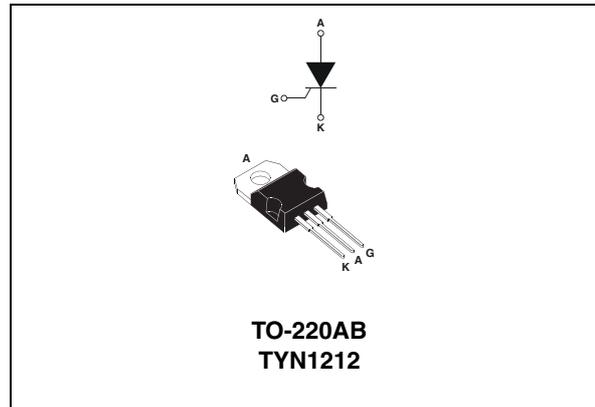


### Features

- On-state rms current 12 A
- Gate trigger current <15 mA
- Repetitive peak voltage 1200 V

### Description

The TYN1212 is suitable for state relays and high power motor control.



**Table 1. Device summary**

| Symbol                | Value | Unit |
|-----------------------|-------|------|
| $I_{T(RMS)}$          | 12    | A    |
| $V_{DRM}/V_{RRM}$     | 1200  | V    |
| $I_{GT}$ (min. / max) | <15   | mA   |

# 1 Characteristics

**Table 2. Absolute ratings (limiting values)**

| Symbol             | Parameter  |                      | Value                | Unit                           |                  |
|--------------------|--|----------------------|----------------------|--------------------------------|------------------|
| $I_{T(RMS)}$       | On-state rms current (180 °C conduction angle)                             |                      | $T_c = 80\text{ °C}$ | 12                             | A                |
| $I_{TSM}$          | Non repetitive surge peak on-state current                                 | $t_p = 10\text{ ms}$ | $T_j = 25\text{ °C}$ | 120                            | A                |
| $I^2t$             | $I^2t$ Value for fusing  |                      | $t_p = 10\text{ ms}$ | 72                             | A <sup>2</sup> s |
| di/dt              | Critical rate of rise of on-state current                                  |                      |                      | 100                            | A/μs             |
| $V_{DRM}/V_{RRM}$  | Repetitive peak off-state voltage  |                      |                      | 1200                           | V                |
| $T_{stg}$<br>$T_j$ | Storage junction temperature range<br>Operating junction temperature range |                      |                      | - 40 to + 125<br>- 40 to + 125 | °C               |

**Table 3. Electrical characteristics ( $T_j = 25\text{ °C}$ , unless otherwise specified)**

| Symbol                 | Test conditions   |                       |      | Value | Unit |
|------------------------|---|-----------------------|------|-------|------|
| $I_{GT}$               | $V_D = 12\text{ V}$ , $R_L = 33\text{ }\Omega$ pulse duration >20 μs  | $T_j = 25\text{ °C}$  | MAX. | 15    | mA   |
| $V_{GT}$               | $V_D = 12\text{ V}$ , $R_L = 33\text{ }\Omega$ pulse duration >20 μs  | $T_j = 25\text{ °C}$  | MAX. | 1.5   | V    |
| $V_{GD}$               | $V_D = V_{DRM}$ , $R_L = 3.3\text{ k}\Omega$ pulse duration >20   | $T_j = 125\text{ °C}$ | MIN. | 0.2   | V    |
| $I_H$                  | $I_T = 100\text{ mA}$ Gate open   | $T_j = 25\text{ °C}$  | MAX. | 30    | mA   |
| dV/dt                  | Linear slope $V_D = 67\% V_{DRM}$ Gate open   | $T_j = 125\text{ °C}$ | MIN. | 200   | V/μs |
| $V_{TM}$               | $I_{TM} = 24\text{ A}$ $t_p = 10\text{ ms}$   | $T_j = 25\text{ °C}$  | MAX. | 1.6   | V    |
| $I_{DRM}$<br>$I_{RRM}$ | $V_{DRM} = V_{RRM} = 1200\text{ V}$ gate open   | $T_j = 25\text{ °C}$  | MAX. | 10    | μA   |
|                        |   | $T_j = 125\text{ °C}$ |      | 3     | mA   |
| $t_{gt}$               | Turn-on time<br>$I_G = 40\text{ mA}$ , $dI_G/dt = 0.45\text{ A}/\mu\text{s}$ , $I_T = 24\text{ A}$ $V_{DRM}$  | $T_j = 25\text{ °C}$  | TYP. | 2     | μs   |
| $t_q$                  | Circuit commutated turn-off time<br>$I_T = 10\text{ A}$ , $V_R = 25\text{ V}$ , $dI_R/dt = 30\text{ A}/\mu\text{s}$ $dV/dt = 50\text{ V}/\mu\text{s}$ | $T_j = 125\text{ °C}$ | TYP. | 50    | μs   |

**Table 4. Thermal resistance**

| Symbol        | Parameter             | Value | Unit |
|---------------|-----------------------|-------|------|
| $R_{th(j-c)}$ | Junction to case (DC) | 3.8   | °C/W |

## 2 Package information

- Epoxy meets UL94, V0
- Recommended torque value: 0.4 to 0.6 N·m
- Lead-free package

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK® is an ST trademark.

**Table 5. TO-220AB dimensions**

| Ref. | Dimensions  |       |       |        |       |       |
|------|-------------|-------|-------|--------|-------|-------|
|      | Millimeters |       |       | Inches |       |       |
|      | Min.        | Typ.  | Max.  | Min.   | Typ.  | Max.  |
| A    | 15.20       |       | 15.90 | 0.598  |       | 0.625 |
| a1   |             | 3.75  |       |        | 0.147 |       |
| a2   | 13.00       |       | 14.00 | 0.511  |       | 0.551 |
| B    | 10.00       |       | 10.40 | 0.393  |       | 0.409 |
| b1   | 0.61        |       | 0.88  | 0.024  |       | 0.034 |
| b2   | 1.23        |       | 1.32  | 0.048  |       | 0.051 |
| C    | 4.40        |       | 4.60  | 0.173  |       | 0.181 |
| c1   | 0.49        |       | 0.70  | 0.019  |       | 0.027 |
| c2   | 2.40        |       | 2.72  | 0.094  |       | 0.107 |
| e    | 2.40        |       | 2.70  | 0.094  |       | 0.106 |
| F    | 6.20        |       | 6.60  | 0.244  |       | 0.259 |
| ØI   | 3.75        |       | 3.85  | 0.147  |       | 0.151 |
| I4   | 15.80       | 16.40 | 16.80 | 0.622  | 0.646 | 0.661 |
| L    | 2.65        |       | 2.95  | 0.104  |       | 0.116 |
| I2   | 1.14        |       | 1.70  | 0.044  |       | 0.066 |
| I3   | 1.14        |       | 1.70  | 0.044  |       | 0.066 |
| M    |             | 2.60  |       |        | 0.102 |       |

### 3 Ordering information

Table 6. Ordering information

| Order code | Marking | Package  | Weight | Base qty | Delivery mode |
|------------|---------|----------|--------|----------|---------------|
| TYN1212RG  | TYN1212 | TO-220AB | 2.3 g  | 50       | Tube          |

### 4 Revision history

Table 7. Document revision history

| Date        | Revision | Changes      |
|-------------|----------|--------------|
| 25-Nov-2011 | 1        | First issue. |

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