

4-GTJ-2050 : JIG For MGDM500 and LGDS600

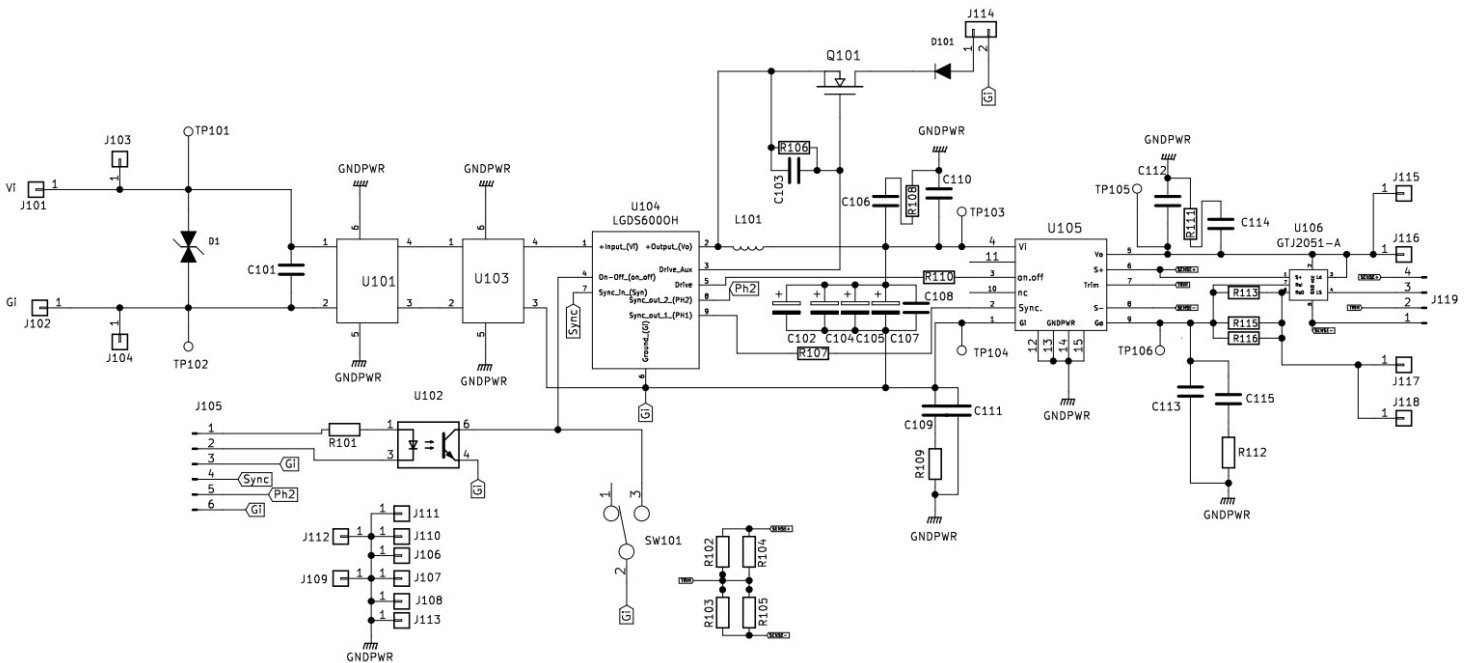
4.1-Board Description

GTJ2050 is a test jig that can be used to evaluate converters from the MGDM500 series, along with the FGDS35A100 EMI filter and LGDS600 Input Bus conditioner. Testing can be performed with regards to the Mil-STD461 and DO 160 military standards.

Warning! the copper track thickness of this board is only 35μ, not compatible with high temperature testing



