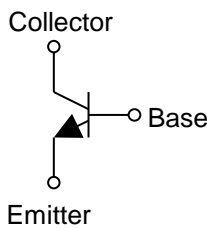


| Parameter | Value |
|-----------|-------|
| V_{CEO} | 50V |
| I_C | 4.0A |

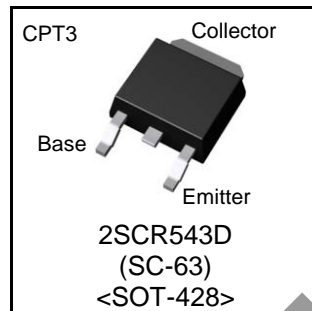
●Features

- 1) Suitable for Middle Power Driver
- 2) Complementary PNP Types : 2SAR543D
- 3) Low $V_{CE(sat)}$
 $V_{CE(sat)}=0.35V(\text{Max.})$
 $(I_C/I_B=2A/100mA)$
- 4) Lead Free/RoHS Compliant.

●Inner circuit



●Outline



●Applications

Motor driver , LED driver
Power supply

●Packaging specifications

| Part No. | Package | Package size (mm) | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit (pcs) | Marking |
|----------|---------|-------------------|-------------|----------------|-----------------|---------------------------|---------|
| 2SCR543D | CPT3 | 6595 | TL | 330 | 16 | 2,500 | CR543 |

●Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Values | Unit | |
|------------------------------|------------|---------------|------|---|
| Collector-base voltage | V_{CBO} | 50 | V | |
| Collector-emitter voltage | V_{CEO} | 50 | V | |
| Emitter-base voltage | V_{EBO} | 6 | V | |
| Collector current | DC | I_C | 4.0 | A |
| | Pulsed | I_{CP}^{*1} | 8.0 | A |
| Power dissipation | P_D^{*2} | 1 | W | |
| | P_D^{*3} | 10 | W | |
| Junction temperature | T_j | 150 | °C | |
| Range of storage temperature | T_{stg} | -55 to +150 | °C | |

*1 Pw=10ms , single pulse

*2 Mounted on a substrate

*3 Tc=25°C

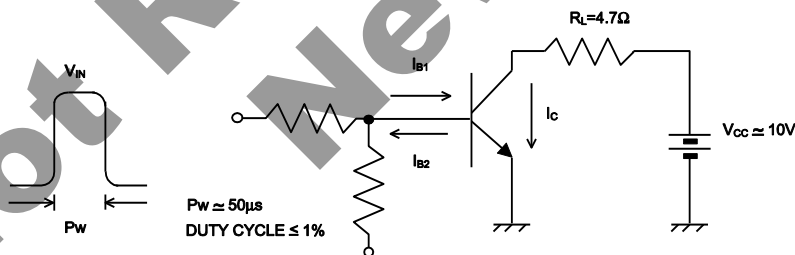
●Electrical characteristics(Ta = 25°C)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------------|--------------------|---|------|------|------|---------------|
| Collector-emitter breakdown voltage | BV_{CEO} | $I_C = 1\text{mA}$ | 50 | - | - | V |
| Collector-base breakdown voltage | BV_{CBO} | $I_C = 100\mu\text{A}$ | 50 | - | - | V |
| Emitter-base breakdown voltage | BV_{EBO} | $I_E = 100\mu\text{A}$ | 6 | - | - | V |
| Collector cut-off current | I_{CBO} | $V_{CB} = 50\text{V}$ | - | - | 1 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB} = 4\text{V}$ | - | - | 1 | μA |
| Collector-emitter saturation voltage | $V_{CE(sat)}^{*1}$ | $I_C = 2\text{A}, I_B = 100\text{mA}$ | - | 0.13 | 0.35 | V |
| DC current gain | h_{FE} | $V_{CE} = 3\text{V}, I_C = 100\text{mA}$ | 180 | - | 450 | - |
| Transition frequency | f_T | $V_{CE} = 10\text{V}, I_E = -500\text{mA}$ $f = 100\text{MHz}$ | - | 300 | - | MHz |
| Output capacitance | C_{ob} | $V_{CB} = 10\text{V}, I_E = 0\text{A},$ $f = 1\text{MHz}$ | - | 20 | - | pF |
| Turn-on time | t_{on}^{*2} | $I_C = 2\text{A}$ $I_{B1} = 200\text{mA}$ $I_{B2} = -200\text{mA}$ $V_{CC} \approx 10\text{V}$ | - | 50 | - | ns |
| Storage time | t_{stg}^{*2} | | - | 450 | - | ns |
| Fall time | t_f^{*2} | | - | 85 | - | ns |

