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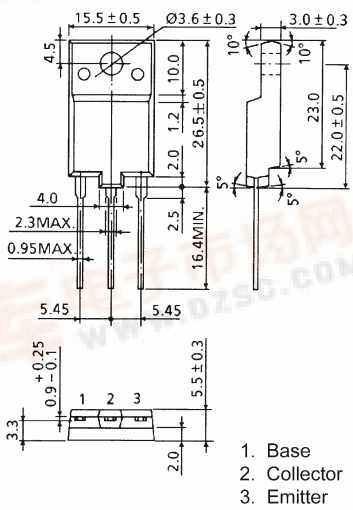
TOSHIBA Transistor Silicon NPN Triple-Diffused Mesa Type

# 2SC6041

Horizontal Deflection Output for HDTV,
Digital TV, Projection TV.

- High voltage : $V_{CBO}$ = 1700 V
- Low saturation voltage : $V_{CE\ (sat)}$ = 1.5 V (max)
- High speed : $t_f$ = 0.15 μs (typ.)
- Collector metal (fin) is fully covered with mold resin.

Unit: mm



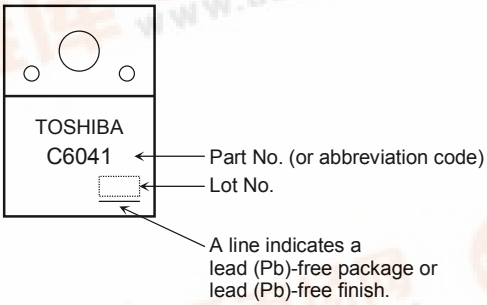

| | |
|---|---|
| JEDEC | — |
| JEITA | — |
| TOSHIBA | 2-16E3A |

Weight: 5.5 g (typ.)

## Maximum Ratings ($T_C$ = 25°C)

| Characteristic | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Collector−base voltage | | $V_{CBO}$ | 1700 | V |
| Collector−emitter voltage | | $V_{CEO}$ | 750 | V |
| Emitter−base voltage | | $V_{EBO}$ | 5 | V |
| Collector current | DC | $I_C$ | 15 | A |
| | Pulse | $I_{CP}$ | 30 | |
| Base current | | $I_B$ | 7.5 | A |
| Collector power dissipation | | $P_C$ | 70 | W |
| Junction temperature | | $T_j$ | 150 | °C |
| Storage temperature range | | $T_{stg}$ | −55 to 150 | °C |

## Marking

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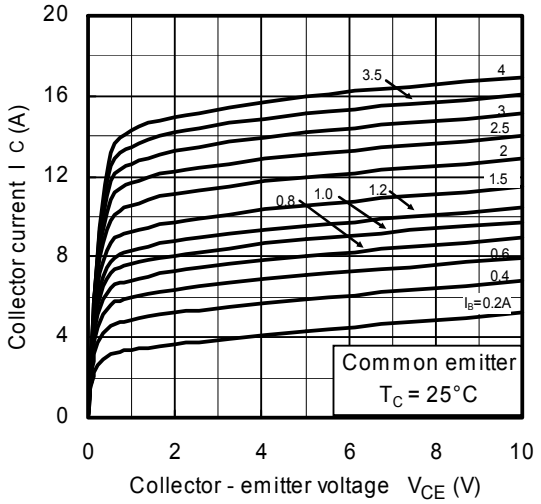
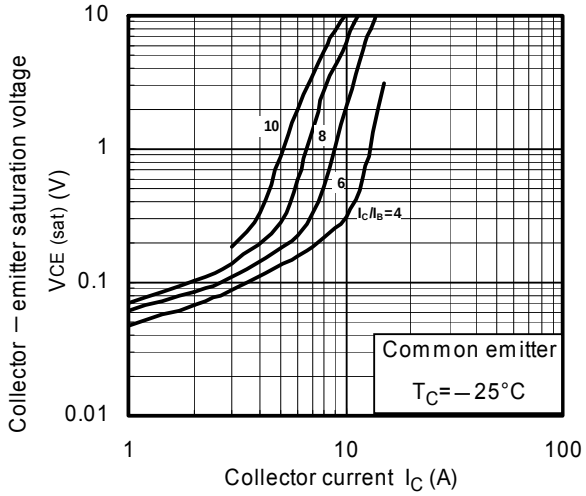
## Electrical Characteristics ($T_C$ = 25°C)

