

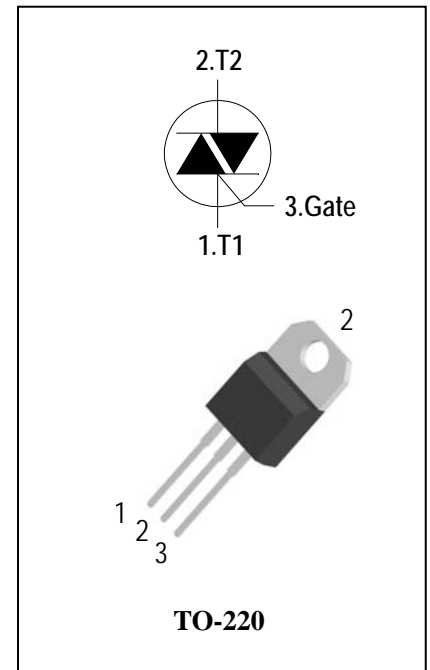
4Quadrants Triacs

General Description

High current density due to mesa technology . the T12XX triac series is suitable for general purpose AC switching. They can be used as an ON/OFF function in applications such as static relays, heating regulation, High power motor controls e.g. washing machines and vacuum cleaners, Rectifier-fed DC inductive loads e.g. DC motors and solenoids , motor speed controllers.

Features

- ◆ Repetitive Peak Off-State Voltage: 600V/800V
- ◆ R.M.S On-State Current ($I_{T(RMS)}=12A$)
- ◆ High Commutation dv/dt
- ◆ These Devices are Pb-Free and are RoHS Compliant



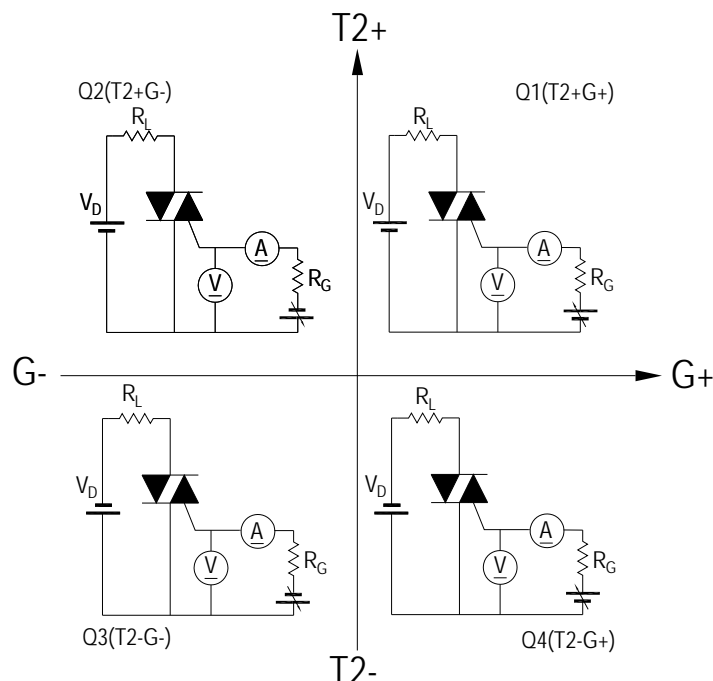
Absolute Maximum Ratings

| Symbol | Items | Conditions | | Ratings | Unit |
|------------------------|--|--|-----------|------------|------------------|
| V_{DRM} V_{RRM} | Repetitive Peak Off-State Voltage | $T_j = 25^{\circ}C$ | T12XXD-6B | 600 | V |
| | | | T12XXD-8B | 800 | |
| $I_{T(RMS)}$ | R.M.S On-State Current | $T_C = 100^{\circ}C$ | | 12 | A |
| I_{TSM} | Surge On-State Current | $t_p=20ms(50Hz)/t_p=16.7ms(60Hz)$ | | 120/126 | A |
| I^2t | I^2t for fusing | $t_p=10ms$ | | 78 | A ² s |
| di/dt | Critical rate of rise of on-state current | $F = 120\text{ Hz}$ $T_j = 125^{\circ}C$ $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ ns}$ | | 50 | A/ μs |
| I_{GM} | Peak Gate Current | $t_p = 20\text{ }\mu s$ $T_j = 125^{\circ}C$ | | 4 | A |
| $P_{G(AV)}$ | Average Gate Power Dissipation($T_j=125^{\circ}C$) | | | 1 | W |
| P_{GM} | Peak Gate Power Dissipation($t_p=20\mu s, T_j=125^{\circ}C$) | | | 5 | W |
| T_j | Operating Junction Temperature | | | - 40 ~ 125 | $^{\circ}C$ |
| T_{STG} | Storage Temperature | | | - 40 ~ 150 | $^{\circ}C$ |



