

# Thyristors and AC Switches

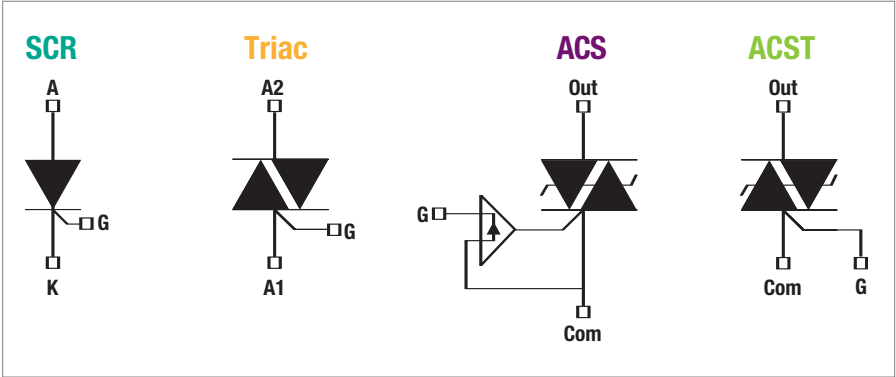
## Advanced power switching

Selection guide



June 2007

# Product symbols



# SCRs

## Sensitive gate (T<sub>j</sub> max = 125°C)

| I <sub>T(RMS)</sub><br>(A) | V <sub>RRM</sub> /<br>V <sub>DRM</sub><br>(V) | I <sub>TSM</sub> <sup>(1)(2)</sup><br>(A) | I <sub>GT</sub> max <sup>(2)</sup><br>(μA) | I <sub>H</sub> max <sup>(2)</sup><br>(mA) | dV/dt min<br>@ T <sub>j</sub> max<br>(V/μs) | Packages |         |          |
|----------------------------|-----------------------------------------------|-------------------------------------------|--------------------------------------------|-------------------------------------------|---------------------------------------------|----------|---------|----------|
|                            |                                               |                                           |                                            |                                           |                                             | SOT-223  | SOT-23  | TO-92    |
| 0.25                       | 200                                           | 6                                         | 200                                        | 5                                         | 200                                         |          | P0102BL |          |
| 0.8                        | 400                                           | 7                                         | 200                                        | 5                                         | 75                                          | P0102DN  |         | P0102DA  |
| 0.8                        | 400                                           | 7                                         | 25                                         | 5                                         | 80                                          | P0111DN  |         | P0111DA  |
| 0.8                        | 400                                           | 7                                         | 5                                          | 5                                         | 75                                          | P0118DN  |         | P0118DA  |
| 0.8                        | 400                                           | 7                                         | 200                                        | 5                                         | 75                                          |          |         | XL0840   |
| 0.8                        | 600                                           | 7                                         | 200                                        | 5                                         | 75                                          | P0102MN  |         | P0102MA  |
| 0.8                        | 600                                           | 7                                         | 25                                         | 5                                         | 80                                          | P0111MN  |         | P0111MA  |
| 0.8                        | 600                                           | 7                                         | 5                                          | 5                                         | 75                                          |          |         | P0118MA  |
| 0.8                        | 600                                           | 9                                         | 200                                        | 5                                         | 25                                          |          |         | X00602MA |
| 1.25                       | 600                                           | 22.5                                      | 200                                        | 5                                         | 10                                          | X0202MN  |         | X0202MA  |
| 1.25                       | 600                                           | 22.5                                      | 50                                         | 5                                         | 15                                          | X0205MN  |         | X0205MA  |
| 1.25                       | 800                                           | 22.5                                      | 200                                        | 5                                         | 10                                          | X0202NN  |         | X0202NA  |
| 1.25                       | 800                                           | 22.5                                      | 50                                         | 5                                         | 15                                          |          |         | X0205NA  |

| I <sub>T(RMS)</sub><br>(A) | V <sub>RRM</sub> /<br>V <sub>DRM</sub><br>(V) | I <sub>TSM</sub> <sup>(1)(2)</sup><br>(A) | I <sub>GT</sub> max <sup>(2)</sup><br>(μA) | I <sub>H</sub> max <sup>(2)</sup><br>(mA) | dV/dt min<br>@ T <sub>j</sub> max<br>(V/μs) | Packages    |             |         |            |
|----------------------------|-----------------------------------------------|-------------------------------------------|--------------------------------------------|-------------------------------------------|---------------------------------------------|-------------|-------------|---------|------------|
|                            |                                               |                                           |                                            |                                           |                                             | DPAK        | IPAK        | TO202-3 | TO-220AB   |
| 4                          | 600                                           | 30                                        | 200                                        | 5                                         | 5                                           | TS420-600B  | TS420-600H  |         | TS420-600T |
| 4                          | 600                                           | 30                                        | 200                                        | 5                                         | 10                                          |             |             | X0402MF |            |
| 4                          | 600                                           | 30                                        | 50                                         | 5                                         | 15                                          |             |             | X0405MF |            |
| 4                          | 800                                           | 30                                        | 200                                        | 5                                         | 10                                          |             |             | X0402NF |            |
| 4                          | 800                                           | 30                                        | 50                                         | 5                                         | 15                                          |             |             | X0405NF |            |
| 8                          | 600                                           | 70                                        | 200                                        | 5                                         | 5                                           | TS820-600B  | TS820-600H  |         | TS820-600T |
| 12                         | 600                                           | 110                                       | 200                                        | 5                                         | 5                                           | TS1220-600B | TS1220-600H |         |            |

