



2SA2012

Bipolar Transistor -30V, -5A, Low VCE(sat) PNP Single PCP

ON Semiconductor®

<http://onsemi.com>

Applications

- Relay drivers, lamp drivers, motor drivers, flash

Features

- Adoption of MBIT processes
- Low collector to emitter saturation voltage
- Ultrasmall-sized package permitting applied sets to be made small and slim
- High allowable power dissipation
- Large current capacity

Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|--------|------------|---------|------|
| Collector to Base Voltage | VCBO | | -30 | V |
| Collector to Emitter Voltage | VCEO | | -30 | V |
| Emitter to Base Voltage | VEBO | | -5 | V |
| Collector Current | IC | | -5 | A |
| Collector Current (Pulse) | ICP | | -8 | A |

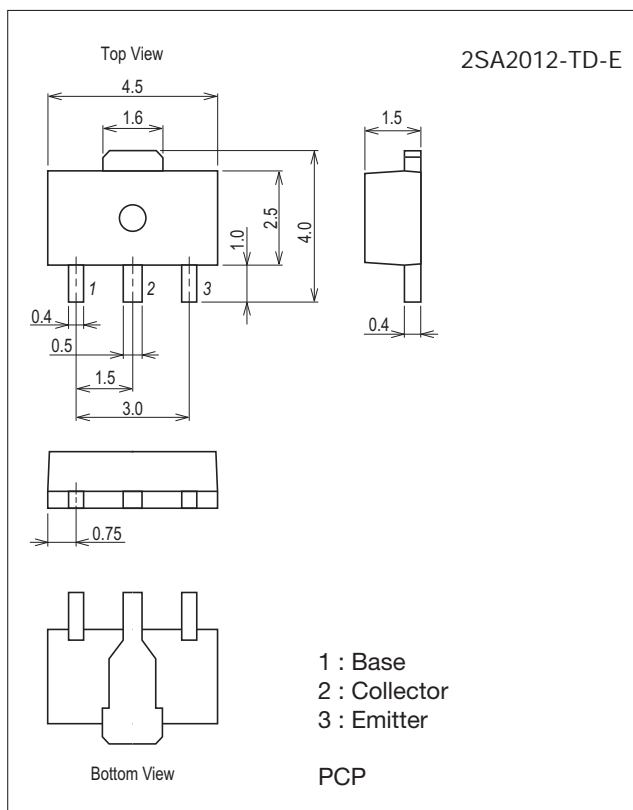
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Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)

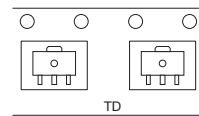
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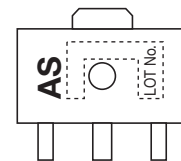
Product & Package Information

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

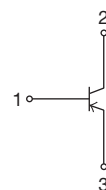
Packing Type: TD



Marking



Electrical Connection



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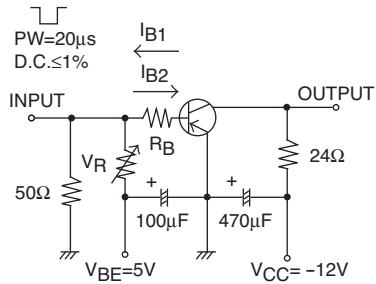
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| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------|-----------|---|-------------|------------------|
| Base Current | I_B | | -600 | mA |
| Collector Dissipation | P_C | When mounted on ceramic substrate (250mm ² ×0.8mm) | 1.3 | W |
| | | $T_C=25^\circ\text{C}$ | 3.5 | W |
| Junction Temperature | T_j | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

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

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|----------------|---|---------|-------|------|---------------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=-30\text{V}, I_E=0\text{A}$ | | | -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 | $V_{CE}=-10\text{V}, I_C=-500\text{mA}$ | | 350 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}(-)10\text{V}, f=1\text{MHz}$ | | 30 | | pF |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)1}$ | $I_C=-1.5\text{A}, I_B=-30\text{mA}$ | | -140 | -210 | mV |
| | $V_{CE(sat)2}$ | $I_C=-2.5\text{A}, I_B=-125\text{mA}$ | | -170 | -260 | mV |
| Base to Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=-1.5\text{A}, I_B=-30\text{mA}$ | | -0.83 | -1.2 | V |
| Collector to Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=-10\mu\text{A}, I_E=0\text{A}$ | -30 | | | V |
| Collector to Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=-1\text{mA}, R_{BE}=\infty$ | -30 | | | V |
| Emitter to Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=-10\mu\text{A}, I_C=0\text{A}$ | -5 | | | V |
| Turn-ON Time | t_{on} | | | 50 | | ns |
| Storage Time | t_{stg} | See specified Test Circuit. | | 270 | | ns |
| Fall Time | t_f | | | 25 | | ns |