| Characteristic | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Collector cutoff current | | $I_{CBO}$ | $V_{CB}$ = 1700 V, $I_E$ = 0 | — | — | 1 | mA |
| Emitter cutoff current | | $I_{EBO}$ | $V_{EB}$ = 5 V, $I_C$ = 0 | — | — | 100 | μA |
| Emitter–base breakdown voltage | | $V_{(BR)\ EBO}$ | $I_E$ = 1 mA, $I_B$ = 0 | 5 | — | — | V |
| DC current gain | | $h_{FE\ (1)}$ | $V_{CE}$ = 5 V, $I_C$ = 2 A | 30 | — | 60 | — |
| | | $h_{FE\ (2)}$ | $V_{CE}$ = 5 V, $I_C$ = 8 A | 8 | — | 12 | |
| | | $h_{FE\ (3)}$ | $V_{CE}$ = 5 V, $I_C$ = 12 A | 5 | — | 7 | |
| Collector–emitter saturation voltage | | $V_{CE\ (sat)}$ | $I_C$ = 12 A, $I_B$ = 3 A | — | — | 1.5 | V |
| Base–emitter saturation voltage | | $V_{BE\ (sat)}$ | $I_C$ = 12 A, $I_B$ = 3 A | — | — | 1.25 | V |
| Transition frequency | | $f_T$ | $V_{CE}$ = 10 V, $I_C$ = 0.1 A | — | 2 | — | MHz |
| Collector output capacitance | | $C_{ob}$ | $V_{CB}$ = 10 V, $I_E$ = 0, f = 1 MHz | — | 260 | — | pF |
| Switching time | Storage time | $t_{stg}$ | $I_{CP}$ = 6 A, $I_{B1}$ (end) = 0.8 A<br>$f_H$ = 32 kHz | — | 4 | — | μs |
| | Fall time | $t_f$ | | — | 0.15 | — | |