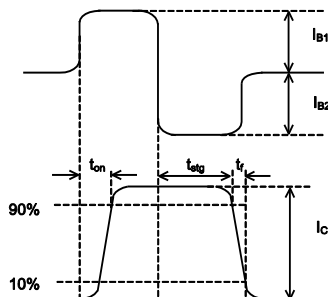
*1 Pulsed

*2 See switching time test circuit

●Switching time test circuit



BASE CURRENT WAVEFORM



COLLECTOR CURRENT WAVEFORM

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

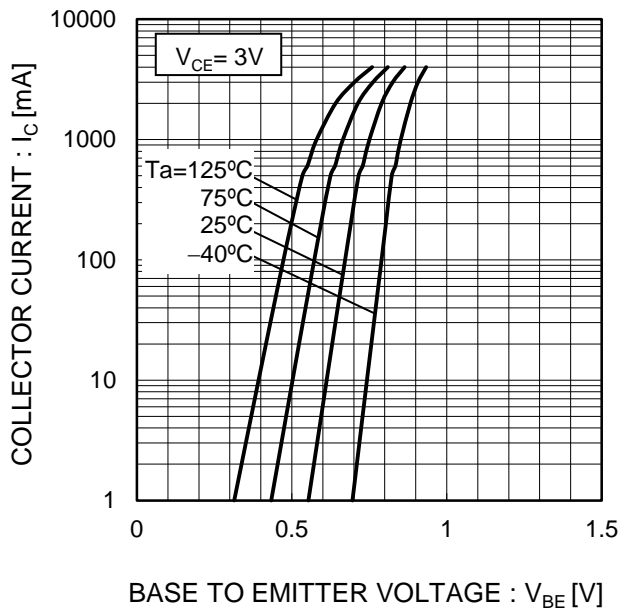


Fig.2 Typical Output Characteristics

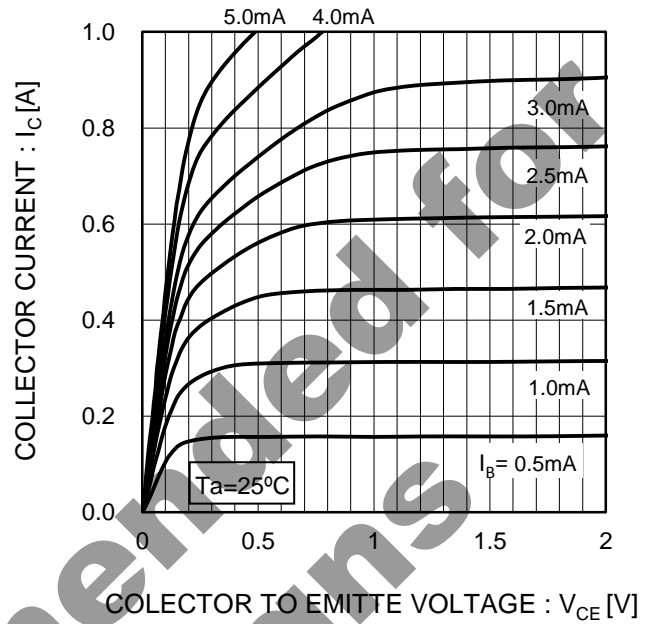


Fig.3 DC Current Gain vs. Collector Current(I)