## Standard (T<sub>j</sub> max = 125°C)

| I <sub>T(RMS)</sub><br>(A) | V <sub>RRM</sub> /<br>V <sub>DRM</sub><br>(V) | I <sub>TSM</sub> <sup>(1)(2)</sup><br>(A) | I <sub>GT</sub> max <sup>(2)</sup><br>(μA) | I <sub>H</sub> max <sup>(2)</sup><br>(mA) | dV/dt min<br>@ T <sub>j</sub> max<br>(V/μs) | Packages    |                    |             |          |
|----------------------------|-----------------------------------------------|-------------------------------------------|--------------------------------------------|-------------------------------------------|---------------------------------------------|-------------|--------------------|-------------|----------|
|                            |                                               |                                           |                                            |                                           |                                             | DPAK        | D <sup>2</sup> PAK | IPAK        | TO-220AB |
| 8                          | 600                                           | 70                                        | 5                                          | 25                                        | 50                                          | TN805-600B  |                    | TN805-600H  |          |
| 8                          | 600                                           | 70                                        | 15                                         | 40                                        | 150                                         | TN815-600B  |                    | TN815-600H  |          |
| 8                          | 600                                           | 95                                        | 15                                         | 30                                        | 150                                         |             |                    |             | TYN608   |
| 8                          | 800                                           | 70                                        | 5                                          | 20                                        | 50                                          | TN805-800B  |                    |             |          |
| 8                          | 800                                           | 70                                        | 15                                         | 40                                        | 150                                         | TN815-800B  |                    |             |          |
| 8                          | 800                                           | 95                                        | 15                                         | 30                                        | 150                                         |             |                    |             | TYN808   |
| 8                          | 1000                                          | 95                                        | 15                                         | 30                                        | 150                                         |             |                    |             | TYN1008  |
| 12                         | 600                                           | 110                                       | 15                                         | 40                                        | 200                                         | TN1215-600B |                    | TN1215-600H |          |
| 12                         | 600                                           | 140                                       | 15                                         | 30                                        | 200                                         |             | TN1215-600G        |             |          |
| 12                         | 600                                           | 140                                       | 15                                         | 30                                        | 200                                         |             |                    |             | TYN612   |
| 12                         | 600                                           | 140                                       | 5                                          | 15                                        | 40                                          |             |                    |             | TYN612T  |
| 12                         | 800                                           | 110                                       | 15                                         | 40                                        | 200                                         | TN1215-800B |                    |             |          |
| 12                         | 800                                           | 140                                       | 15                                         | 30                                        | 200                                         |             | TN1215-800G        |             |          |
| 12                         | 800                                           | 140                                       | 15                                         | 30                                        | 200                                         |             |                    |             | TYN812   |
| 12                         | 800                                           | 140                                       | 5                                          | 15                                        | 40                                          |             |                    |             | TYN812T  |

(1) : tp = 10ms  
(2) : I<sub>TSM</sub>, I<sub>GT</sub> and I<sub>H</sub> specified at T<sub>j</sub> = 25°C  
MSS : Two SCRs in back-to-back configuration

# SCRs (continued)

## Standard (T<sub>j</sub> max = 125°C) (continued)

| I <sub>T(RMS)</sub><br>(A) | V <sub>RRM</sub> /<br>V <sub>DRM</sub><br>(V) | I <sub>TSM</sub> <sup>(1)(2)</sup><br>(A) | I <sub>GT</sub> max <sup>(2)</sup><br>(μA) | I <sub>H</sub> max <sup>(2)</sup><br>(mA) | dV/dt min<br>@ T <sub>j</sub> max<br>(V/μs) | Packages |                    |      |          |
|----------------------------|-----------------------------------------------|-------------------------------------------|--------------------------------------------|-------------------------------------------|---------------------------------------------|----------|--------------------|------|----------|
|                            |                                               |                                           |                                            |                                           |                                             | DPAK     | D <sup>2</sup> PAK | IPAK | T0-220AB |
| 12                         | 1000                                          | 140                                       | 15                                         | 30                                        | 200                                         |          |                    |      | TYN1012  |
| 12                         | 1000                                          | 140                                       | 5                                          | 15                                        | 40                                          |          |                    |      | TYN1012T |
| 16                         | 600                                           | 190                                       | 25                                         | 40                                        | 500                                         |          | TN1625-600G        |      | TYN616   |
| 16                         | 800                                           | 190                                       | 25                                         | 40                                        | 500                                         |          | TN1625-800G        |      | TYN816   |
| 16                         | 1000                                          | 190                                       | 25                                         | 40                                        | 500                                         |          | TN1625-1000G       |      |          |
| 25                         | 600                                           | 300                                       | 40                                         | 50                                        | 500                                         |          | TN2540-600G        |      | TYN625   |
| 25                         | 800                                           | 300                                       | 40                                         | 50                                        | 500                                         |          | TN2540-800G        |      | TYN825   |
| 25                         | 1000                                          | 300                                       | 40                                         | 50                                        | 500                                         |          | TN2540-1000G       |      |          |
| 40                         | 600                                           | 460                                       | 35                                         | 75                                        | 1000                                        |          | TN4035-600G        |      | TYN640   |
| 40                         | 800                                           | 460                                       | 35                                         | 75                                        | 1000                                        |          |                    |      | TYN840   |

| I <sub>T(RMS)</sub><br>(A) | V <sub>RRM</sub> /<br>V <sub>DRM</sub><br>(V) | I <sub>TSM</sub> <sup>(1)(2)</sup><br>(A) | I <sub>GT</sub> max <sup>(2)</sup><br>(μA) | I <sub>H</sub> max <sup>(2)</sup><br>(mA) | dV/dt min<br>@ T <sub>j</sub> max<br>(V/μs) | Packages   |            |
|----------------------------|-----------------------------------------------|-------------------------------------------|--------------------------------------------|-------------------------------------------|---------------------------------------------|------------|------------|
|                            |                                               |                                           |                                            |                                           |                                             | RD91       | TOP3 Ins.  |
| 30                         | 600                                           | 400                                       | 50                                         | 75                                        | 500                                         |            | BTW68-600  |
| 30                         | 800                                           | 400                                       | 50                                         | 75                                        | 500                                         |            | BTW68-800  |
| 30                         | 1000                                          | 400                                       | 50                                         | 75                                        | 250                                         |            | BTW68-1000 |
| 50                         | 600                                           | 580                                       | 80                                         | 150                                       | 500                                         | BTW67-600  | BTW69-600  |
| 50                         | 800                                           | 580                                       | 80                                         | 150                                       | 500                                         | BTW67-800  | BTW69-800  |
| 50                         | 1200                                          | 580                                       | 80                                         | 150                                       | 250                                         | BTW67-1200 | BTW69-1200 |

