

9097250 TOSHIBA (DISCRETE/OPTO)

90D 16292 DT-33-35



SEMICONDUCTOR

TECHNICAL DATA

TOSHIBA GTR MODULE

MG400H1FK1

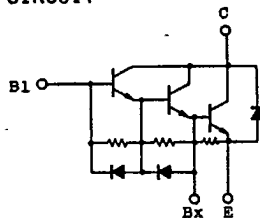
SILICON NPN TRIPLE DIFFUSED TYPE

HIGH POWER SWITCHING APPLICATIONS.  
MOTOR CONTROL APPLICATIONS.

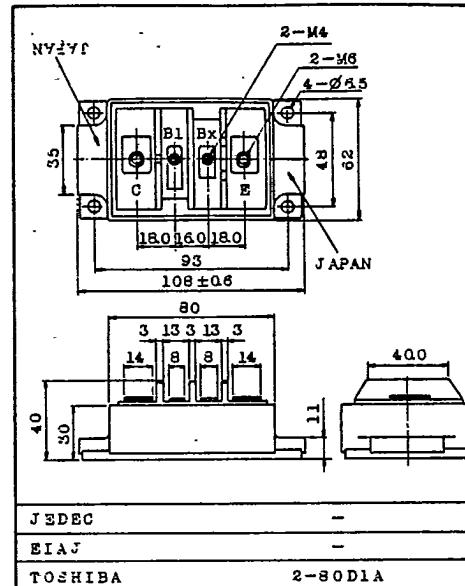
## FEATURES:

- The Collector is Isolated from Case.
- With Built-in Free Wheeling Diode
- High DC Current Gain :  $h_{FE}=200(\text{Min.})$  ( $I_C=400\text{A}$ )
- Low Saturation Voltage  
:  $V_{CE(\text{sat})}=2.5\text{V}(\text{Max.})$  ( $I_C=400\text{A}$ )

## EQUIVALENT CIRCUIT



Unit in mm



JEDEC

EIAJ

TOSHIBA

2-80D1A

Weight : 500g

MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ )

| CHARACTERISTIC                                         |                  | SYMBOL                | RATING             | UNIT             |
|--------------------------------------------------------|------------------|-----------------------|--------------------|------------------|
| Collector-Base Voltage                                 |                  | $V_{CBO}$             | 600                | V                |
| Collector-Emitter Sustaining Voltage                   |                  | $V_{CEX(\text{SUS})}$ | 600                | V                |
| Collector-Emitter Sustaining Voltage                   |                  | $V_{CEO(\text{SUS})}$ | 550                | V                |
| Emitter-Base Voltage                                   |                  | $V_{EBO}$             | 6                  | V                |
| Collector Current                                      | DC               | $I_C$                 | 400                | A                |
|                                                        | 1ms              | $I_{CP}$              | 800                | A                |
| Forward Current                                        | DC               | $I_F$                 | 400                | A                |
|                                                        | 1ms              | $I_{FM}$              | 800                | A                |
| Base Current                                           |                  | $I_B$                 | 12                 | A                |
| Collector Power Dissipation ( $T_c=25^\circ\text{C}$ ) |                  | $P_C$                 | 1600               | W                |
| Junction Temperature                                   |                  | $T_j$                 | 150                | $^\circ\text{C}$ |
| Storage Temperature Range                              |                  | $T_{stg}$             | -40 ~ 125          | $^\circ\text{C}$ |
| Isolation Voltage                                      |                  | $V_{\text{isol}}$     | 2500 (AC 1 Minute) | V                |
| Screw Torque                                           | Terminal (M4/M6) |                       | 20/30              | kg·cm            |
|                                                        | Mounting         |                       | 30                 |                  |

