# 2SA673A(K)

Silicon PNP Epitaxial

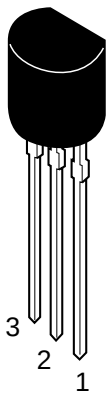
HITACHI

## Application

- Low frequency amplifier
- Medium speed switching

## Outline

TO-92 (1)




1. Emitter
2. Collector
3. Base

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

| Item | Symbol | Ratings | Unit |
|---|---|---|---|
| Collector to base voltage | $V_{CBO}$ | –50 | V |
| Collector to emitter voltage | $V_{CEO}$ | –50 | V |
| Emitter to base voltage | $V_{EBO}$ | –4 | V |
| Collector current | $I_C$ | –0.5 | A |
| Collector power dissipation | $P_C$ | 0.4 | W |
| 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 base breakdown voltage | $V_{(BR)CBO}$ | –50 | — | — | V | $I_C$ = –10 µA, $I_E$ = 0 |
| Collector to emitter breakdown voltage | $V_{(BR)CEO}$ | –50 | — | — | V | $I_C$ = –1 mA, $R_{BE}$ = ∞ |
| Emitter to base breakdown voltage | $V_{(BR)EBO}$ | –4 | — | — | V | $I_E$ = –10 µA, $I_C$ = 0 |
| Collector cutoff current | $I_{CBO}$ | — | — | –0.5 | µA | $V_{CB}$ = –20 V, $I_E$ = 0 |
| Emitter cutoff current | $I_{EBO}$ | — | — | –0.5 | µA | $V_{EB}$ = –3 V, $I_C$ = 0 |
| Base to emitter voltage | $V_{BE}$ | — | –0.64 | — | V | $V_{EB}$ = –3 V, $I_C$ = –10 mA |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | — | –0.2 | –0.6 | V | $I_C$ = –150 mA, $I_B$ = –15 mA*[2] |
| Base to emitter saturation voltage | $V_{BE(sat)}$ | — | –0.87 | — | V | $I_C$ = –150 mA, $I_B$ = –15 mA*[2] |
| DC current transfer ratio | $h_{FE}$*[1] | 60 | — | 320 | | $V_{CE}$ = –3 V, $I_C$ = –10 mA |
| | $h_{FE}$ | 10 | — | — | | $V_{CE}$ = –3 V, $I_C$ = –500 mA*[2] |
| Gain bandwidth product | $f_T$ | — | 120 | — | MHz | $V_{CE}$ = –3 V, $I_C$ = –10 mA |
| Turn on time | $t_{on}$ | — | 0.3 | — | µs | $V_{CC}$ = –10.3 V |
| Turn off time | $t_{off}$ | — | 0.6 | — | µs | $I_C$ = 10 $I_{B1}$ = –10 $I_{B2}$ = –10 mA |
| Storage time | $t_{stg}$ | — | 0.4 | — | µs | $V_{CC}$ = –5 V, $I_C$ = $I_{B1}$ = $I_{B2}$ = –20 mA |

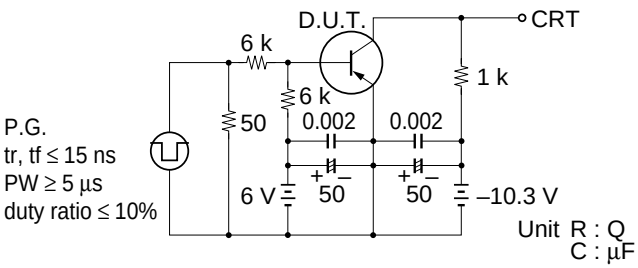
Notes: 1. The 2SA673A(K) is grouped by $h_{FE}$ as follows.
2. Pulse test

| B | C | D |
|---|---|---|
| 60 to 120 | 100 to 200 | 160 to 320 |

See 2SA673A except for the above – mentioned characteristic curves.

