# High voltage discharge, High speed switching, Low Noise (–60V, –3A)

## 2SA2072

### ●Features

1) High speed switching. ( tf : Typ. : 20ns at $I_C$ = −3A)
2) Low saturation voltage, typically.
   (Typ. : −200mV at $I_C$ = −2.0A, $I_B$ = −200mA)
3) Strong discharge power for inductive load and capacitance load.
4) Low Noise.

### ●Applications

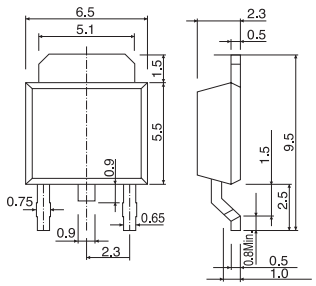
High speed switching, Low noise

### ●Structure

PNP silicon epitaxial planar transistor

### ●Dimensions (Unit : mm)

CPT3
(SC-63)
<SOT-428>




(1) Base
(2) Collector
(3) Emitter

Abbreviated symbol : A2072

### ●Packaging specifications

| Type | Package | Taping |
|---|---|---|
| | Code | TL |
| | Basic ordering unit (pieces) | 2500 |
| 2SA2072 | | ◯ |

### ●Absolute maximum ratings (Ta=25°C)

| Parameter | | Symbol | Limits | Unit |
|---|---|---|---|---|
| Collector-base voltage | | $V_{CBO}$ | –60 | V |
| Collector-emitter voltage | | $V_{CEO}$ | –60 | V |
| Emitter-base voltage | | $V_{EBO}$ | –6 | V |
| Collector current | DC | $I_C$ | –3 | A |
| | Pulsed | $I_{CP}$ *1 | –6 | A |
| Power dissipation | | $P_C$ | 1.0 *2 | W |
| | | | 10.0 *3 | W |
| Junction temperature | | tj | 150 | °C |
| Range of storage temperature | | tstg | –55 to 150 | °C |

*1 Pw=100ms
*2 Ta=25°C
*3 Tc=25°C

## ●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|---|---|---|---|---|---|---|
| Collector-emitter breakdown voltage | $BV_{CEO}$ | –60 | – | – | V | $I_C$=–1mA |
| Collector-base breakdown voltage | $BV_{CBO}$ | –60 | – | – | V | $I_C$=–100μA |
| Emitter-base breakdown voltage | $BV_{EBO}$ | –6 | – | – | V | $I_E$=–100μA |
| Collector cut-off current | $I_{CBO}$ | – | – | –1.0 | μA | $V_{CB}$=–20V |
| Emitter cut-off current | $I_{EBO}$ | – | – | –1.0 | μA | $V_{EB}$=–4V |
| Collector-emitter saturation voltage | $V_{CE\ (sat)}$ *1 | – | –200 | –500 | mV | $I_C$=–2A<br>$I_B$=–0.2A |
| DC current gain | $h_{FE}$ | 120 | – | 270 | – | $V_{CE}$=–2V<br>$I_C$=–100mA |
| Transistor frequency | $f_T$ *1 | – | 180 | – | MHz | $V_{CE}$=–10V<br>$I_E$=100mA<br>f=10MHz |
| Collector output capacitance | Cob | – | 50 | – | pF | $V_{CB}$=–10V<br>$I_E$=0mA<br>f=1MHz |
| Turn-on time | ton *2 | – | 20 | – | ns | $I_C$=–3A<br>$I_{B1}$=–300mA<br>$I_{B2}$=300mA<br>$V_{CC}$≒–25V |
| Storage time | tstg *2 | – | 150 | – | ns | |
| Fall time | tf *2 | – | 20 | – | ns | |

*1 Non repetitive pulse
*2 See switching characteristics measurement circuits

## ●$h_{FE}$ RANK

| Q |
|---|
| 120–270 |

## ●Electrical characteristics curves

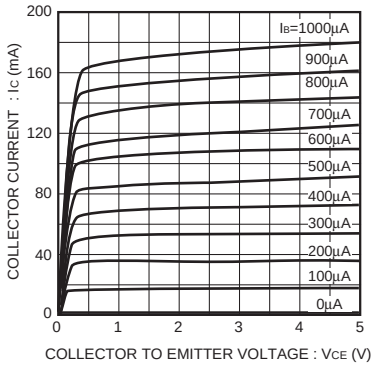



Fig.1 Typical output characteristics

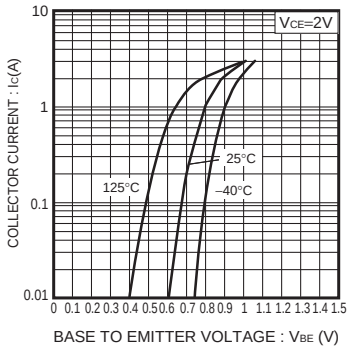



Fig.2 Grounded emitter propagation characteristics

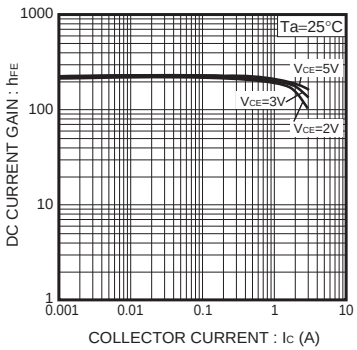



Fig.3 DC current gain vs.collector current ( I )

