

9097250 TOSHIBA (DISCRETE/OPTO)

90D 16006

D T-33-35

# TOSHIBA SEMICONDUCTOR

## TECHNICAL DATA

TOSHIBA GTR MODULE

MG30G2YL1

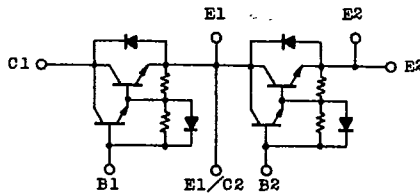
SILICON NPN TRIPLE DIFFUSED TYPE

HIGH POWER SWITCHING APPLICATIONS.  
MOTOR CONTROL APPLICATIONS.

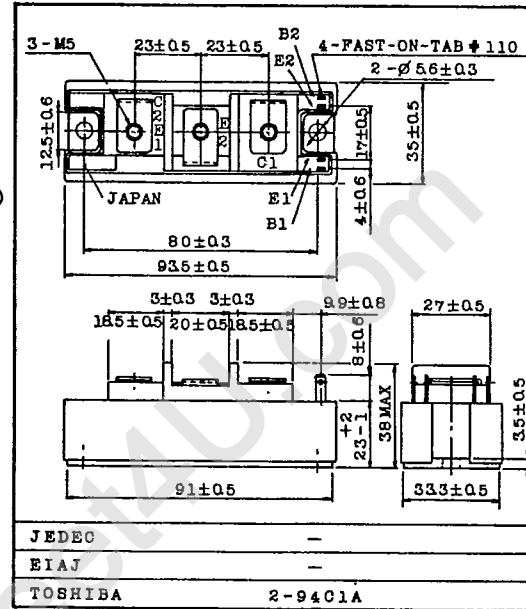
## FEATURES:

- The Collector is Isolated from Case.
- 2 Power Transistors and 2 Free Wheeling Diodes are Built-in to 1 Package.
- High DC Current Gain:  $h_{FE}=100(\text{Min.})(I_C=30A)$
- Low Saturation Voltage  
:  $V_{CE}(\text{sat})=2V(\text{Max.})(I_C=30A)$
- High Speed :  $t_f=3\mu\text{s}(\text{Max.})(I_C=30A)$

## EQUIVALENT CIRCUIT



Unit in mm



Weight : 222g

## MAXIMUM RATINGS (Ta=25°C)

| CHARACTERISTIC                        |     | SYMBOL    | RATING             | UNIT  |
|---------------------------------------|-----|-----------|--------------------|-------|
| Collector-Base Voltage                |     | VCBO      | 600                | V     |
| Collector-Emitter Sustaining Voltage  |     | VCEX(SUS) | 600                | V     |
|                                       |     | VCEO(SUS) | 450                |       |
| Emitter-Base Voltage                  |     | VEBO      | 6                  | V     |
| Collector Current                     | DC  | IC        | 30                 | A     |
|                                       | 1ms | ICP       | 60                 |       |
| Forward Current                       | DC  | IF        | 30                 | A     |
|                                       | 1ms | IFM       | 60                 |       |
| Base Current                          |     | IB        | 3                  | A     |
| Collector Power Dissipation (Tc=25°C) |     | PC        | 200                | W     |
| Junction Temperature                  |     | Tj        | 150                | °C    |
| Storage Temperature Range             |     | Tstg      | -40~125            | °C    |
| Isolation Voltage                     |     | Visol     | 2500 (AC 1 Minute) | V     |
| Screw Torque (Terminal/Mounting)      |     | -         | 30/30              | kg·cm |

