

# DT1T Series TRIACs

## DT1T TRIACs SILICON BIDIRECTIONAL THYRISTORS

### General description

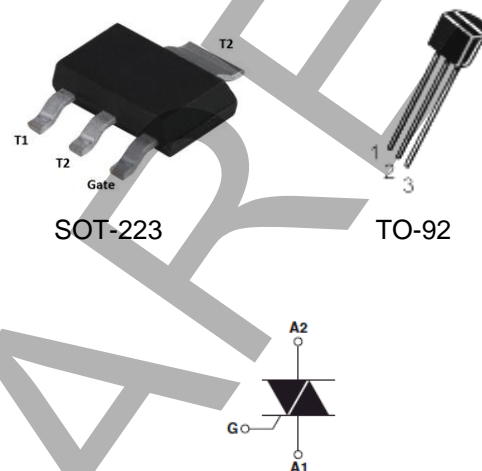
This product TRIAC is a sensitive gate for third quadrant used in TO-92 & SOT-223. These products are high commutation performance without snubber circuit. It can be triggered by logic level input.

### FEATURES

- Passivated die for reliability and uniformity
- Three-quadrant triggering TRIAC
- Over 1000V/ 800V  $V_{DRM}/V_{RRM}$
- Low level triggering and holding characteristics
- Logic control compatible
- “Green” molding compound,  
UL flammability classification 94V-0, (No Br. Sb. Cl)
- Lead free in RoHS II 2015/863/EU compliant
- Moisture sensitivity meets industry standard IPC/JEDEC J-STD-020

### APPLICATIONS

- General purpose motor control
- Small loads in fan control
- Solenoid drivers
- LED Dimming
- Digital control drivers



| PIN ASSIGNMENT |                 |
|----------------|-----------------|
| 1              | Main Terminal 1 |
| 2              | Gate            |
| 3              | Main Terminal 2 |

## DT1T Series TRIACs ELECTRICAL CHARACTERISTICS (T<sub>j</sub> = 25°C, unless otherwise specified.)

### Absolute Ratings

| PARAMETER  | SYMBOL                 | VALUE       | UNIT             |
|--|------------------------|-------------|------------------|
| Peak repetitive off-state voltage<br>( T <sub>j</sub> = -40 to 125°C, Full sine wave, 50 to 60 Hz; Gate open) (Note 1) | $V_{DRM}$<br>$V_{RRM}$ | 1000/ 800   | V                |
| On-stage RMS current (Full sine wave, T <sub>c</sub> = 60°C )  | $I_{T(RMS)}$           | 1           | A                |
| Peak non-repetitive surge current ( one full cycle 60 Hz, T <sub>j</sub> = 25°C)                                       | $I_{TSM}$              | 9           | A                |
| Circuit fusing consideration ( t = 8.3ms)  | $I^2T$                 | 0.6         | A <sup>2</sup> S |
| Operating junction temperature range   | T <sub>j</sub>         | -40 to +125 | °C               |
| Storage temperature range  | T <sub>STG</sub>       | -40 to +150 | °C               |

#### Note :

- (1)  $V_{DRM}$  and  $V_{RRM}$  for all types can be applied on a continuous basis.  
Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

Version 02, Oct-2020

# DT1T Series TRIACs

CHARACTERISTIC & CURVES (T<sub>j</sub> = 25°C, unless otherwise specified.)



