

TENTATIVE

TOSHIBA MULTI CHIP DISCRETE DEVICE

**HN7G01FU**

POWER MANAGEMENT SWITCH APPLICATION

DRIVER CIRCUIT APPLICATION

INTERFACE CIRCUIT APPLICATION

Unit in mm

Q1 (Transistor) : 2SA1955 Equivalent

Q2 (MOS-FET) : 2SK1830 Equivalent

Q1 (Transistor) MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC            | SYMBOL    | RATING | UNIT |
|---------------------------|-----------|--------|------|
| Collector-Base Voltage    | $V_{CBO}$ | -15    | V    |
| Collector-Emitter Voltage | $V_{CEO}$ | -12    | V    |
| Emitter-Base Voltage      | $V_{EBO}$ | -5     | V    |
| Collector Current         | $I_C$     | -400   | mA   |
| Base Current              | $I_B$     | -50    | mA   |

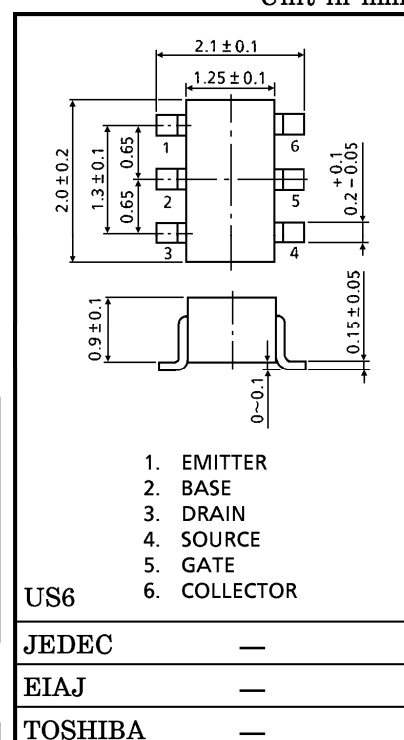
Q2 (MOS-FET) MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC       | SYMBOL    | RATING | UNIT |
|----------------------|-----------|--------|------|
| Drain-Source Voltage | $V_{DS}$  | 20     | V    |
| Gate-Source Voltage  | $V_{GSS}$ | 10     | V    |
| Drain Current        | $I_D$     | 50     | mA   |

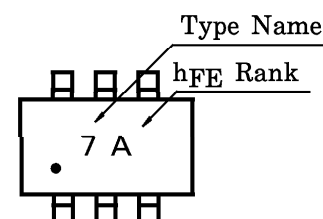
Q1, Q2 COMMON RATINGS (Ta = 25°C)

| CHARACTERISTIC            | SYMBOL    | RATING  | UNIT |
|---------------------------|-----------|---------|------|
| Power Dissipation         | $P_C$ (*) | 200     | mW   |
| Junction Temperature      | $T_j$     | 125     | °C   |
| Storage Temperature Range | $T_{stg}$ | -55~125 | °C   |

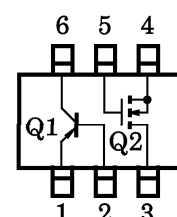
(\*) Total Rating



MARKING



PIN ASSIGNMENT (TOP VIEW)



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Q1 (Transistor) ELECTRICAL CHARACTERISTICS (Ta = 25°C)

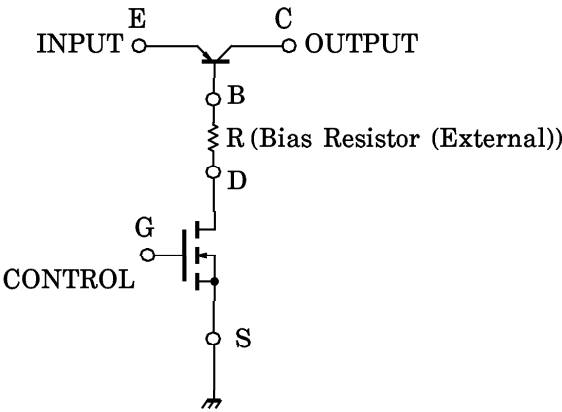
| CHARACTERISTIC                       | SYMBOL                    | TEST CONDITION                                    | MIN. | TYP.  | MAX. | UNIT |
|--------------------------------------|---------------------------|---------------------------------------------------|------|-------|------|------|
| Collector Cut-off Current            | ICBO                      | V <sub>CB</sub> = -15 V, I <sub>E</sub> = 0       | —    | —     | -0.1 | μA   |
| Emitter Cut-off Current              | IEBO                      | V <sub>EB</sub> = -5 V, I <sub>C</sub> = 0        | —    | —     | -0.1 | mA   |
| DC Current Gain                      | h <sub>FE</sub> (*)       | V <sub>CE</sub> = -2 V, I <sub>C</sub> = -10 mA   | 300  | —     | 1000 |      |
| Collector-Emitter Saturation Voltage | V <sub>CE (sat)</sub> (1) | I <sub>C</sub> = -10 mA, I <sub>B</sub> = -0.5 mA | —    | -15   | -30  | mV   |
|                                      | V <sub>CE (sat)</sub> (2) | I <sub>C</sub> = -200 mA, I <sub>B</sub> = -10 mA | —    | -110  | -250 |      |
| Base-Emitter Saturation Voltage      | V <sub>BE (sat)</sub>     | I <sub>C</sub> = -200 mA, I <sub>B</sub> = -10 mA | —    | -0.87 | -1.2 | V    |

