TOSHIBA GTR MODULE SILICON N CHANNEL IGBT
MG15N6ES42
HIGH POWER SWITCHING APPLICATIONS.


Weight: 220g

## EQUIVALENT CIRCUIT



961001EAA2
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MAXIMUM RATINGS ( $\mathrm{Ta}=25^{\circ} \mathrm{C}$ )

| CHARACTERISTIC |  | SYMBOL | RATING | UNIT |
| :--- | :--- | :---: | :---: | :---: |
| Collector-Emitter Voltage | $\mathrm{V}_{\mathrm{CES}}$ | 1200 | V |  |
| Gate-Emitter Voltage | $\mathrm{V}_{\mathrm{GES}}$ | $\pm 20$ | V |  |
| Collector Current | DC | $\mathrm{I}_{\mathrm{C}}$ | 15 | A |
|  | 1 ms | $\mathrm{I}_{\mathrm{CP}}$ | 30 |  |
| Forward Current | DC | $\mathrm{I}_{\mathrm{F}}$ | 15 | A |
|  | 1 ms | $\mathrm{I}_{\mathrm{FM}}$ | 30 |  |
| Collector Power Dissipation | $\mathrm{P}_{\mathrm{C}}$ | 125 | W |  |
| Junction Temperature |  |  |  |  |
| Storage Temperature Range | $\mathrm{T}_{\mathrm{j}}$ | 150 | ${ }^{\circ} \mathrm{C}$ |  |
| Isolation Voltage | $\mathrm{T}_{\text {stg }}$ | $-40 \sim 125$ | ${ }^{\circ} \mathrm{C}$ |  |
| Screw Torque | $\mathrm{V}_{\text {Isol }}$ | 2500 (AC 1 minute) | V |  |

ELECTRICAL CHARACTERISTICS $\left(\mathrm{Ta}=25^{\circ} \mathrm{C}\right)$

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Gate Leakage Current | $\mathrm{I}_{\text {GES }}$ | $\mathrm{V}_{\mathrm{GE}}= \pm 20 \mathrm{~V}, \mathrm{~V}_{\mathrm{CE}}=0$ | - | - | $\pm 10$ | $\mu \mathrm{A}$ |
| Collector Cut-off Current | $\mathrm{I}_{\text {CES }}$ | $\mathrm{V}_{\mathrm{CE}}=1200 \mathrm{~V}, \mathrm{~V}_{\mathrm{GE}}=0$ | - | - | 1.0 | mA |
| Gate-Emitter Cut-off Voltage | $\mathrm{V}_{\mathrm{GE}(\mathrm{OFF})}$ | $\mathrm{I}_{\mathrm{C}}=15 \mathrm{~mA}, \mathrm{~V}_{\mathrm{CE}}=5 \mathrm{~V}$ | 3.0 | - | 6.0 | V |
| Collector-Emitter Saturation Voltage | $\mathrm{V}_{\text {CE(sat) }}$ | $\mathrm{I}_{\mathrm{C}}=15 \mathrm{~A}, \mathrm{~V}_{\mathrm{GE}}=15 \mathrm{~V}$ | - | 3.0 | 4.0 | V |
| Input Capacitance | $\mathrm{C}_{\text {ies }}$ | $\mathrm{V}_{\mathrm{CE}}=10 \mathrm{~V}, \mathrm{~V}_{\mathrm{GE}}=0, \mathrm{f}=1 \mathrm{MHz}$ | - | 1800 | - | pF |
| Switching Time | $\mathrm{t}_{\mathrm{r}}$ |  | - | 0.3 | 0.6 | $\mu \mathrm{S}$ |
|  | $\mathrm{t}_{\text {on }}$ |  | - | 0.4 | 0.8 |  |
|  | $\mathrm{tf}_{\mathrm{f}}$ |  | - | 0.25 | 0.5 |  |
|  | $\mathrm{t}_{\text {off }}$ |  | - | 0.8 | 1.5 |  |
| Forward Voltage | $\mathrm{V}_{\mathrm{F}}$ | $\mathrm{I}_{\mathrm{F}}=15 \mathrm{~A}, \mathrm{~V}_{\mathrm{GE}}=0$ | - | 1.8 | 2.5 | V |
| Reverse Recovery Time | $\mathrm{trr}_{\text {r }}$ | $\begin{aligned} & \mathrm{I}_{\mathrm{F}}=15 \mathrm{~A}, \mathrm{~V}_{\mathrm{GE}}=-10 \mathrm{~V} \\ & \mathrm{di} / \mathrm{dt}=100 \mathrm{~A} / \mu \mathrm{s} \end{aligned}$ | - | 0.2 | 0.5 | $\mu \mathrm{s}$ |
| Thermal Resistance | $\mathrm{R}_{\text {th (j-c) }}$ | Transistor | - | - | 1.0 | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ |
|  |  | Diode | - | - | 1.8 |  |











