To all our customers

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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Keep safety first in your circuit designs!

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# 2SC1515(K)

Silicon NPN Triple Diffused

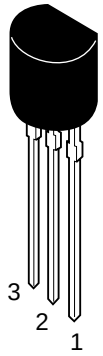
ADE-208-1055 (Z)
1st. Edition
Mar. 2001

## Application

High voltage switching

## Outline

TO-92 (1)




1. Emitter
2. Collector
3. Base

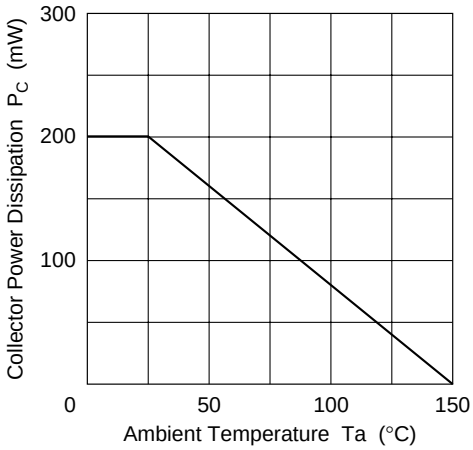
## Absolute Maximum Ratings (Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|---|---|---|
| Collector to base voltage | $V_{CBO}$ | 200 | V |
| Collector to emitter voltage | $V_{CES}$ | 200 | V |
| | $V_{CEO}$ | 150 | V |
| Emitter to base voltage | $V_{EBO}$ | 5 | V |
| Collector current | $I_C$ | 50 | mA |
| Collector power dissipation | $P_C$ | 200 | mW |
| Junction temperature | Tj | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

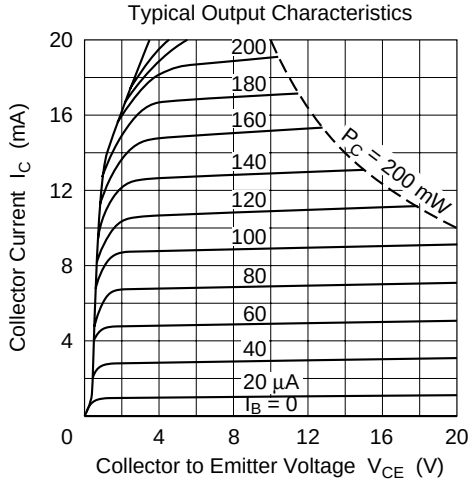
## Electrical Characteristics (Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|---|---|---|---|---|---|---|
| Collector to emitter breakdown voltage | $V_{(BR)CES}$ | 200 | — | — | V | $I_C$ = 10 µA, $R_{BE}$ = 0 |
| | $V_{(BR)CEO}$ | 150 | — | — | V | $I_C$ = 1 mA, $R_{BE}$ = |
| Emitter to base breakdown voltage | $V_{(BR)EBO}$ | 5 | — | — | V | $I_E$ = 10 µA, $I_C$ = 0 |
| Collector cutoff current | $I_{CBO}$ | — | — | 0.1 | µA | $V_{CB}$ = 20 V, $I_E$ = 0 |
| DC current transfer ratio | $h_{FE}$ | 30 | — | 300 | | $V_{CE}$ = 6 V, $I_C$ = 10 mA |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | — | — | 1.0 | V | $I_C$ = 10 mA, $I_B$ = 1 mA |
| Base to emitter saturation voltage | $V_{BE(sat)}$ | — | — | 1.5 | V | $I_C$ = 10 mA, $I_B$ = 1 mA |
| Gain bandwidth product | $f_T$ | 60 | — | — | MHz | $V_{CE}$ = 6 V, $I_C$ = 10 mA |
| Collector output capacitance | Cob | — | — | 10 | pF | $V_{CB}$ = 6 V, $I_E$ = 0, f = 1 MHz |