## Thermal Characteristics

| PARAMETER   |         | SYMBOL               | VALUE |     | UNIT |
|---|---------|----------------------|-------|-----|------|
| Thermal resistance from junction to lead (1)                                    | TO-92   | R <sub>th(j-c)</sub> | Max   | 50  | °C/W |
|   | SOT-223 |                      |       | 20  |      |
| Junction to ambient (DC) (1)  | TO-92   | R <sub>th(j-L)</sub> | Max   | 50  |      |
|   | SOT-223 |                      |       | 25  |      |
| Maximum lead temperature for soldering purposes (1/8" form case for 10 seconds) |         | T <sub>L</sub>       | Max   | 260 | °C   |

Note 1: Without Heatsink

## Static Characteristics

| PARAMETER   |                        | SYMBOL           | MIN. | TYP. | MAX. | UNIT |
|---|------------------------|------------------|------|------|------|------|
| Threshold Voltage (T <sub>j</sub> = 125°C)  |                        | V <sub>to</sub>  | --   | --   | 1.1  | V    |
| Dynamic resistors (T <sub>j</sub> = 125°C)  |                        | R <sub>d</sub>   | --   | --   | 500  | mΩ   |
| Peak repetitive forward or reverse blocking current (V <sub>AK</sub> = rated V <sub>DRM</sub> and V <sub>RRM</sub> , gate open) | T <sub>j</sub> = 25°C  | I <sub>DRM</sub> | --   | --   | 5    | uA   |
|   | T <sub>j</sub> = 125°C | I <sub>RRM</sub> | --   | --   | 0.5  | mA   |

## ON Characteristics

| PARAMETER   | SYMBOL                             | DT1T5X | DT1T10X. |     | UNIT |
|---|------------------------------------|--------|----------|-----|------|
| Peak forward on-state voltage (I <sub>TM</sub> = 1.4 A @ T <sub>j</sub> = 25°C)   | V <sub>TM</sub>                    | 1.56   | --       | Max | V    |
| V <sub>D</sub> = V <sub>DRM</sub> , R <sub>L</sub> = 100Ω, T <sub>j</sub> = 125°C | V <sub>GD</sub>                    | 0.3    | --       | Min | V    |
| Gate trigger current (V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω)               | I <sub>GT1</sub>                   | 5      | 10       | Max | mA   |
|   | I <sub>GT2</sub>                   | 5      | 10       |     |      |
|   | I <sub>GT3</sub>                   | 5      | 10       |     |      |
| Gate trigger voltage (V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω)               | V <sub>GT1</sub>                   | 1      | 1        | Max | V    |
|   | V <sub>GT2</sub>                   |        |          |     |      |
|   | V <sub>GT3</sub>                   |        |          |     |      |
| Holding current (V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω)                    | I <sub>H1</sub><br>I <sub>H3</sub> | 5      | 10       | Max | mA   |
| Latching current (V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω)                   | I <sub>L1</sub>                    | 10     | 25       | Max | mA   |
|   | I <sub>L2</sub>                    | 20     | 25       |     |      |
|   | I <sub>L3</sub>                    | 10     | 25       |     |      |

# DT1T Series TRIACs

CHARACTERISTIC & CURVES ( $T_j = 25^\circ\text{C}$ , unless otherwise specified.)



## Dynamic Characteristics

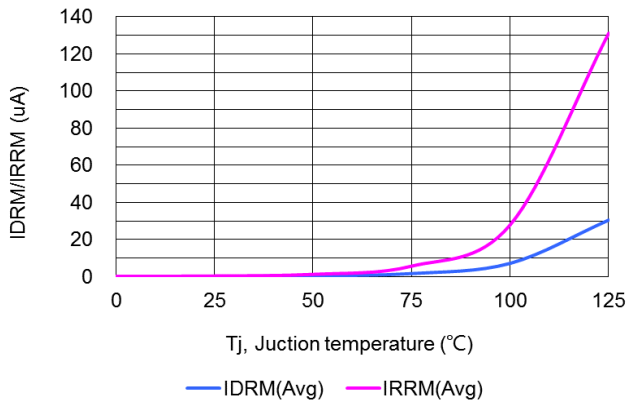
| PARAMETER  | SYMBOL   | DT1T5X | DT1T10X |     | UNIT |
|--|----------|--------|---------|-----|------|
| Critical rate of rise of off-stage voltage<br>( $V_{AK} = 67\%$ rated $V_{DRM}$ , $T_j = 125^\circ\text{C}$ , gate open) | dv/dt    | 200    | 600     | Max | V/us |
| Critical rate of rise of on-state current, ( $V_{DRM}$ =maximum<br>$V_{DRM}$ , $T_j = 125^\circ\text{C}$ )               | di/dt(s) | 15     | 50      | Max | A/us |
| $T_j=125^\circ\text{C}$ , gate open, Without Snubber   | di/dt(c) | 0.3    | 1       | Max | A/ms |