EGA-MG30G2YL1-1

1986-9-1

TOSHIBA CORPORATION

9097250 TOSHIBA (DISCRETE/OPTO)

90D 16007 DT-33-35

**TOSHIBA** SEMICONDUCTOR  
TECHNICAL DATA

MG30G2YL1

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

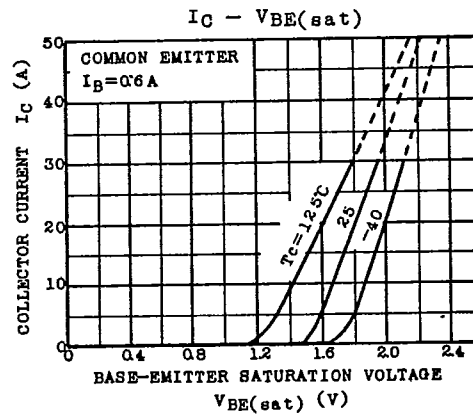
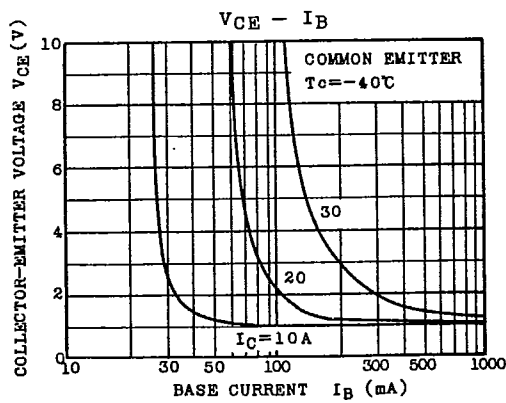
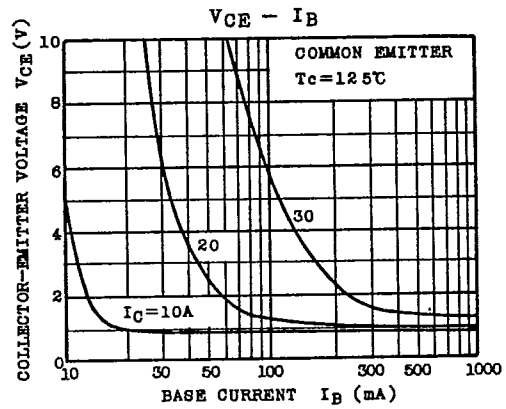
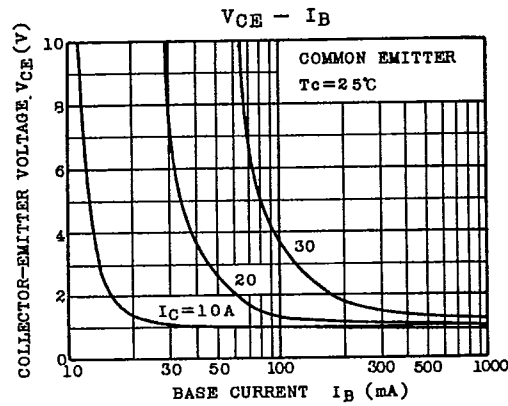
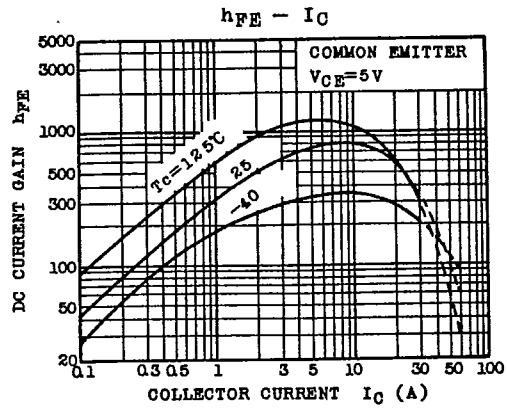
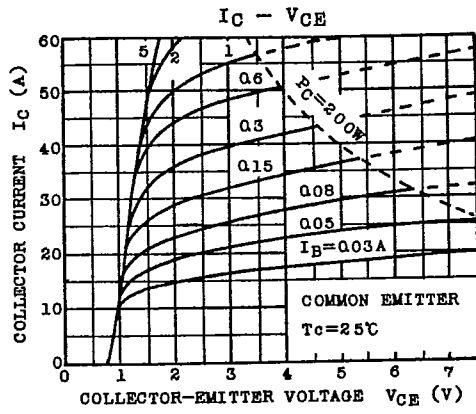
| CHARACTERISTIC                       |              | SYMBOL                | TEST CONDITION   | MIN.  | TYP. | MAX.  | UNIT |
|--------------------------------------|--------------|-----------------------|--|---|------|-------|------|
| Collector Cut-off Current            |              | ICBO                  | V <sub>CB</sub> =600V, I <sub>E</sub> =0   | -   | -    | 1.0   | mA   |
| Emitter Cut-off Current              |              | I <sub>EBO</sub>      | V <sub>EB</sub> =6V, I <sub>C</sub> =0   | -   | -    | 200   | mA   |
| Collector-Emitter Sustaining Voltage |              | V <sub>CEO(SUS)</sub> | I <sub>C</sub> =0.5A, L=40mH   | 450   | -    | -     | V    |
| DC Current Gain                      |              | h <sub>FE</sub>       | V <sub>CE</sub> =5V, I <sub>C</sub> =30A   | 100   | -    | -     |      |
| Collector-Emitter Saturation Voltage |              | V <sub>CE(sat)</sub>  | I <sub>C</sub> =30A, I <sub>B</sub> =0.6A  | -   | -    | 2.0   | V    |
| Base-Emitter Saturation Voltage      |              | V <sub>BE(sat)</sub>  |  | -   | -    | 2.5   | V    |
| Switching Time                       | Turn-on Time | t <sub>on</sub>       | <p>INPUT OUTPUT<br/>50µs<br/>I<sub>B1</sub> I<sub>B2</sub><br/>100<br/>V<sub>CC</sub>=300V</p> | -   | -    | 1.0   | µs   |
|                                      | Storage Time | t <sub>stg</sub>      |  | -   | -    | 12    |      |
|                                      | Fall Time    | t <sub>f</sub>        |  | I <sub>F</sub> =30A, I <sub>B</sub> =0<br>DUTY CYCLE=0.5% | -    | -     |      |
| Forward Voltage                      |              | V <sub>F</sub>        | I <sub>F</sub> =30A, I <sub>B</sub> =0   | -   | -    | 1.6   | V    |
| Reverse Recovery Time                |              | t <sub>rr</sub>       | I <sub>F</sub> =30A, V <sub>BE</sub> =-2V<br>di/dt=60A/µs                                      | -   | -    | 1.0   | µs   |
| Thermal Resistance                   |              | R <sub>th(j-c)</sub>  | Transistor   | -   | -    | 0.625 | °C/W |
|                                      |              |                       | Diode  | -   | -    | 1.8   |      |

