Ordering number:EN2213B

PNP/NPN Epitaxial Planar Silicon Darlington Transistors

# 2SB1227/2SD1829

## Driver Applications

## Applications

· Suitable for use in control of motor drivers, printer hammer drivers, relay drivers, and constant-votlage regulators.

## Features

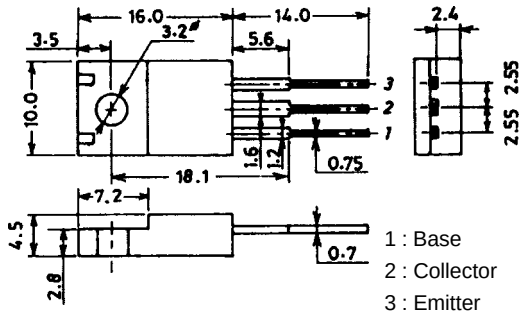
· High DC current gain.
· Large current capacity and wide ASO.
· Low saturation voltage.
· Micaless package facilitating mounting.

## Package Dimensions

unit:mm

2041A

[2SB1227/2SD1829]




SANYO : TO-220ML

( ) : 2SB1227

## Specifications

### Absolute Maximum Ratings at Ta = 25˚C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Collector-to-Base Voltage | $V_{CBO}$ | | (–)110 | V |
| Collector-to-Emitter Voltage | $V_{CEO}$ | | (–)100 | V |
| Emitter-to-Base Voltage | $V_{EBO}$ | | (–)6 | V |
| Collector Current | $I_C$ | | (–)5 | A |
| Collector Current (Pulse) | $I_{CP}$ | | (–)8 | A |
| Collector Dissipation | $P_C$ | | 2.0 | W |
| | | Tc=25˚C | 25 | W |
| Junction Temperature | Tj | | 150 | ˚C |
| Storage Temperature | Tstg | | –55 to +150 | ˚C |

### Electrical Characteristics at Ta = 25˚C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$=(–)80V, $I_E$=0 | | | (–)0.1 | mA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$=(–)5V, $I_C$=0 | | | (–)3.0 | mA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$=(–)3V, $I_C$=(–)2.5A | 1500 | 4000 | | |
| Gain-Bandwidth Product | $f_T$ | $V_{CE}$=(–)5V, $I_C$=(–)2.5A | | 20 | | MHz |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$=(–)2.5A, $I_B$=(–)5mA | | 0.9 | (–)1.5 | V |
| | | | | (–1.0) | | V |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C$=(–)2.5A, $I_B$=(–)5mA | | | (–)2.0 | V |

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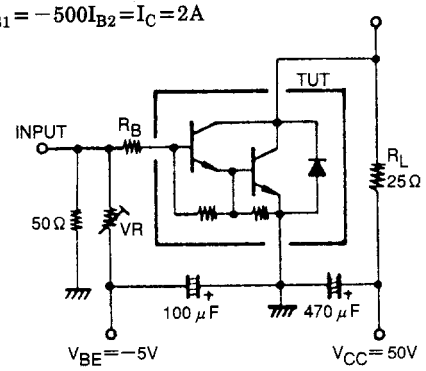
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$=(–)5mA, $I_E$=0 | (–)110 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$=(–)50mA, $R_{BE}$=∞ | (–)100 | | | V |
| Turn-ON TIme | $t_{on}$ | See specified Test Circuit | | 0.6 | | µs |
| | | | | (0.7) | | µs |
| Storage Time | $t_{stg}$ | See specified Test Circuit | | 4.8 | | µs |
| | | | | (1.3) | | µs |
| Fall Time | $t_f$ | See specified Test Circuit | | 1.6 | | µs |
| | | | | (1.5) | | µs |

