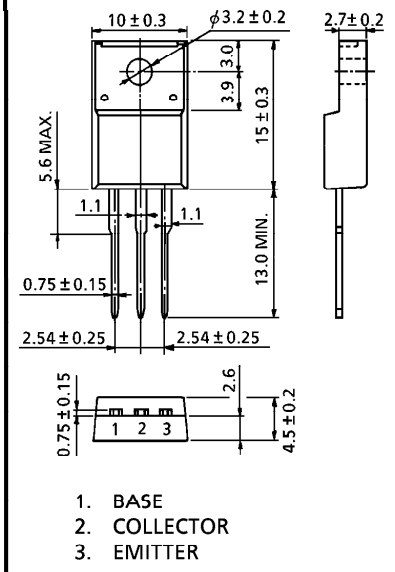
# 2SB1016A

POWER AMPLIFIER APPLICATIONS

Unit in mm

- High Breakdown Voltage : $V_{CEO} = -100V$
- Low Collector-Emitter Saturation Voltage
  : $V_{CE\ (sat)} = -2.0V$ (Max.)
- Complementary to 2SD1407A




1. BASE
2. COLLECTOR
3. EMITTER

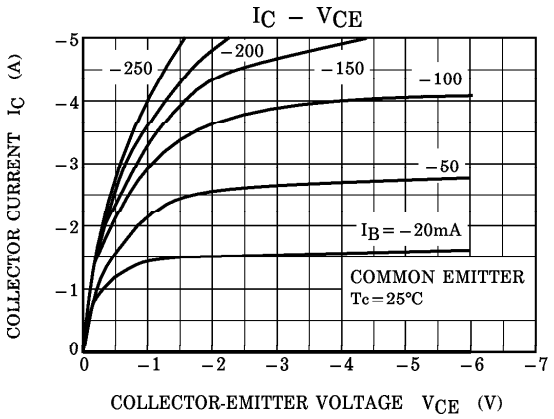
| | |
|---|---|
| JEDEC | — |
| EIAJ | — |
| TOSHIBA | 2-10R1A |

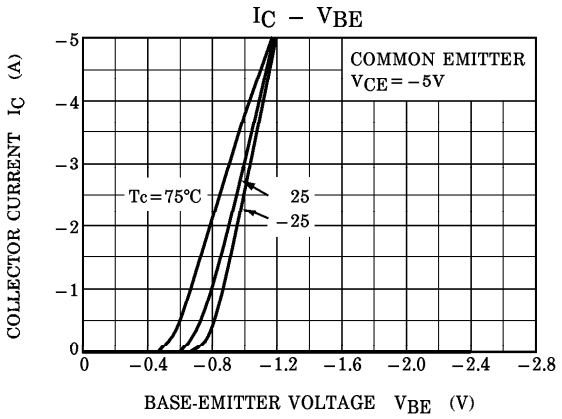
MAXIMUM RATINGS (Ta = 25°C)

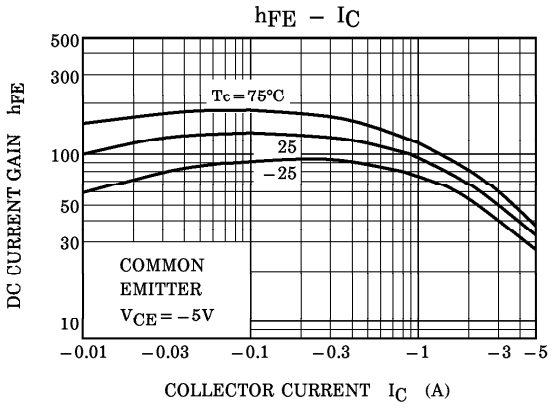
| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | −100 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | −100 | V |
| Emitter-Base Voltage | $V_{EBO}$ | −5 | V |
| Collector Current | $I_C$ | −5 | A |
| Base Current | $I_B$ | −0.5 | A |
| Collector Power Dissipation (Tc = 25°C) | $P_C$ | 30 | W |
| Junction Temperature | $T_j$ | 150 | °C |
| Storage Temperature Range | $T_{stg}$ | −55~150 | °C |

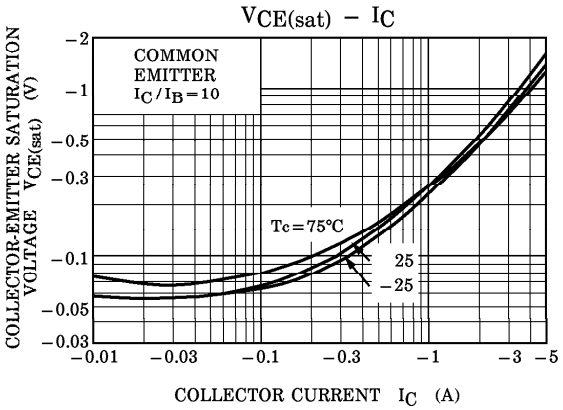
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

