



2SB1136/2SD1669

50V/12A Switching Applications

Applications

- Relay drivers, high-speed inverters, converters, and other general high-current switching applications.

Features

- Low-saturation collector-to-emitter voltage : $V_{CE(sat)} = -0.5V$ (PNP), $0.4V$ (NPN) max.
- Wide ASO leading to high resistance to breakdown.
- Micaless package facilitating mounting.

() : 2SB1136

Specifications

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

| 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 | | (-12) | A |
| Collector Current (Pulse) | I_{CP} | | (-15) | A |
| Collector Dissipation | P_C | | 2 | W |
| | | $T_c = 25^\circ C$ | 30 | W |
| Junction Temperature | T_j | | 150 | $^\circ C$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ C$ |

Electrical Characteristics at $T_a = 25^\circ C$

| Parameter | Symbol | Conditions | Ratings | | Unit | |
|---|---------------|----------------------------------|---------|-----|--------|-----|
| | | | min | typ | | max |
| Collector Cutoff Current | I_{CBO} | $V_{CB} = (-40V)$, $I_E = 0$ | | | (-0.1) | mA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = (-4V)$, $I_C = 0$ | | | (-0.1) | mA |
| DC Current Gain | h_{FE1} | $V_{CE} = (-2V)$, $I_C = (-1A)$ | 70* | | 280* | |
| | h_{FE2} | $V_{CE} = (-2V)$, $I_C = (-5A)$ | 30 | | | |
| Gain-Bandwidth Product | f_T | $V_{CE} = (-5V)$, $I_C = (-1A)$ | | 10 | | MHz |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = (-6A)$, $I_B = (-0.6A)$ | | | (-0.4) | V |

* : The 2SB1136/2SD1669 are classified by 1A h_{FE} as follows :

| | | | | | | | | |
|----|---|-----|-----|---|-----|-----|---|-----|
| 70 | Q | 140 | 100 | R | 200 | 140 | S | 280 |
|----|---|-----|-----|---|-----|-----|---|-----|

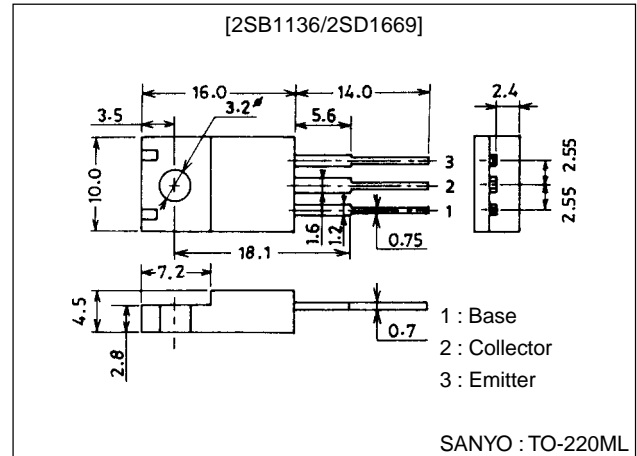
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Package Dimensions

