

TD62M3704F

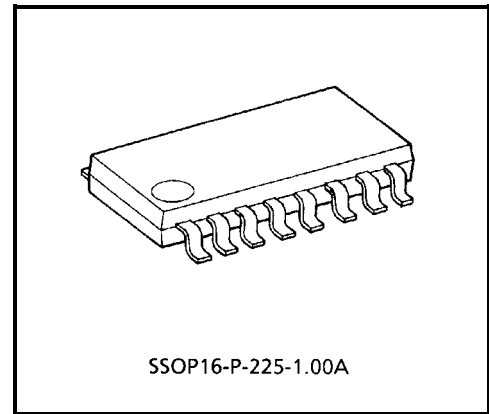
LOW SATURATION VOLTAGE DRIVER FOR MOTOR

TD62M3704F is Multi Chip IC incorporates 5 low saturation discrete transistors which equipped fly-wheeling diodes and bias resistor.

This IC is suitable for a battery use motor drive applications.

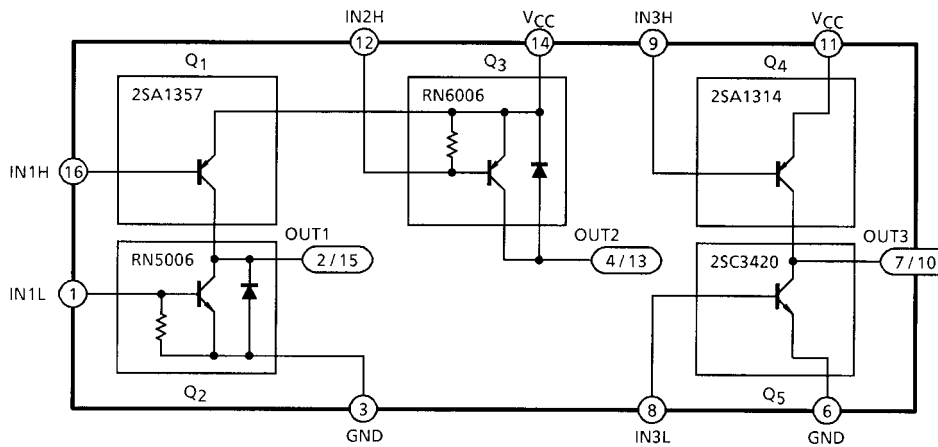
FEATURES

- ch1 (Upper): 2SA1357
ch1 (Lower): RN5006-Fly-wheeling Diode and Bias Resistor equipped
- ch2 (Upper): RN6006-Fly-wheeling Diode and Bias Resistor equipped
- ch3 (Upper): 2SA1314
ch3 (Lower): 2SC3420
- Suitable for High Efficiency Motor drive circuit
- External Input Resistor
- SSOP16 (1 mm pitch) small package sealed

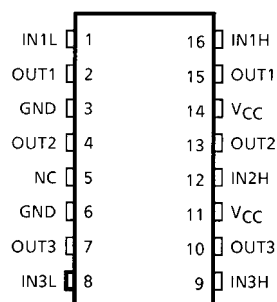


Weight: 0.14 g (Typ.)

BLOCK DIAGRAM



PIN CONNECTION (TOP VIEW)



MAXIMUM RATINGS (Ta = 25°C)

