

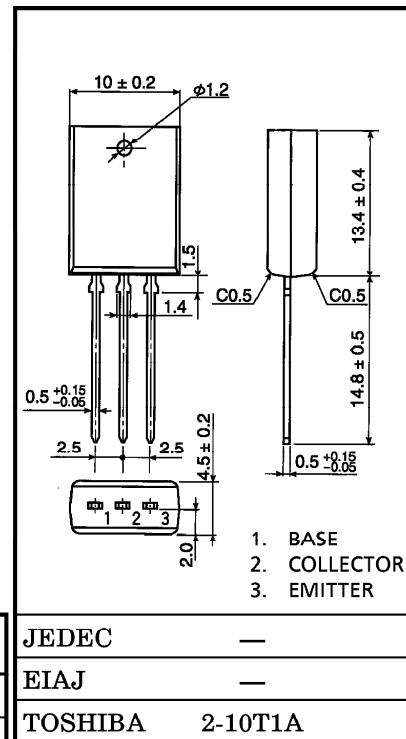
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

2SC5176

HIGH CURRENT SWITCHING APPLICATIONS
DC-DC CONVERTER APPLICATIONS

INDUSTRIAL APPLICATIONS

- Low Collector Saturation Voltage
: $V_{CE(sat)} = 0.4V$ (Max.) (at $I_C = 3A$)
- High Speed Switching Time : $t_{stg} = 1.0\mu s$ (Typ.)



MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|-----------------------------|-------|-----------|---------|------|
| Collector-Base Voltage | | V_{CBO} | 100 | V |
| Collector-Emitter Voltage | | V_{CEO} | 80 | V |
| Emitter-Base Voltage | | V_{EBO} | 7 | V |
| Collector Current | DC | I_C | 5 | A |
| | Pulse | I_{CP} | 8 | |
| Base Current | | I_B | 1 | A |
| Collector Power Dissipation | | P_C | 1.8 | W |
| Junction Temperature | | T_j | 150 | °C |
| Storage Temperature Range | | T_{stg} | -55~150 | °C |

Weight : 1.5g

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-------------------------------------|-------------------|------------------------|-----------------------------------|---|------|------|---------|
| Collector Cut-off Current | | I_{CBO} | $V_{CB} = 100V, I_E = 0$ | — | — | 1 | μA |
| Emitter Cut-off Current | | I_{EBO} | $V_{EB} = 7V, I_C = 0$ | — | — | 1 | μA |
| Collector-Emitter Breakdown Voltage | | $V_{(BR) CEO}$ | $I_C = 10mA, I_B = 0$ | 80 | — | — | V |
| DC Current Gain | | $h_{FE} (1)$ (Note) | $V_{CE} = 1V, I_C = 1A$ | 70 | — | 240 | |
| | | $h_{FE} (2)$ | $V_{CE} = 1V, I_C = 3A$ | 40 | — | — | |
| Saturation Voltage | Collector-Emitter | $V_{CE (sat)}$ | $I_C = 3A, I_B = 0.15A$ | — | 0.2 | 0.4 | V |
| | Base-Emitter | $V_{BE (sat)}$ | $I_C = 3A, I_B = 0.15A$ | — | 0.9 | 1.2 | |
| Transition Frequency | | f_T | $V_{CE} = 4V, I_C = 1A$ | — | 120 | — | MHz |
| Collector Output Capacitance | | C_{ob} | $V_{CB} = 10V, I_E = 0, f = 1MHz$ | — | 80 | — | pF |
| Switching Time | Turn-on Time | t_{on} | | — | 0.2 | — | μs |
| | Storage Time | t_{stg} | | — | 1.0 | — | |
| | Fall Time | t_f | | $I_{B1} = -I_{B2} = 0.15A$ DUTY CYCLE $\leq 1\%$ | — | 0.1 | |

Note : $h_{FE} (1)$ Classification O : 70~140, Y : 120~240