# DT1T Series TRIACs

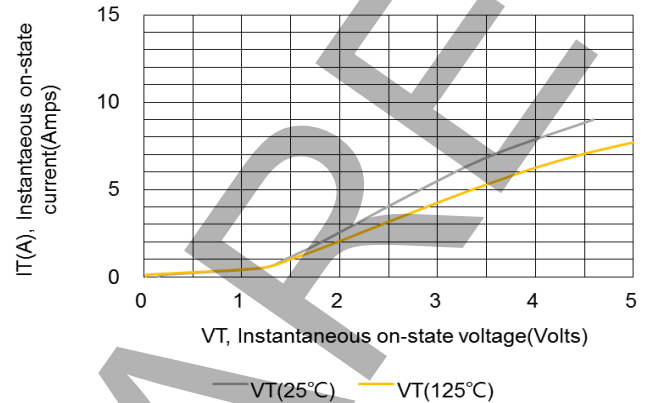
CHARACTERISTIC & CURVES (Tj = 25°C, unless otherwise specified.)



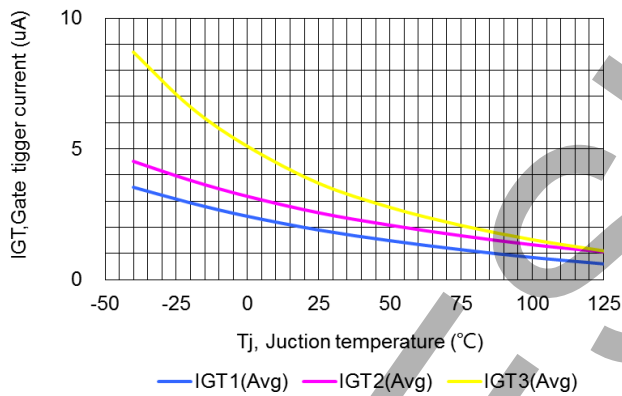
IR VS Temperature



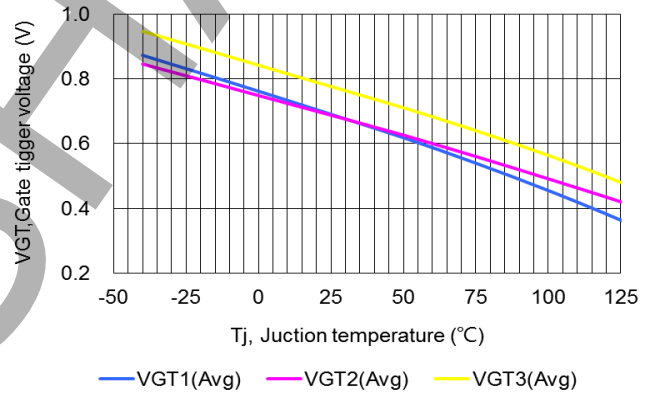
VTM - IT



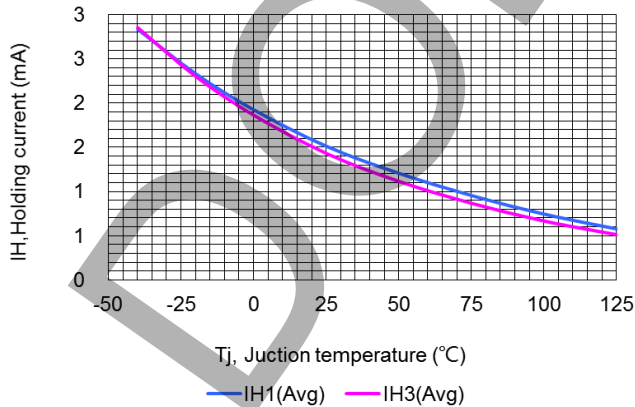
Typical gate trigger current V.S. junction temperature



