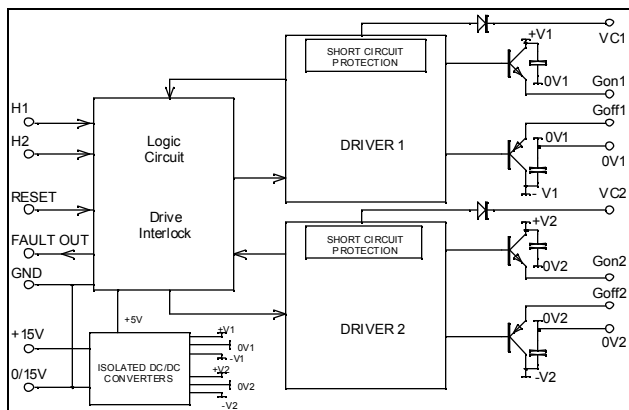


## Dual IGBT Isolated Driver

$$V_{Cmax} = 1200V$$

$$I_{OUTpeak} = 8A @ T_c = 25^{\circ}C$$

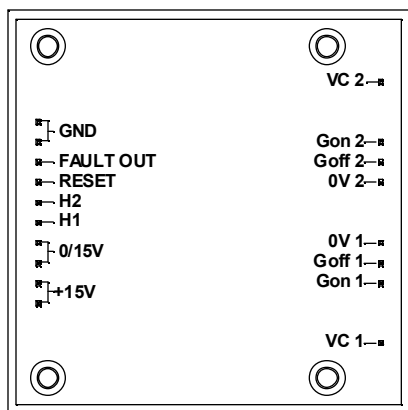


### Application

- Driver dedicated to IGBT Power modules in :
  - Motor Control
  - Uninterruptible Power Supplies
  - Switched Mode Power Supplies
  - Welding converters
  - Automotive

### Features

- Drive IGBTs up to  $I_C=300A$ ,  $V_{CE}=1200V$
- Short circuit protection by  $V_{CEsat}$  monitoring
- Low speed overcurrent cut off to limit over voltage
- Under voltage Lockout with hysteresis
- Top Bottom input signals Interlock
- Switching frequency up to 50 kHz
- Low stray inductance
- High level of integration
- Isolated driver



### Benefits

- Outstanding performance at high frequency operation
- Rugged
- Stable temperature behavior
- Very high noise immunity (common mode rejection > 10kV/μs)
- 2500V Galvanic Isolation primary/secondary
- 5V logic level with Schmitt-trigger Input
- Single  $V_{DD}=15V$  supply required
- Positive & Negative Secondary auxiliary power supplies internally generated
- Separate sink & Source output for easy Gate drive (optimized turn on & turn off operation)
- Mounting with screws for good vibration withstand
- Solderable pins