## Modules

| I <sub>T(RMS)</sub><br>(A) | V <sub>RRM</sub> /<br>V <sub>DRM</sub><br>(V) | I <sub>TSM</sub> <sup>(1)(2)</sup><br>(A) | I <sub>GT</sub> max <sup>(2)</sup><br>(μA) | I <sub>H</sub> max <sup>(2)</sup><br>(mA) | dV/dt min<br>@ T <sub>j</sub> max<br>(V/μs) | Packages   |
|----------------------------|-----------------------------------------------|-------------------------------------------|--------------------------------------------|-------------------------------------------|---------------------------------------------|------------|
|                            |                                               |                                           |                                            |                                           |                                             | ISOTOP     |
| 55                         | 1200                                          | 400 <sup>(1)</sup>                        | 50                                         | 80                                        | 1000                                        | MSS40-1200 |
| 70                         | 800                                           | 400 <sup>(1)</sup>                        | 50                                         | 80                                        | 1000                                        | MSS50-800  |
| 70                         | 1200                                          | 400 <sup>(1)</sup>                        | 50                                         | 80                                        | 1000                                        | MSS50-1200 |

(1) : tp = 10ms  
(2) : I<sub>TSM</sub>, I<sub>GT</sub> and I<sub>H</sub> specified at T<sub>j</sub> = 25°C  
MSS : Two SCRs in back-to-back configuration

# Standard

| I <sub>T(RMS)</sub><br>(A) | V <sub>RRM</sub> /<br>V <sub>DRM</sub><br>(V) | I <sub>TSM</sub> <sup>(1)(2)</sup><br>(A) | I <sub>GT</sub> max <sup>(2)</sup><br>(I > III)<br>(mA) | I <sub>GT</sub> max <sup>(2)</sup><br>(IV)<br>(mA) | (dV/dt) <sub>c</sub><br>min<br>(V/μs) | dV/dt<br>min<br>(V/μs) | Packages |          |         |
|----------------------------|-----------------------------------------------|-------------------------------------------|---------------------------------------------------------|----------------------------------------------------|---------------------------------------|------------------------|----------|----------|---------|
|                            |                                               |                                           |                                                         |                                                    |                                       |                        | SOT-223  | T0-92    | T0202-3 |
| 0.8                        | 600                                           | 9                                         | 5                                                       | 7                                                  | 1.5                                   | 10                     |          | Z00607MA |         |
| 1                          | 600                                           | 8                                         | 3                                                       | 5                                                  | 0.5                                   | 10                     | Z0103MN  | Z0103MA  |         |
| 1                          | 600                                           | 8                                         | 5                                                       | 7                                                  | 1                                     | 20                     | Z0107MN  | Z0107MA  |         |
| 1                          | 600                                           | 8                                         | 10                                                      | 10                                                 | 2                                     | 50                     | Z0109MN  | Z0109MA  |         |
| 1                          | 600                                           | 8                                         | 25                                                      | 25                                                 | 5                                     | 100                    | Z0110MN  | Z0110MA  |         |
| 1                          | 800                                           | 8                                         | 3                                                       | 5                                                  | 0.5                                   | 10                     |          | Z0103NA  |         |
| 1                          | 800                                           | 8                                         | 5                                                       | 7                                                  | 1                                     | 20                     | Z0107NN  | Z0107NA  |         |
| 1                          | 800                                           | 8                                         | 10                                                      | 10                                                 | 2                                     | 50                     | Z0109NN  | Z0109NA  |         |
| 1                          | 800                                           | 8                                         | 25                                                      | 25                                                 | 5                                     | 100                    |          | Z0110NA  |         |
| 4                          | 600                                           | 20                                        | 3                                                       | 3                                                  | 0.5                                   | 100                    |          |          | Z0402MF |
| 4                          | 600                                           | 20                                        | 5                                                       | 5                                                  | 1                                     | 20                     |          |          | Z0405MF |
| 4                          | 600                                           | 20                                        | 10                                                      | 10                                                 | 2                                     | 100                    |          |          | Z0409MF |
| 4                          | 600                                           | 20                                        | 25                                                      | 25                                                 | 5                                     | 200                    |          |          | Z0410MF |
| 4                          | 800                                           | 20                                        | 5                                                       | 5                                                  | 1                                     | 20                     |          |          | Z0405NF |
| 4                          | 800                                           | 20                                        | 10                                                      | 10                                                 | 2                                     | 100                    |          |          | Z0409NF |
| 4                          | 800                                           | 20                                        | 25                                                      | 25                                                 | 5                                     | 200                    |          |          | Z0410NF |

| I <sub>T(RMS)</sub><br>(A) | V <sub>RRM</sub> /<br>V <sub>DRM</sub><br>(V) | I <sub>TSM</sub> <sup>(1)(2)</sup><br>(A) | I <sub>GT</sub> max <sup>(2)</sup><br>(I > III)<br>(mA) | I <sub>GT</sub> max <sup>(2)</sup><br>(IV)<br>(mA) | (dV/dt) <sub>c</sub><br>min<br>(V/μs) | dV/dt<br>min<br>(V/μs) | Packages     |               |
|----------------------------|-----------------------------------------------|-------------------------------------------|---------------------------------------------------------|----------------------------------------------------|---------------------------------------|------------------------|--------------|---------------|
|                            |                                               |                                           |                                                         |                                                    |                                       |                        | T0-220AB     | T0-220AB Ins. |
| 4                          | 600                                           | 35                                        | 10                                                      | 25                                                 | 10                                    | 75                     | BTB04-600SL  |               |
| 6                          | 600                                           | 60                                        | 50                                                      | 100                                                | 10                                    | 400                    | BTB06-600BRG | BTA06-600BRG  |
| 6                          | 600                                           | 60                                        | 25                                                      | 50                                                 | 5                                     | 200                    | BTB06-600CRG | BTA06-600CRG  |
| 6                          | 800                                           | 60                                        | 50                                                      | 100                                                | 10                                    | 400                    | BTB06-800BRG | BTA06-800BRG  |
| 6                          | 800                                           | 60                                        | 25                                                      | 50                                                 | 5                                     | 200                    | BTB06-800CRG | BTA06-800CRG  |
| 8                          | 600                                           | 80                                        | 50                                                      | 100                                                | 10                                    | 400                    | BTB08-600BRG | BTA08-600BRG  |
| 8                          | 600                                           | 80                                        | 25                                                      | 50                                                 | 5                                     | 200                    | BTB08-600CRG | BTA08-600CRG  |
| 8                          | 800                                           | 80                                        | 50                                                      | 100                                                | 10                                    | 400                    | BTB08-800BRG | BTA08-800BRG  |
| 8                          | 800                                           | 80                                        | 25                                                      | 50                                                 | 5                                     | 200                    | BTB08-800CRG | BTA08-800CRG  |
| 10                         | 600                                           | 100                                       | 50                                                      | 100                                                | 10                                    | 400                    | BTB10-600BRG | BTA10-600BRG  |
| 10                         | 600                                           | 100                                       | 25                                                      | 50                                                 | 5                                     | 200                    | BTB10-600CRG | BTA10-600CRG  |
| 10                         | 800                                           | 100                                       | 50                                                      | 100                                                | 10                                    | 400                    | BTB10-800BRG | BTA10-800BRG  |
| 10                         | 800                                           | 100                                       | 25                                                      | 50                                                 | 5                                     | 200                    | BTB10-800CRG | BTA10-800CRG  |
| 12                         | 600                                           | 120                                       | 50                                                      | 100                                                | 10                                    | 400                    | BTB12-600BRG | BTA12-600BRG  |
| 12                         | 600                                           | 120                                       | 25                                                      | 50                                                 | 5                                     | 200                    | BTB12-600CRG | BTA12-600CRG  |
| 12                         | 800                                           | 120                                       | 50                                                      | 100                                                | 10                                    | 400                    | BTB12-800BRG | BTA12-800BRG  |
| 12                         | 800                                           | 120                                       | 25                                                      | 50                                                 | 5                                     | 200                    | BTB12-800CRG | BTA12-800CRG  |
| 16                         | 600                                           | 160                                       | 50                                                      | 100                                                | 10                                    | 400                    | BTB16-600BRG | BTA16-600BRG  |
| 16                         | 800                                           | 160                                       | 25                                                      | 50                                                 | 5                                     | 200                    | BTB16-600CRG | BTA16-600CRG  |
| 16                         | 800                                           | 160                                       | 50                                                      | 100                                                | 10                                    | 400                    | BTB16-800BRG | BTA16-800BRG  |
| 16                         | 800                                           | 160                                       | 25                                                      | 50                                                 | 5                                     | 200                    | BTB16-800CRG | BTA16-800CRG  |