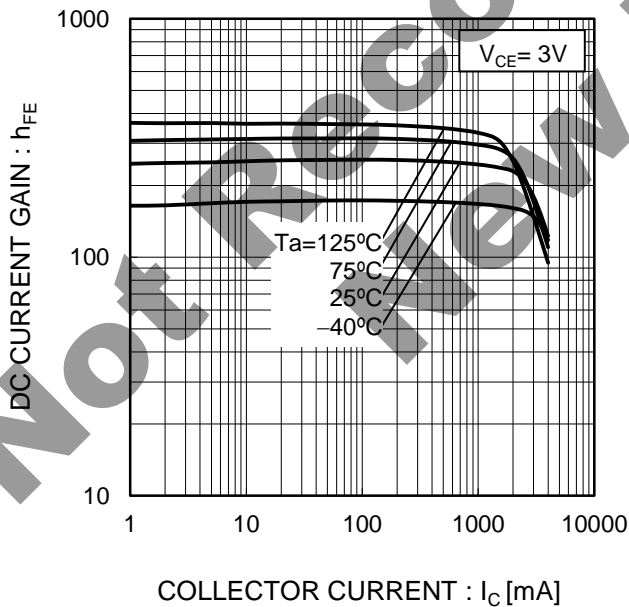
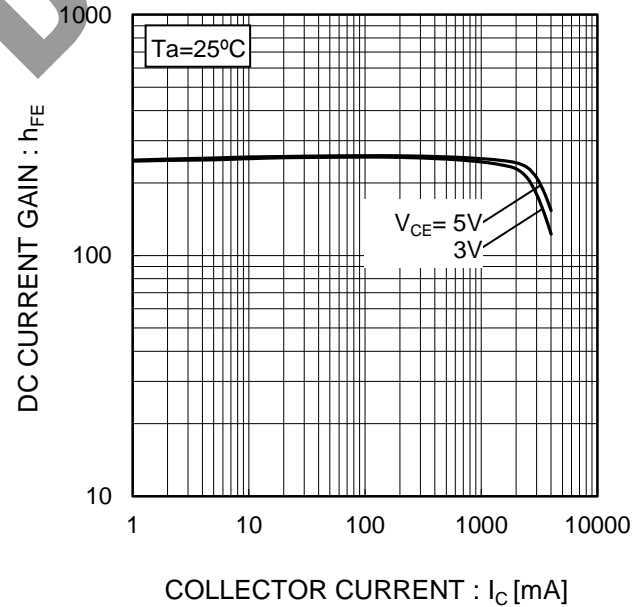


Fig.4 DC current gain vs. output current (II)



●Electrical characteristic curves(Ta = 25°C)

Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

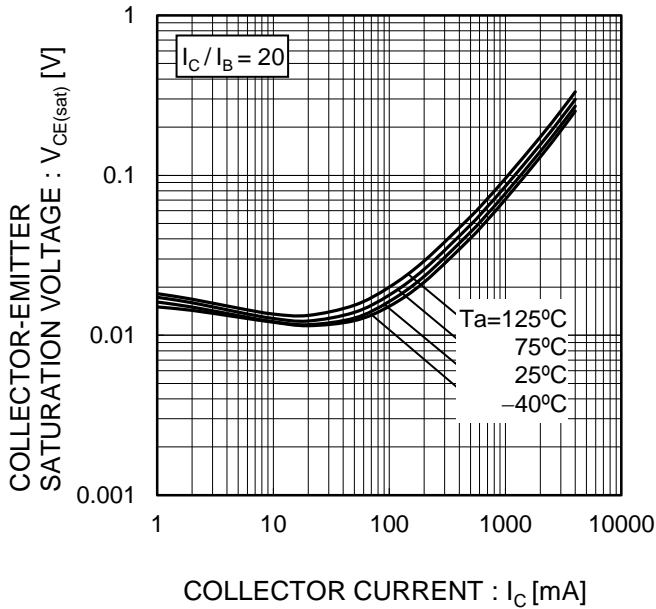


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

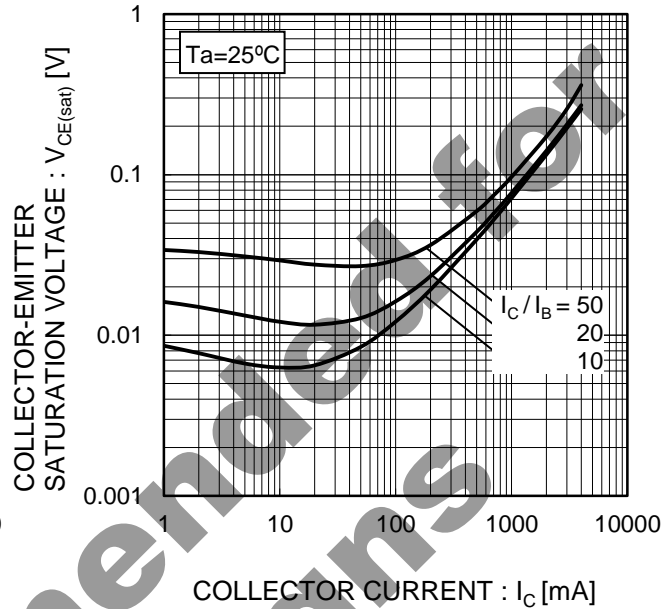


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

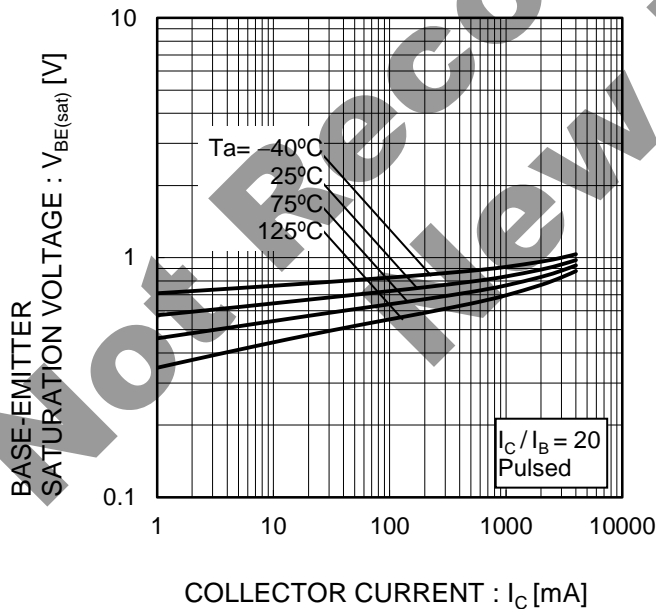
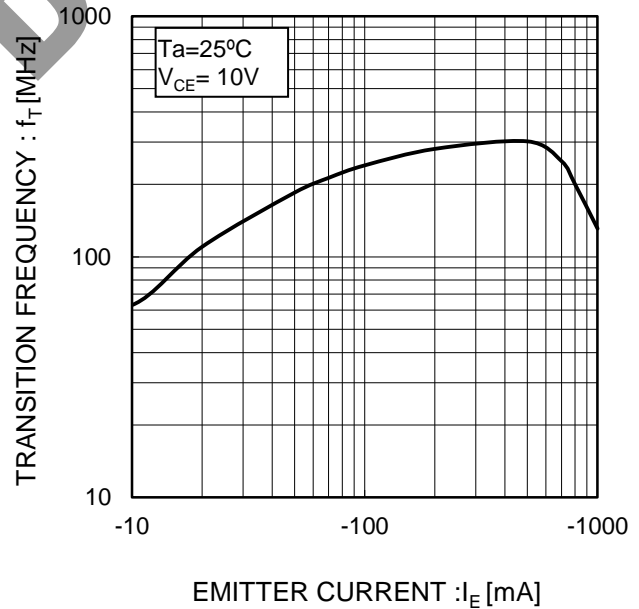