## Switching Time Test Circuit

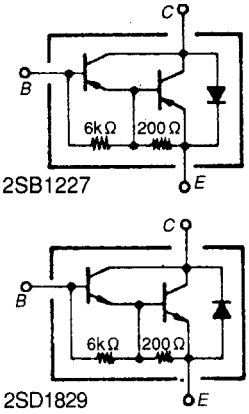
PW=50µs, Duty cycle ≦1%

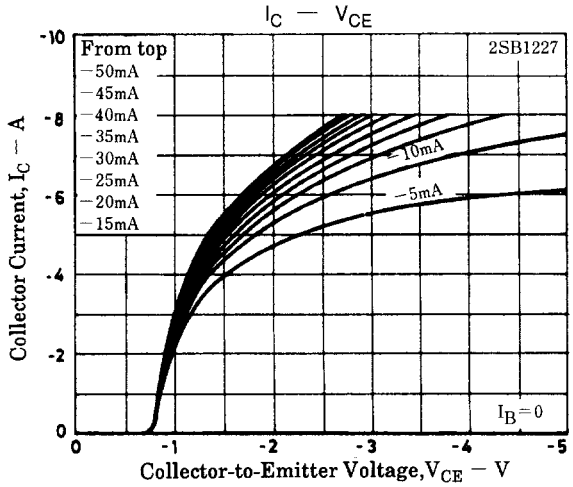
$500I_{B1} = -500I_{B2} = I_C = 2A$

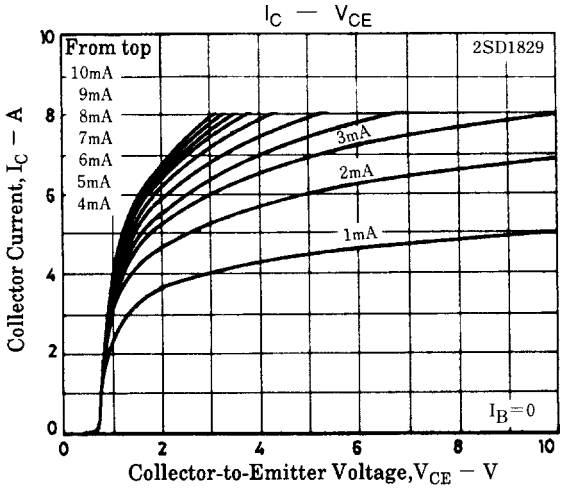


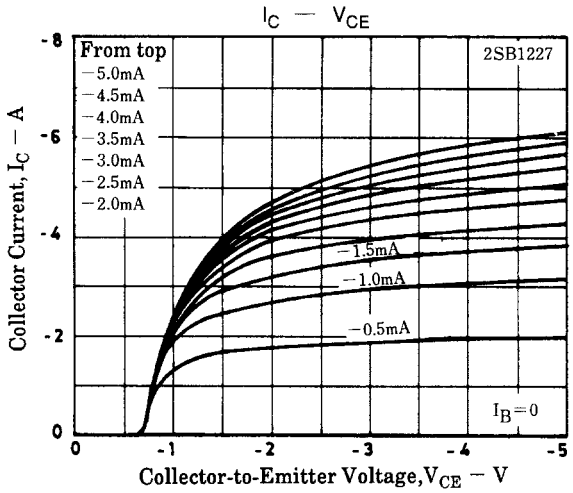

(For PNP, the polarity is reversed.)

