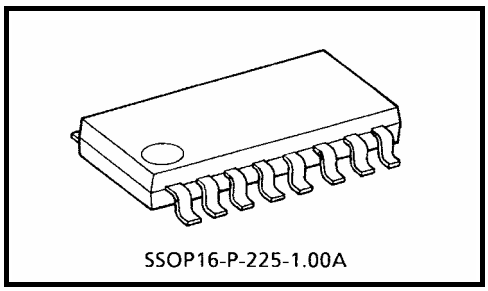
Toshiba Bipolar Digital Integrated Circuit Multi Chip

# TD62M4601FG

4ch Low Saturation Voltage Source Driver

TD62M4601FG is multi chip IC incorporates 4 low saturation discrete (2SA1357) transistors.

This IC is suitable for a battery use motor drive and LED display module applications.

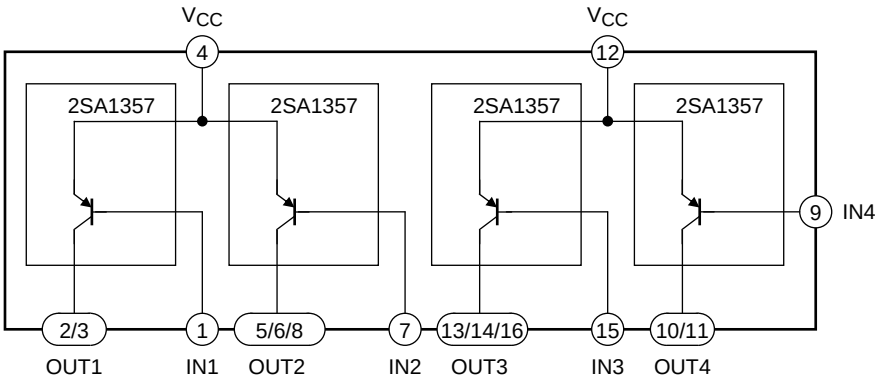



Weight: 0.14 g (typ.)

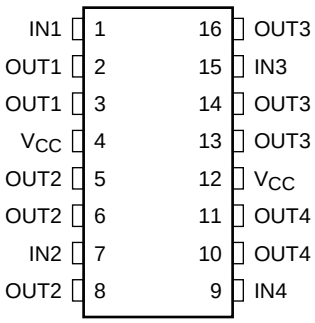
## Features

- Suitable for motor drive circuit and LED display module
- External bias resistor
- Low saturation voltage
  $V_{CE\ (sat)}$ = 0.12 V (typ.) at IC = −1 A
  $V_{CE\ (sat)}$ = 0.25 V (typ.) at IC = −2 A
- SSOP16 (1 mm pitch) small package sealed

## Block Diagram




## Pin Assignment (top view)



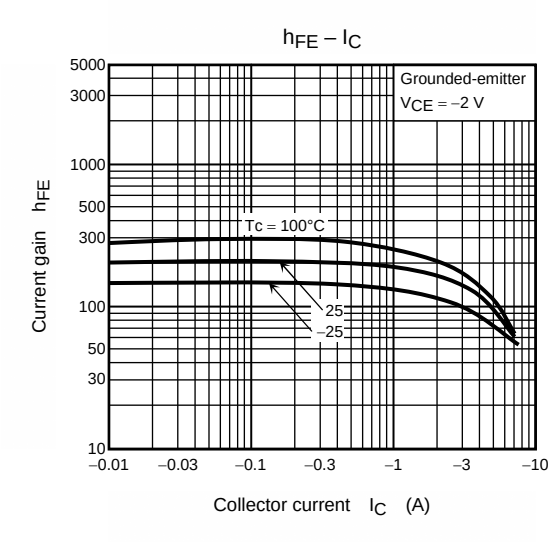
## Maximum Ratings (Ta = 25°C)