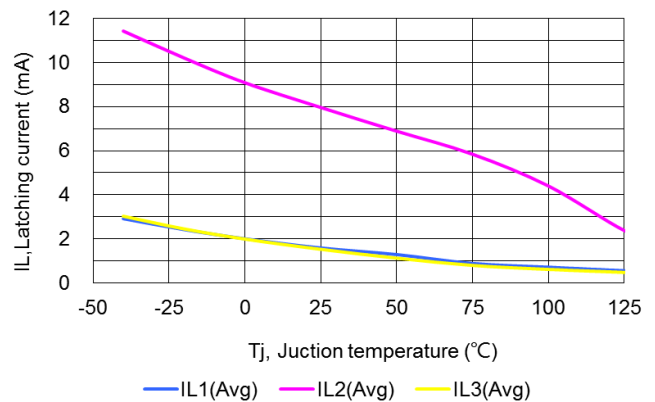
Typical gate trigger voltage V.S. junction temperature



Typical holding current V.S. junction temperature

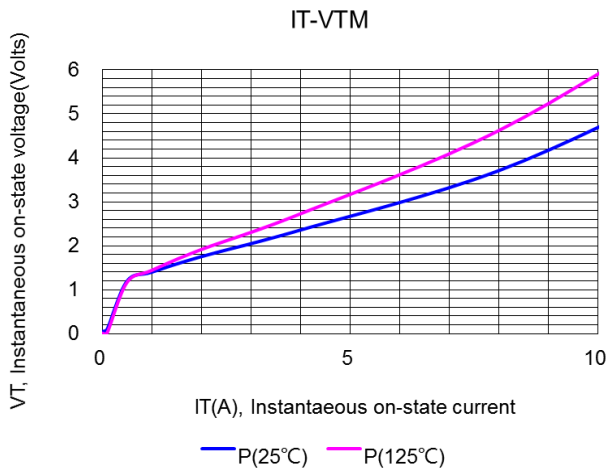


Typical latch current V.S. junction temperature



# DT1T Series TRIACs

CHARACTERISTIC & CURVES (T<sub>j</sub> = 25°C, unless otherwise specified.)