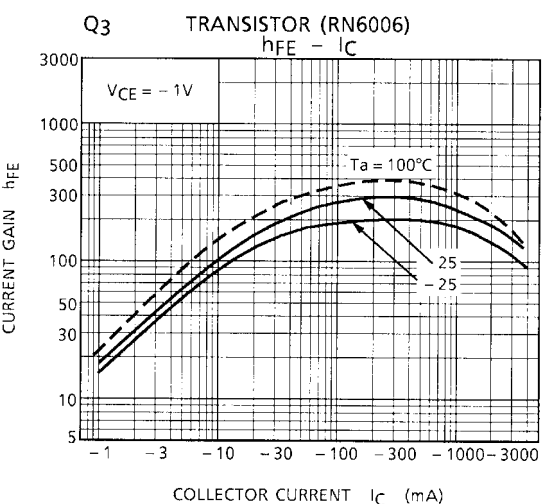
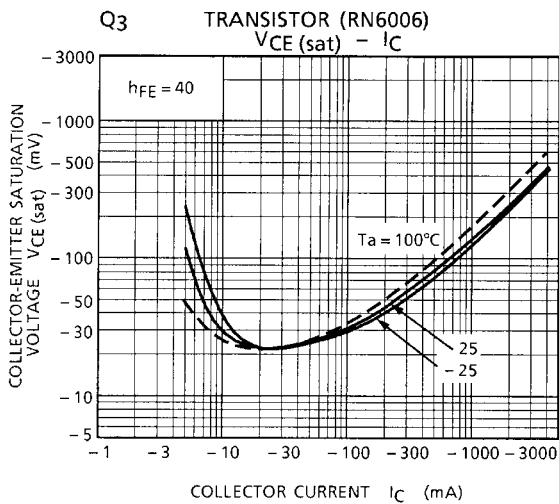
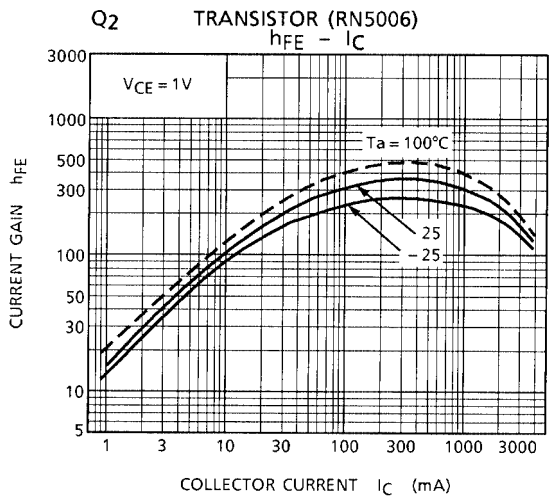
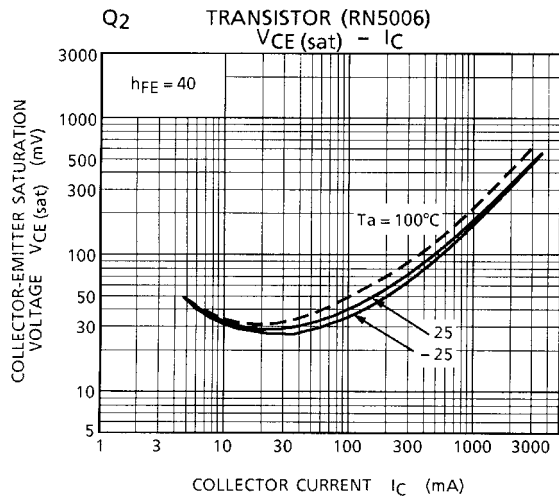
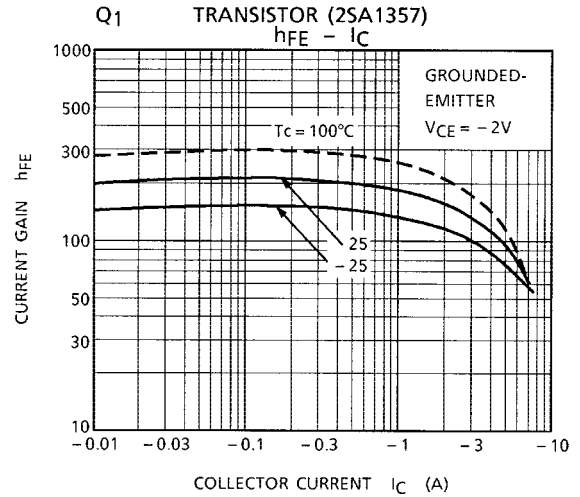
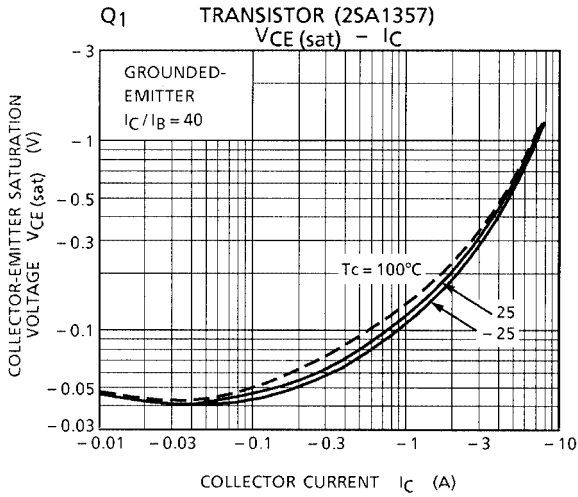
| CHARACTERISTIC | SYMBOL | RATING | UNIT | |
|-----------------------|-----------------------------------|---------------------------------|------|---|
| Supply Voltage | V _{CC} | 10 | V | |
| Breakdown Voltage | V _{CB0} | 10 | V | |
| | V _{CEO} (Note 2) | 10 | | |
| | V _{EBO} | Q ₁ , Q ₅ | | 8 |
| | | Q ₂ , Q ₃ | | 6 |
| Q ₄ | | 7 | | |
| Output Current | I _O (AVE) | Q ₁ , Q ₅ | 5 | A |
| | | Q ₂ ~Q ₄ | 2 | |
| | I _O (PEAK) (Note 1) | Q ₁ , Q ₅ | 8 | A |
| | | Q ₂ ~Q ₄ | 4 | |
| Base Current | I _B | Q ₁ , Q ₅ | 1 | A |
| | | Q ₂ ~Q ₄ | 0.4 | |
| Power Dissipation | P _D | 490 | mW | |
| Junction Temperature | T _j | 150 | °C | |
| Operating Temperature | T _{opr} | -40~85 | °C | |
| Storage Temperature | T _{stg} | -55~150 | °C | |