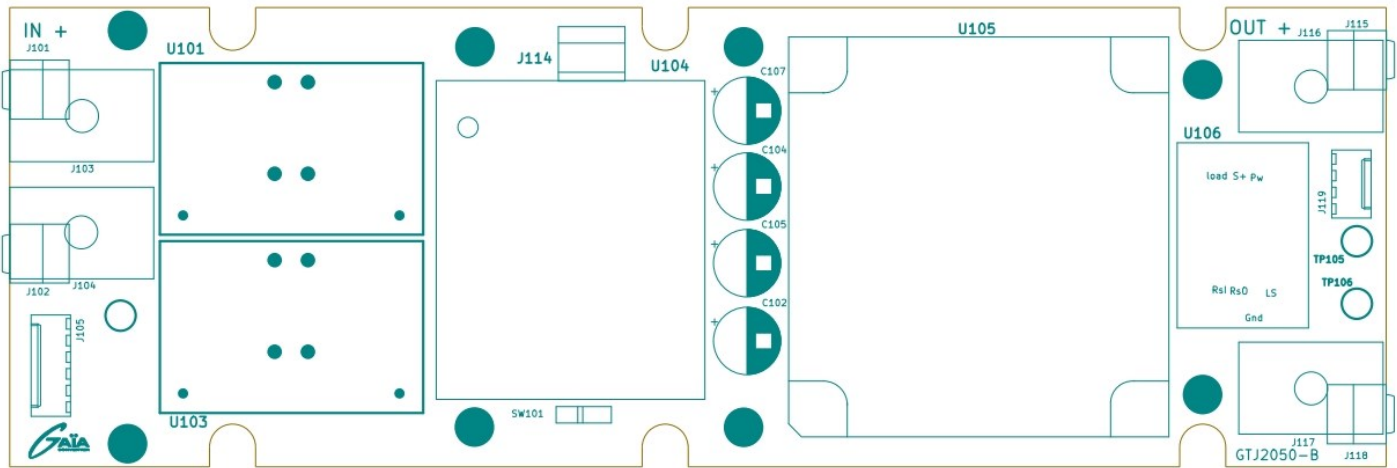
4.2-SCHEMATIC DIAGRAM



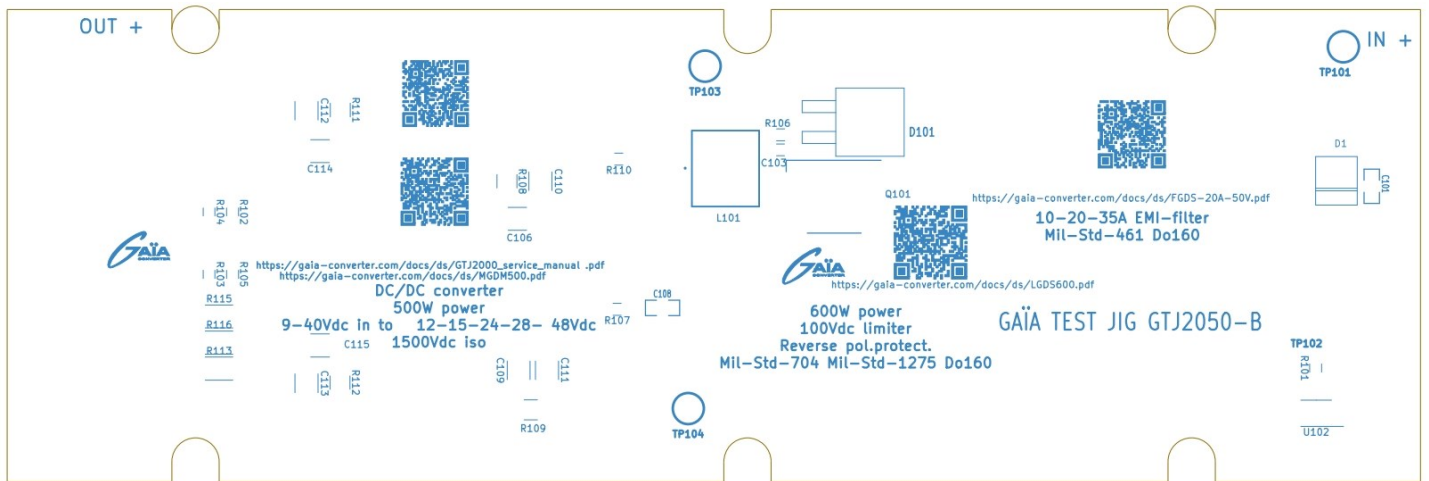
GTJ2050-B

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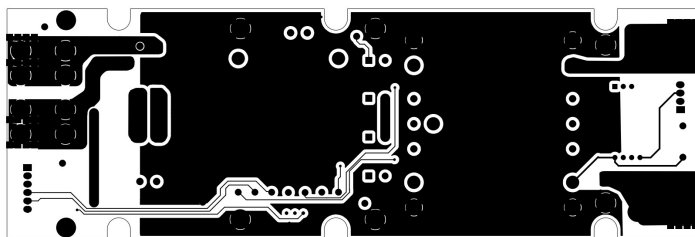
4.3-BOARD DRAWINGS