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

Fig.9 Emitter input capacitance vs. Emitter-Base Voltage
Collector output capacitance vs. Collector-Base Voltage

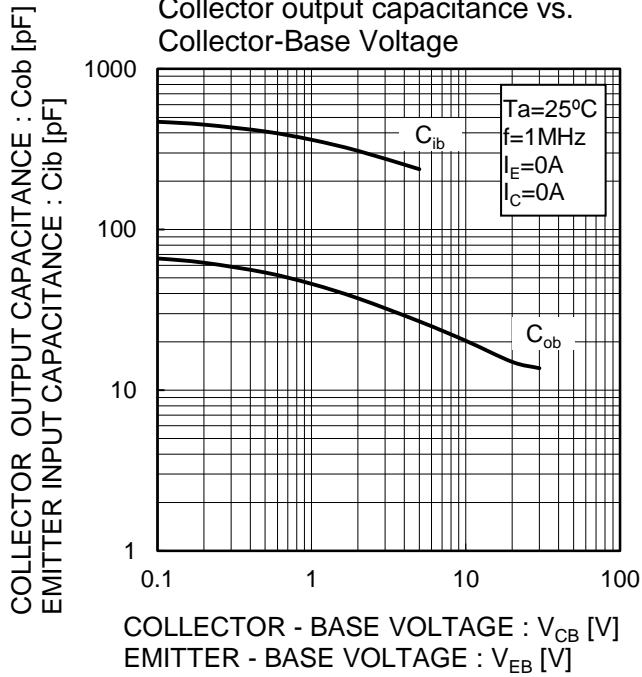
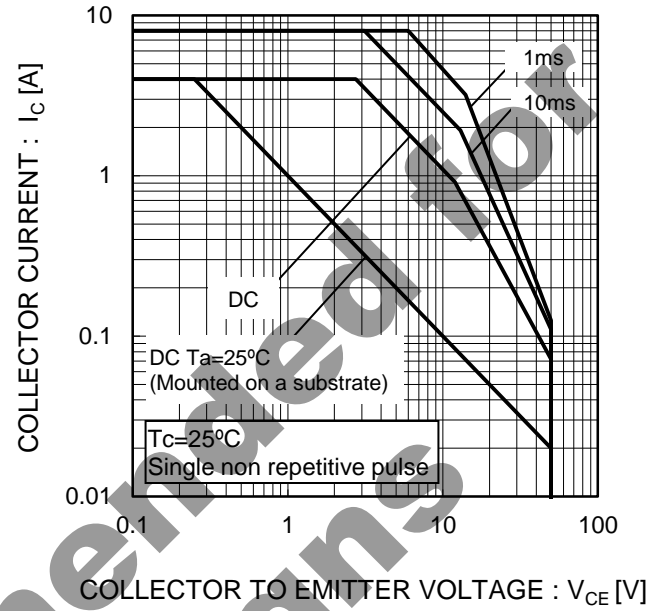