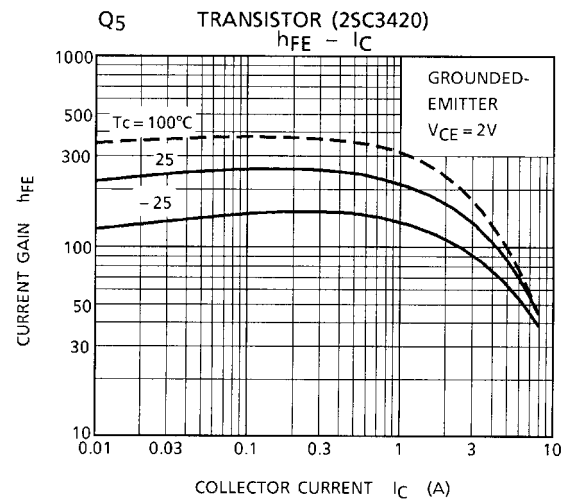
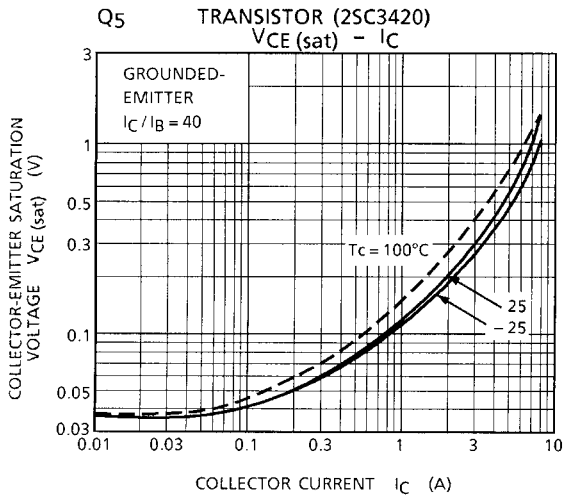
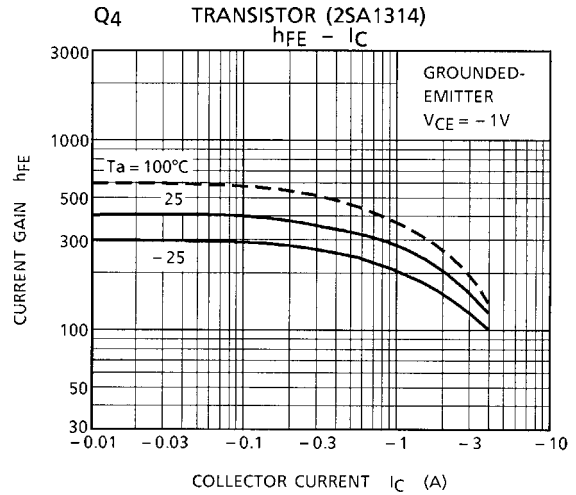
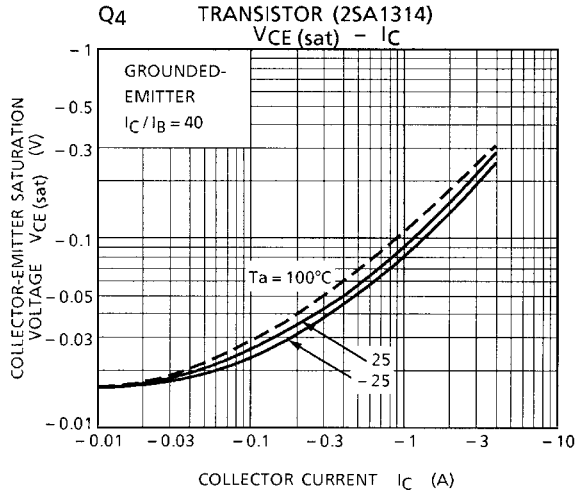
Note 1: T = 10 ms MAX. and maximum duty is less than 30%.