| I <sub>T(RMS)</sub><br>(A) | V <sub>RRM</sub> /<br>V <sub>DRM</sub><br>(V) | I <sub>TSM</sub> <sup>(1)(2)</sup><br>(A) | I <sub>GT</sub> max <sup>(2)</sup><br>(I > III)<br>(mA) | I <sub>GT</sub> max <sup>(2)</sup><br>(IV)<br>(mA) | (dV/dt) <sub>c</sub><br>min<br>(V/μs) | dV/dt<br>min<br>(V/μs) | Packages   |              |              |              |
|----------------------------|-----------------------------------------------|-------------------------------------------|---------------------------------------------------------|----------------------------------------------------|---------------------------------------|------------------------|------------|--------------|--------------|--------------|
|                            |                                               |                                           |                                                         |                                                    |                                       |                        | RD91       | TOP3         | TOP31        | T0-220AB     |
| 25                         | 600                                           | 250                                       | 50                                                      | 100                                                | 10                                    | 500                    | BTA25-600B | BTB26-600BRG | BTA26-600BRG | BTB24-600BRG |
| 25                         | 800                                           | 250                                       | 50                                                      | 100                                                | 10                                    | 500                    | BTA25-800B |              | BTA26-800BRG | BTB24-800BRG |
| 40                         | 600                                           | 400                                       | 50                                                      | 100                                                | 10                                    | 500                    | BTA40-600B | BTB41-600BRG | BTA41-600BRG |              |
| 40                         | 800                                           | 400                                       | 50                                                      | 100                                                | 10                                    | 500                    | BTA40-800B | BTB41-800BRG | BTA41-800BRG |              |

(1): t<sub>p</sub> = 20ms

(2): I<sub>TSM</sub>, I<sub>GT</sub> and I<sub>H</sub> specified at T<sub>j</sub> = 25°C