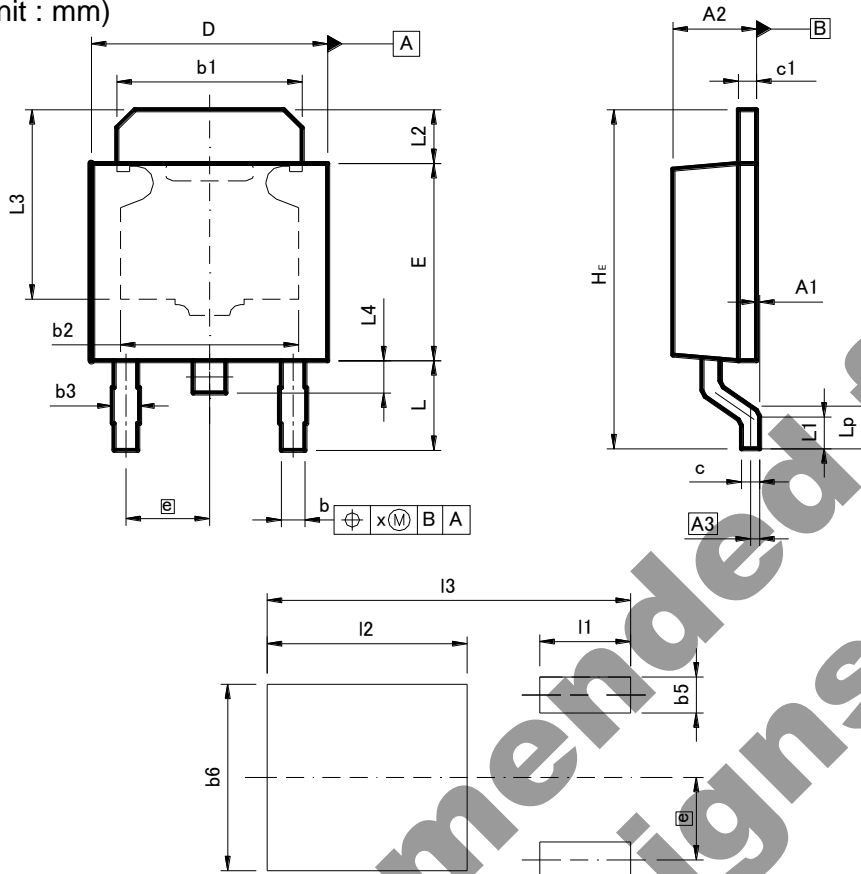
Fig.10 Safe Operating Area



Not Recommended for New Design

●Dimensions (Unit : mm)

CPT3



Pattern of terminal position areas
 [Not a recommended pattern of soldering pads]

| DIM | MILIMETERS | | INCHES | |
|-----|------------|-------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A1 | 0.00 | 0.15 | 0.000 | 0.006 |
| A2 | 2.20 | 2.50 | 0.087 | 0.098 |
| A3 | 0.25 | | 0.010 | |
| b | 0.55 | 0.75 | 0.022 | 0.030 |
| b1 | 5.00 | 5.30 | 0.197 | 0.209 |
| b2 | 5.00 | | 0.197 | |
| b3 | 0.75 | | 0.030 | |
| c | 0.40 | 0.60 | 0.016 | 0.024 |
| c1 | 0.40 | 0.60 | 0.016 | 0.024 |
| D | 6.30 | 6.70 | 0.248 | 0.264 |
| E | 5.40 | 5.80 | 0.213 | 0.228 |
| e | 2.30 | | 0.091 | |
| HE | 9.00 | 10.00 | 0.354 | 0.394 |
| L | 2.20 | 2.80 | 0.087 | 0.110 |
| L1 | 0.80 | 1.40 | 0.031 | 0.055 |
| L2 | 1.20 | 1.80 | 0.047 | 0.071 |
| L3 | 5.30 | | 0.209 | |
| L4 | 0.90 | | 0.035 | |
| Lp | 1.00 | 1.60 | 0.039 | 0.063 |
| x | - | 0.25 | - | 0.010 |

| DIM | MILIMETERS | | INCHES | |
|-----|------------|-------|--------|-------|
| | MIN | MAX | MIN | MAX |
| b5 | - | 1.00 | - | 0.04 |
| b6 | - | 5.20 | - | 0.205 |
| l1 | - | 2.50 | - | 0.098 |
| l2 | - | 5.50 | - | 0.217 |
| l3 | - | 10.00 | - | 0.394 |

Dimension in mm / inches

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