Note 2: Q₅ : 2SC3420 = 15 V

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN | TYP. | MAX | UNIT | |
|------------------------------------|--|-----------------------|-----------------|---|--|------|------|------|-----|
| Current Gain | Q ₁ | h _{FE} (1) | — | V _{CE} = 2 V, I _C = 0.5 A | 100 | — | 600 | — | |
| | | h _{FE} (2) | — | V _{CE} = 2 V, I _C = 4.0 A | 70 | — | — | | |
| | Q ₅ | h _{FE} (1) | — | V _{CE} = 2 V, I _C = 0.5 A | 140 | — | 600 | | |
| | | h _{FE} (2) | — | V _{CE} = 2 V, I _C = 4.0 A | 70 | — | — | | |
| | Q ₄ | h _{FE} (1) | — | V _{CE} = 1 V, I _C = 0.5 A | 200 | — | 650 | | |
| | | h _{FE} (2) | — | V _{CE} = 1 V, I _C = 2.0 A | 60 | 130 | — | | |
| | Q ₂ , Q ₃ | h _{FE} (1) | — | V _{CE} = 1 V, I _C = 0.5 A | 160 | — | 600 | | |
| | | h _{FE} (2) | — | V _{CE} = 1 V, I _C = 2.0 A | 60 | 130 | — | | |
| Saturation Voltage | Q ₁ | V _{CE} (sat) | — | I _C = 1 A, I _B = 25 mA | — | 0.15 | 0.25 | V | |
| | | | | I _C = 3 A, I _B = 75 mA | — | 0.38 | 0.70 | | |
| | Q ₅ | V _{CE} (sat) | — | I _C = 1 A, I _B = 25 mA | — | 0.16 | 0.25 | | |
| | | | | I _C = 3 A, I _B = 75 mA | — | 0.40 | 0.70 | | |
| | Q ₃ , Q ₄ | V _{CE} (sat) | — | I _C = 1 A, I _B = 25 mA | — | 0.14 | 0.25 | | |
| | | | | I _C = 2 A, I _B = 50 mA | — | 0.25 | 0.45 | | |
| | Q ₂ | V _{CE} (sat) | — | I _C = 1 A, I _B = 25 mA | — | 0.17 | 0.32 | | |
| | | | | I _C = 2 A, I _B = 50 mA | — | 0.31 | 0.45 | | |
| Fly-wheeling Diode Forward Voltage | Q ₂ , Q ₃ | V _F | — | I _F = 300 mA | — | 0.89 | 1.2 | V | |
| Transition Frequency | | | f _T | — | V _{CE} = 2 V, I _C = 0.5A | — | 100 | — | MHz |
| Leakage Current | | | I _{OL} | — | V _{CC} = 10 V | — | 0 | 10 | μA |
| Base-Emitter Forward Voltage | Q ₁ , Q ₅ | V _{BE} | — | V _{CE} = 2 V, I _C = 3.0 A | — | 0.84 | 1.5 | V | |
| | Q ₂ , Q ₃ , Q ₄ | | | V _{CE} = 1 V, I _C = 2.0 A | — | 0.84 | 1.5 | | |
| Base-Emitter Resistor | | | R _{BE} | — | — | 7 | 10 | 13 | kΩ |





PRECAUTIONS for USING

This IC does not integrate protection circuits such as overcurrent and overvoltage protectors.