# Triacs (continued)

## Snubberless™ and logic level

| T <sub>(RMS)</sub><br>(A) | V <sub>RRM</sub> /<br>V <sub>DRM</sub><br>(V) | I <sub>TSM</sub> <sup>(1)(2)</sup><br>(A) | I <sub>GT</sub> max <sup>(2)</sup><br>(I > III)<br>(mA) | (di/dt) <sub>c</sub><br>min<br>(A/ms) | dV/dt<br>min<br>(V/μs) | Packages  |                    |           |               |               |               |
|---------------------------|-----------------------------------------------|-------------------------------------------|---------------------------------------------------------|---------------------------------------|------------------------|-----------|--------------------|-----------|---------------|---------------|---------------|
|                           |                                               |                                           |                                                         |                                       |                        | DPAK      | D <sup>2</sup> PAK | IPAK      | ISO WATT220AB | T0-220AB      | T0-220AB Ins. |
| 4                         | 600                                           | 30                                        | 5                                                       | 0.9                                   | 20                     | T405-600B |                    | T405-600H | T405-600W     | T405-600T     |               |
| 4                         | 600                                           | 30                                        | 10                                                      | 2                                     | 40                     | T410-600B |                    | T410-600H | T410-600W     | T410-600T     |               |
| 4                         | 600                                           | 30                                        | 35                                                      | 2.5                                   | 400                    | T435-600B |                    | T435-600H | T435-600W     | T435-600T     |               |
| 4                         | 800                                           | 30                                        | 5                                                       | 0.9                                   | 20                     | T405-800B |                    | T405-800H | T405-800W     | T405-800T     |               |
| 4                         | 800                                           | 30                                        | 10                                                      | 2                                     | 40                     | T410-800B |                    | T410-800H | T410-800W     | T410-800T     |               |
| 4                         | 800                                           | 30                                        | 35                                                      | 2.5                                   | 400                    | T435-800B |                    | T435-800H | T435-800W     | T435-800T     |               |
| 6                         | 600                                           | 60                                        | 50                                                      | 5.3                                   | 1000                   |           |                    |           |               | BTB06-600BWRG | BTA06-600BWRG |
| 6                         | 600                                           | 60                                        | 35                                                      | 3.5                                   | 400                    |           |                    |           |               | BTB06-600CWRG | BTA06-600CWRG |
| 6                         | 600                                           | 60                                        | 10                                                      | 2.4                                   | 40                     |           |                    |           |               | BTB06-600SWRG | BTA06-600SWRG |
| 6                         | 600                                           | 60                                        | 5                                                       | 1.2                                   | 20                     |           |                    |           |               | BTB06-600TWRG | BTA06-600TWRG |
| 6                         | 600                                           | 80                                        | 20                                                      | 3.3                                   | 300                    |           |                    |           |               |               | T620-600W     |
| 6                         | 600                                           | 80                                        | 30                                                      | 4.5                                   | 500                    |           |                    |           |               |               | T630-600W     |
| 8                         | 600                                           | 80                                        | 50                                                      | 7                                     | 1000                   |           |                    |           |               | BTB08-600BWRG | BTA08-600BWRG |
| 8                         | 600                                           | 80                                        | 35                                                      | 4.5                                   | 400                    |           |                    |           |               | BTB08-600CWRG | BTA08-600CWRG |
| 8                         | 600                                           | 80                                        | 10                                                      | 2.8                                   | 40                     |           |                    |           |               | BTB08-600SWRG | BTA08-600SWRG |
| 8                         | 600                                           | 80                                        | 5                                                       | 1.5                                   | 20                     |           |                    |           |               | BTB08-600TWRG | BTA08-600TWRG |
| 8                         | 600                                           | 80                                        | 10                                                      | 2.5                                   | 40                     | T810-600B |                    |           |               |               |               |
| 8                         | 600                                           | 80                                        | 35                                                      | 4.5                                   | 400                    | T835-600B |                    |           |               |               |               |
| 8                         | 600                                           | 80                                        | 35                                                      | 4.5                                   | 400                    |           | T835-600G          |           |               |               |               |
| 8                         | 800                                           | 80                                        | 50                                                      | 7                                     | 1000                   |           |                    |           |               | BTB08-800BWRG | BTA08-800BWRG |
| 8                         | 800                                           | 80                                        | 35                                                      | 4.5                                   | 400                    |           |                    |           |               | BTB08-800CWRG | BTA08-800CWRG |
| 8                         | 800                                           | 80                                        | 10                                                      | 2.8                                   | 40                     |           |                    |           |               | BTB08-800SWRG | BTA08-800SWRG |
| 8                         | 800                                           | 80                                        | 5                                                       | 1.5                                   | 20                     |           |                    |           |               | BTB08-800TWRG | BTA08-800TWRG |
| 8                         | 800                                           | 80                                        | 10                                                      | 2.8                                   | 40                     | T810-800B |                    |           |               |               |               |
| 8                         | 800                                           | 80                                        | 35                                                      | 4.5                                   | 400                    | T835-800B |                    |           |               |               |               |
| 8                         | 800                                           | 100                                       | 20                                                      | 4.5                                   | 300                    |           |                    |           | T820-800W     |               |               |
| 8                         | 800                                           | 100                                       | 30                                                      | 4.5                                   | 500                    |           |                    |           | T830-800W     |               |               |
| 10                        | 600                                           | 100                                       | 50                                                      | 9                                     | 1000                   |           |                    |           |               | BTB10-600BWRG | BTA10-600BWRG |
| 10                        | 600                                           | 100                                       | 35                                                      | 5.5                                   | 500                    |           |                    |           |               | BTB10-600CWRG | BTA10-600CWRG |
| 10                        | 800                                           | 100                                       | 50                                                      | 9                                     | 1000                   |           |                    |           |               | BTB10-800BWRG | BTA10-800BWRG |
| 10                        | 800                                           | 100                                       | 35                                                      | 5.5                                   | 500                    |           |                    |           |               | BTB10-800CWRG | BTA10-800CWRG |
| 12                        | 600                                           | 120                                       | 50                                                      | 12                                    | 1000                   |           |                    |           |               | BTB12-600BWRG | BTA12-600BWRG |
| 12                        | 600                                           | 120                                       | 35                                                      | 6.5                                   | 500                    |           |                    |           |               | BTB12-600CWRG | BTA12-600CWRG |
| 12                        | 600                                           | 120                                       | 10                                                      | 2.9                                   | 40                     |           |                    |           |               | BTB12-600SWRG | BTA12-600SWRG |
| 12                        | 600                                           | 120                                       | 35                                                      | 6.5                                   | 500                    |           | T1235-600G         |           |               |               |               |
| 12                        | 800                                           | 120                                       | 50                                                      | 12                                    | 1000                   |           |                    |           |               | BTB12-800BWRG | BTA12-800BWRG |
| 12                        | 800                                           | 120                                       | 35                                                      | 6.5                                   | 500                    |           |                    |           |               | BTB12-800CWRG | BTA12-800CWRG |
| 12                        | 800                                           | 120                                       | 10                                                      | 2.9                                   | 40                     |           |                    |           |               | BTB12-800SWRG | BTA12-800SWRG |
| 12                        | 800                                           | 120                                       | 35                                                      | 6.5                                   | 500                    |           | T1235-800G         |           |               |               |               |
| 16                        | 600                                           | 160                                       | 50                                                      | 14                                    | 1000                   |           |                    |           |               | BTB16-600BWRG | BTA16-600BWRG |
| 16                        | 600                                           | 160                                       | 35                                                      | 8.5                                   | 500                    |           |                    |           |               | BTB16-600CWRG | BTA16-600CWRG |
| 16                        | 600                                           | 160                                       | 10                                                      | 3                                     | 40                     |           |                    |           |               | BTB16-600SWRG | BTA16-600SWRG |
| 16                        | 600                                           | 200                                       | 20                                                      | 8.5                                   | 300                    |           |                    |           | T1620-600W    |               |               |
| 16                        | 600                                           | 200                                       | 30                                                      | 11                                    | 500                    |           |                    |           | T1630-600W    |               |               |
| 16                        | 600                                           | 160                                       | 35                                                      | 8.5                                   | 500                    |           | T1635-600G         |           |               |               |               |
| 16                        | 800                                           | 160                                       | 50                                                      | 14                                    | 1000                   |           |                    |           |               | BTB16-800BWRG | BTA16-800BWRG |
| 16                        | 800                                           | 160                                       | 35                                                      | 8.5                                   | 500                    |           |                    |           |               | BTB16-800CWRG | BTA16-800CWRG |

(1): t<sub>p</sub> = 20ms  
(2): I<sub>TSM</sub>, I<sub>GT</sub> and I<sub>H</sub> specified at T<sub>j</sub> = 25°C