MG30G2YL1

TOSHIBA CORPORATION

**TOSHIBA** SEMICONDUCTOR  
TECHNICAL DATA

MG30G2YL1



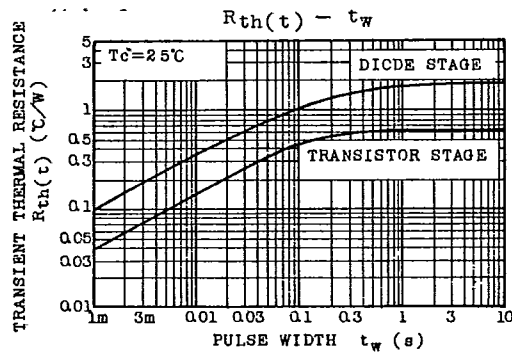
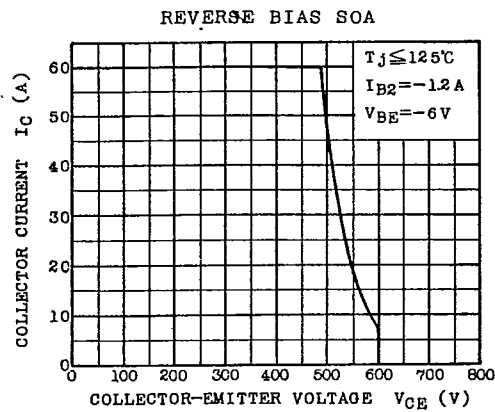
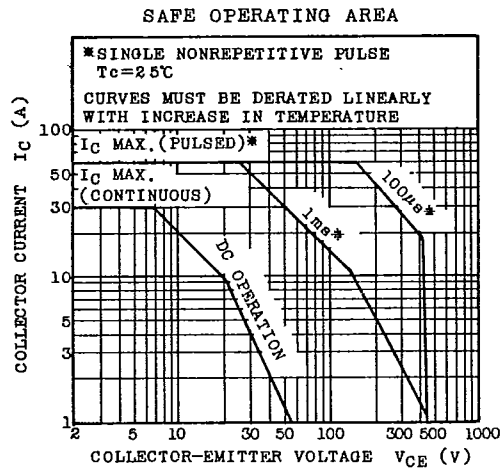
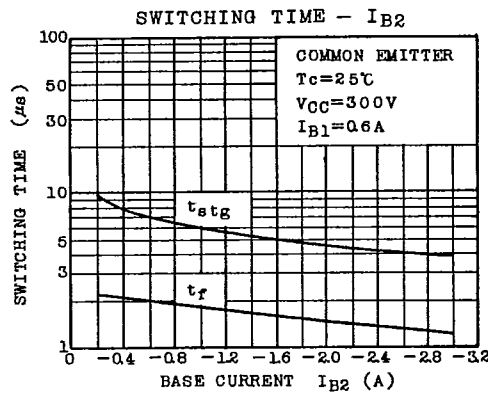
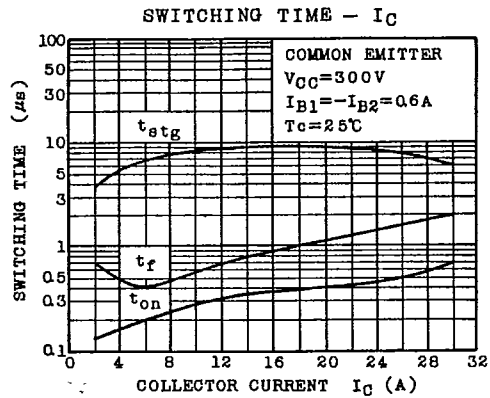
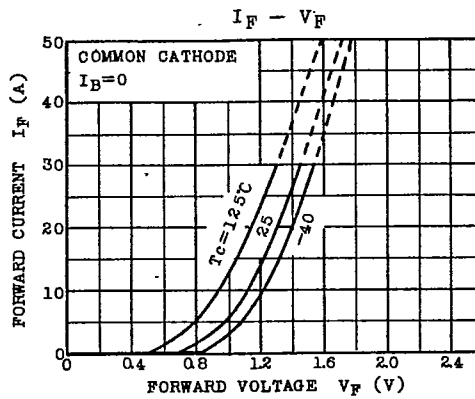
MG30G2YL1  
TOSHIBA CORPORATION

