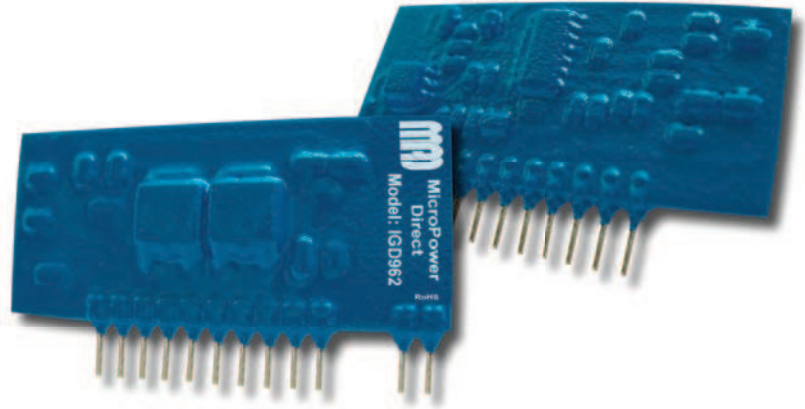


IGD962

Hybrid Integrated Isolated N-Channel IGBT Driver



Key Features:

- Internal OptoCoupler
- 30 kV/ μ S CMR
- $V_{ISO} = 3,750V$
- Two Supply Drive Topology
- TTL Compatible Input
- Short Circuit Protected
- Fault Signal Output
- Switching Freq. to 20 kHz
- Compatible With M57962AL

Recommended For:

- 600V Series IGBT (up to 600A)
- 1200V Series IGBT (up to 400A)
- 1700V Series IGBT (up to 200A)



Operates With
IG100 Series
DC/DC Converters

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Electrical Specifications

Absolute Maximum Ratings, $T_A = 25^\circ C$ unless otherwise noted.

Parameter	Conditions		Min.	Typ.	Max.	Units
Supply Voltage	V_{CC}	DC			18	VDC
	V_{EE}				-15	
Input Voltage	V_{IN}	See Note 3			50	VDC
Input Current	I_{IN}	See Note 4			25	mA
Output Voltage	V_O	When Output is "H"			V_{CC}	VDC
Output Current	I_{GON}	Pulse Width $2\mu S$, Frequency ≤ 20 kHz			+5.0	A
	I_{GOFF}				-5.0	
Isolation Voltage	V_{ISO}	Sine Wave Voltage 50 Hz/ 60 Hz , 1 Min			3,750	VAC
Junction Temperature	T_J				150	$^\circ C$
Operating Temperature	T_{OP}		-20		+70	$^\circ C$
Storage Temperature	T_{ST}		-40		+125	$^\circ C$
Fault Output Current	I_{FO}	See Note 5			20	mA