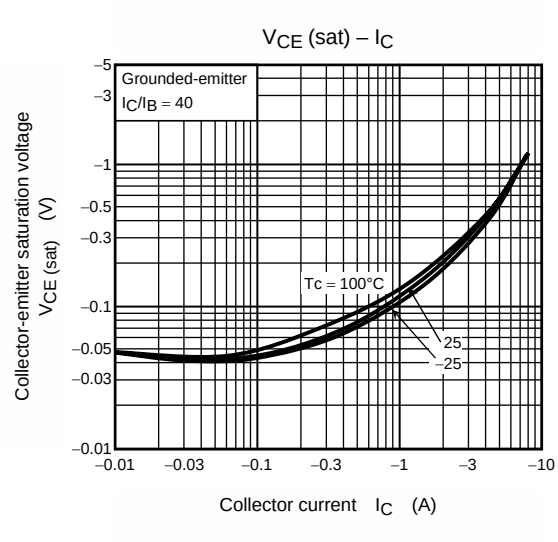
| Characteristics | Symbol | Rating | Unit |
|---|---|---|---|
| Supply voltage | $V_{CC}$ | −20 | V |
| Breakdown voltage | $V_{CBO}$ | −20 | V |
| | $V_{CEO}$ | −20 | |
| | $V_{EBO}$ | −8 | |
| Output current | $I_O$ | −2 | A/ch |
| | $I_{O\ (PRAK)}$ | −4 (Note) | |
| Base current | $I_B$ | −1 | A |
| Power dissipation | $P_D$ | 490 | mW |
| Junction temperature | $T_j$ | 150 | °C |
| Operating temperature | $T_{opr}$ | −40 to 85 | °C |
| Storage temperature | $T_{stg}$ | −55 to 150 | °C |

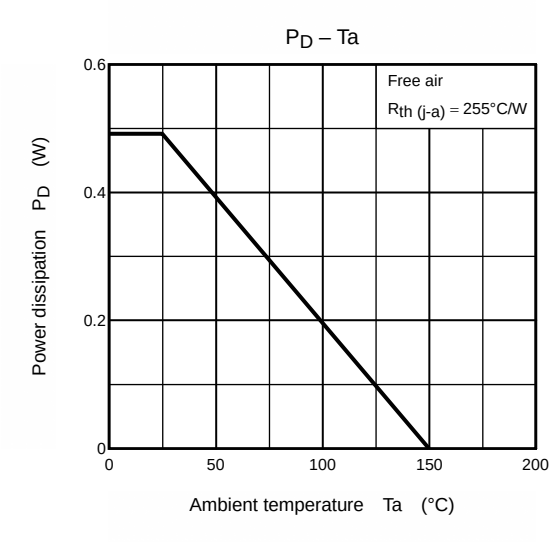
Note: T = 10 ms max and maximum duty is less than 30%.

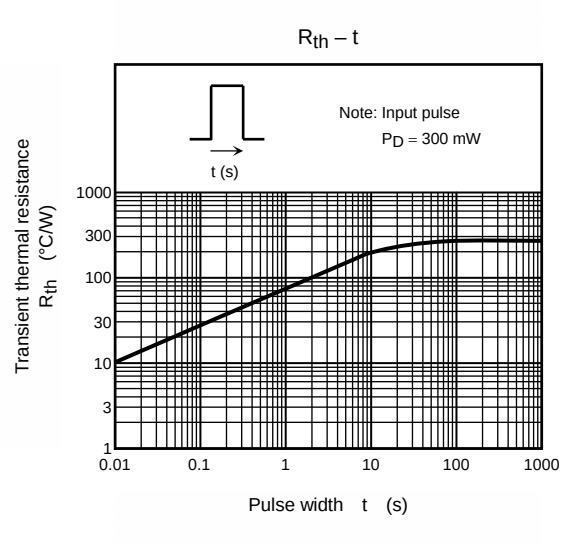
## Electrical Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Circuit | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Current gain | $h_{FE\ (1)}$ | — | $V_{CE}$ = −2 V, $I_C$ = −0.5 A | 100 | — | 320 | — |
| | $h_{FE\ (2)}$ | | $V_{CE}$ = −2 V, $I_C$ = −2.0 A | 70 | 140 | — | |
| Saturation voltage | $V_{CE\ (sat)}$ | — | $I_C$ = −1 A, $I_B$ = −25 mA | — | −0.12 | −0.25 | V |
| | | | $I_C$ = −2 A, $I_B$ = −50 mA | — | −0.25 | −0.50 | |
| Transition frequency | $f_T$ | — | $V_{CE}$ = −2 V, $I_C$ = −0.5 A | — | 100 | — | MHz |
| Leakage current | $I_{OL}$ | — | $V_{CC}$ = −20 V | — | 0 | −10 | μA |
| Base-emitter forward voltage | $V_{BE}$ | — | $V_{CE}$ = −2 V, $I_C$ = −2.0 A | — | −0.84 | −1.5 | V |