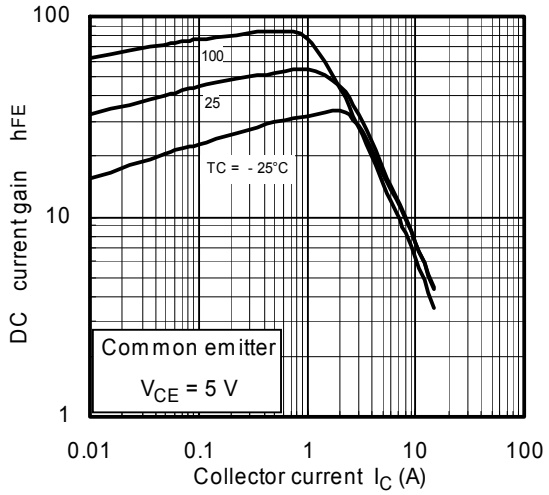
$I_C - V_{CE}$



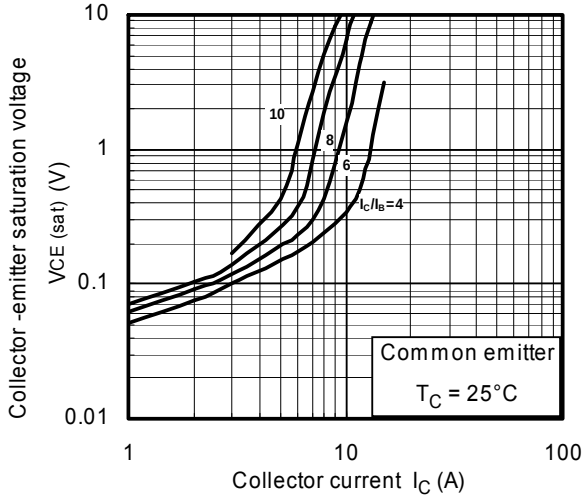

$V_{CE(sat)} - I_C$



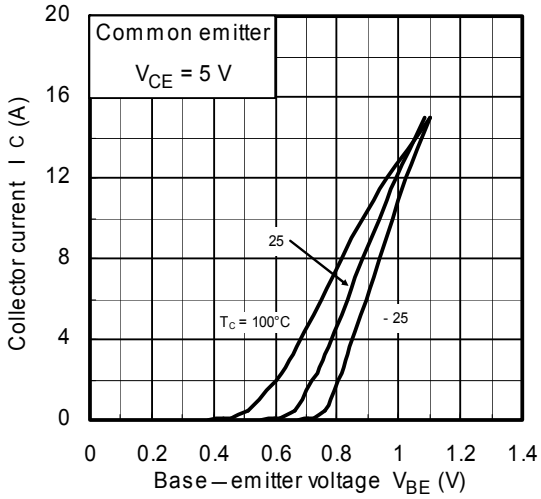

$h_{FE} - I_C$



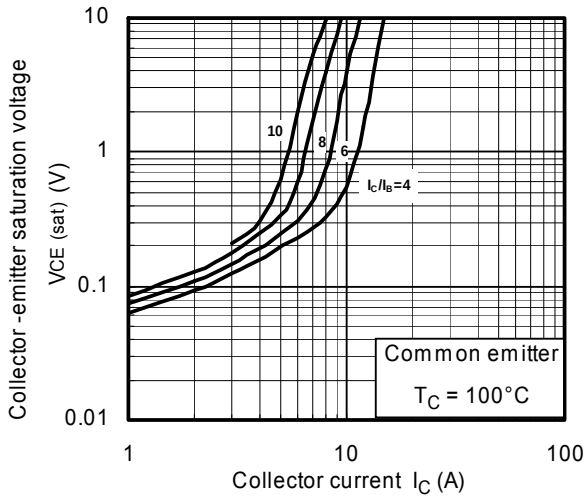

$V_{CE(sat)} - I_C$

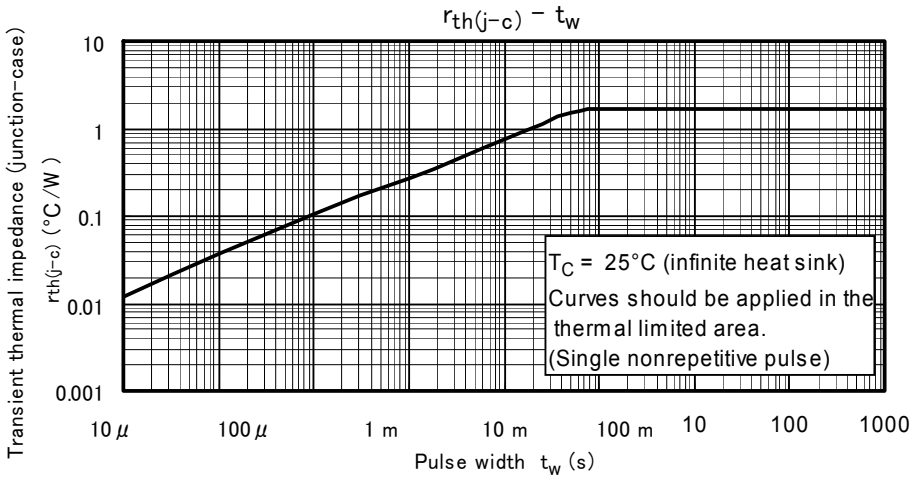


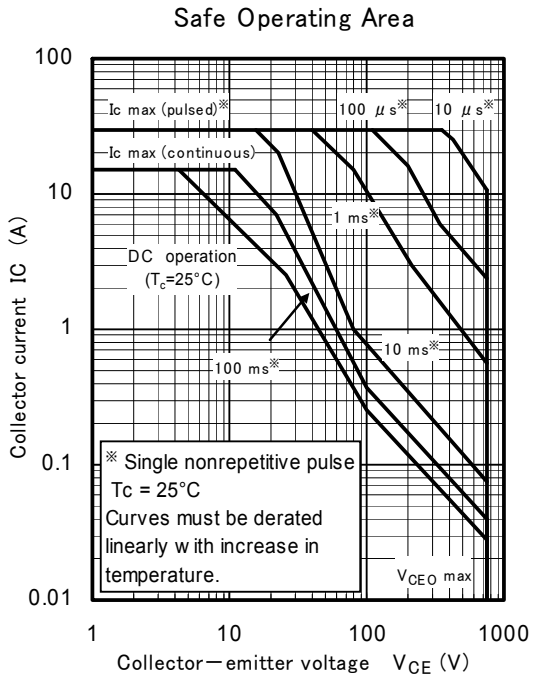

$I_C - V_{BE}$

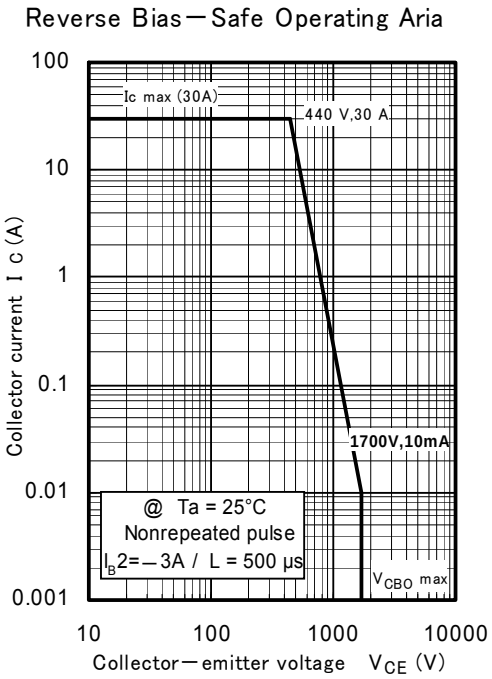


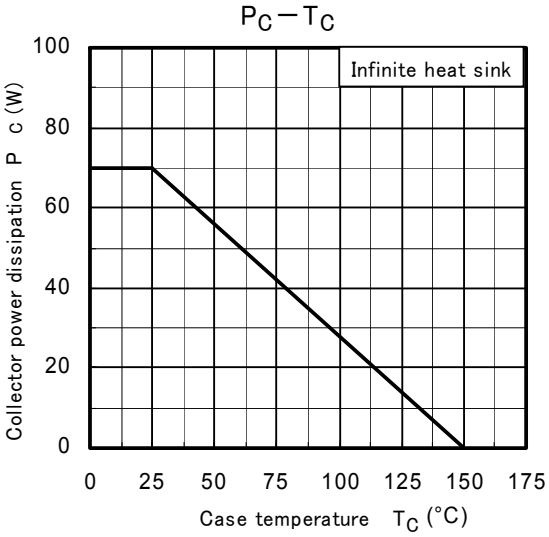

$V_{CE(sat)} - I_C$




rth(j-c) − tw
Transient thermal impedance (junction-case) rth(j-c) (°C/W)
10
1
0.1
0.01
0.001
10 μ
100 μ
1 m
10 m
100 m
10
100
1000
Pulse width tw (s)
TC = 25°C (infinite heat sink)
Curves should be applied in the thermal limited area.
(Single nonrepetitive pulse)


Safe Operating Area
Collector current IC (A)
100
10
1
0.1
0.01
Ic max (pulsed)※
100 μs※
10 μs※
Ic max (continuous)
1 ms※
DC operation
(Tc=25°C)
10 ms※
100 ms※
※ Single nonrepetitive pulse
Tc = 25°C
Curves must be derated linearly with increase in temperature.
VCEO max
1
10
100
1000
Collector−emitter voltage VCE (V)


Reverse Bias−Safe Operating Aria
Collector current I C (A)
100
10
1
0.1
0.01
0.001
Ic max (30A)
440 V,30 A
1700V,10mA
@ Ta = 25°C
Nonrepeated pulse
IB2=−3A / L = 500 μs
VCBO max
10
100
1000
10000
Collector−emitter voltage VCE (V)


PC−TC
Collector power dissipation P c (W)
100
80
60
40
20
0
Infinite heat sink
0
25
50
75
100
125
150
175
Case temperature TC (°C)

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