



# SDI200S12

## 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> = 6mA                               | 4.8  | 5.5       | 6.45       | V     |
| I <sub>CES</sub>                                 | V <sub>GE</sub> = 0; V <sub>CE</sub> = V <sub>CE(s)</sub> ; T <sub>j</sub> = 25(125)°C |      | 0.2       | 0.6        | 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> = 15V, T <sub>j</sub> = 25(125)°C                                      |      | 6(8)      | 8(10)      | mΩ    |
| V <sub>CE(sat)</sub>                             | I <sub>c</sub> = 150A; V <sub>GE</sub> = 15V; chip level                               |      | 1.9(2.1)  | 2.35(2.55) | V     |
| C <sub>ies</sub>                                 | under following conditions   |      | 13        |            | nF    |
| C <sub>oes</sub>                                 | V <sub>GE</sub> = 0, V <sub>CE</sub> = 25V, f = 1MHz                                   |      | 2         |            |       |
| C <sub>res</sub>                                 |  |      | 2         |            |       |
| L <sub>CE</sub>                                  |  |      |           | 20         | nH    |
| R <sub>CC+EE'</sub>                              | res., terminal-chip T <sub>c</sub> = 25(125)°C   |      | 0.35(0.5) |            | mΩ    |
| t <sub>d(on)</sub>                               | under following conditions:<br>V <sub>CC</sub> = 600V, I <sub>c</sub> = 150A           |      | 125       |            | ns    |
| t <sub>r</sub>                                   | R <sub>Gon</sub> = R <sub>Goff</sub> = 7 Ω; T <sub>j</sub> = 125°C                     |      | 50        |            | ns    |
| t <sub>d(off)</sub>                              | V <sub>GE</sub> = ± 15V  |      | 620       |            | ns    |
| t <sub>f</sub>                                   |  |      | 55        |            | ns    |
| E <sub>on(Eoff)</sub>                            |  |      | 18(15)    |            | mJ    |
| <b>Inverse Diode</b> under following conditions: |  |      |           |            |       |
| V <sub>F</sub> = V <sub>EC</sub>                 | I <sub>F</sub> = 150A; 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   |      | 6         | 8.7        | mΩ    |
| I <sub>RRM</sub>                                 | I <sub>F</sub> = 150A; T <sub>j</sub> = 125°C  |      | 190       |            | A     |
| Q <sub>rr</sub>                                  | di/dt = 4800A/us   |      | 24        |            | uC    |
| E <sub>rr</sub>                                  | V <sub>GE</sub> = V  |      | 8         |            | mJ    |
| <b>Thermal Characteristics</b>                   |  |      |           |            |       |
| R <sub>th(j-c)</sub>                             | per IGBT   |      |           | 0.095      | K/W   |
| R <sub>th(j-c)D</sub>                            | per Inverse Diode  |      |           | 0.25       | K/W   |
| R <sub>th(c-s)</sub>                             | per module   |      |           | 0.038      | K/W   |
| <b>Mechanical Data</b>                           |  |      |           |            |       |
| M <sub>s</sub>                                   | to heatsink M6   | 3    |           | 5          | Nm    |
| M <sub>t</sub>                                   | to terminals M6  | 2.5  |           | 5          | Nm    |
| w  |  |      |           | 325        | g     |