**CAUTION:** These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

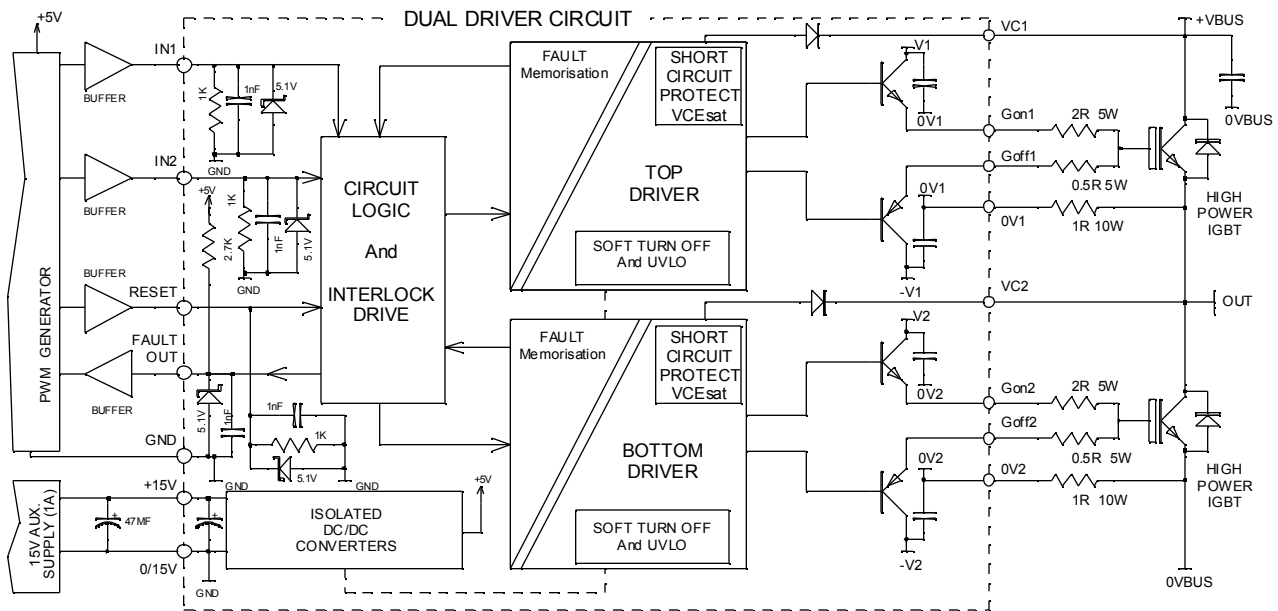


fig 1: Typical phase leg Operation Block Diagram

All ratings @  $T_j = 25^\circ\text{C}$  unless otherwise specified

## Absolute maximum ratings

| Symbol         | Parameter                                                  | Max ratings                                              | Unit     |
|----------------|------------------------------------------------------------|----------------------------------------------------------|----------|
| $V_{DD}$       | Supply Voltage                                             | 16                                                       | V        |
| $V_{Hi}$       | Input signal voltage $i=1, 2$                              | 5.5                                                      | V        |
| $I_{VDDmax}$   | Maximum Supply current                                     | $V_{Hi} = 0V, i = 1, 2$                                  | A        |
|                |                                                            | $V_{DD} = 15V, F_{out} = 25\text{ kHz}, C_{eff} = 150nF$ |          |
| $f_{max}$      | Maximum Switching Frequency @ $T_{amb} = 85^\circ\text{C}$ | 50                                                       | kHz      |
| $V_C$          | Collector Voltage short circuit protection pin             | 1200                                                     | V        |
| $I_{outAVmax}$ | Output Average Current                                     | Per Output                                               | 270      |
| $R_{Gonmin}$   | Minimum resistance for $R_{Gon}$                           | 2                                                        | $\Omega$ |
| $R_{Goffmin}$  | Minimum resistance for $R_{Goff}$                          | 1                                                        | $\Omega$ |
| $P_{out}$      | Output Power DC/DC converter                               | Per Output                                               | 4        |
|                |                                                            |                                                          | W        |