# Triacs (continued)

## Snubberless and logic level (continued)

| $I_T$ (RMS)<br>(A) | $V_{RRM}/V_{DRM}$<br>(V) | $I_{TSM}^{(1)(2)}$<br>(A) | $I_{GT} \max^{(2)}$<br>(I > III)<br>(mA) | $(di/dt)c_{min}$<br>(A/ms) | $dV/dt_{min}$<br>(V/ $\mu$ s) | Packages           |             |               |               |               |
|--------------------|--------------------------|---------------------------|------------------------------------------|----------------------------|-------------------------------|--------------------|-------------|---------------|---------------|---------------|
|                    |                          |                           |                                          |                            |                               | D <sup>2</sup> PAK | RD91        | TOP31         | TO-220AB      | TO-220AB ins. |
| 25                 | 600                      | 250                       | 50                                       | 22                         | 1000                          |                    |             |               | BTB24-600BWRG | BTA24-600BWRG |
| 25                 | 600                      | 250                       | 35                                       | 13                         | 500                           |                    |             |               | BTB24-600CWRG | BTA24-600CWRG |
| 25                 | 600                      | 250                       | 50                                       | 22                         | 1000                          |                    | BTA25-600BW |               |               |               |
| 25                 | 600                      | 250                       | 35                                       | 13                         | 500                           |                    | BTA25-600CW |               |               |               |
| 25                 | 600                      | 250                       | 50                                       | 22                         | 1000                          |                    |             | BTA26-600BWRG |               |               |
| 25                 | 600                      | 250                       | 35                                       | 13                         | 500                           | T2535-600G         |             |               |               |               |
| 25                 | 800                      | 250                       | 50                                       | 22                         | 1000                          |                    |             |               | BTB24-800BWRG | BTA24-800BWRG |
| 25                 | 800                      | 250                       | 35                                       | 13                         | 500                           |                    |             |               | BTB24-800CWRG | BTA24-800CWRG |
| 25                 | 800                      | 250                       | 50                                       | 22                         | 1000                          |                    | BTA25-800BW |               |               |               |
| 25                 | 800                      | 250                       | 50                                       | 22                         | 1000                          |                    |             | BTA26-800BWRG |               |               |
| 25                 | 800                      | 250                       | 35                                       | 13                         | 500                           |                    |             | BTA26-800CWRG |               |               |
| 25                 | 800                      | 250                       | 35                                       | 13                         | 500                           | T2535-800G         |             |               |               |               |

## High temperature snubberless

| $I_T$ (RMS)<br>(A) | $V_{RRM}/V_{DRM}$<br>(V) | $T_c$<br>(°C) | $I_{TSM}^{(1)(2)}$<br>(A) | $I_{GT} \max^{(2)}$<br>(I > III)<br>(mA) | $(di/dt)c_{min}^{(3)}$<br>(A/ms) | $R_{th(j-c)}$<br>max<br>(°C/W) | Packages           |           |               |
|--------------------|--------------------------|---------------|---------------------------|------------------------------------------|----------------------------------|--------------------------------|--------------------|-----------|---------------|
|                    |                          |               |                           |                                          |                                  |                                | D <sup>2</sup> PAK | TO-220AB  | TO-220AB ins. |
| 8                  | 600                      | 135           | 80                        | 35                                       | 11                               | 1.85                           | T835H-6G           | T835H-6T  | T835H-6I      |
| 8                  | 600                      | 135           | 80                        | 50                                       | 14                               | 1.85                           | T850H-6G           | T850H-6T  | T850H-6I      |
| 10                 | 600                      | 135           | 100                       | 35                                       | 13                               | 1.45                           | T1035H-6G          | T1035H-6T | T1035H-6I     |
| 10                 | 600                      | 135           | 100                       | 50                                       | 18                               | 1.45                           | T1050H-6G          | T1050H-6T | T1050H-6I     |
| 12                 | 600                      | 130           | 120                       | 35                                       | 16                               | 1.4                            | T1235H-6G          | T1235H-6T | T1235H-6I     |
| 12                 | 600                      | 130           | 120                       | 50                                       | 21                               | 1.4                            | T1250H-6G          | T1250H-6T | T1250H-6I     |
| 16                 | 600                      | 130           | 160                       | 35                                       | 21                               | 1.15                           | T1635H-6G          | T1635H-6T | T1635H-6I     |
| 16                 | 600                      | 130           | 160                       | 50                                       | 28                               | 1.15                           | T1650H-6G          | T1650H-6T | T1650H-6I     |
| 20                 | 600                      | 130           | 200                       | 35                                       | 27                               | 1                              |                    | T2035H-6T |               |
| 20                 | 600                      | 130           | 200                       | 50                                       | 36                               | 1                              |                    | T2050H-6T |               |

# DIACS

## Trigger diode

| $V_{BO}$ |         |         | $V_{BO}$<br>symmetry<br>(V) | $I_{BO}$<br>max<br>( $\mu$ A) | $\Delta V$ (dynamic<br>$V_{BO}$ )<br>(V) | Packages |        |
|----------|---------|---------|-----------------------------|-------------------------------|------------------------------------------|----------|--------|
| Min (V)  | Typ (V) | Max (V) |                             |                               |                                          | D0-35    | SOT-23 |
| 28       | 32      | 36      | $\pm 3$                     | 50                            | 5                                        | DB3      |        |
| 30       | 32      | 34      | $\pm 2$                     | 15                            | 9                                        | DB3TG    |        |
| 35       | 40      | 45      | $\pm 3$                     | 50                            | 5                                        | DB4      |        |
| 28       | 32      | 36      | $\pm 3$                     | 10                            | 10                                       |          | SMDB3  |

(1):  $t_p = 20ms$   
(2):  $I_{TSM}$  and  $I_{GT}$  specified at  $T_j = 25^\circ C$   
(3): Without snubber,  $T_j = 150^\circ C$   
■ : New products

# ASDs (application specific devices)

## Ignitors for industrial applications

### Fire lighter circuit: control circuit for gas hobs, fuel ignition, electrical fence

Fire lighter circuits have been developed for systems with gas ignition like furnaces, boilers, fuel control ignition, gas ranges and barbecues. They are based on spark generation through capacitive discharge mode and provide high pulse and high noise immunity level in a fully integrated solution.