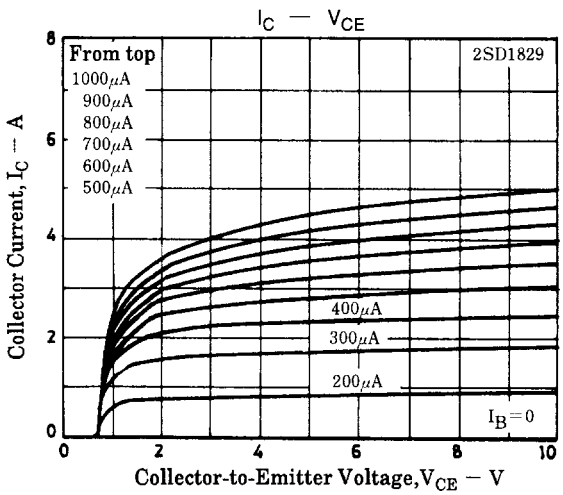
## Electrical Connection



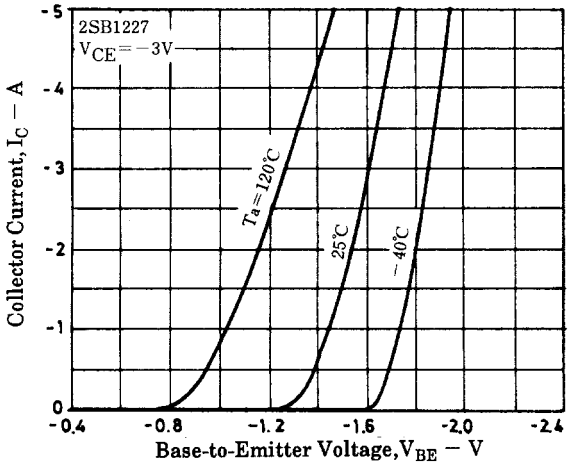



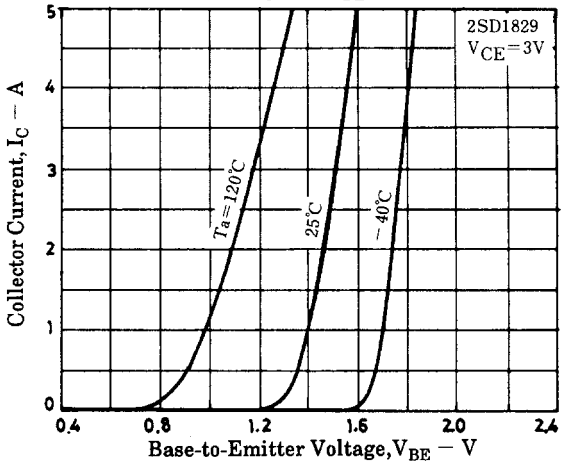



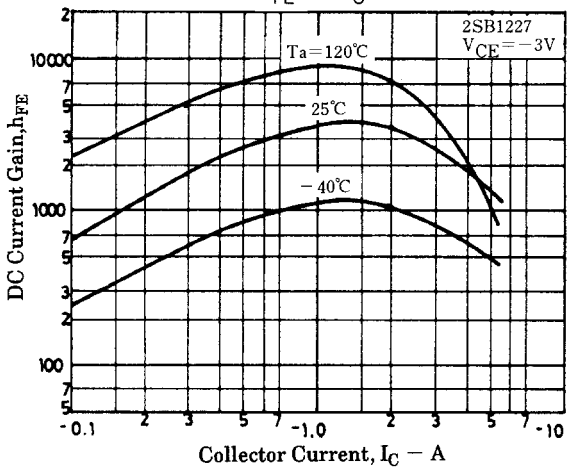
$I_C$ — $V_{BE}$



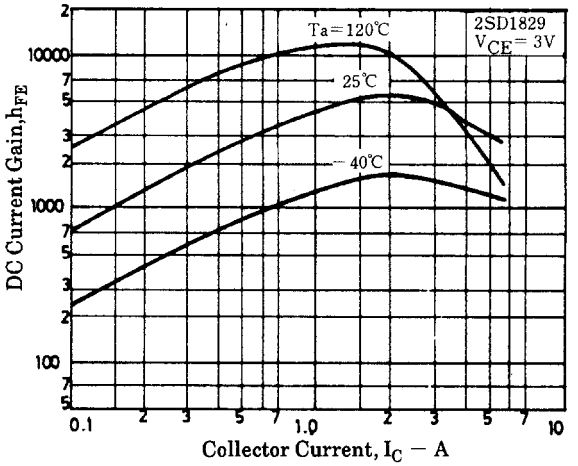

$I_C$ — $V_{BE}$



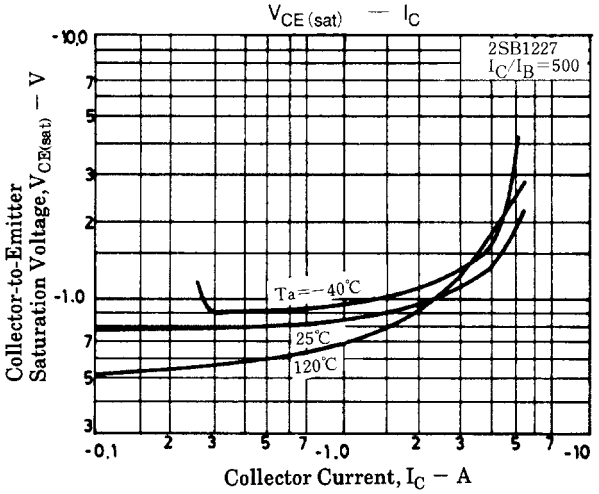

$h_{FE}$ — $I_C$



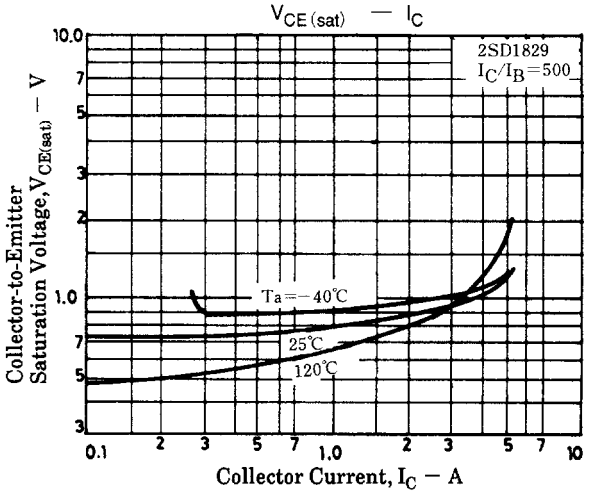

$h_{FE}$ — $I_C$



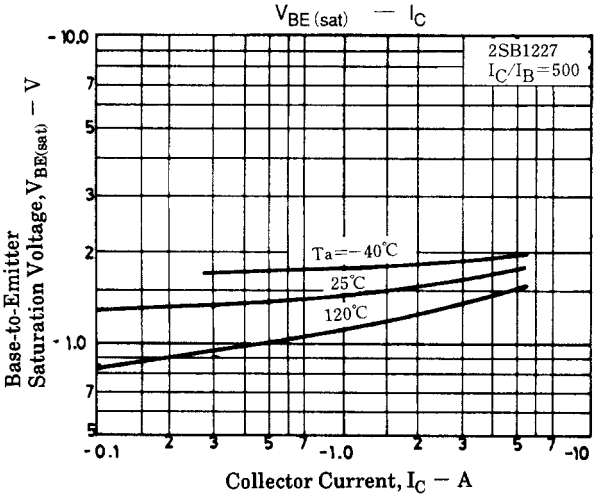

$V_{CE(sat)}$ — $I_C$




$V_{CE(sat)}$ — $I_C$




$V_{BE(sat)}$ — $I_C$




$V_{BE(sat)}$ — $I_C$