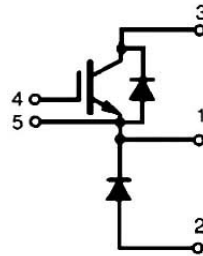
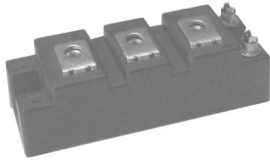
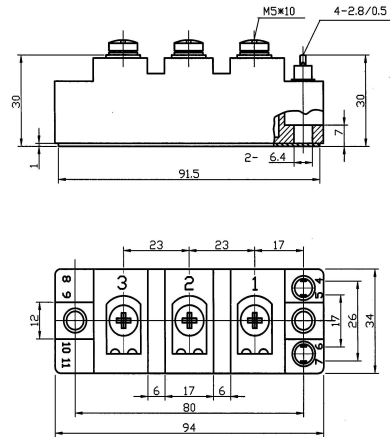


# SDI75S12

## SPT IGBT Modules



Dimensions in mm (1mm = 0.0394")



### Absolute Maximum Ratings

T<sub>c</sub> = 25°C, unless otherwise specified

| Symbol                              | Conditions  | Values          | Units |
|-------------------------------------|---|-----------------|-------|
| <b>IGBT</b>                         |   |                 |       |
| V <sub>CES</sub>                    |   | 1200            | V     |
| I <sub>C</sub>                      | T <sub>C</sub> = 25(80)°C                           | 100(70)         | A     |
| I <sub>CRM</sub>                    | T <sub>C</sub> = 25(80)°C, t <sub>P</sub> = 1ms     | 200(140)        | A     |
| V <sub>GES</sub>                    |   | ±20             | V     |
| T <sub>Vj</sub> (T <sub>stg</sub> ) | T <sub>OPERATION</sub> ≤ T <sub>stg</sub>           | -40...+150(125) | °C    |
| V <sub>isol</sub>                   | AC, 1min  | 4000            | V     |
| <b>Inverse Diode</b>                |   |                 |       |
| I <sub>F</sub> = -I <sub>C</sub>    | T <sub>C</sub> = 25(80)°C                           | 75(50)          | A     |
| I <sub>FRM</sub>                    | T <sub>C</sub> = 25(80)°C, t <sub>P</sub> = 1ms     | 200(140)        | A     |
| I <sub>FSM</sub>                    | t <sub>P</sub> = 10ms; sin.; T <sub>j</sub> = 150°C | 550             | A     |

# SDI75S12

## SPT IGBT Modules

### Characteristics

T<sub>C</sub> = 25°C, unless otherwise specified

| Symbol   | Conditions   | min. | typ.     | max.       | Units |
|--|--|------|----------|------------|-------|
| <b>IGBT</b>                                      |  |      |          |            |       |
| V <sub>GE(th)</sub>                              | V <sub>GE</sub> = V <sub>CE</sub> , I <sub>C</sub> = 4mA                             | 4.8  | 5.5      | 6.5        | V     |
| I <sub>CES</sub>                                 | V <sub>GE</sub> = 0; V <sub>CE</sub> = V <sub>CES</sub> ; T <sub>j</sub> = 25(125)°C |      | 0.1      | 0.3        | mA    |
| V <sub>CE(TO)</sub>                              | T <sub>j</sub> = 25(125)°C   |      | 1(0.9)   | 1.15(1.05) | V     |
| r <sub>CE</sub>                                  | V <sub>GE</sub> = 20V, T <sub>j</sub> = 25(125)°C                                    |      | 18(24)   | 24(30)     | mΩ    |
| V <sub>CE(sat)</sub>                             | I <sub>C</sub> = 50A; V <sub>GE</sub> = 15V; chip level                              |      | 1.9(2.1) | 2.35(2.55) | V     |
| C <sub>ies</sub>                                 | under following conditions   |      | 4.5      |            | nF    |
| C <sub>oes</sub>                                 | V <sub>GE</sub> = 0, V <sub>CE</sub> = 25V, f = 1MHz                                 |      | 0.6      |            |       |
| C <sub>res</sub>                                 |  |      | 0.55     |            |       |
| L <sub>CE</sub>                                  |  |      |          | 25         | nH    |
| R <sub>CC+EE'</sub>                              | res., terminal-chip T <sub>C</sub> = 25(125)°C                                       |      | 0.75(1)  |            | mΩ    |
| t <sub>d(on)</sub>                               | under following conditions:<br>V <sub>CC</sub> = 600V, I <sub>C</sub> = 50A          |      | 90       |            | ns    |
| t <sub>r</sub>                                   | R <sub>Gon</sub> = R <sub>Goff</sub> = 15Ω, T <sub>j</sub> = 125°C                   |      | 55       |            | ns    |
| t <sub>d(off)</sub>                              | V <sub>GE</sub> = ± 15V  |      | 400      |            | ns    |
| t <sub>f</sub>                                   |  |      | 40       |            | ns    |
| E <sub>on(Eoff)</sub>                            |  |      | 5.7(4.7) |            | mJ    |
| <b>Inverse Diode</b> under following conditions: |  |      |          |            |       |
| V <sub>F</sub> = V <sub>EC</sub>                 | I <sub>F</sub> = 50A; V <sub>GE</sub> = 0V; T <sub>j</sub> = 25(125)°C               |      | 2(1.8)   | 2.5        | V     |
| V <sub>(TO)</sub>                                | T <sub>j</sub> = 25(125)°C   |      | 1.1      | 1.2        | V     |
| r <sub>T</sub>                                   | T <sub>j</sub> = 25(125)°C   |      | 18       | 26         | mΩ    |
| I <sub>RRM</sub>                                 | I <sub>F</sub> = 50A; T <sub>j</sub> = 125°C   |      | 80       |            | A     |
| Q <sub>rr</sub>                                  | di/dt = 2100A/us   |      | 8.5      |            | uC    |
| E <sub>rr</sub>                                  | V <sub>GE</sub> = V  |      | 3.1      |            | mJ    |
| <b>Thermal Characteristics</b>                   |  |      |          |            |       |
| R <sub>th(j-c)</sub>                             | per IGBT   |      |          | 0.3        | K/W   |
| R <sub>th(j-c)D</sub>                            | per Inverse Diode  |      |          | 0.6        | K/W   |
| R <sub>th(c-s)</sub>                             | per module   |      |          | 0.05       | K/W   |
| <b>Mechanical Data</b>                           |  |      |          |            |       |
| M <sub>s</sub>                                   | to heatsink M6   | 3    |          | 5          | Nm    |
| M <sub>t</sub>                                   | to terminals M5  | 2.5  |          | 5          | Nm    |
| w  |  |      |          | 160        | g     |