| Voltage source (V) | V <sub>BO</sub> |         | Peak current @ 10µs (A) | Packages      |            |            |
|--------------------|-----------------|---------|-------------------------|---------------|------------|------------|
|                    | Min (V)         | Max (V) |                         | DPAK          | IPAK       | T0-92      |
| 220AC              | 206             | 233     | 190                     | FLC01-200B-TR | FLC01-200H |            |
| 220AC              | 206             | 233     | 240                     | FLC10-200B    | FLC10-200H |            |
| DC battery         | 140             | 160     | 90                      |               |            | FLC21-135A |

## Ignitors for lighting applications

### Sensitive gate SCR's (T<sub>j</sub> max. = 125°C) for fluorescent tube starter

The TN22/P01 combination is specifically intended for use in fluorescent tube ignition starters. Thanks to the high voltage capability of the TN22 coupled with the very sensitive P01 pilot SCR, this circuit kit provides high energy striking capabilities with low triggering power.

| I <sub>T</sub> (RMS) (A) | V <sub>RRM</sub> /V <sub>DRM</sub> (V) | I <sub>TSM</sub> <sup>(1)(2)</sup> (A) | I <sub>GT</sub> max <sup>(2)</sup> (µA) | I <sub>H</sub> max <sup>(2)</sup> (mA) | dV/dt min @ T <sub>j</sub> max (V/µs) | Packages |            |            |                    |            |
|--------------------------|----------------------------------------|----------------------------------------|-----------------------------------------|----------------------------------------|---------------------------------------|----------|------------|------------|--------------------|------------|
|                          |                                        |                                        |                                         |                                        |                                       | T0-92    | DPAK       | IPAK       | I <sup>2</sup> PAK | T0-220AB   |
| 0.8                      | 100                                    | 7                                      | 1                                       | 5                                      | 25                                    | P0130AA  |            |            |                    |            |
| 2                        | 400                                    | 1.5                                    | 1500                                    | 175                                    | 500                                   |          | TN22-1500B | TN22-1500H | TN22-1500R         | TN22-1500T |

### LIC: High intensity discharge lamp starter

The LIC is the core of the electronic ignitors for high intensity discharge lamps supplied by magnetic ballast. The main applications are outdoor, street or building lighting fixtures using high pressure sodium or metal halide lamps. The LIC devices provide a high pulse current capability and a low holding current, to secure lamp ignition with multi-pulse striking, while offering high reliability level and space saving as a standalone circuit.

| V <sub>BO</sub> |         | Peak current @ 10µs (A) | I <sub>H</sub> min (mA) | dI/dt max (A/µs) | Packages      |            |
|-----------------|---------|-------------------------|-------------------------|------------------|---------------|------------|
| Min (V)         | Max (V) |                         |                         |                  | IPAK          | T0-92      |
| 195             | 230     | 50                      | 50                      | 80               |               | LIC01-195H |
| 215             | 255     | 50                      | 50                      | 80               | LIC01-215B-TR | LIC01-215H |

(1): tp = 10ms  
(2): I<sub>TSM</sub>, I<sub>GT</sub> and I<sub>H</sub> specified at T<sub>j</sub> = 25° C  
■ : New products



# ASDs (application specific devices continued)

## Industrial applications

### Inrush current limitation circuit

The STIL is a circuit combining two unidirectional switches for use in a controlled bridge primary rectification configuration. Compared to the traditional inrush current limitation circuits, the SCR bridge configuration using the STIL offers reduced power losses and higher efficiency, reduced size, full operation during a.c. on/off cycles with PFC and absence of PCB hot spots during nominal operation.

| $I_{out} / V_{Rout}$<br>(A) | $I_{out}(AV)$<br>(A) | $I_{TSM}^*$<br>(A) | $I_{p1+Ip2}$<br>typ<br>(mA) | $I_{Rout}$ (on)<br>( $\mu A$ ) | $V_F @ I_{out}$ (AV) |     | $dV_{Dout}/dt$ min<br>@ $T_j$ max | Packages  |           |
|-----------------------------|----------------------|--------------------|-----------------------------|--------------------------------|----------------------|-----|-----------------------------------|-----------|-----------|
|                             |                      |                    |                             |                                | (V)                  | (A) |                                   | PENTAWATT | T0-220 5L |
| 700                         | 4                    | 65                 | 20                          | 300                            | 1.2                  | 4   | 500                               | STIL04-P5 |           |
| 700                         | 6                    |                    | 20                          | 300                            | 1.1                  | 6   | 500                               |           | STIL06-T5 |
| 700                         | 8                    |                    | 20                          | 300                            | 1                    | 8   | 500                               |           | STIL08-T5 |

### Power control circuit

The STCC is a control circuit that fully embeds the monitoring and driving functions required for power and safety management in ovens, air conditioners, refrigerators and washers.

| $V_{IN}$ |         | V supply<br>typ<br>(V) | Temp<br>(°C) | Functions |                      |                     | Input<br>interface | Packages |        |
|----------|---------|------------------------|--------------|-----------|----------------------|---------------------|--------------------|----------|--------|
| Min (V)  | Max (V) |                        |              | ZVS       | Driver               | Security            |                    | DIP-16   | DIP-20 |
| 7        | 27      | 5                      | -10 to 85    | Yes       | 2 relays<br>1 buzzer | Door close<br>Reset |                    | STCC02   |        |
| 9        | 18      | 5                      | -20 to 85    | Yes       | 4 relays<br>1 buzzer | Reset               | Speed sensor       |          | STCC05 |

### Current limited overvoltage protected quad digital termination

The CLT3-4 is a 3mA quadruple input digital termination device designed for 24V DC automation applications. It achieves the compact front-end of a digital input by minimizing the external component count, so reducing the printed board size and the losses in conduction. The CLT3-4 application is the termination for IEC 61131-2 type 1 input and logic interface for EN60947-5-2 proximity sensor in industrial automation such as: Programmable logic controller, field bus nodes and machine tool interface.

| $V_{CC}$<br>(V) | $V_I$<br>(V) | $I_{LIM}$ min/max<br>(mA) | $I_{OFF}/V_{OFF}$<br>(mA/V) | ESD<br>in air<br>(kV) | Surge<br>1.2/50 $\mu$ s<br>(kV) | Packages  |
|-----------------|--------------|---------------------------|-----------------------------|-----------------------|---------------------------------|-----------|
| 19 to 35        | -30 to 35    | 2.1 / 3.7                 | 1.5 / 5                     | $\pm$ 8               | 1                               | TSS0P20   |
|                 |              |                           |                             |                       |                                 | CLT3-4BT6 |