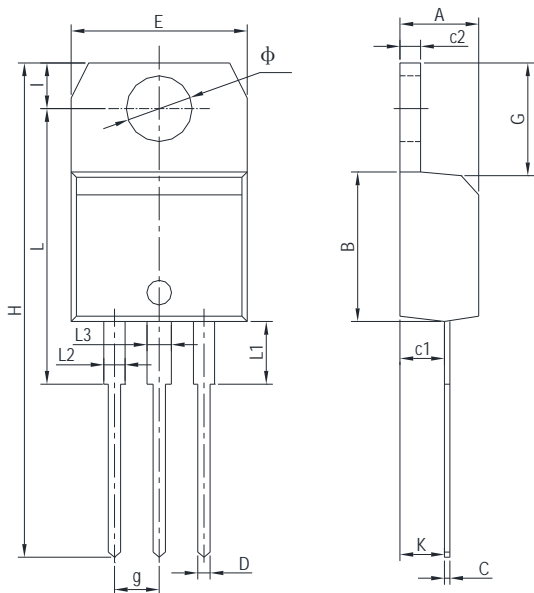
Electrical Characteristics ($T_j = 25^\circ\text{C}$ unless otherwise specified)

| Symbol | Items | | Conditions | | T12XXD-6/8B | | | | Unit |
|---------------|--|----------------------------|---|------|-------------|-------|-------|-------|---------------|
| | | | | | T1205 | T1210 | T1235 | T1250 | |
| I_{DRM} | Peak Forward Reverse Blocking Current | | $V_{DRM} = V_{RRM}, T_j = 25^{\circ}C$ | Max. | 5 | | | | μA |
| I_{RRM} | | | $V_{DRM} = V_{RRM}, T_j = 125^{\circ}C$ | | 1 | | | | mA |
| V_{TM} | Peak On-State Voltage | | $I_{TM} = 17A, t_p = 380 \mu s$ | Max. | 1.55 | | | | V |
| V_{GD} | Q1-Q2-Q3-Q4 | Non – Trigger Gate Voltage | $V_D = V_{DRM} \quad R_L = 3.3 k\Omega$ $T_j = 125^{\circ}C$ | Min. | 0.2 | | | | V |
| V_{GT} | Q1-Q2-Q3-Q4 | GateTrigger Voltage | $V_D = 12V \quad , \quad R_L = 33\Omega$ | Max. | 1.3 | | | | V |
| I_{GT} | Q1-Q2-Q3 | GateTrigger Current | | Max. | 5 | 10 | 35 | 50 | mA |
| | Q4 | | | | 10 | 25 | 70 | 100 | |
| I_H | Q1-Q2-Q3-Q4 | Holding Current | $I_T = 0.1A$ | Max. | 10 | 15 | 35 | 50 | mA |
| I_L | Q1-Q3-Q4 | Latching Current | $I_G = 1.2 I_{GT}$ | Max. | 10 | 25 | 50 | 70 | mA |
| | Q2 | | | | 15 | 30 | 70 | 80 | |
| dV/dt | Critical Rate of Rise of Off-State Voltage | | $V_D = 2/3V_{DRM}$ gate open $T_j = 125^{\circ}C$ | Min. | 20 | 40 | 200 | 400 | V/ μs |
| (dV/dt)c | Rate of Change of Commutating Current, | | (dl/dt)c=-5.3A/ms $T_j = 125^{\circ}C$ | Min. | 0.5 | 1 | 5 | 10 | V/ μs |
| $R_{th(j-c)}$ | Junction to case (AC) | | | Max. | 1.4 | | | | $^{\circ}C/W$ |
| $R_{th(j-a)}$ | Junction to ambient | | | Max. | 60 | | | | $^{\circ}C/W$ |

FIG.1:Triac quadrant are defined and the gate trigger test circuit

PACKAGE MECHANICAL DATA

TO-220 Package Dimension



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|------------------------------|-------|-------------------------|-------|
| | Min | Max | Min | Max |
| A | 4.40 | 4.60 | 0.173 | 0.181 |
| B | 9.00 | 9.30 | 0.354 | 0.366 |
| C | 0.40 | 0.60 | 0.015 | 0.023 |
| c1 | 2.00 | 2.60 | 0.078 | 0.102 |
| c2 | 1.23 | 1.32 | 0.048 | 0.051 |
| D | 0.70 | 1.00 | 0.027 | 0.039 |
| E | 10.00 | 10.40 | 0.393 | 0.409 |
| g | 2.40 | 2.70 | 0.094 | 0.106 |
| G | 6.20 | 6.80 | 0.244 | 0.267 |
| H | 28.00 | 29.85 | 1.102 | 1.175 |
| I | 2.65 | 2.95 | 0.104 | 0.116 |
| L | 15.80 | 16.80 | 0.622 | 0.661 |
| L1 | 3.75 | | 0.147 | |
| L2 | 1.14 | 1.70 | 0.044 | 0.066 |
| L3 | 1.14 | 1.70 | 0.044 | 0.066 |
| Φ | 3.60 | 3.90 | 0.141 | 0.153 |
| K | 2.60TYP | | 0.102TYP | |

Making Diagram

ADV XXXX
T1235D-8B
XXXH ○ XX

ADV:Logo
T1235D-8B:Part number
X:Internal control code
H:Halogen Free

T 12 XX D - 8 B

T series thyristor

Current:12=12A

Gate trigger current:05=5mA
10=10mA,35=35mA,50=50mA

Package explain:
B=TO-220
Voltage:6=600V,8=800V
Quadrant:D=4Q

Ordering information

| Part number | Package | Marking | Packing | Quantity |
|-------------|---------|-----------|---------|----------|
| T1235D-8B | TO-220 | T1235D-8B | Tube | 50pcs |

Note: Gate Trigger Current Sensitivity and type05=5mA, 10=10mA, 35=35mA, 50=50mA

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