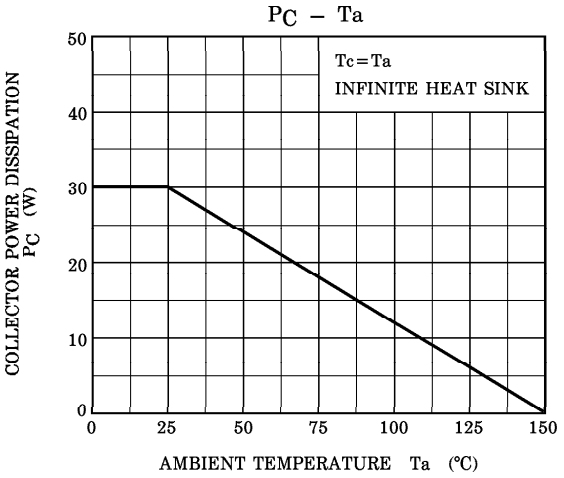
| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Collector Cut-off Current | $I_{CBO}$ | $V_{CB} = -100V$, $I_E = 0$ | — | — | −100 | μA |
| Emitter Cut-off Current | $I_{EBO}$ | $V_{EB} = -5V$, $I_C = 0$ | — | — | −1 | mA |
| Collector-Emitter Breakdown Voltage | $V_{(BR)\ CEO}$ | $I_C = -50mA$, $I_B = 0$ | −100 | — | — | V |
| DC Current Gain | $h_{FE\ (1)}$ (Note) | $V_{CE} = -5V$, $I_C = -1A$ | 70 | — | 240 | |
| | $h_{FE\ (2)}$ | $V_{CE} = -5V$, $I_C = -4A$ | 20 | — | — | |
| Collector-Emitter Saturation Voltage | $V_{CE\ (sat)}$ | $I_C = -4A$, $I_B = -0.4A$ | — | — | −2.0 | V |
| Base-Emitter Voltage | $V_{BE}$ | $V_{CE} = -5V$, $I_C = -4A$ | — | — | −1.5 | V |
| Transition Frequency | $f_T$ | $V_{CE} = -5V$, $I_C = -1A$ | — | 5 | — | MHz |
| Collector Output Capacitance | $C_{ob}$ | $V_{CB} = -10V$, $I_E = 0$, f = 1MHz | — | 270 | — | pF |

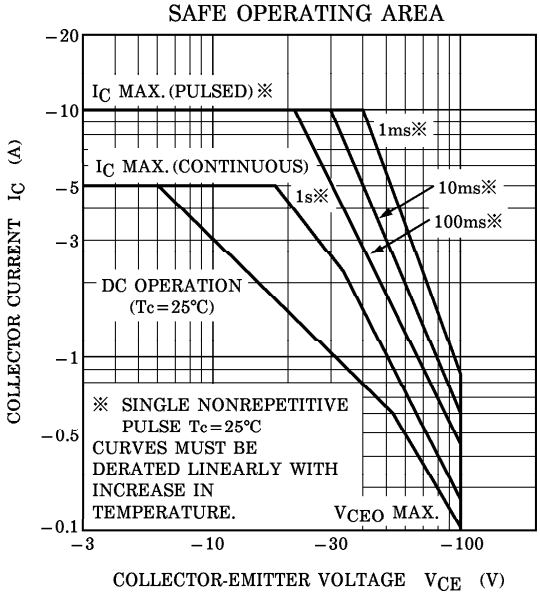

IC – VCE
COLLECTOR CURRENT IC (A)
COLLECTOR-EMITTER VOLTAGE VCE (V)
–250
–200
–150
–100
–50
IB = –20mA
COMMON EMITTER
Tc = 25°C
0
–1
–2
–3
–4
–5
–6
–7


IC – VBE
COLLECTOR CURRENT IC (A)
BASE-EMITTER VOLTAGE VBE (V)
COMMON EMITTER
VCE = –5V
Tc = 75°C
25
–25
0
–0.4
–0.8
–1.2
–1.6
–2.0
–2.4
–2.8


hFE – IC
DC CURRENT GAIN hFE
COLLECTOR CURRENT IC (A)
Tc = 75°C
25
–25
COMMON
EMITTER
VCE = –5V
500
300
100
50
30
10
–0.01
–0.03
–0.1
–0.3
–1
–3
–5


VCE(sat) – IC
COLLECTOR-EMITTER SATURATION VOLTAGE VCE(sat) (V)
COLLECTOR CURRENT IC (A)
COMMON
EMITTER
IC / IB = 10
Tc = 75°C
25
–25
–2
–1
–0.5
–0.3
–0.1
–0.05
–0.03
–0.01
–0.03
–0.1
–0.3
–1
–3
–5


PC – Ta
COLLECTOR POWER DISSIPATION PC (W)
AMBIENT TEMPERATURE Ta (°C)
Tc = Ta
INFINITE HEAT SINK
50
40
30
20
10
0
25
50
75
100
125
150


SAFE OPERATING AREA
COLLECTOR CURRENT IC (A)
COLLECTOR-EMITTER VOLTAGE VCE (V)
IC MAX. (PULSED) ※
IC MAX. (CONTINUOUS)
1ms※
1s※
10ms※
100ms※
DC OPERATION
(Tc = 25°C)
※ SINGLE NONREPETITIVE
PULSE Tc = 25°C
CURVES MUST BE
DERATED LINEARLY WITH
INCREASE IN
TEMPERATURE.
VCEO MAX.
–20
–10
–5
–3
–1
–0.5
–0.1
–3
–10
–30
–100