### Dual current limited overvoltage protected digital termination

The PCLT-2A is a dual sensor termination device to be included in the design of the front-end of a 24 V DC digital input module in factory automation. Its flexibility will allow designers to develop a large variety of input types in isolated and un-isolated versions. The current limiters are programmable from 2.5mA to 7.5mA typical. With its robust protection and its current limiter, it is a low-loss EMI-proof solution for highly integrated module interfacing with proximity detectors.

| $V_{CC}$<br>(V) | $V_I$<br>(V) | $I_{LIM}$ min/max<br>(mA) | $I_{OFF}/V_{OFF}$<br>(mA/V) | ESD<br>in air<br>(kV) | Surge<br>1.2/50 $\mu$ s<br>(kV) | Packages                 |
|-----------------|--------------|---------------------------|-----------------------------|-----------------------|---------------------------------|--------------------------|
| 19 to 35        | -30 to 35    | 6.1/8.8/2.8/4.3           | 2/5                         | $\pm$ 15              | 0.5/1                           | TSS0P20<br>(exposed pad) |
|                 |              |                           |                             |                       |                                 | PCLT-2AT4                |

(1):  $t_p = 10ms$   
■ : New products

# AC switches

## ACS™ and ACST devices for home appliances

The ACS series is a new generation of switches specifically developed for home appliances and industrial processing applications. Thanks to their integrated overvoltage protection and level shifter, no MOV protection is needed, provide safety such as defined in IEC61000 standards, and are easy to drive directly from microprocessors. The ACST series keeps the overvoltage protection structure of the ACS with standard gate sensitivity.

| $I_{T(RMS)}$<br>(A) | $V_{RRM}/V_{DRM}$<br>(V) | $V_{CL}$ @ 1mA typ <sup>(2)</sup><br>(V) | $I_{GT}$ max <sup>(4)</sup><br>(mA) | (di/dt)c @ T <sub>J</sub> =125°C<br>(A/ms) | dV/dt @ T <sub>J</sub> =125°C<br>(V/μs) |
|---------------------|--------------------------|------------------------------------------|-------------------------------------|--------------------------------------------|-----------------------------------------|
| 3 x 0.2             | 500                      | 600                                      | 5                                   | 0.15 <sup>(3)</sup>                        | 300 <sup>(3)</sup>                      |
| 4 x 0.2             | 500                      | 600                                      | 10                                  | 0.3 <sup>(3)</sup>                         | 500 <sup>(3)</sup>                      |
| 0.2                 | 600                      | 700 <sup>(2)</sup>                       | 5                                   | 0.15                                       | 300                                     |
| 0.8                 | 600                      | 700 <sup>(2)</sup>                       | 10                                  | 0.3                                        | 500                                     |
| 1                   | 700                      | 1100                                     | 10                                  | 0.5                                        | 500                                     |
| 2                   | 700                      | 1100                                     | 10                                  | 1                                          | 500                                     |

| $I_{T(RMS)}$<br>(A) | $V_{RRM}/V_{DRM}$<br>(V) | $V_{CL}$ @ 1mA typ <sup>(2)</sup><br>(A) | $I_{GT}$ max <sup>(4)</sup><br>(mA) | (di/dt)c @ T <sub>J</sub> =125°C<br>(A/ms) | dV/dt @ T <sub>J</sub> =125°C<br>(V/μs) |
|---------------------|--------------------------|------------------------------------------|-------------------------------------|--------------------------------------------|-----------------------------------------|
| 2                   | 800                      | 850                                      | 10                                  | 0.5                                        | 500                                     |
| 4                   | 700                      | 1100                                     | 25                                  | 2.5                                        | 500                                     |
| 4                   | 700                      | 1100                                     | 10                                  | 2                                          | 200                                     |
| 6                   | 700                      | 1100                                     | 10                                  | 3                                          | 200                                     |
| 8                   | 800                      | 1100                                     | 30                                  | 4.5                                        | 500                                     |
| 10                  | 700                      | 850                                      | 10                                  | 5                                          | 300                                     |
| 10                  | 700                      | 850                                      | 35                                  | 12                                         | 1000                                    |
| 12                  | 700                      | 850                                      | 10                                  | 5                                          | 300                                     |
| 12                  | 700                      | 850                                      | 35                                  | 12                                         | 1000                                    |

1) : tp = 1ms  
(2): Minimum value  
(3): T<sub>J</sub> = 110°C  
(4): I<sub>GT</sub> specified at T<sub>J</sub> = 25°C  
■ : New products

| Packages    |             |            |            |            |            |            |             |            |
|-------------|-------------|------------|------------|------------|------------|------------|-------------|------------|
| DIP-8       | DIP-20      | DPAK       | S0-8       | S0-20      | SOT-223    | T0-220AB   | T0-220FPAB  | T0-92      |
|             |             |            |            | ACS302-5S3 |            |            |             |            |
|             | ACS402-5SB4 |            |            |            |            |            |             |            |
|             |             |            | ACS102-6S1 |            |            |            |             | ACS102-6SA |
|             |             |            |            |            | ACS108-6SN |            |             | ACS108-6SA |
| ACS110-7SB2 |             |            |            |            | ACS110-7SN |            |             |            |
|             |             | ACS120-7SB |            |            |            | ACS120-7ST | ACS120-7SFP |            |

| Packages  |                    |           |           |            |             |
|-----------|--------------------|-----------|-----------|------------|-------------|
| DPAK      | D <sup>2</sup> PAK | IPAK      | FPAK      | T0-220AB   | T0-220FPAB  |
| ACST2-8SB |                    |           |           |            | ACST2-8SFP  |
| ACST4-7CB |                    | ACST4-7CH |           |            | ACST4-7CFP  |
| ACST4-7SB |                    | ACST4-7SH |           |            | ACST4-7SFP  |
|           | ACST6-7SG          |           | ACST6-7SR | ACST6-7ST  | ACST6-7SFP  |
|           | ACST8-8CG          |           |           | ACST8-8CT  | ACST8-8CFP  |
|           |                    |           |           | ACST10-7ST | ACST10-7SFP |
|           |                    |           |           | ACST10-7CT | ACST10-7CFP |
|           |                    |           |           | ACST12-7ST | ACST12-7SFP |
|           |                    |           |           | ACST12-7CT | ACST12-7CFP |



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