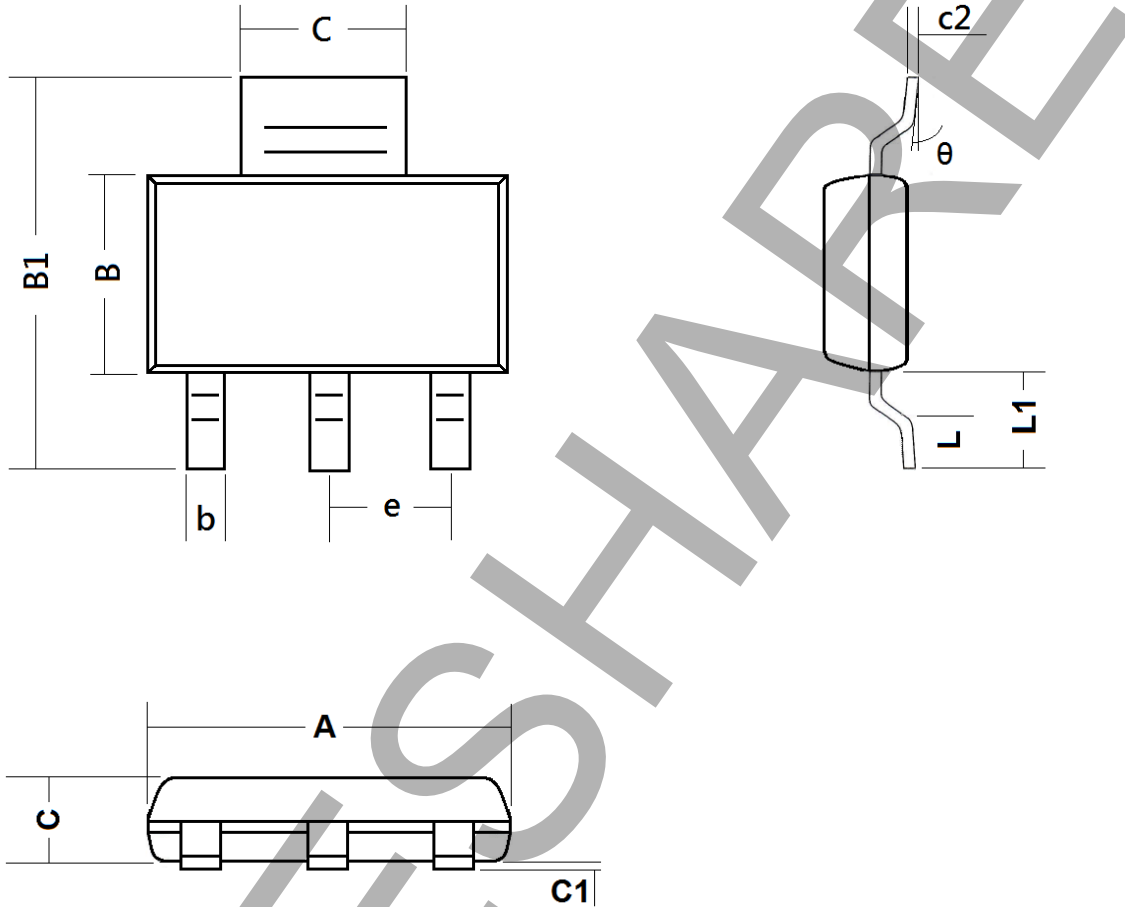


DOESHARE

# DT1T Series TRIACs

CHARACTERISTIC & CURVES ( $T_j = 25^\circ\text{C}$ , unless otherwise specified.)

