TOSHIBA SILICON N-CHANNEL IEGT

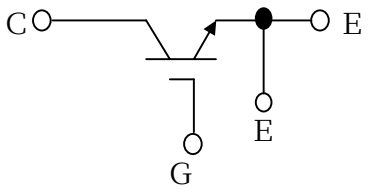
# S6X06

*<TENTATIVE SPEC.>*

HIGH POWER SWITCHING APPLICATIONS
MOTOR CONTROL APLICATIONS

- High Input Impedance.
- Enhancement Mode.

EQUIVALENT CIRCUIT




MAXIMUM RATINGS (Ta=25℃)

| CHARACTERISTICS | | SYMBOL | RATINGS | UNIT |
|---|---|---|---|---|
| Collector-Emitter Voltage | | $V_{CES}$ | 4500 | V |
| Gate-Emitter Voltage | | $V_{GES}$ | ±20 | V |
| Collector Current | RMS (note.1) | $I_{C(rms)}$ | 1200 | A |
| | Peak Turn-Off (note.2) | $I_{CP}$ | 2400 | A |
| Collector Power Dissipation (Tc=25℃) | | $P_C$ | 5000 | W |
| Junction Temperature | | $T_j$ | -40～125 | ℃ |
| Storage Temperature Range | | $T_{stg}$ | -40～125 | ℃ |
| Mounting Force | | - | 28～35 | kN |

note.1
50Hz, half-sine wave
Tf=75℃
without switching losses

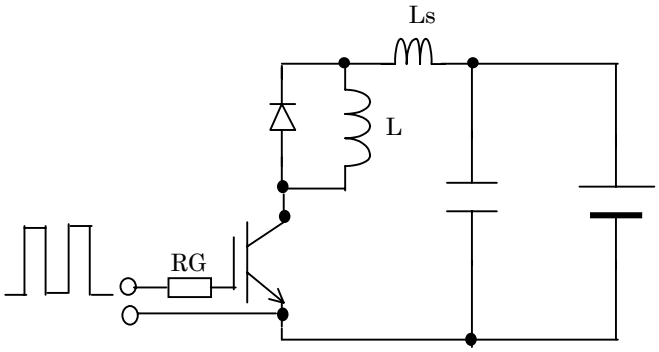
note.2
Vcp=<3600V
VGE=±15V, RG=7.2Ω
Tj=<125℃
non-repetitive

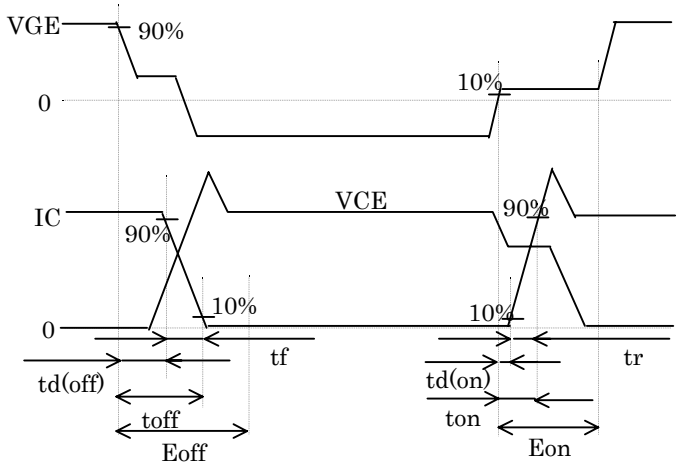
*<TENTATIVE SPEC>*

ELECTORICAL CHARACTERISTICS (Tc=125℃ : EXCEPT THERMAL RESISTANCE)

| CHARACTERISTICS | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Gate Leakage Current | | $I_{GES}$ | VGE=±20V, VCE=0V | - | - | ±50 | nA |
| Collector Cut-off Current | | $I_{CES}$ | VCE=4500V, VGE=0V | - | - | 100 | mA |
| Gate-Emitter cut-off Voltage | | $V_{GE(off)}$ | IC=1.2A, VCE=5V | - | 5.0 | - | V |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$ | IC=1200A, VCE=5V | | 4.0 | - | V |
| Input Capacitance | | $C_{ies}$ | VCE=10V, VGE=0V, f=100kHz | - | 150 | - | nF |
| Switching Time | Rise Time | $t_r$ | Vcc=2700V, IC=1200A | - | 0.8 | - | μs |
| | Turn-on Time | $t_{on}$ | VGE=±15V, Ls=330nH | - | 1.5 | - | μs |
| | Fall Time | $t_f$ | RG(on)/(off)=15/7.2Ω, | - | 3.0 | - | μs |
| | Turn-off Time | $t_{off}$ | di/dt=2500A/us | - | 9.0 | - | μs |
| Switching Dissipation | Turn-on Loss | $E_{on}$ | (FWD : 1000GXHH25) | - | 8.5 | - | J |
| | Turn-off Loss | $E_{off}$ | NOTE.3 | - | 5.5 | - | J |
| Short Circuit Capability | | SC | VGE=+/-15V, tw=10us | 3000 | - | - | V |
| Thermal Resistance | | $R_{th(j-c)}$ | Emitter Side | - | - | 26 | ℃/kW |
| | | | Collector Side | - | - | 16 | ℃/kW |
| | | | Double Side | - | - | 10 | ℃/kW |

