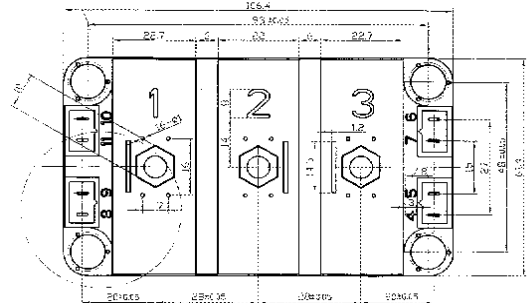
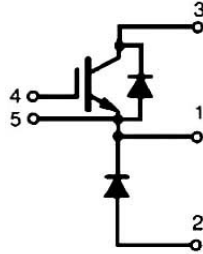
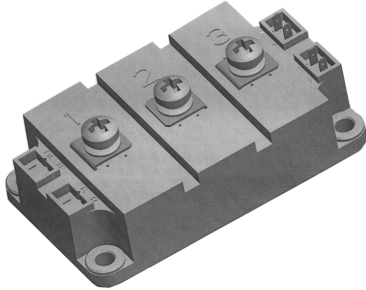


SDI400S12

SPT IGBT Modules

Dimensions in mm (1mm = 0.0394")



Absolute Maximum Ratings

$T_c = 25^\circ\text{C}$, unless otherwise specified

| Symbol | Conditions | Values | Units |
|----------------------|---|-----------------------|------------------|
| IGBT | | | |
| V_{CES} | | 1200 | V |
| I_c | $T_c = 25(80)^\circ\text{C}$ | 565(400) | A |
| I_{CRM} | $T_c = 25(80)^\circ\text{C}$, $t_P = 1\text{ms}$ | 1130(800) | A |
| V_{GES} | | ± 20 | V |
| $T_{Vj}(T_{stg})$ | $T_{OPERATION} \leq T_{stg}$ | $-40 \dots +150(125)$ | $^\circ\text{C}$ |
| V_{isol} | AC, 1min | 4000 | V |
| Inverse Diode | | | |
| $I_{F=-I_c}$ | $T_c = 25(80)^\circ\text{C}$ | 390(260) | A |
| I_{FRM} | $T_c = 25(80)^\circ\text{C}$, $t_P = 1\text{ms}$ | 1130(800) | A |
| I_{FSM} | $t_P = 10\text{ms}$; sin.; $T_j = 150^\circ\text{C}$ | 2900 | A |

SDI400S12

SPT IGBT Modules

Characteristics

T_c = 25°C, unless otherwise specified

| Symbol | Conditions | min. | typ. | max. | Units |
|--|---|------|-----------|------------|-------|
| IGBT | | | | | |
| V _{GE(th)} | V _{GE} = V _{CE} , I _c = 12mA | 4.8 | 5.5 | 6.45 | V |
| I _{CES} | V _{GE} = 0; V _{CE} = V _{CE(s)} ; T _j = 25°C | | 0.2 | 0.6 | mA |
| V _{CE(TO)} | T _j = 25(125)°C | | 1(0.9) | 1.15(1.05) | V |
| r _{CE} | V _{GE} = 15V, T _j = 25(125)°C | | 3(4) | 4(5) | mΩ |
| V _{CE(sat)} | I _c = 300A; V _{GE} = 15V; chip level | | 1.9(2.1) | 2.35(2.55) | V |
| C _{ies} | under following conditions | | 26 | | nF |
| C _{oes} | V _{GE} = 0, V _{CE} = 25V, f = 1MHz | | 3 | | |
| C _{res} | | | 3 | | |
| L _{CE} | | | | 20 | nH |
| R _{CC+EE'} | res., terminal-chip T _c = 25(125)°C | | 0.35(0.5) | | mΩ |
| t _{d(on)} | under following conditions: V _{CC} = 600V, I _c = 300A | | 110 | | ns |
| t _r | R _{Gon} = R _{Goff} = 4.7Ω, T _j = 125°C | | 60 | | ns |
| t _{d(off)} | V _{GE} = ± 15V | | 800 | | ns |
| t _f | | | 60 | | ns |
| E _{on(E_{off})} | | | 32(31) | | mJ |
| Inverse Diode under following conditions: | | | | | |
| V _F = V _{EC} | I _F = 300A; V _{GE} = 0V; T _j = 25(125)°C | | 2(1.8) | 2.5 | V |
| V _(TO) | T _j = 25(125)°C | | 1.1 | 1.2 | V |
| r _T | T _j = 25(125)°C | | 3 | 4.3 | mΩ |
| I _{RRM} | I _F = 300A; T _j = 125°C | | 176 | | A |
| Q _{rr} | di/dt = 2400A/us | | 40 | | uC |
| E _{rr} | V _{GE} = V | | 16 | | mJ |
| Thermal Characteristics | | | | | |
| R _{th(j-c)} | per IGBT | | | 0.055 | K/W |
| R _{th(j-c)D} | per Inverse Diode | | | 0.125 | K/W |
| R _{th(c-s)} | per module | | | 0.038 | K/W |
| Mechanical Data | | | | | |
| M _s | to heatsink M6 | 3 | | 5 | Nm |
| M _t | to terminals M6 | 2.5 | | 5 | Nm |
| w | | | | 325 | g |