9097250 TOSHIBA (DISCRETE/OPTO)

90D 16009 DT-33-35

**TOSHIBA** SEMICONDUCTOR  
TECHNICAL DATA

MG30G2YL1



MG30G2YL1  
TOSHIBA CORPORATION



9097250 TOSHIBA (DISCRETE/OPTO)

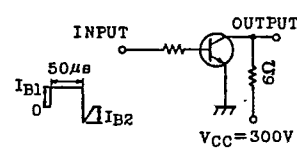
90D 16011 DT-33-35

# TOSHIBA SEMICONDUCTOR

## TECHNICAL DATA

MG50G2YL1A

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

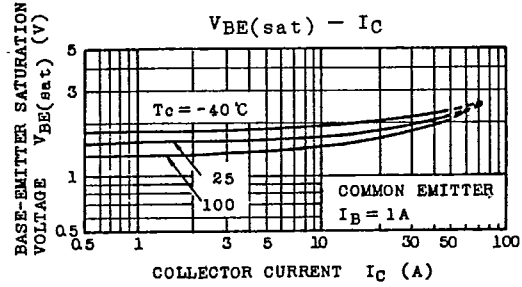
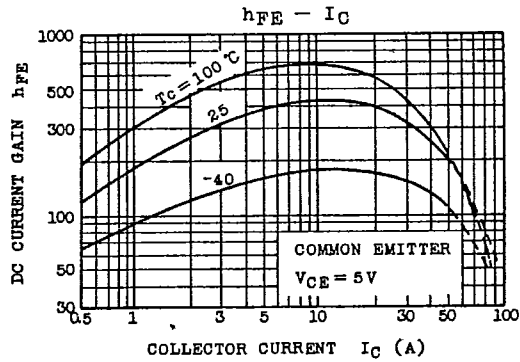
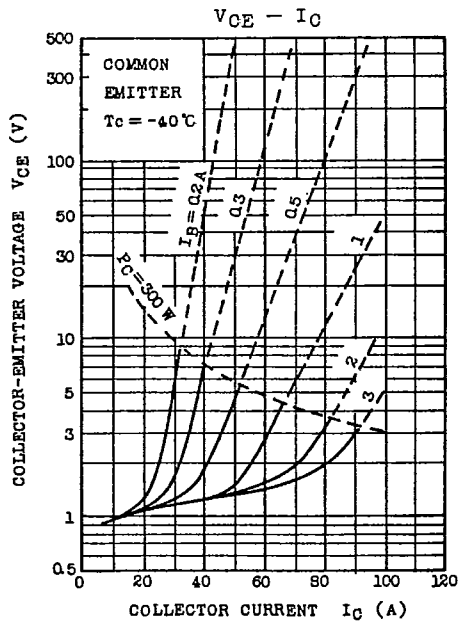
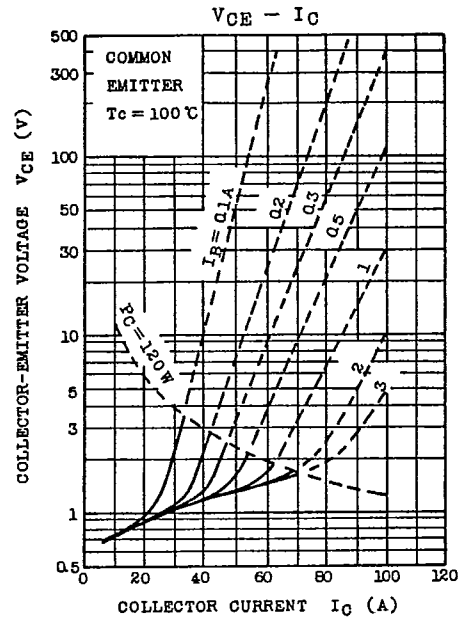
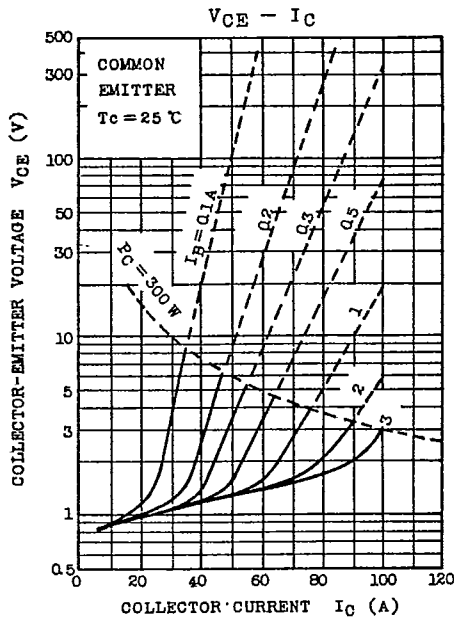
| CHARACTERISTIC                       |              | SYMBOL                | TEST CONDITION   | MIN.   | TYP. | MAX. | UNIT |
|--------------------------------------|--------------|-----------------------|--|--|------|------|------|
| Collector Cut-off Current            |              | ICBO                  | V <sub>CB</sub> =600V, I <sub>E</sub> =0   | -  | -    | 1.0  | mA   |
| Emitter Cut-off Current              |              | IEBO                  | V <sub>EB</sub> =6V, I <sub>C</sub> =0   | -  | -    | 200  | mA   |
| Collector-Emitter Sustaining Voltage |              | V <sub>CEO(SUS)</sub> | I <sub>C</sub> =0.5A, L=40mH   | 450  | -    | -    | V    |
| DC Current Gain                      |              | h <sub>FE</sub>       | V <sub>CE</sub> =5V, I <sub>C</sub> =50A   | 100  | -    | -    |      |