**Driver Electrical Characteristics**

| <i>Symbol</i>        | <i>Characteristic</i>                               | <i>Test Conditions</i>                                                                                          | <i>Min</i> | <i>Typ</i> | <i>Max</i> | <i>Unit</i> |
|----------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------|------------|------------|-------------|
| V <sub>DD</sub>      | Operating Supply Voltage                            |                                                                                                                 | 14.5       | 15         | 15.5       | V           |
| I <sub>VDD</sub>     | Operating Supply Current                            | F <sub>out</sub> =25kHz, V <sub>DD</sub> =15V, V <sub>Bus</sub> =600V<br>C <sub>eff</sub> =150nF on Channel 1&2 |            | 0.75       |            | A           |
| V <sub>UVLO</sub>    | Under Voltage lockout threshold                     |                                                                                                                 | 11.6       | 12.3       | 13.5       | V           |
| V <sub>Hi(max)</sub> | Maximum Input Voltage                               | i = 1, 2                                                                                                        | -0.5       | 5          | 5.5        | V           |
| V <sub>Hi(th+)</sub> | Positive Going Threshold Voltage                    |                                                                                                                 | 2          |            |            |             |
| V <sub>Hi(th-)</sub> | Negative Going Threshold Voltage                    |                                                                                                                 |            |            | 0.8        |             |
| C <sub>Hi</sub>      | Input Capacitance *                                 |                                                                                                                 |            | 1          |            | nF          |
| R <sub>Hi</sub>      | Input Resistance *                                  |                                                                                                                 |            | 1          |            | kΩ          |
| V <sub>G(on)</sub>   | Turn on Gate Voltage Output                         | No Load                                                                                                         | 14         | 15         | 16         | V           |
|                      |                                                     | R <sub>Gon</sub> =2Ω, F <sub>out</sub> = 25kHz, C <sub>eff</sub> =150nF                                         |            | 14         |            |             |
| V <sub>G(off)</sub>  | Turn off Gate Voltage Output                        | No Load                                                                                                         | -7         | -6         | -5         |             |
|                      |                                                     | R <sub>Goff</sub> =1Ω, F <sub>out</sub> = 25kHz, C <sub>eff</sub> =150nF                                        |            | -5         |            |             |
| T <sub>d(on)</sub>   | Turn On delay time                                  | C <sub>eff</sub> = 150nF ❶                                                                                      | 200        | 400        | 500        | ns          |
| T <sub>d(off)</sub>  | Turn Off delay time                                 | C <sub>eff</sub> = 150nF ❶                                                                                      | 220        | 420        | 520        |             |
| PWD                  | Pulse Width Distortion                              |                                                                                                                 | -0.3       | 0.02       | 0.3        | μs          |
| PDD                  | Propagation Delay Difference between any two driver | T <sub>d(on)</sub> - T <sub>d(off)</sub>                                                                        | -0.35      |            | 0.35       |             |
| I <sub>fault</sub>   | Output fault current                                | Fault condition                                                                                                 |            |            | 7          | mA          |
| V <sub>faultH</sub>  | High Output Fault Voltage                           | No fault                                                                                                        |            | 5          |            | V           |
| V <sub>faultL</sub>  | Low Output Fault Voltage                            | Fault condition                                                                                                 |            |            | 0.5        |             |
| T <sub>dfault</sub>  | Desat Fault Output Delay Time                       | V <sub>DD</sub> =15V                                                                                            |            |            | 5          | μs          |
| T <sub>SC</sub>      | Total Short Circuit Duration                        |                                                                                                                 |            |            | 6          | μs          |
| I <sub>SC</sub>      | Short Circuit Current                               | T <sub>sc</sub> =6μs, V <sub>Bus</sub> =600V, V <sub>GE</sub> =15V                                              |            | 950        |            | A           |
| C <sub>PS</sub>      | Coupling Capacitance Primary Secondary              |                                                                                                                 |            | 20         |            | pF          |
| R <sub>PW</sub>      | Reset Pulse Width                                   | Logic high for reset                                                                                            | 20         |            |            | μs          |
| R <sub>R</sub>       | Reset Input Resistance                              |                                                                                                                 |            | 1          |            | kΩ          |
| F <sub>R</sub>       | Fault output pull-up resistance                     |                                                                                                                 |            | 2.7        |            |             |