unit:mm

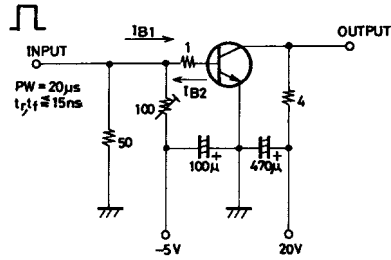
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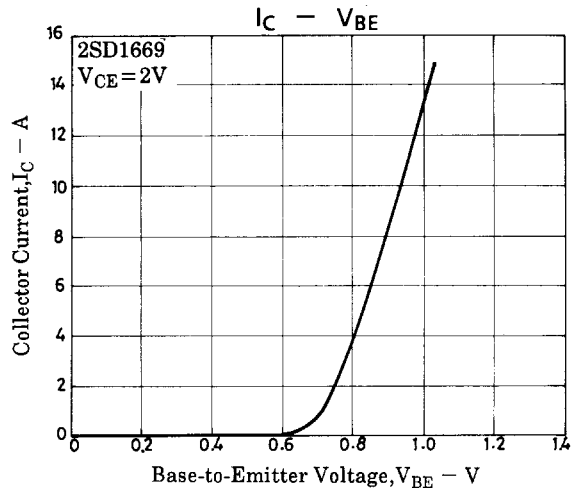
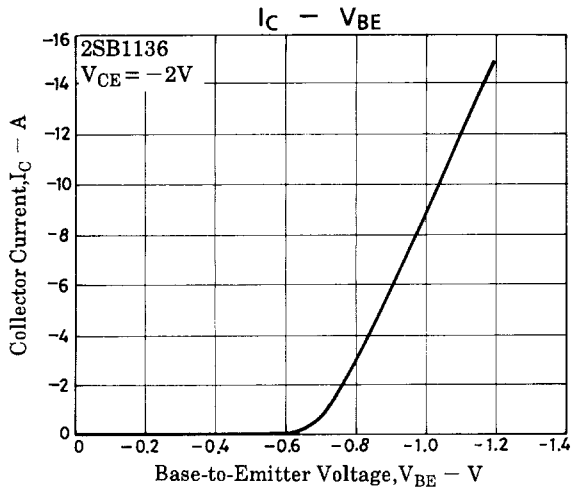
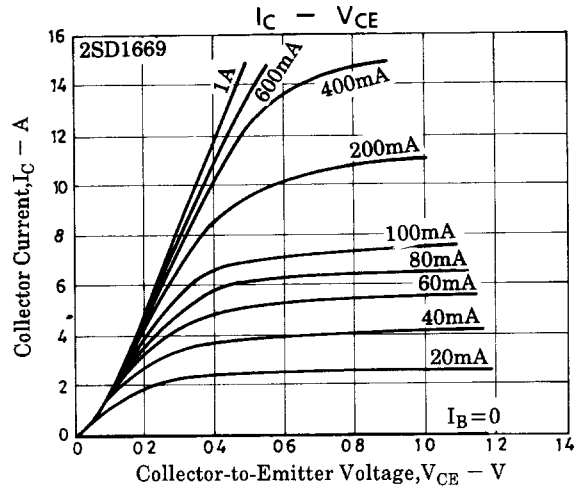
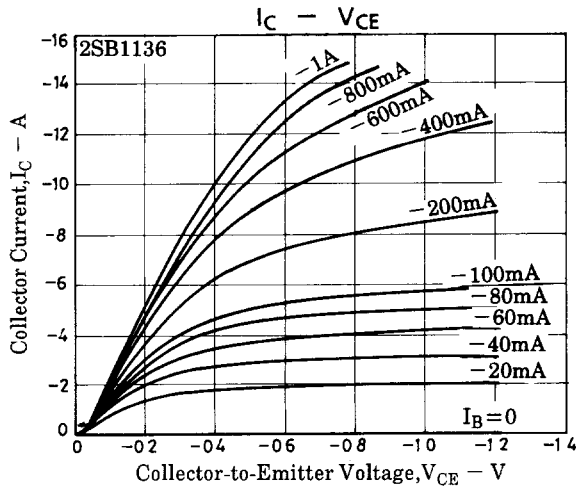
2SB1136/2SD1669

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|---------------------------------|---------|-------|-----|---------|
| | | | min | typ | max | |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = (-)1mA, I_E = 0$ | (-)60 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = (-)1mA, R_{BE} = \infty$ | (-)50 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = (-)1mA, I_C = 0$ | (-)6 | | | V |
| Rise Time | t_{on} | See specified Test Circuit. | | (0.2) | | μs |
| | | | | 0.1 | | μs |
| Storage Time | t_{stg} | See specified Test Circuit. | | (0.4) | | μs |
| | | | | 1.2 | | μs |
| Fall Time | t_f | See specified Test Circuit. | | (0.1) | | μs |
| | | | | 0.05 | | μs |