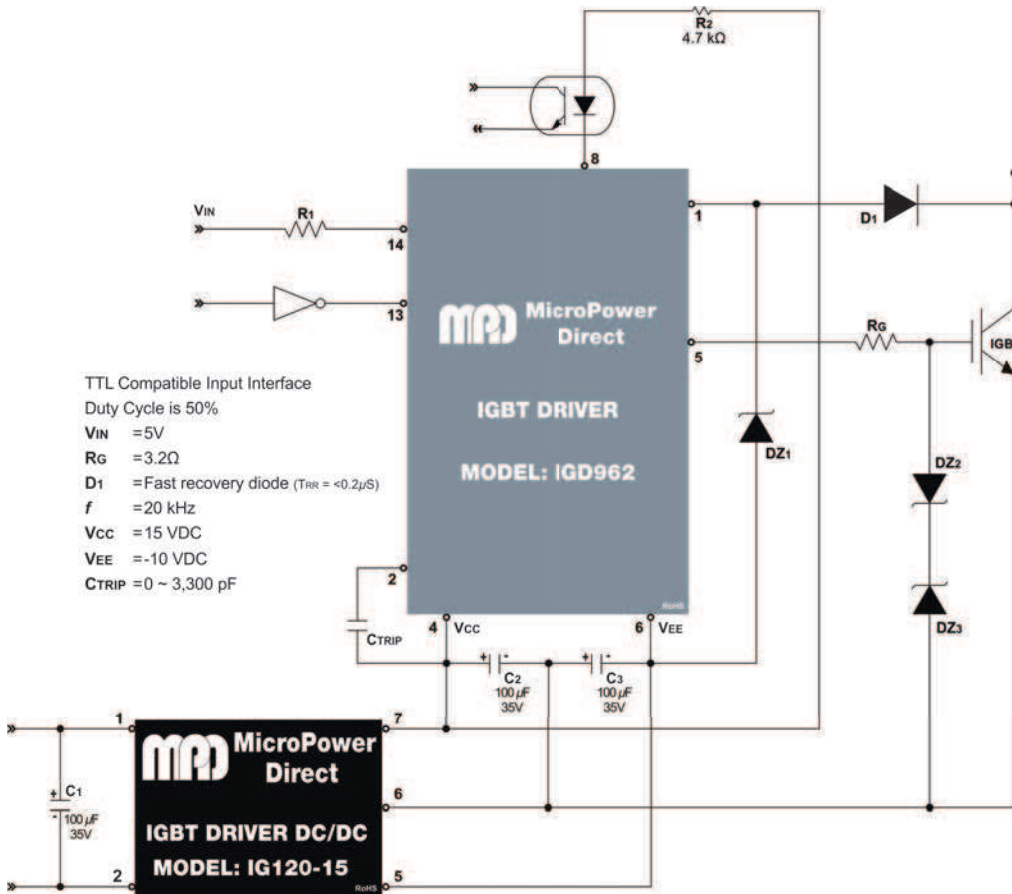
Electrical Characteristics, $T_A = 25^\circ C$, $V_{CC} = 15$ VDC, $V_{EE} = -10$ VDC unless otherwise noted.

Parameter	Conditions		Min.	Typ.	Max.	Units
Supply Voltage	V_{CC}	Recommended Range	14	15		VDC
	V_{EE}		-7		-10	
Switching Frequency	f	Recommended Range	0		20	kHz
Gate Resistor	R_G		2			Ω
Input CMR			15	30		kV/ μ S
"H" Input Current	I_{IH}	Recommended Range	10	16	20	mA
"H" Output Voltage	V_{OH}		13	14		VDC
"L" Output Voltage	V_{OL}		-6		-9	VDC
"L-H" Propagation	T_{PLH}	$I_{IH} = 16$ mA		0.5	1.0	μS
"L-H" Rise Time	T_R	$I_{IH} = 16$ mA		0.6	1.0	μS
"H-L" Propagation	T_{PHL}	$I_{IH} = 16$ mA		1.0	1.3	μS
"H-L" Fall Time	T_F	$I_{IH} = 16$ mA		0.4	1.0	μS
Protection Reset Time	T_{TIMER}		1.0	1.3	2.0	mS
Fault Output Current	I_{FO}	See Note 6		5.0		mA
Controlled Time Detect	T_{TRIP1}	Short Circuit 1, See Note 7		2.6		μS
	T_{TRIP2}	Short Circuit 2, See Note 8		3.0		μS
Soft Turn-On Time	T_{OFF2}	See Note 9		5.0		μS
SC Detect Voltage	V_{SC}	Collector Voltage of Module	15			VDC

Notes:

1. Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.
2. "H" = high level signal. "L" = low level signal.
3. The voltage applied to pin 1.
4. The voltage measured between pins 13 and 14.
5. The input current at pin 8.
6. The input current at pin 8. $R_2 = 4.7$ k Ω .
7. Pin 1 ≥ 15 VDC. Pin 2 open.
8. Pin 1 ≥ 15 VDC. A 1,000 pF connected from pin 2 to pin 4.
9. Pin 1 ≥ 15 VDC.