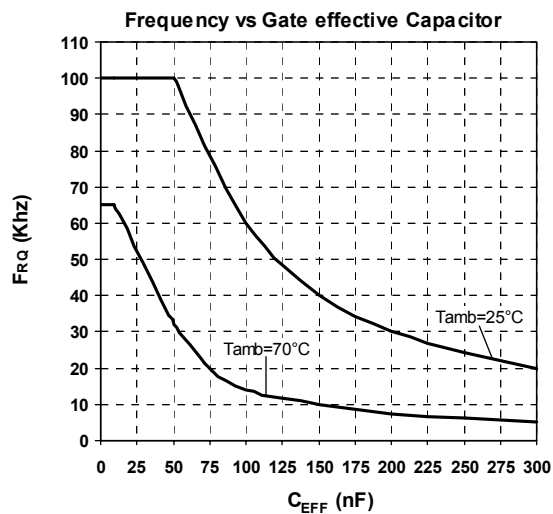
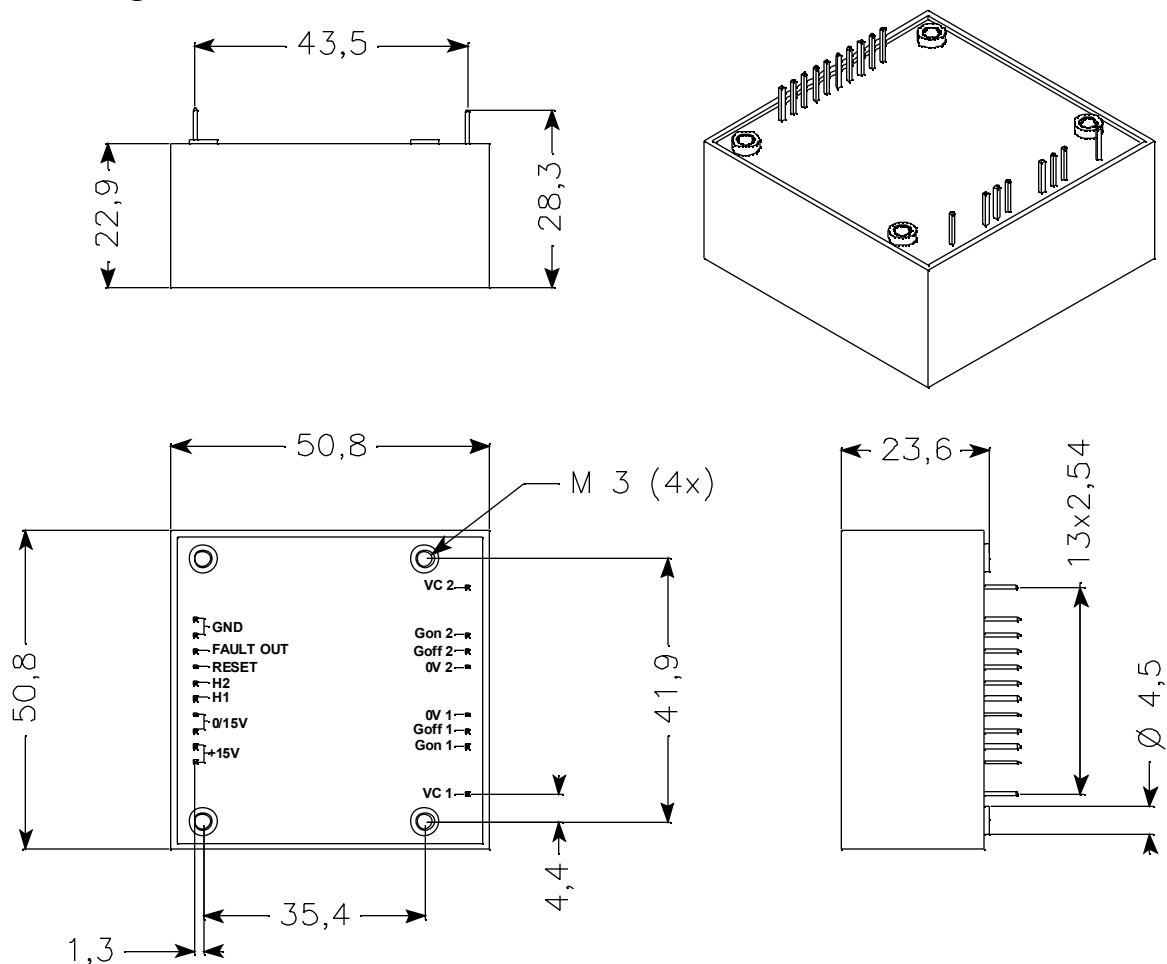
\* Low impedance guarantees good noise immunity.

❶ Dead time between top and bottom inputs signals must be generated externally in case of phase leg operation

**Thermal and package characteristics**

| <i>Symbol</i>     | <i>Characteristic</i>          |    | <i>Min</i> | <i>Typ</i> | <i>Max</i> | <i>Unit</i> |
|-------------------|--------------------------------|----|------------|------------|------------|-------------|
| V <sub>ISOL</sub> | Primary to Secondary Isolation |    | 2500       |            |            | V           |
| T <sub>OP</sub>   | Operating Ambient Temperature  |    | -40        |            | 85         | °C          |
| T <sub>STG</sub>  | Storage Temperature Range      |    | -55        |            | 100        |             |
| Torque            | Mounting torque                | M3 |            | 0.5        |            | N.m         |
| Wt                | Package Weight                 |    |            |            | 120        | g           |

## Driver Package outline (dimensions in mm)



Microsemi reserves the right to change, without notice, the specifications and information contained herein

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