1984-4-5

TOSHIBA CORPORATION

EGA-MG400H1FK1-1

JT1A2

9097250 TOSHIBA (DISCRETE/OPTO)

90D 16293

DT-33-35

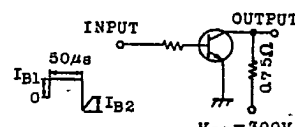


## SEMICONDUCTOR

## TECHNICAL DATA

MG400H1FK1

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

| CHARACTERISTIC                       |              | SYMBOL         | TEST CONDITION                                                                     | MIN. | TYP. | MAX.  | UNIT |
|--------------------------------------|--------------|----------------|------------------------------------------------------------------------------------|------|------|-------|------|
| Collector Cut-off Current            |              | $I_{CBO}$      | $V_{CB}=600V, I_E=0$                                                               | -    | -    | 4     | mA   |
| Emitter Cut-off Current              |              | $I_{EBO}$      | $V_{EB}=6V, I_C=0$                                                                 | -    | -    | 800   | mA   |
| Collector-Emitter Sustaining Voltage |              | $V_{CEO(SUS)}$ | $I_C=0.5A, L=40mH$                                                                 | 550  | -    | -     | V    |
| DC Current Gain                      |              | $h_{FE}$       | $V_{CE}=5V, I_C=400A$                                                              | 200  | -    | -     |      |
| Collector-Emitter Saturation Voltage |              | $V_{CE(sat)}$  | $I_C=400A, I_B=4A$                                                                 | -    | -    | 2.5   | V    |
| Base-Emitter Saturation Voltage      |              | $V_{BE(sat)}$  |                                                                                    | -    | -    | 3.5   | V    |
| Switching Time                       | Turn-on Time | $t_{on}$       |  | -    | -    | 2.0   | µs   |
|                                      | Storage Time | $t_{stg}$      |                                                                                    | -    | -    | 12    |      |
|                                      | Fall Time    | $t_f$          |                                                                                    | -    | -    | 5     |      |
| Forward Voltage                      |              | $V_F$          | $I_F=400A, I_B=0$                                                                  | -    | -    | 1.8   | V    |
| Reverse Recovery Time                |              | $t_{rr}$       | $I_F=400A, V_{BE}=-3V$<br>$di/dt=200A/\mu s$                                       | -    | -    | 1.0   | µs   |
| Thermal Resistance                   |              | $R_{th(j-c)}$  | Transistor                                                                         | -    | -    | 0.078 | °C/W |
|                                      |              |                | Diode                                                                              | -    | -    | 0.325 |      |

TOSHIBA CORPORATION

EGA-MG400H1FK1-2

GT1A2A

9097250 TOSHIBA (DISCRETE/OPTO)

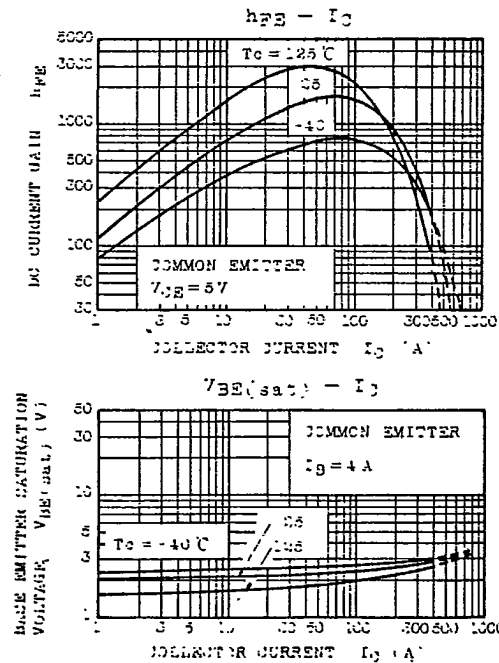
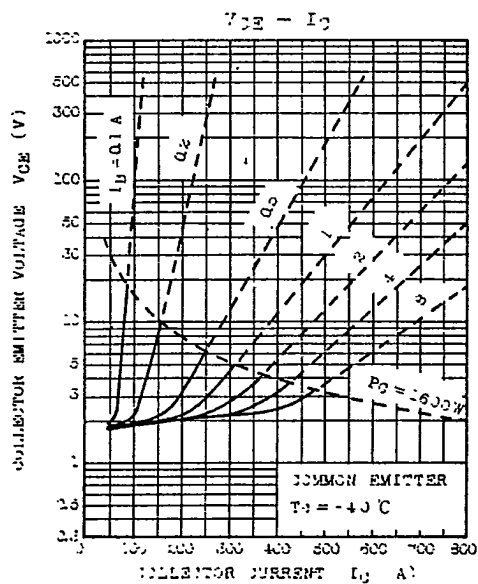
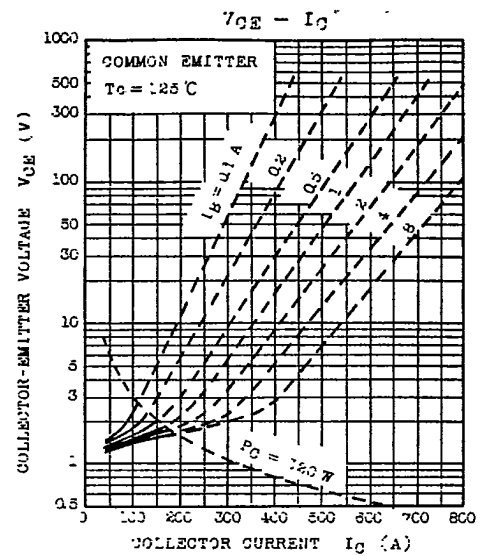
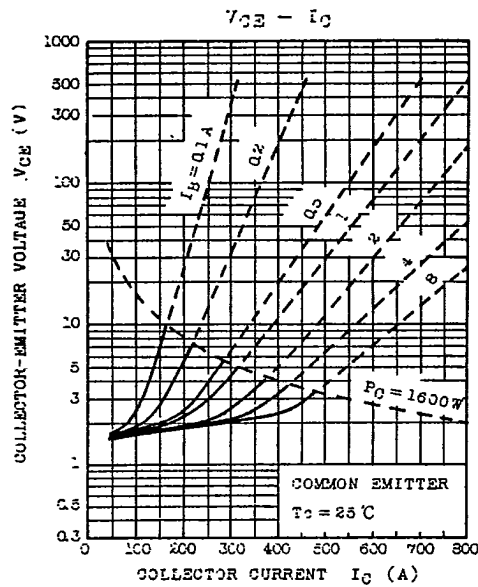
90D 16294 DT-33-35