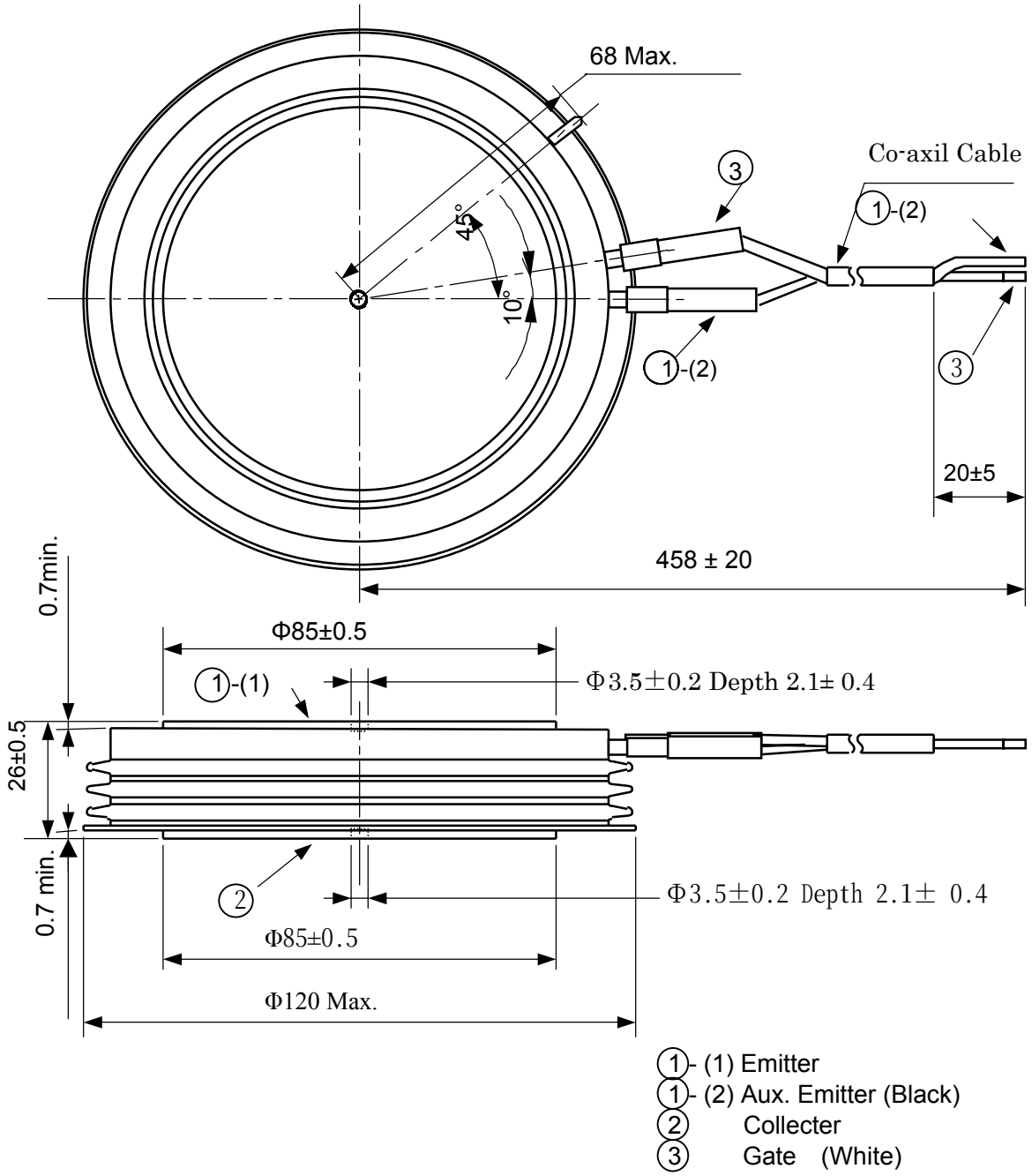
NOTE.3 : Test circuit and timing chart of switching time



*<TENTANTIVE SPEC>*

Unit : mm




1- (1) Emitter
1- (2) Aux. Emitter (Black)
2 Collecter
3 Gate (White)

<TENTANTIVE SPEC>

*** TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

*** The Toshiba products listed in this document are intended for usage in general electronics applications ( computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These Toshiba products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of Toshiba products listed in this document shall be made at the customer's own risk.

*** The information contained herein in presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.

*** The information contained herein is subject to change without notice.