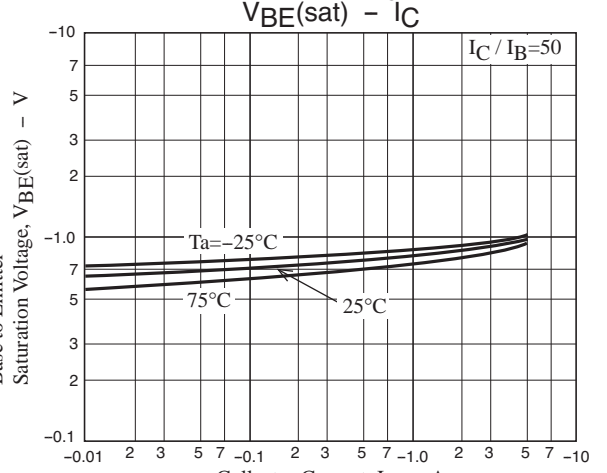
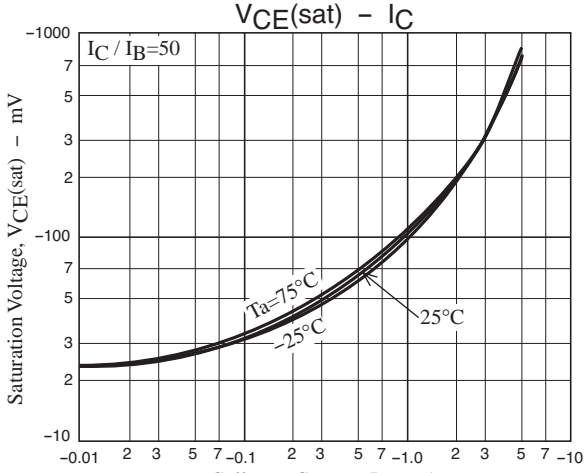
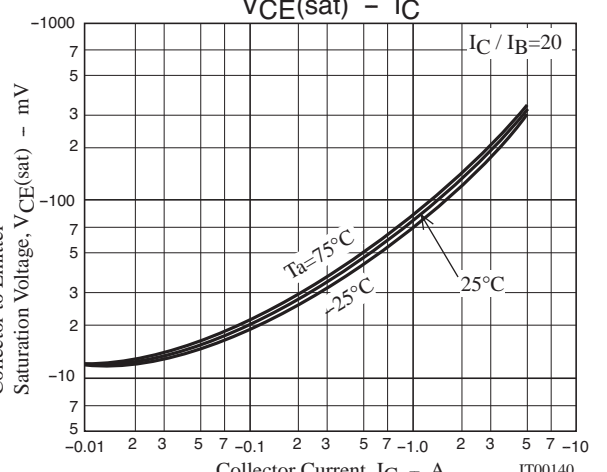
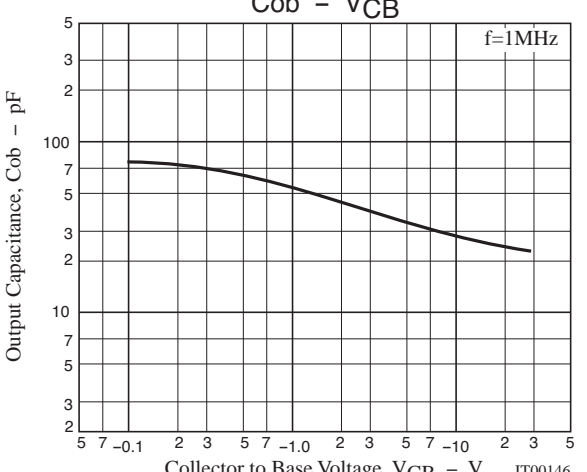
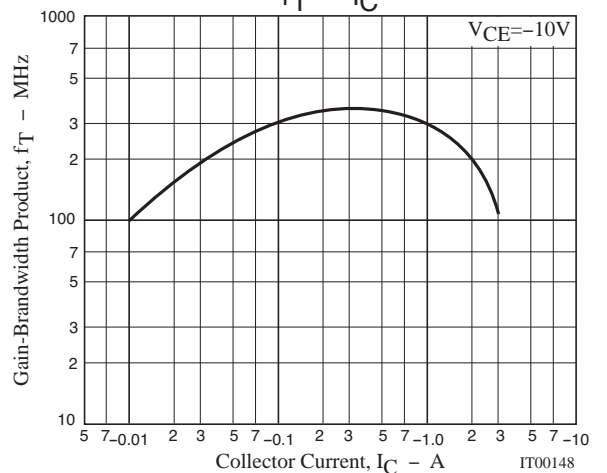
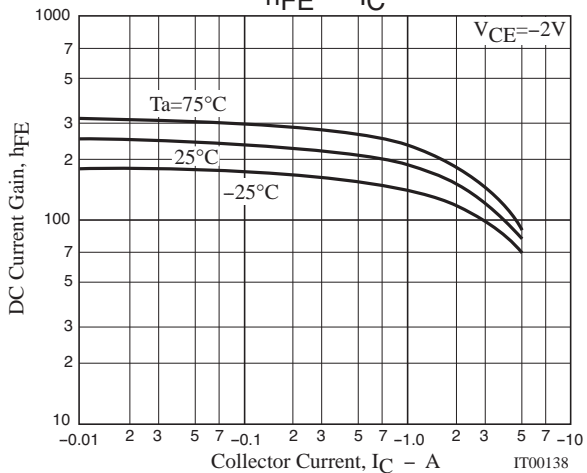
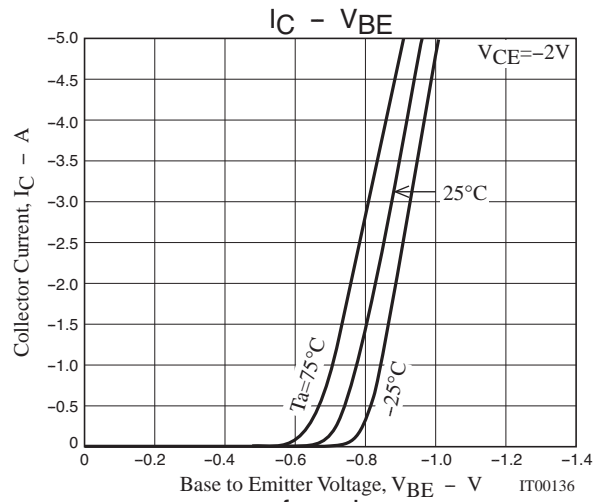
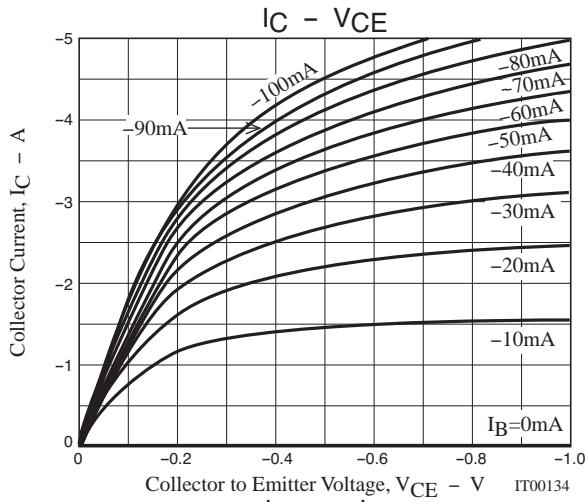
Switching Time Test Circuit