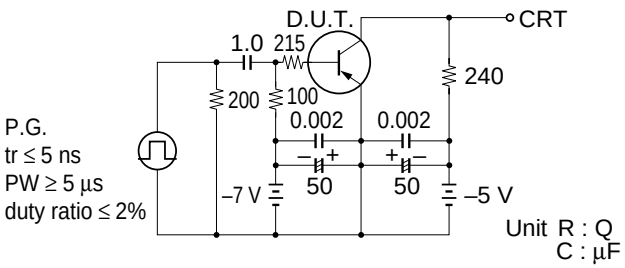
Switching Time Test Circuit

$t_{on}$, $t_{off}$ Test Circuit

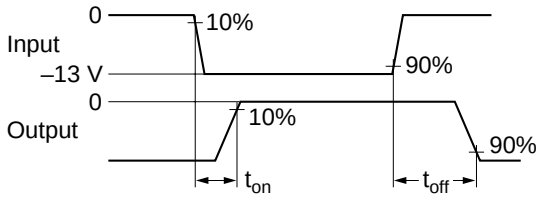



Switching Time Test Circuit

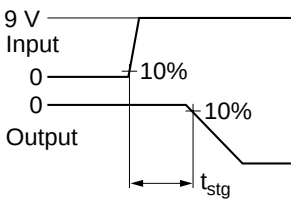
$t_{stg}$ Test Circuit



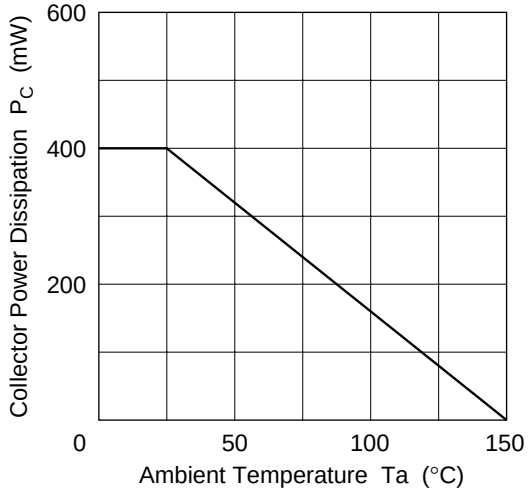

Response Waveform



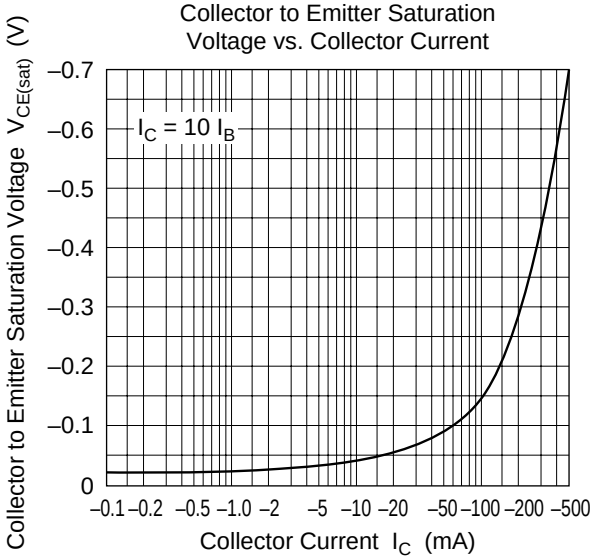

Response Waveform



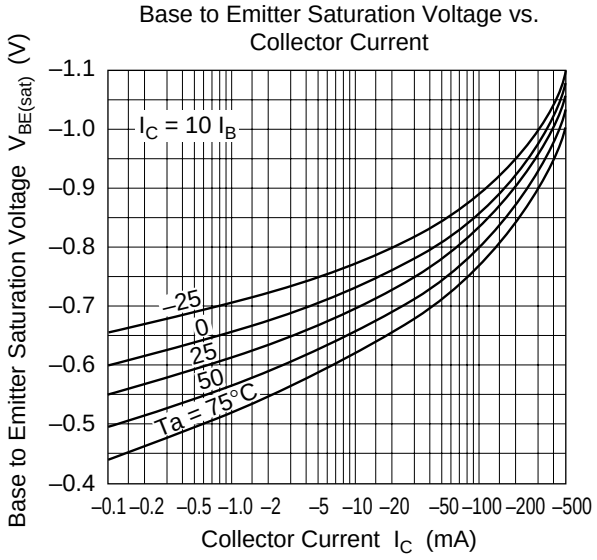
Maximum Collector Dissipation Curve



