

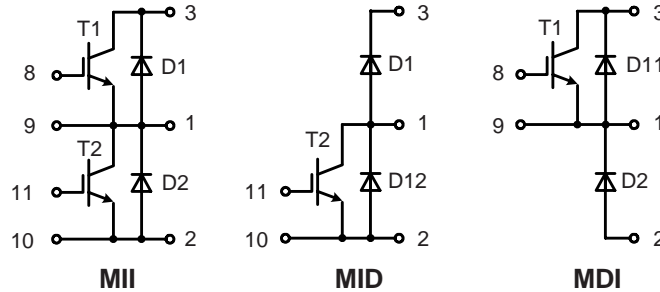
IGBT Module

phaseleg and chopper topologies

MII 400-12E4
MID 400-12E4
MDI 400-12E4

I_{C25} = 420 A
 V_{CES} = 1200 V
 $V_{CE(sat)}$ typ. = 2.2 V

Preliminary



IGBTs T1-T2

| Symbol | Conditions | Maximum Ratings | |
|---------------------|--|-----------------|---------------|
| V_{CES} | $T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$ | 1200 | V |
| V_{GES} | | ± 20 | V |
| I_{C25} | $T_C = 25^{\circ}\text{C}$ | 420 | A |
| I_{C80} | $T_C = 80^{\circ}\text{C}$ | 300 | A |
| I_{CM} | $V_{GE} = \pm 15\text{ V}; R_G = 4.7\ \Omega; T_{VJ} = 125^{\circ}\text{C}$ | 450 | A |
| V_{CEK} | RBSOA , Clamped inductive load; $L = 100\ \mu\text{H}$ | V_{CES} | |
| t_{SC} (SCSOA) | $V_{CE} = 900\text{ V}; V_{GE} = \pm 15\text{ V}; R_G = 4.7\ \Omega; T_{VJ} = 125^{\circ}\text{C}$ non repetitive | 10 | μs |
| P_{tot} | $T_C = 25^{\circ}\text{C}$ | 1700 | W |

Features

- IGBT
 - low saturation voltage
 - positive temperature coefficient
 - fast switching
 - short tail current for optimized performance in resonant circuits
- HiPerFRED™ diodes
 - fast and soft reverse recovery
 - low operating forward voltage
 - low leakage current
- Package
 - low inductive current path
 - screw connection to high current main terminals
 - use of non interchangeable connectors for auxiliary terminals possible
 - kelvin emitter terminal for easy drive
 - isolated ceramic base plate

| Symbol | Conditions | Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified) | | | |
|--|--|--|------------------------------------|----------------------------------|-----------------|
| | | min. | typ. | max. | |
| $V_{CE(sat)}$ | $I_C = 300\text{ A}; V_{GE} = 15\text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$ | | 2.2 2.6 | V V | |
| $V_{GE(th)}$ | $I_C = 10\text{ mA}; V_{GE} = V_{CE}$ | 4.5 | | 6.5 V | |
| I_{CES} | $V_{CE} = V_{CES}; V_{GE} = 0\text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$ | | 0.8 3.5 | mA mA | |
| I_{GES} | $V_{CE} = 0\text{ V}; V_{GE} = \pm 20\text{ V}$ | | | 600 nA | |
| $t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off} | Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 600\text{ V}; I_C = 300\text{ A}$ $V_{GE} = \pm 15\text{ V}; R_G = 4.7\ \Omega$ | | 150 60 680 50 36 30 | ns ns ns ns mJ mJ | |
| C_{ies} | | $V_{CE} = 25\text{ V}; V_{GE} = 0\text{ V}; f = 1\text{ MHz}$ | | 17 | nF |
| Q_{Gon} | | $V_{CE} = 600\text{ V}; V_{GE} = 15\text{ V}; I_C = 300\text{ A}$ | | 2.25 | μC |
| R_{thJC} R_{thJH} | | (per IGBT) with heatsink compound | | 0.15 | 0.08 K/W K/W |

Applications

- drives
 - AC
 - DC
- power supplies
 - rectifiers with power factor correction and recuperation capability
 - UPS