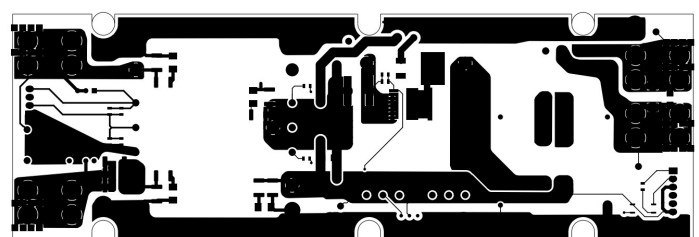
Front



Back



Front



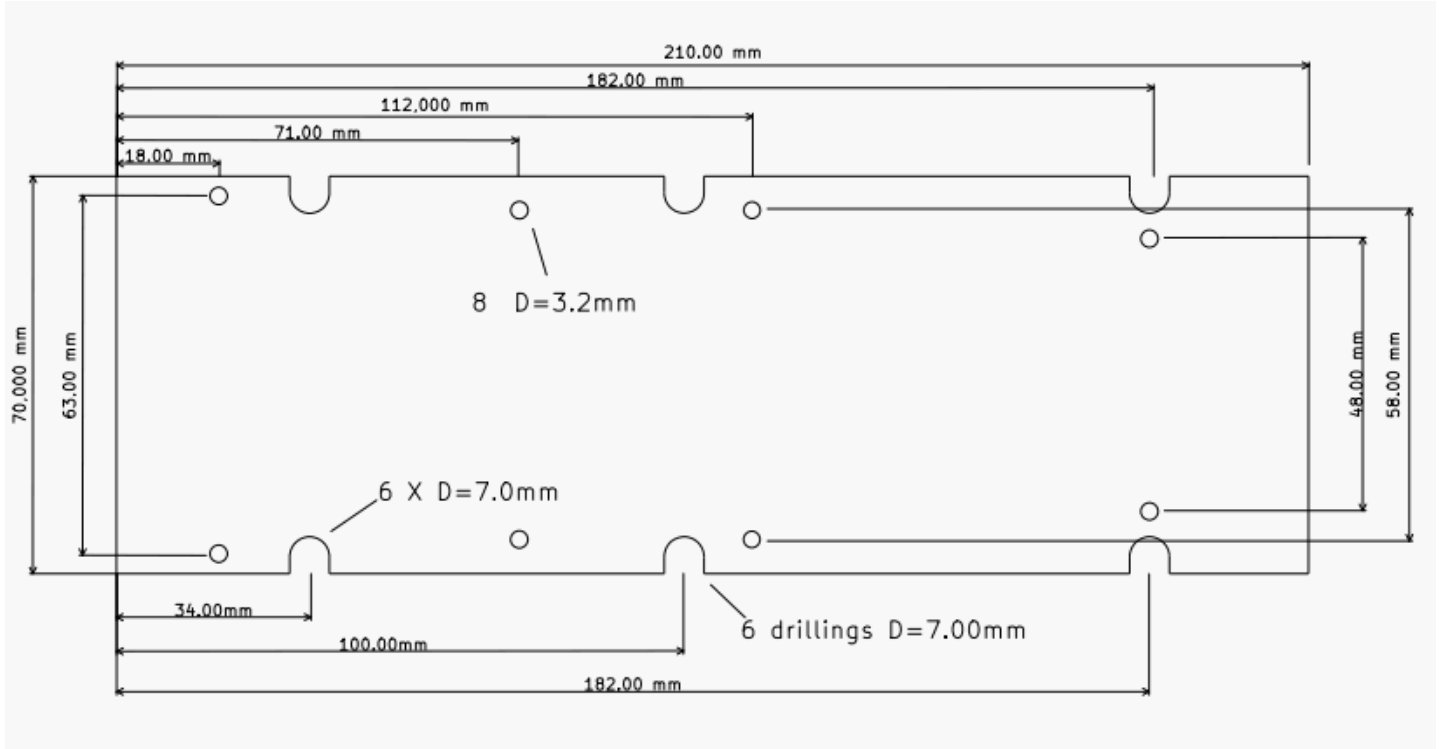
Back

GTJ2050-B

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4.3-BOARD DRAWING

Board Mechanical drawing



Base-Plate Mechanical drawing

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4.4-BILL OF MATERIALS

designator	Description Value	Qty	possible part-number	Supplier	comment
Q101	IPT007N06N	1	IPT007N06N	INFINEON	
C102,C104,C105,C107	220µF / 50V	2	ECA1HHG221	panasonic	
C101	100nF /100V	1			
C103	DNP	1			
D101	Diode	1	VB30100C-E3/4W	VISHAY	
D1	TVS	1	SMAJ10CA	Littlefuse	
C110,C111,C112,C113	470nF MLCC	4	C1210X474K251T	HOLYSTONE	
R110,R107	0 R	2	CRCW08050000Z0EA	VISHAY	
R115,R116,R113	1 mR	1	TLR3AWDTE1L00F	KOA	Replaced by short if no U106 used ²²
R109,R111,R112,R108	10R	4	CRCW1206- series	VISHAY	SMD 1206 (not mandatory)
C106,C114,C109,C115	1 tp 4.7 µF	4			SMD 1210 (not mandatory)
R102, R104,R105,R103	Anny value	4	CRCW0805- series	VISHAY	Configuration resistors TRIM
R101	1k	1	CRCW08051K00FKEA	VISHAY	
R106	DNP	1			
L101	450nH	1	XAL1010-451MED	CoilCraft	
J103,J104,J116,J117	Terminal blocks	4	OT-048-M5	BLOCK MASTER ELECTRONICS	To be used for strait-connection
J101,J102,J118,J118	PCB Terminal	4	7461103	Wurth Elecktronic	To be used for 90°C connection
J106, J107,J108,J109-J110, J112,J111,J113	holes 3,2 mm	8	SpacersL=14mm	RS PRO	L= 14mm
J114	Connector 2 pts	1	PM 5.08/02/90 3.5SN	WEIDMULLER	408-7871 RS
J112	Connector2 pts	1	Mini KK series 2 contacts	MOLEX	
J105	MOLEX 6 CTS	1	22-05-7068	Molex	
J119	MOLEX 4 CTS	1	22-05-7048		
TP103,TP104,TP105,TP106	Test point	4	RS 101-2391	Rs-pro	
SW101	Switch	1	45030101442	WURTH ELEKTRONIK	
U101,U103	EMI FILTER 35A	2	FGDS35A50	GAÍA-CONVERTER	
U104	LGDS6000OH	1	LGDS6000OH	GAÍA-CONVERTER	
U102	Opto-coupler	1	TLP 185	Toshiba	
U106	Current Share IC	1	GTJ-2051A	GAÍA-CONVERTER	