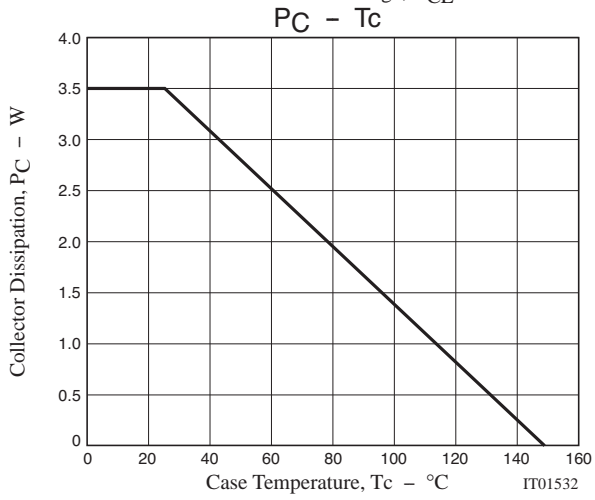
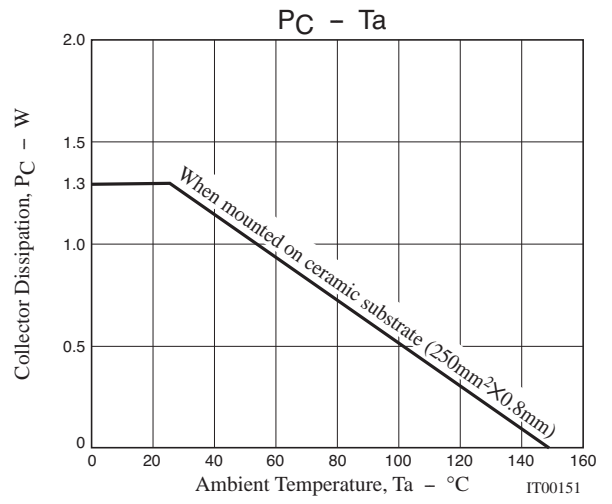
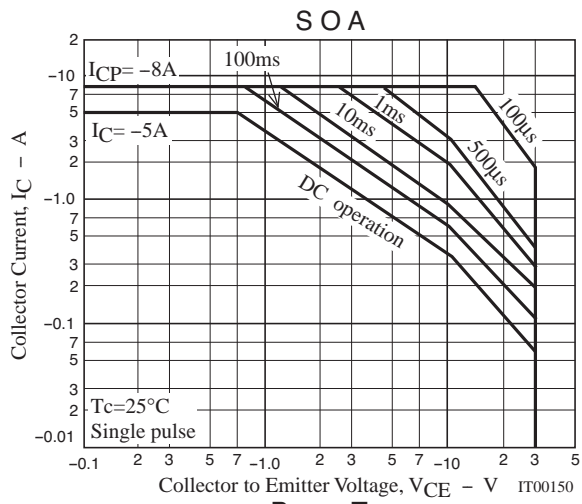