# SEMICONDUCTOR

## TECHNICAL DATA

MG400H1FK1



1984-4-5

**TOSHIBA CORPORATION**

EGA-MC400H LFK1-3

**GT1A2**

- 300 -

9097250 TOSHIBA (DISCRETE/OPTO)

90D 16295 DT-33-35

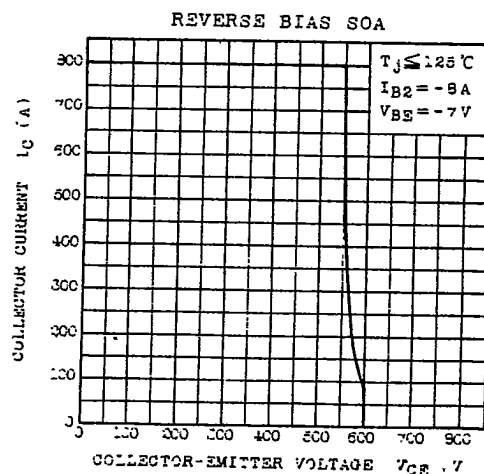
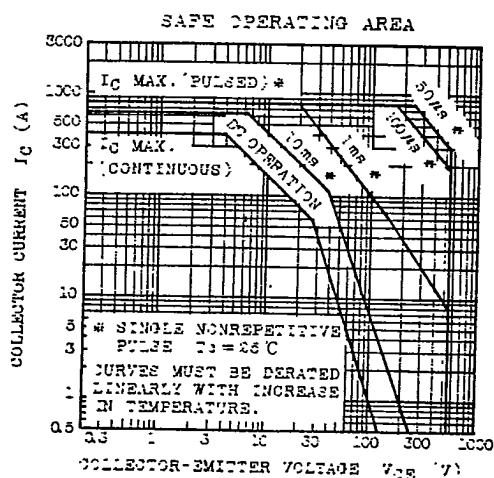
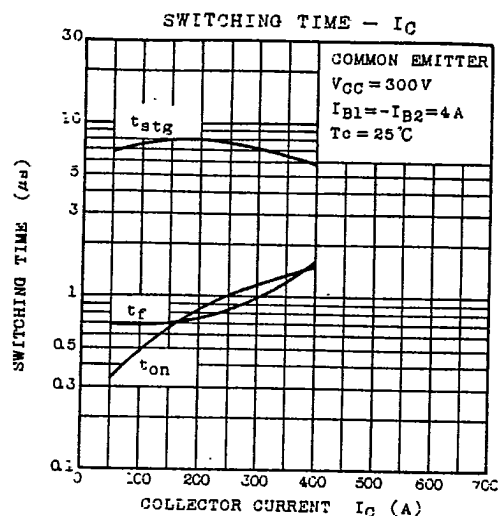
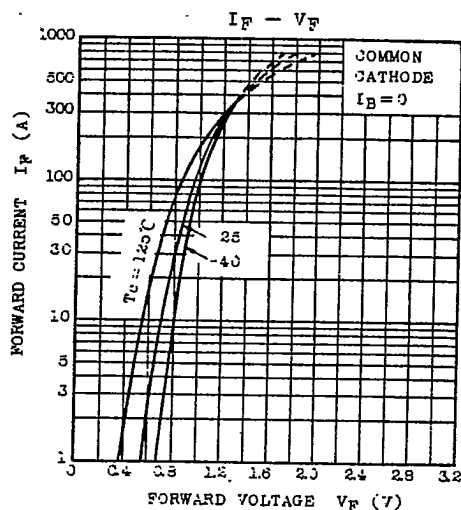


SEMICONDUCTOR

東芝

TECHNICAL DATA

MG400H1FK1



1984-4-5

TOSHIBA CORPORATION

EGA-MG400H1FK1-1

3T1A2

- 301 -