(\*) h<sub>FE</sub> Classification     A : 300~600, B : 500~1000

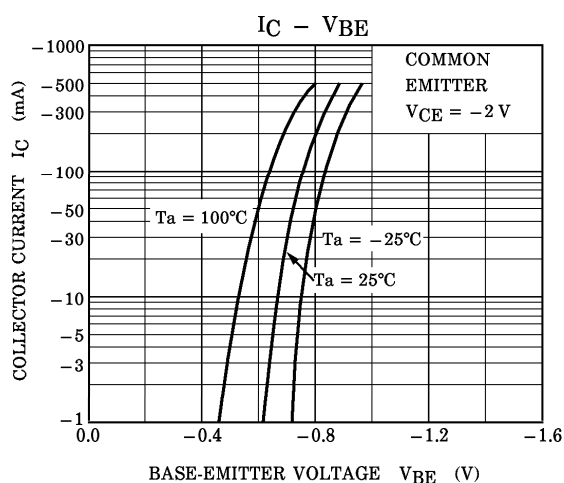
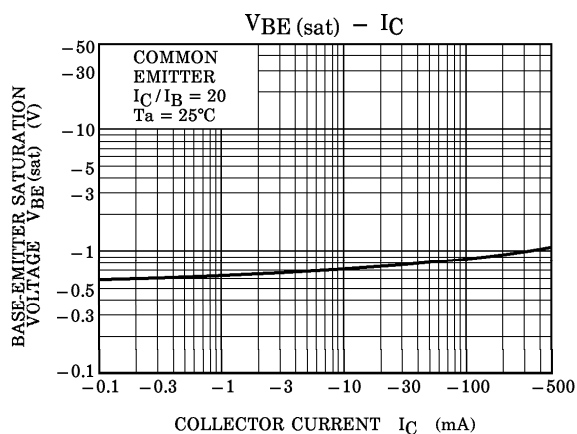
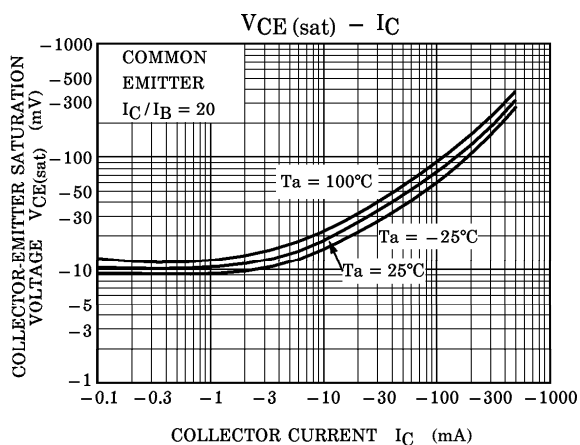
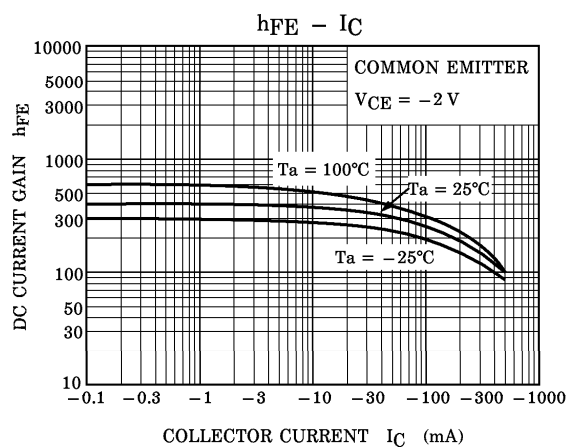
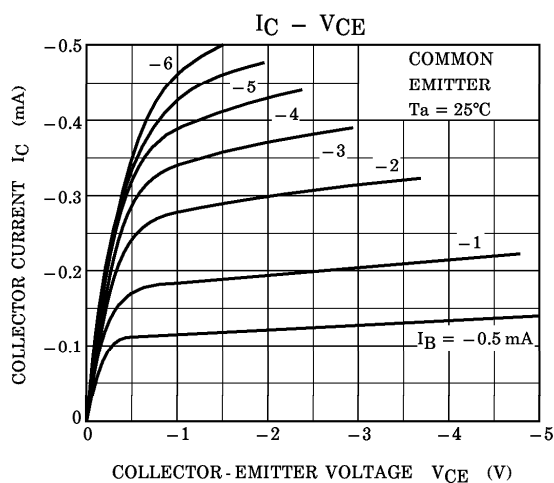
Q2 (MOS-FET) ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC                 | SYMBOL                | TEST CONDITION                                  | MIN. | TYP. | MAX. | UNIT |
|--------------------------------|-----------------------|-------------------------------------------------|------|------|------|------|
| Gate Leakage Current           | IGSS                  | V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0     | —    | —    | 1    | μA   |
| Drain-Source Breakdown Voltage | V <sub>(BR)</sub> DSS | I <sub>D</sub> = 100 μA, V <sub>GS</sub> = 0    | 20   | —    | —    | V    |
| Drain Current                  | IDSS                  | V <sub>DS</sub> = 20 V, V <sub>GS</sub> = 0     | —    | —    | 1    | μA   |
| Gate Threshold Voltage         | V <sub>th</sub>       | V <sub>DS</sub> = 3 V, I <sub>D</sub> = 0.1 mA  | 0.5  | —    | 1.5  | V    |
| Forward Transfer Admittance    | Y <sub>fs</sub>       | V <sub>DS</sub> = 3 V, I <sub>D</sub> = 10 mA   | 20   | —    | —    | mS   |
| Drain-Source ON Resistance     | R <sub>DS (ON)</sub>  | I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 2.5 V | —    | 20   | 40   | Ω    |

APPLICATION EXAMPLE (Power Management Switch)



○ Transistor



○ MOS-FET