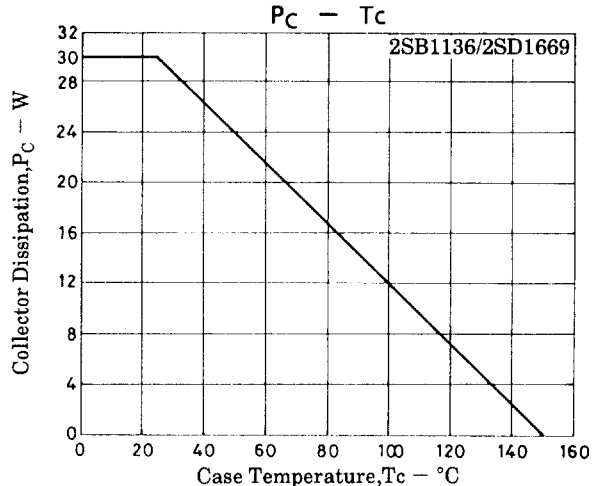
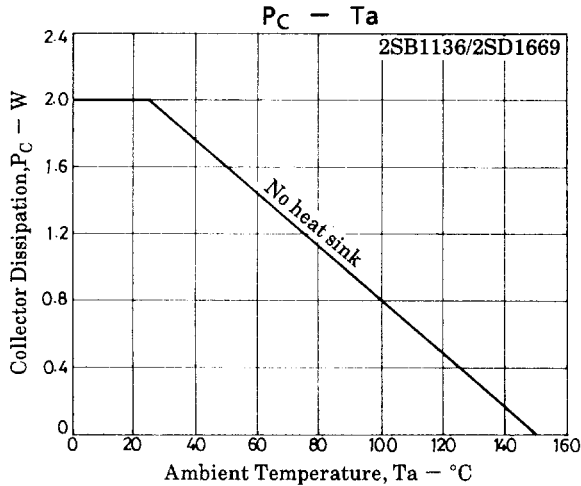
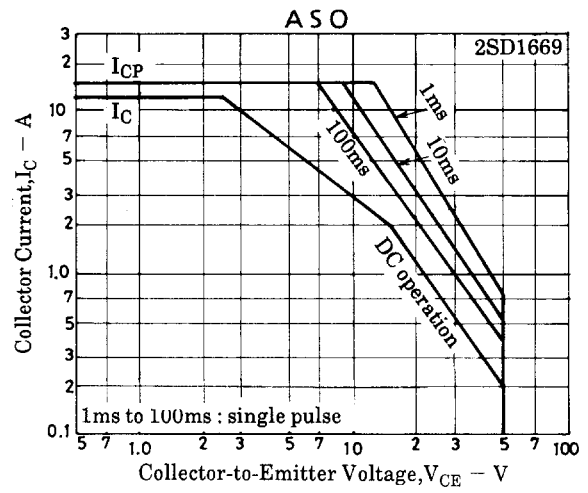
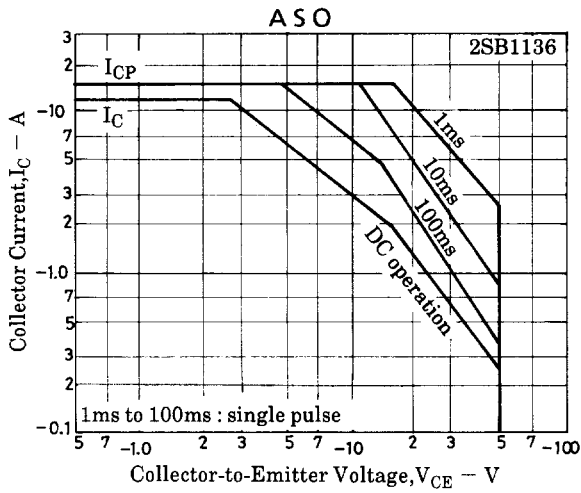
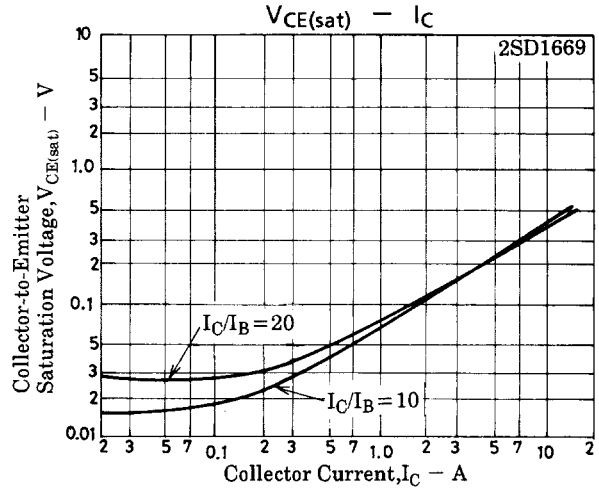
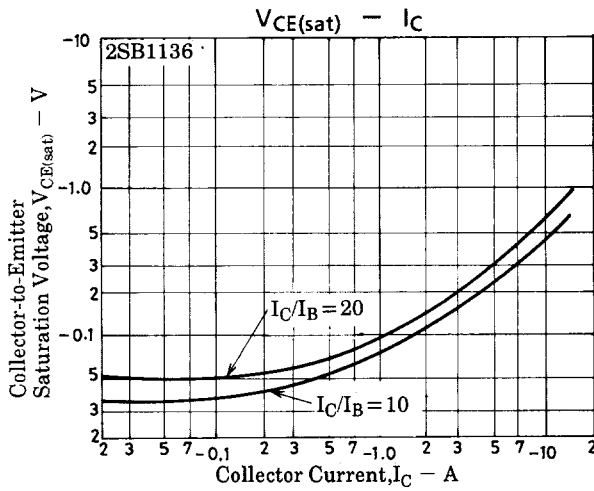
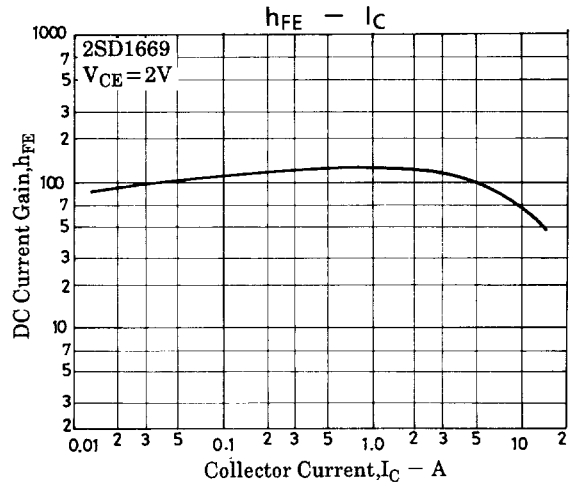
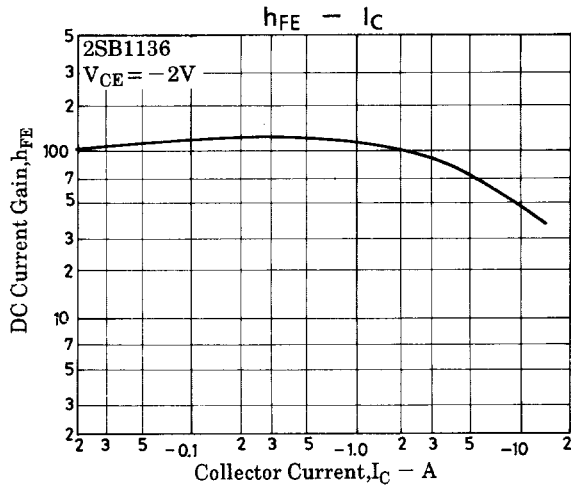
Switching Time Test Circuit



$10I_{B1} = -10I_{B2} = I_C = 2A$
 (For PNP, the polarity is reversed.)
 Unit (resistance : Ω , capacitance : F)



2SB1136/2SD1669



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