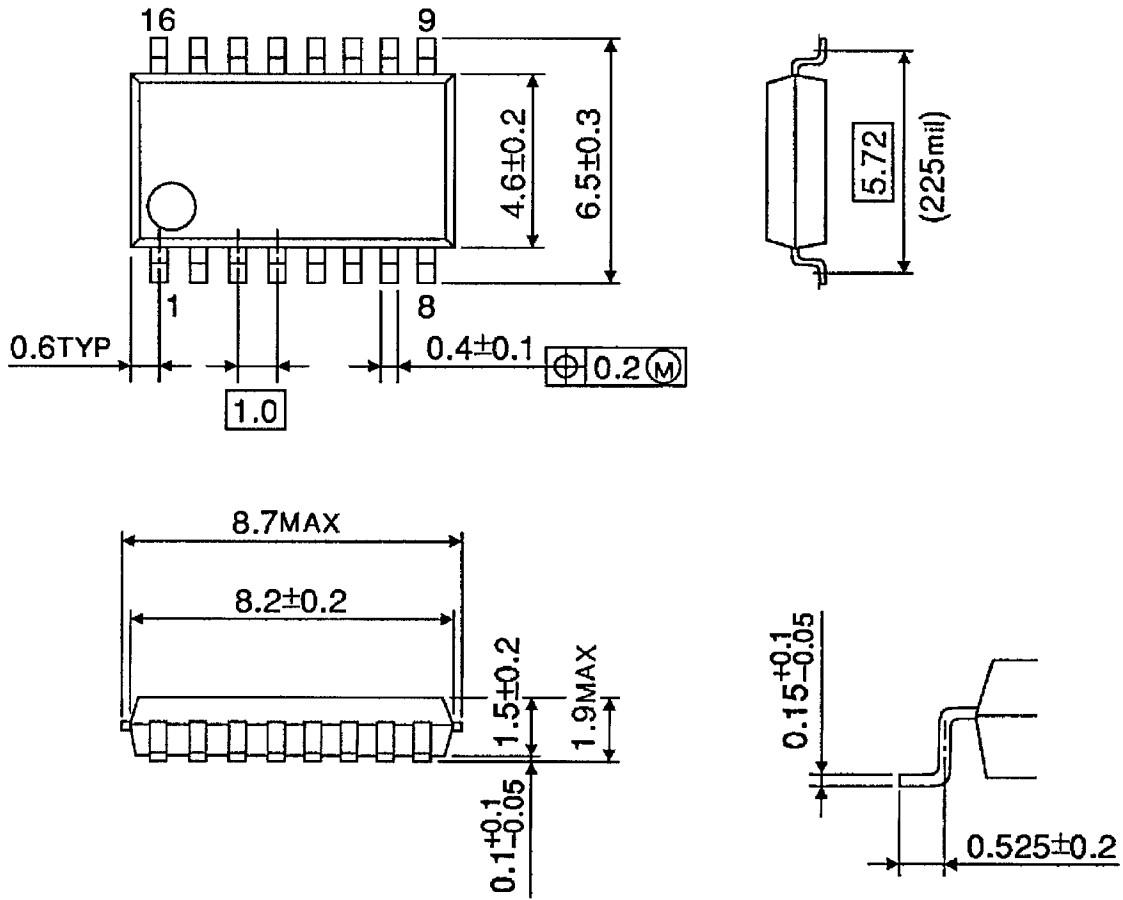
Thus, if excess current or voltage is applied to the IC, the IC may be damaged. Please design the IC so that excess current or voltage will not be applied to the IC.

Utmost care is necessary in the design of the output line, VCC 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.)

RESTRICTIONS ON PRODUCT USE

000707EBA

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