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Connection Notes:

To minimize the potential for problems (and/or failures) caused by induced noise, EMI interference and/or oscillation, the connection of the gate driver must be done with great care. Some recommendations would include:

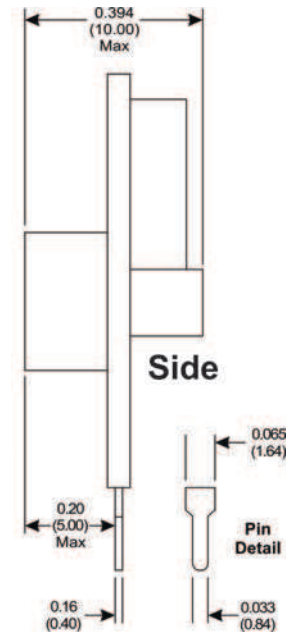
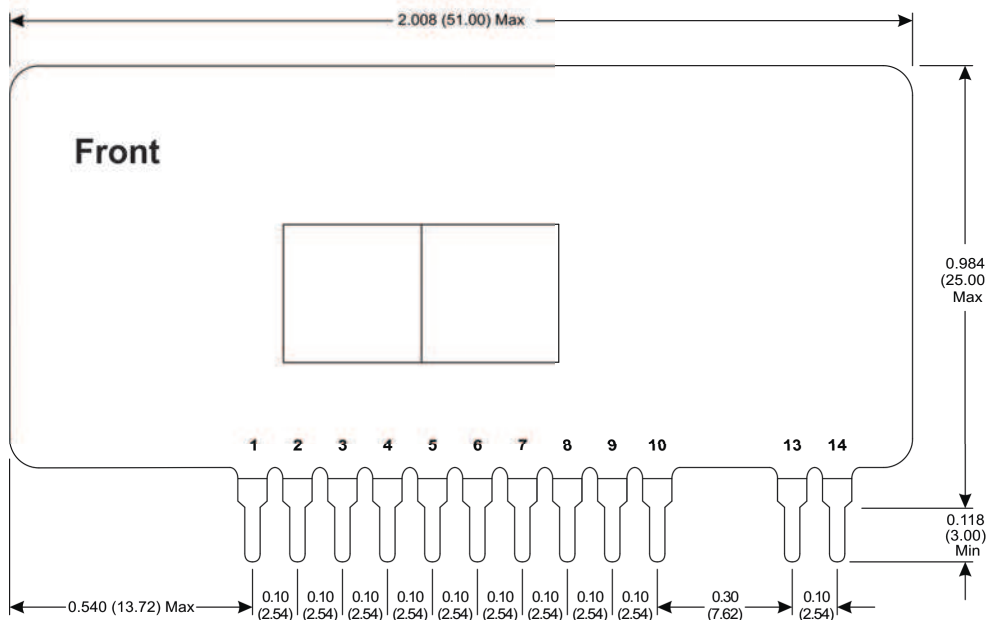
1. The input signal voltage (pin 14) cannot exceed 5.25V. The internal dissipation caused by the resultant increase in input current could damage the input optocoupler. A current limiting resistor (R_1) is used to help prevent this. The resistor value is calculated by the formula:

$$R_1 = \frac{V_{IN} - 1.7V}{16mA} - 150\Omega$$
2. The gate wiring of the IGBT gate-emitter drive loop must be shorter than 1 meter.
3. Twisted pair wiring is recommended for the gate-emitter drive loop to minimize mutual induction.
4. Pins 3, 7, 9 and 10 (not shown in the connection diagram) of the IGD962 are only used for testing. They should not be used as a connection in any application circuit.
5. If a large voltage spike is generated at the IGBT collector, the value of the gate resistor (R_G) should be increased.
6. Capacitors C_2 and C_3 should be mounted as close to the driver as possible.
7. The peak reverse voltage rating of D_1 must be higher than the peak value of the IGBT collector voltage.
8. The voltage level at pin 1 could go "High" depending on the reverse recovery characteristics of D_1 . A 30V zener diode DZ_1 is connected between pin 1 and Pin 6 to prevent any problems caused by this.
9. If C_{TRIP} is used, it be mounted as close to the driver as possible. The distance between C_{TRIP} and pins 4 & 2 should be less than 5 cm.
10. The traces (or wires) between the DC/DC and the driver circuit should be as short as possible.

Pin Connections

Pin	Function	Pin	Function	Pin	Function
1	Fault Detect	5	Drive Output	13	Drive Signal Input (-)
2	Control Pin (For T_{TRIP})	6	VEE (- Power Supply)	14	Drive Signal Input (+)
4	VCC (+ Power Supply)	8	Fault Signal Output	3,7,9,10	No Connection

Mechanical Dimensions



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Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ± 0.01 (± 0.25)