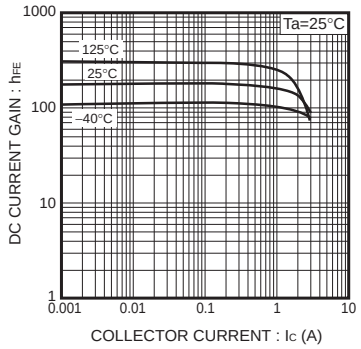



Fig.4 DC current gain vs.collector current ( II )

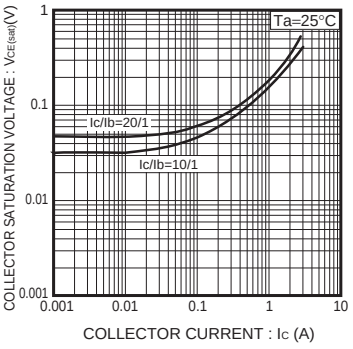



Fig.5 Collector-emitter saturation voltage vs.collector current ( I )

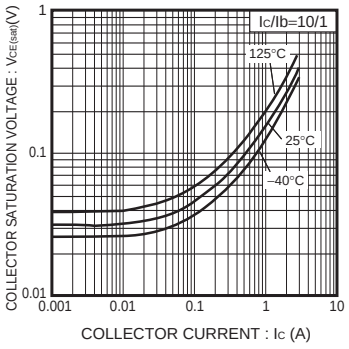



Fig.6 Collector-emitter saturation voltage vs.collector current ( II )

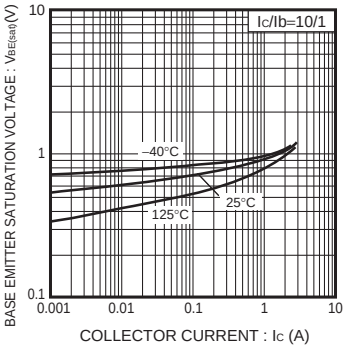



Fig.7 Base-emitter saturation voltage vs. collector current

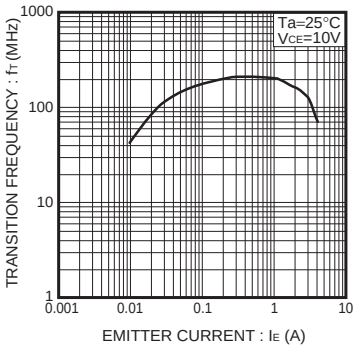



Fig.8 Transition frequency

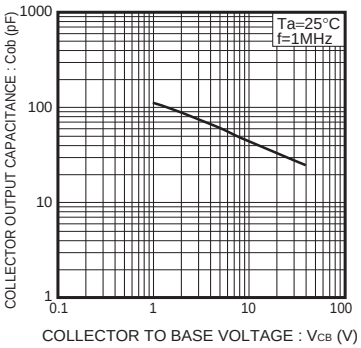



Fig.9 Collector output capacitance

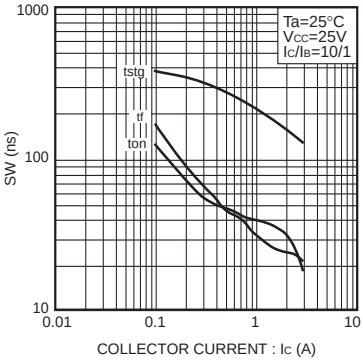
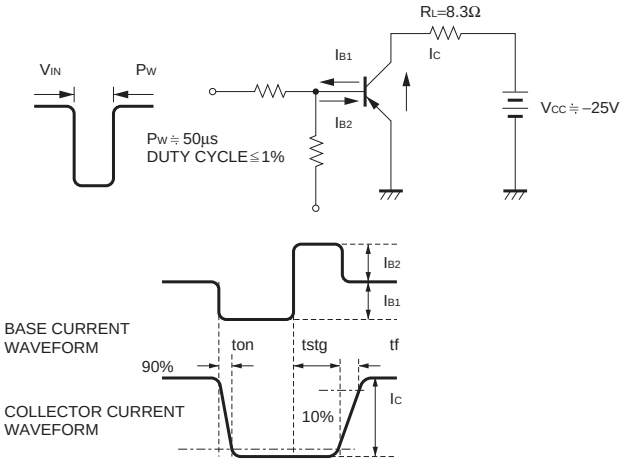



Fig.10 Switching Time

## ●Switching characteristics measurement circuits



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