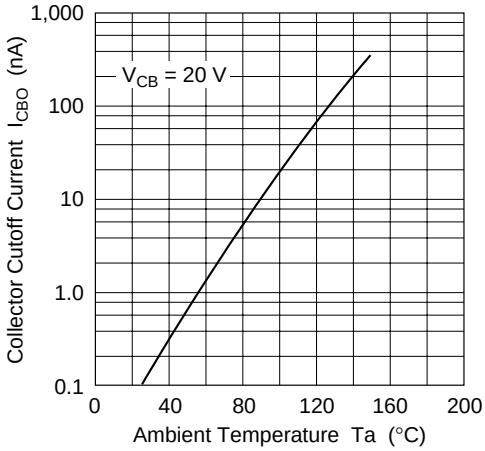
Maximum Collector Dissipation Curve



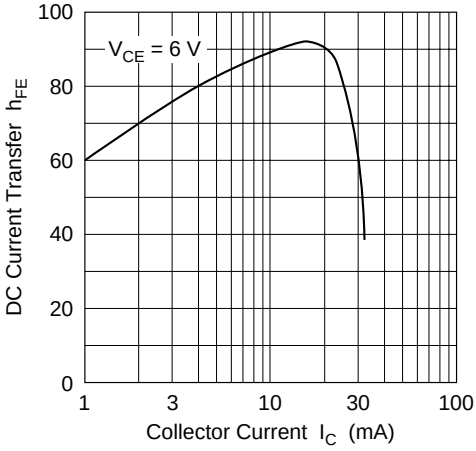

Typical Output Characteristics

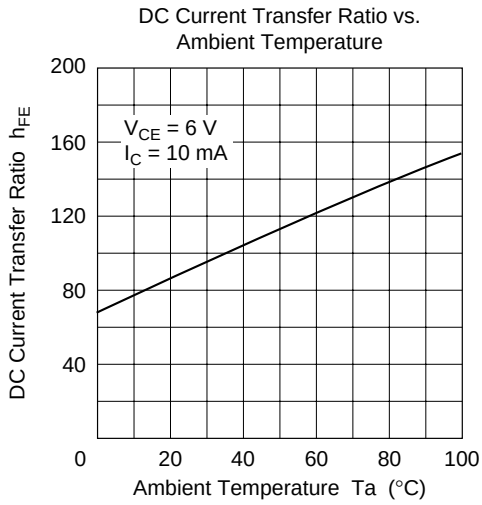


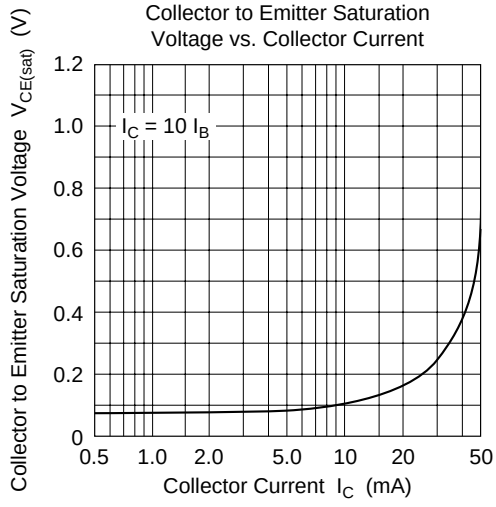

Collector Cutoff Current vs. Ambient Temperature




DC Current Transfer Ratio vs. Collector Current



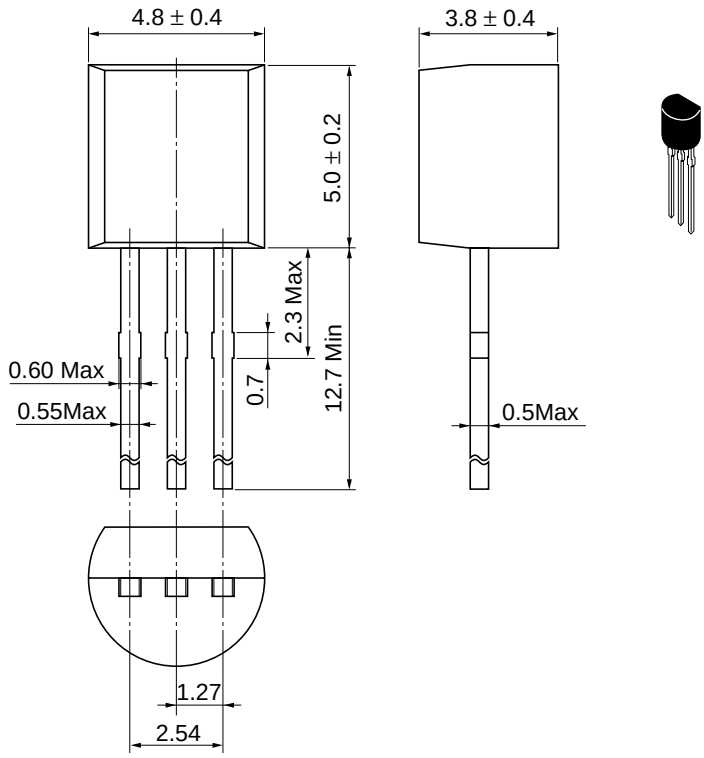

DC Current Transfer Ratio vs.
Ambient Temperature
DC Current Transfer Ratio $h_{FE}$
200
160
120
80
40
0
$V_{CE}$ = 6 V
$I_C$ = 10 mA
0
20
40
60
80
100
Ambient Temperature Ta (°C)


Collector to Emitter Saturation
Voltage vs. Collector Current
Collector to Emitter Saturation Voltage $V_{CE(sat)}$ (V)
1.2
1.0
0.8
0.6
0.4
0.2
0
$I_C$ = 10 $I_B$
0.5
1.0
2.0
5.0
10
20
50
Collector Current $I_C$ (mA)

## Package Dimensions

As of January, 2001

Unit: mm




| | |
|---|---|
| Hitachi Code | TO-92 (1) |
| JEDEC | Conforms |
| EIAJ | Conforms |
| Mass (reference value) | 0.25 g |

## Cautions

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