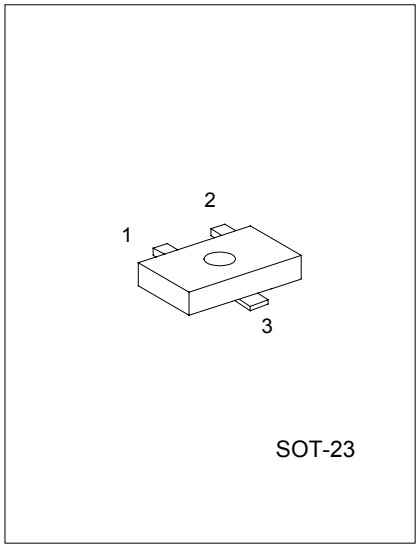
## NPN DIGITAL TRANSISTOR (BUILT-IN RESISTOR)

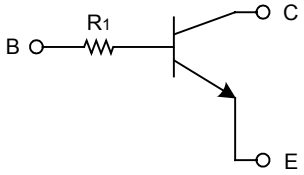
### FEATURES

*Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
*The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input They also have the advantage of almost completely eliminating parasitic effects.
*Only the on / off conditions need to be set for operation, making device design easy.

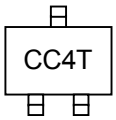



1: EMITTER 2: BASE 3: COLLECTOR

### EQUIVALENT CIRCUIT




### MARKING




### ABSOLUTE MAXIMUM RATINGS (Ta=25℃)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | 50 | V |
| Collector-emitter voltage | $V_{CEO}$ | 50 | V |
| Emitter-base voltage | $V_{EBO}$ | 5 | V |
| Collector current | Ic | 100 | mA |
| Collector Power dissipation | Pc | 200 | mW |
| Junction temperature | Tj | 150 | ℃ |
| Storage temperature | Tstg | -55~+150 | ℃ |

### ELECTRICAL CHARACTERISTICS (Ta=25°C,unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | Ic=50μA | 50 | | | V |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | Ic=1mA | 50 | | | V |
| Emitter-base breakdown voltage | $BV_{EBO}$ | $I_E$=50μA | 5 | | | V |
| Collector cutoff current | $I_{CBO}$ | $V_{CB}$=50V | | | 0.5 | μA |
| Emitter cutoff current | $I_{EBO}$ | $V_{EB}$=4V | | | 0.5 | μA |
| Collector-emitter saturation voltage | $V_{CE}$(sat) | Ic=5mA, $I_B$=0.5mA | | | 0.3 | V |
| DC current transfer ratio | $h_{FE}$ | $V_{CE}$=5V, Ic=1mA | 100 | 250 | 600 | |
| Input resistance | R1 | | 15.4 | 22 | 28.6 | kΩ |
| Transition frequency | $f_T$ | $V_{CE}$=10V, $I_E$= -5mA, f=100MHz * | | 250 | | MHz |

* Transition frequency of the device

## ELECTRICAL CHARACTERISTIC CURVES

Fig.1 DC current gain vs.collector current

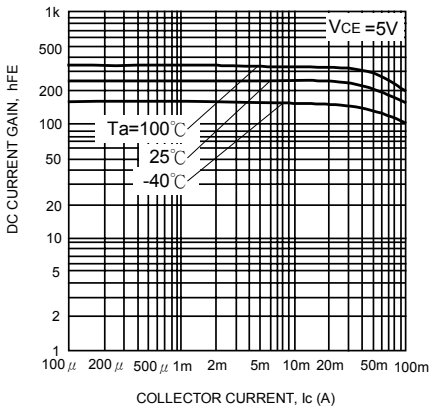



Fig.2 Collector-emitter saturation voltage vs. collector current