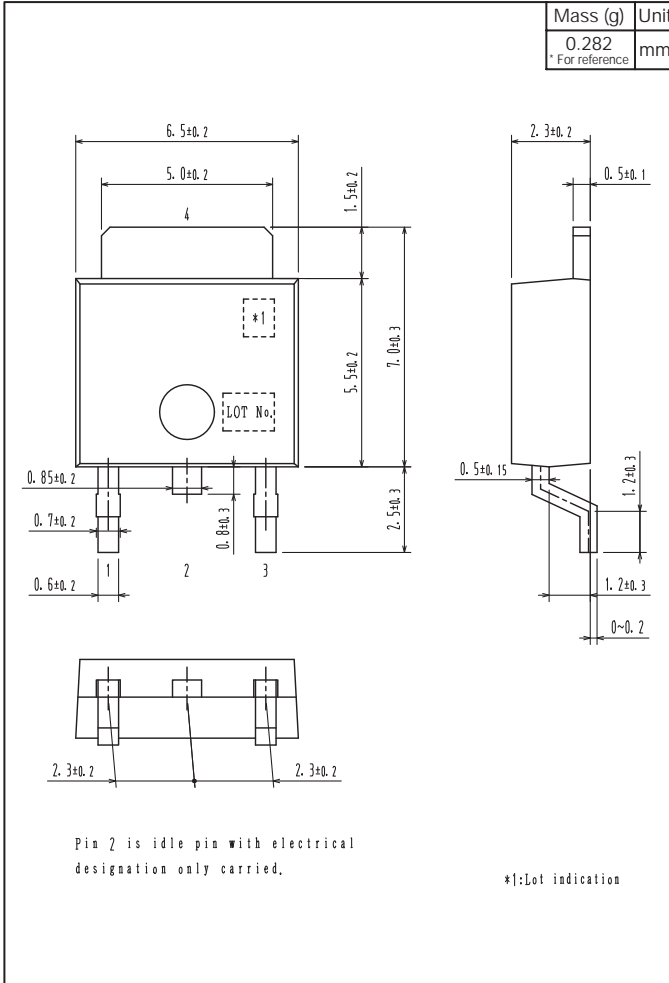


2SB1202/2SD1802

Outline Drawing

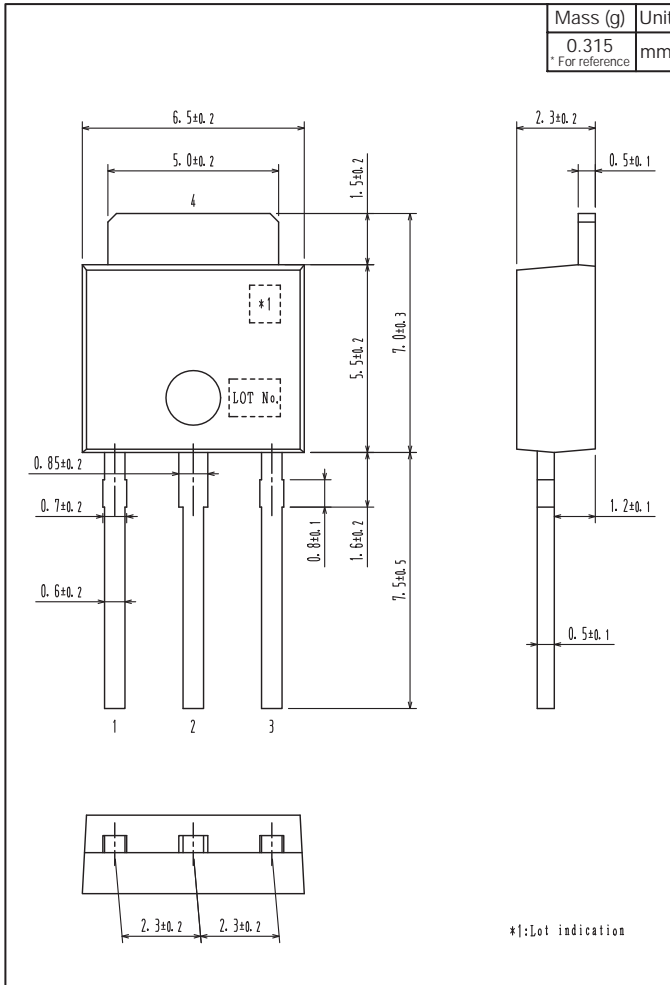
Land Pattern Example

2SB1202S-TL-E, 2SB1202T-TL-E, 2SD1802S-TL-E, 2SD1802T-TL-E



Outline Drawing



2SB1202S-E, 2SB1202T-E, 2SD1802S-E, 2SD1802T-E



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