## SOT-223 Plastic Package

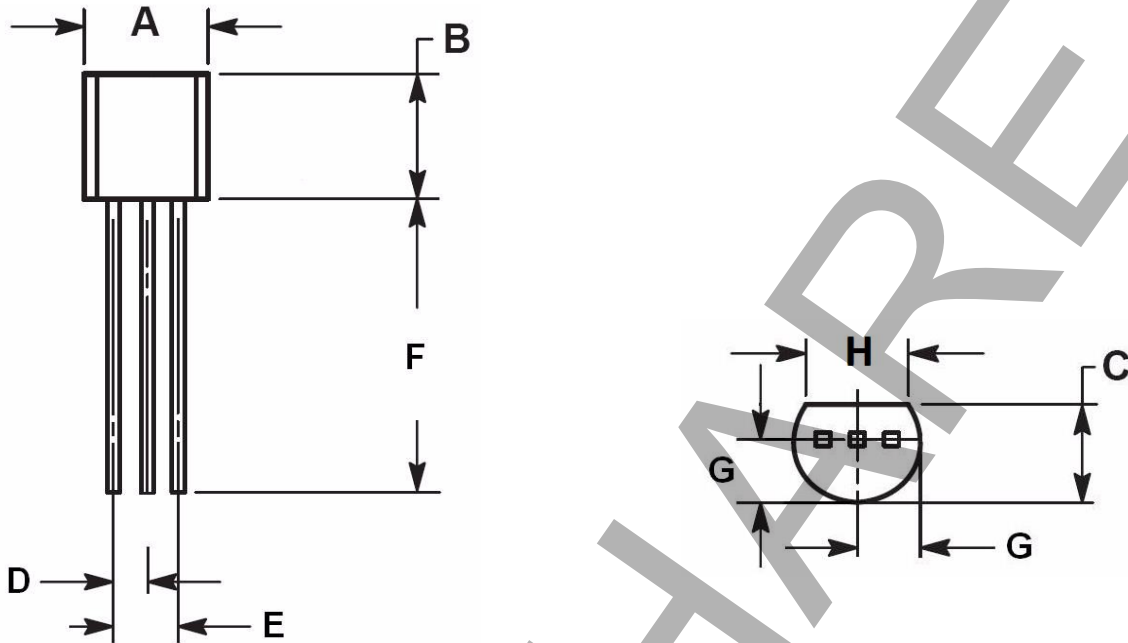


| DIM | Millimeters |      | DIM | Millimeters |      | DIM      | Millimeters |      |
|-----|-------------|------|-----|-------------|------|----------|-------------|------|
|     | Min         | Max  |     | Min         | Max  |          | Min         | Max  |
| A   | 6.40        | 6.60 | c2  | 0.2         | 0.35 | L        | 0.76        | 1.16 |
| B   | 3.40        | 3.60 | b   | 0.66        | 0.76 | L1       | 1.70        | 1.80 |
| C   | 1.45        | 1.65 | B1  | 6.85        | 7.15 | $\theta$ | 0°          | 8°   |
| C1  | 0.03        | 0.15 | e   | 2.286(BSC)  |      |          |             |      |

# DT1T Series TRIACs

CHARACTERISTIC & CURVES (Tj = 25°C, unless otherwise specified.)

## TO-92 Plastic Package



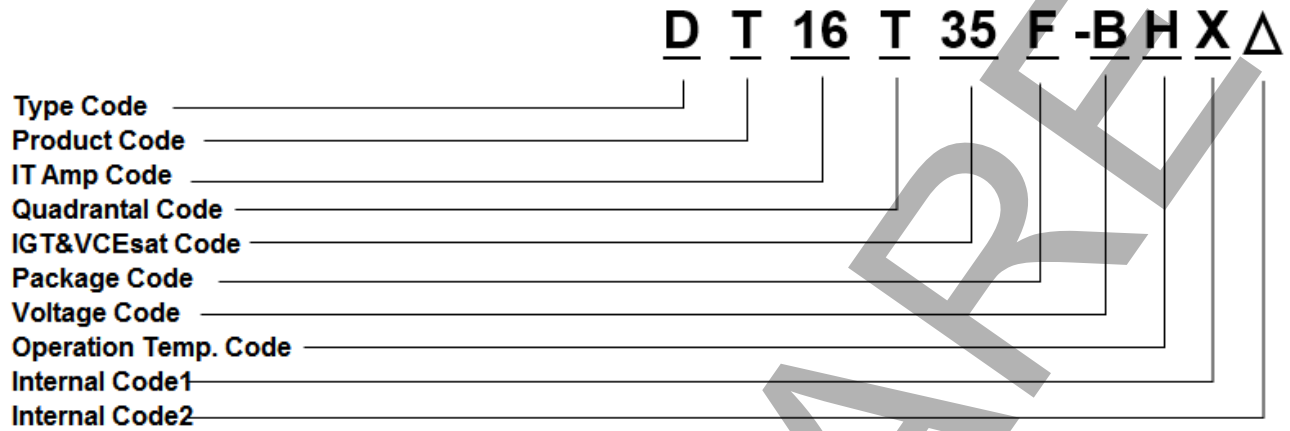
| DIM | Inches |       | Millimeters |       | DIM | Inches |       | Millimeters |       |
|-----|--------|-------|-------------|-------|-----|--------|-------|-------------|-------|
|     | Min    | Max   | Min         | Max   |     | Min    | Max   | Min         | Max   |
| A   | 0.175  | 0.205 | 4.45        | 5.20  | E   | 0.095  | 0.105 | 2.413       | 2.667 |
| B   | 0.170  | 0.210 | 4.32        | 5.33  | F   | 0.500  |       | 12.70       |       |
| C   | 0.125  | 0.165 | 3.175       | 4.191 | G   | 0.080  | 0.105 | 2.04        | 2.66  |
| D   | 0.045  | 0.055 | 1.143       | 1.397 | H   | 0.135  |       | 3.43        |       |