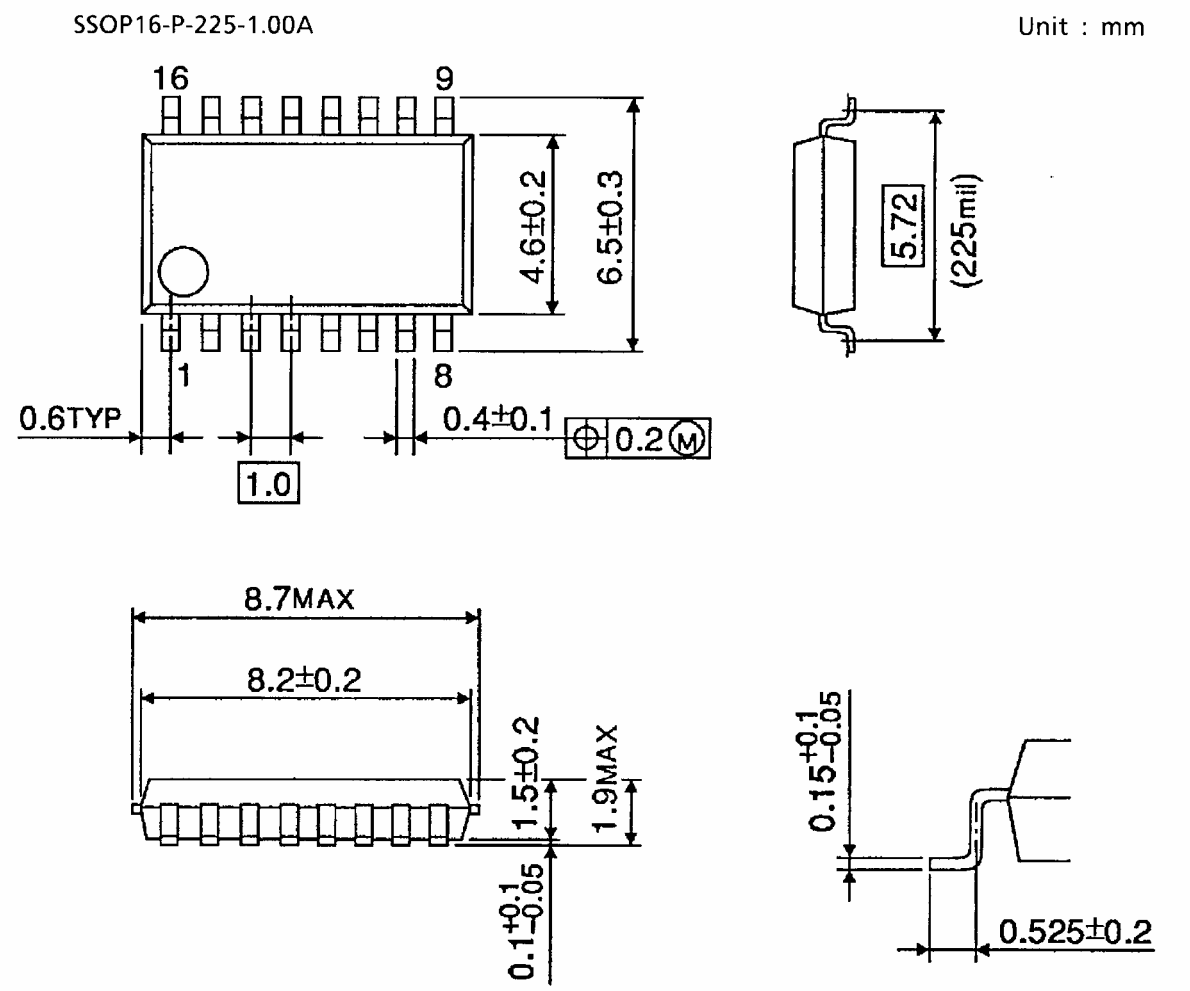

## Precautions for Using

This IC does not integrate protection circuits such as overcurrent and overvoltage protectors. Thus, if excess current or voltage is applied to the IC, the IC may be damaged. Please design the IC so that excess current or voltage will not be applied to the IC.

Utmost care is necessary in the design of the output line, $V_{CC}$ and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

**Package Dimensions**

SSOP16-P-225-1.00A Unit : mm




Weight: 0.14 g (typ.)

About solderability, following conditions were confirmed

- Solderability

  (1) Use of Sn-63Pb solder Bath
  - solder bath temperature = 230°C
  - dipping time = 5 seconds
  - the number of times = once
  - use of R-type flux

  (2) Use of Sn-3.0Ag-0.5Cu solder Bath
  - solder bath temperature = 245°C
  - dipping time = 5 seconds
  - the number of times = once
  - use of R-type flux

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