$$I_C=20I_{B1} = -20I_{B2} = -500\text{mA}$$

Ordering Information

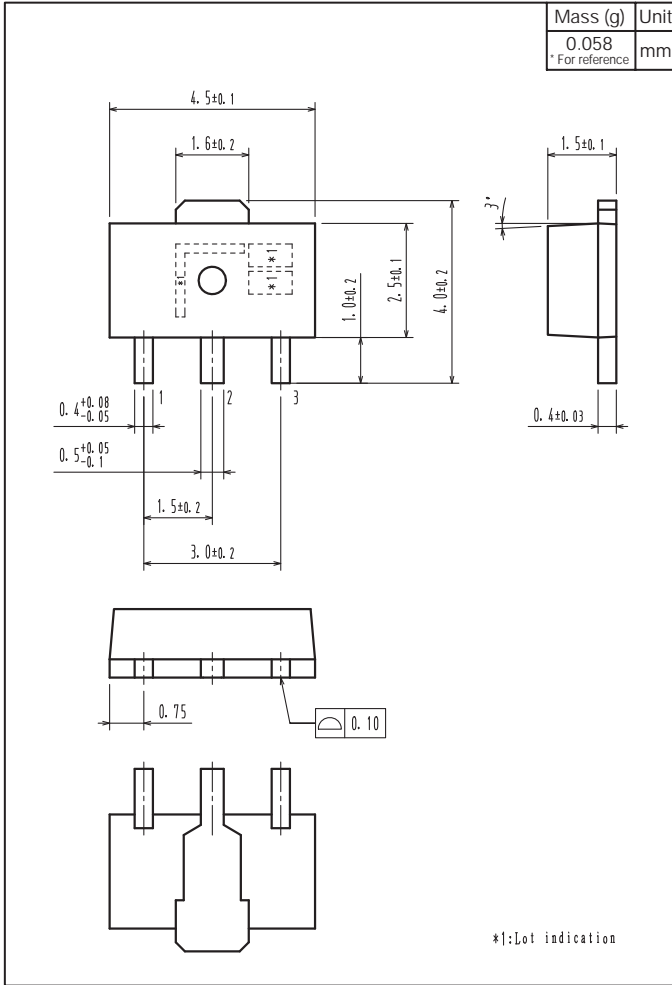
| Device | Package | Shipping | memo |
|--------------|---------|----------------|---------|
| 2SA2012-TD-E | PCP | 1,000pcs./reel | Pb Free |



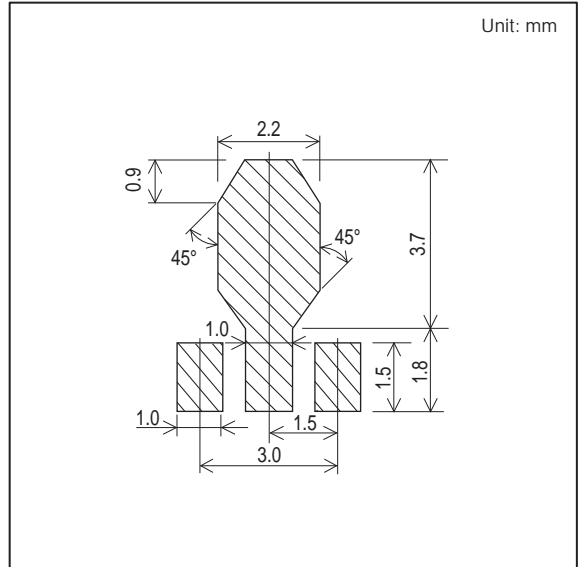


Outline Drawing

2SA2012-TD-E



Land Pattern Example



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