# DT1T Series TRIACs

CHARACTERISTIC & CURVES (T<sub>j</sub> = 25°C, unless otherwise specified.)



## Ordering information scheme



- Type Code: Doeshare Standar products
- Product Code: T for Triac series
- IT Amp Code: 16 for 16A, 1 for 1A
- Quadrantal Code: T for 3Q, F for 4Q
- IGT&VCEsat Code: 35 means Igt 35mA, 5 means Igt 5mA
- Package Code: A=>TO-92, C=>TO-126, D=> DPAK, E=>D2PAK, F=> TO-220F, G=>SOT-223  
M=>ITO-3P, P=>TO-3P, T=> TO-220, Y=>TO251
- Voltage Code: A=> 600V, B=> 800V, C=> 1000V
- Operation Temp Code: None=>125°C, H=>150°C



## Important Notice and Disclaimer

DOESHARE has used reasonable care in preparing the information included in this document, but DOESHARE does not warrant that such information is error free. DOESHARE assumes no liability whatsoever for any damages incurred by you resulting from errors in or omissions from the information included herein.

DOESHARE no warranty, representation or guarantee regarding the documents, circuits and products specification, DOESHARE reservation rights to make changes for any documents, products, circuits and specifications at any time without notice.

Purchasers are solely responsible for the choice, selection and use of the DOESHARE products and services described herein, and DOESHARE assumes no liability whatsoever relating to the choice, selection or use of the products and services described herein.

No license, express or implied, by implication or otherwise under any intellectual property rights of DOESHARE.

Resale of DOESHARE products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by DOESHARE for the DOESHARE product or service described herein and shall not create or extend in any anner whatsoever, any liability of DOESHARE.

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Triacs](#) category:*

*Click to view products by [Doeshare](#) manufacturer:*

Other Similar products are found below :

[BT137-600-0Q](#) [OT415Q](#) [2N6075A](#) [NTE5688](#) [BTA2008W-800D,135](#) [D31410](#) [BT136-600,127](#) [BT137B-800,118](#) [BTA140-600,127](#)  
[BTA208-800B,127](#) [MAC97A6,116](#) [BTA420-800BT,127](#) [BTA201W-800E,115](#) [BTA212B-800B,118](#) [BTA26-800CWRG](#) [BTA41-800BRG](#)  
[TMA164P-L](#) [TMA166P-L](#) [TMA54S-L](#) [BT137-600E,127](#) [BTA140-800,127](#) [BTA30-600CW3G](#) [BTB16-600CW3G](#) [TMA84S-L](#)  
[Z0109MN,135](#) [T825T-6I](#) [T1635T-6I](#) [T1220T-6I](#) [NTE5638](#) [ACST1235-8FP](#) [BT134-600D,127](#) [BT134-600G,127](#) [BT136X-600E,127](#)  
[BT139X-800,127](#) [BTA204X-800C,127](#) [BTA208X-1000C0,127](#) [BTA216-600E,127](#) [BTA316X-600E/DG,12](#) [BTA316X-800C,127](#) [BT134-600D,127](#) [BT134-600E,127](#) [BT137X-600D,127](#) [BT139X-600E,127](#) [BTA08-600BW3G](#) [BTA201-800ER,126](#) [BTA208X-1000B,127](#)  
[BTA316X-800E,127](#) [NTE56008](#) [NTE56017](#) [NTE56018](#)