| Collector-Emitter Saturation Voltage |              | V <sub>CE(sat)</sub>  | I <sub>C</sub> =50A, I <sub>B</sub> =1A  | -  | -    | 2.0  | V    |
| Base-Emitter Saturation Voltage      |              | V <sub>BE(sat)</sub>  |  | -  | -    | 2.5  | V    |
| Switching Time                       | Turn-on Time | t <sub>on</sub>       |  <p>INPUT</p> <p>OUTPUT</p> <p>50µs</p> <p>IB1</p> <p>IB2</p> <p>RL</p> <p>V<sub>CC</sub>=300V</p> | -  | -    | 1.0  | µs   |
|                                      | Storage Time | t <sub>stg</sub>      |  | -  | -    | 12   |      |
|                                      | Fall Time    | t <sub>f</sub>        |  | I <sub>B1</sub> =-I <sub>B2</sub> =1A<br>DUTY CYCLE=0.5% | -    | -    |      |
| Forward Voltage                      |              | V <sub>F</sub>        | I <sub>F</sub> =50A, I <sub>B</sub> =0   | -  | -    | 1.7  | V    |
| Reverse Recovery Time                |              | t <sub>rr</sub>       | I <sub>F</sub> =50A, V <sub>BE</sub> =-3V<br>di/dt=100A/µs   | -  | -    | 2.0  | µs   |
| Thermal Resistance                   |              | R <sub>th(j-c)</sub>  | Transistor   | -  | -    | 0.41 | °C/W |
|                                      |              |                       | Diode  | -  | -    | 1.3  |      |

MG50G2YL1

TOSHIBA CORPORATION

**TOSHIBA** SEMICONDUCTOR  
TECHNICAL DATA

MG50G2YL1A



**TOSHIBA** SEMICONDUCTOR  
TECHNICAL DATA

MG50G2YL1A