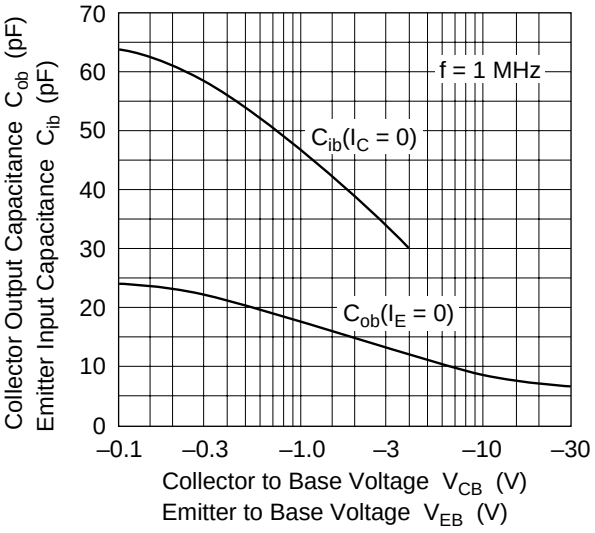

Collector to Emitter Saturation Voltage vs. Collector Current

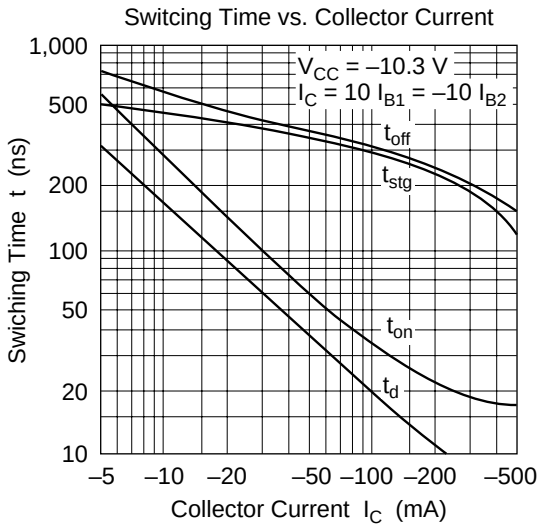



Base to Emitter Saturation Voltage vs. Collector Current

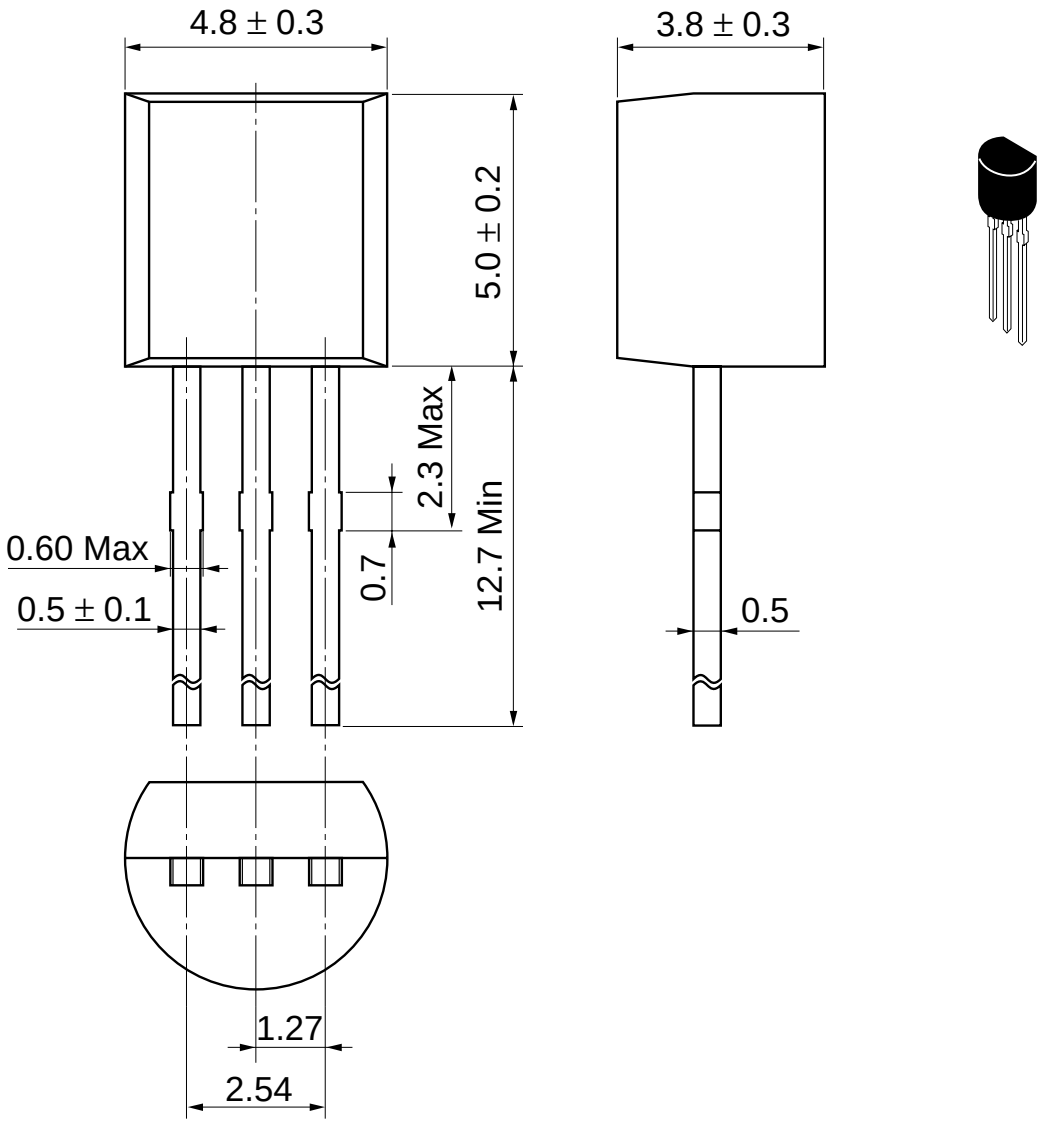



Input and Output Capacitance vs. voltage





Unit: mm




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

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