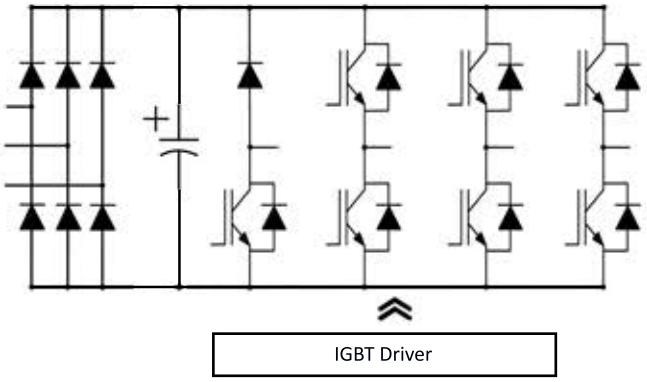
# IGBT based Power Stack




## IGBT based Power Stack

3-Phase rectifier + IGBT inverter + Break Chopper

### Fearures:

Multi-function IGBT Converter
Transparent enclosure to allow visualisation of internal parts.
Encapsulated assembly makes it easier for students working in power electronics laboratory and to study modern converters without shock hazards.
External Connection for easy wiring
Built in isolated IGBT driver and IGBT protection
Forced-air cooled heatsink
For higher switching frequencies up to 20kHz

### Typical Applications:

Education: Various converter configuration possible
- 3- phase inverter + break chopper
- Buck or Boost converter
- single phase inverter
- single phase inverter

## Specification:

### Major Component Details:

| Component | Make | Rating |
|---|---|---|
| IGBT | Semikron | $I_C$ = 75A, $V_{CES}$ = 1200 V, $V_{GE}$ = 15V @T = 25°C |
| BREAK CHOPPER | Semikron | $I_C$ = 100A, $V_{CES}$ = 1200 V, $V_{GE}$ = 15V @T = 25°C |
| 3 PHASE RECTIFIER | Semikron | $I_D$ = 80A, V = 1600 V, $V_F$ = 1.6V Max @T = 110°C |
| CAPACITOR | ALCON | V = 400$V_{DC}$, $I_{RIPPLE}$ = 6.1A @100Hz |
| IGBT SNUBBER | ALCON | $V_{DC}$ = 1000V, $I_{RMS}$ = 26 A @ 100kHz & T = 55°C |
| COOLING FAN | | V = 230V AC 50 Hz |

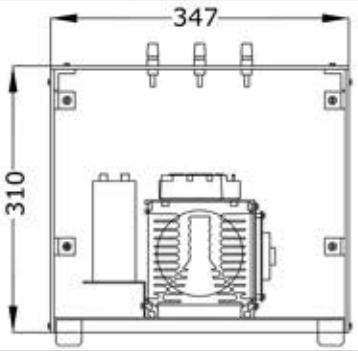
### Electrical Charecteristics:

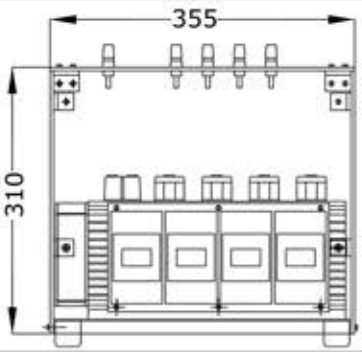
(Ambient Temperature = 30°C, No overload, Junction temp < 125°C)

| Symbol | Description | min | typ | max | Unit |
|---|---|---|---|---|---|
| $I_{OUT\ RATED}$ | Rated output current | | 30 | | $A_{RMS}$ |
| $V_{OUT}$ | Rated Output Voltage | | 400 | | $V_{AC}$ |
| PF | Power Factor | | 1.0 | | - |
| $P_{OUT}$ | Rated Output Power | | 12 | | kW |
| $f_{SW}$ | Inverter switching frequency | | 5.0 | | kHz |
| $f_{OUT}$ | Output frequency | | 50 | | Hz |
| $V_{BUS}$ | Rated DC voltage | | 750 | | $V_{DC}$ |
| $P_{LOSS}$ | Total power loss | | 700 | | W |
| $T_{TRIP}$ | Temperature trip level (Normally Open type) | | 65 | | °C |
| $V_{BUS}$ | DC Voltage applied to the Capacitor bank with switching | | 540 | 700 | $V_{DC}$ |
| $V_{DC\ CAP}$ | Max DC Voltage applied to the Capacitor Bank | | 800 | | $V_{DC}$ |

### IGBT DRIVER Charecteristics:

| Symbol | Description | min | typ | max | Unit |
|---|---|---|---|---|---|
| $V_s$ | Supply voltage | 14.4 | 15 | 15.6 | $V_{DC}$ |
| $I_{VP,\ IDLE}$ | Supply primary current (no load) | | 80 | | mA |
| $I_{VP,\ LOAD}$ | Max. supply primary current | | | 290 | mA |
| $V_{IT+}$ | Input threshold voltage (high) | | | 3.9 | $V_{DC}$ |
| $V_{IT-}$ | Input threshold voltage (low) | 1.5 | | | $V_{DC}$ |
| $R_{in}$ | Input Resistance | | 10 | | kΩ |

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