U105	DC/DC Converter	1	MGDS500Hx	GAÍA-CONVERTER	
J106, J107,J108,J109-J110, J112,J111,J113	holes 3,2 mm	8	SpacersL=14mm	RS PRO	L= 14mm
J114	Connector 2 pts	1	PM 5.08/02/90 3.5SN	WEIDMULLER	408-7871 RS

GTJ2050

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4.5-COMPATIBLES PRODUCTS

Compatible Modules	comment
MGDS500HE	12V 500W
MGDS500HF	15V 500W
MGDS500HI	24V 500W
MGDS500HJ	28V 500W
MGDS500HP	48V 480W
FGDS20A50	Min. steady state input voltage at full power = 27.5 Vdc
FGDS35A50	Min. steady state input voltage at full power = 16 Vdc
LGDS600OH	Input Bus Conditioner

4.6- ASSEMBLY OPERATION CONNECTIONS.

Board Assembly : Start populating smallest components (SMD resistors and SMD capacitors) on the bottom side of GTJ2050, and then on top side. Install trim resistors if output voltage needs to be changed, for nominal output voltage, R102 to R105 should not be populates.

Install then through hole components, taking care that the MGDS500 converter is correctly applied to PCB board. If you plan to screw the converter to PCB , it is mandatory to solder the converter pins only when the 4 screws are tightened..

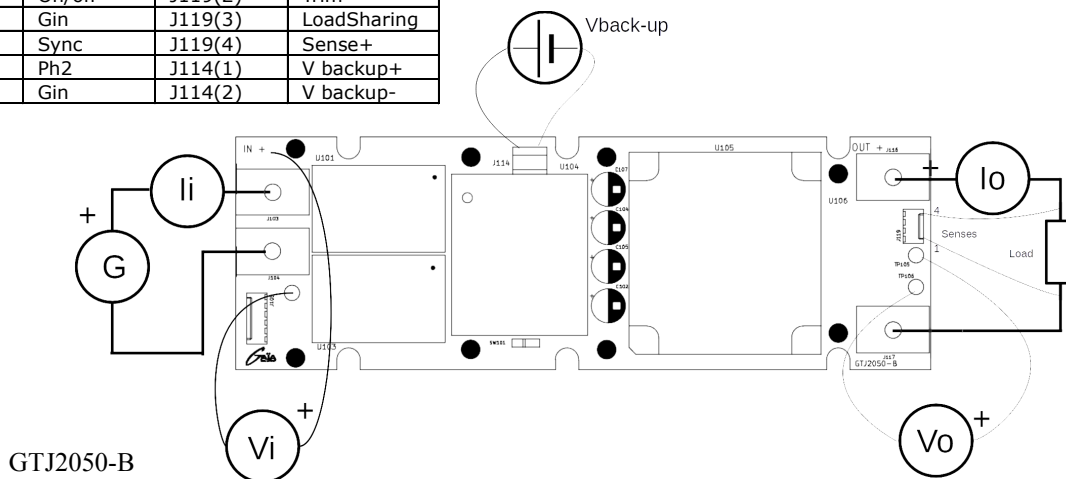
Board Operation : For board operation, the wiring scheme opposite needs to be applied. The input Generator (or Lab. PSU) is to connect to J101 & J102. Load is connected across J116 & J117. To compensate power wire losses, senses can be connected to the load through J105(1&4), using AWG 24 wires. U106 does not need to be connected for single channel operation. For performance testing, be sure to properly cool down components, with adequate heatsink or baseplate.

Warning! the copper track thickness of this board is only 35µm, not compatible with high temperature testing

The board efficiency can be evaluated using the wiring describe here below.

Connectors & Pinout :

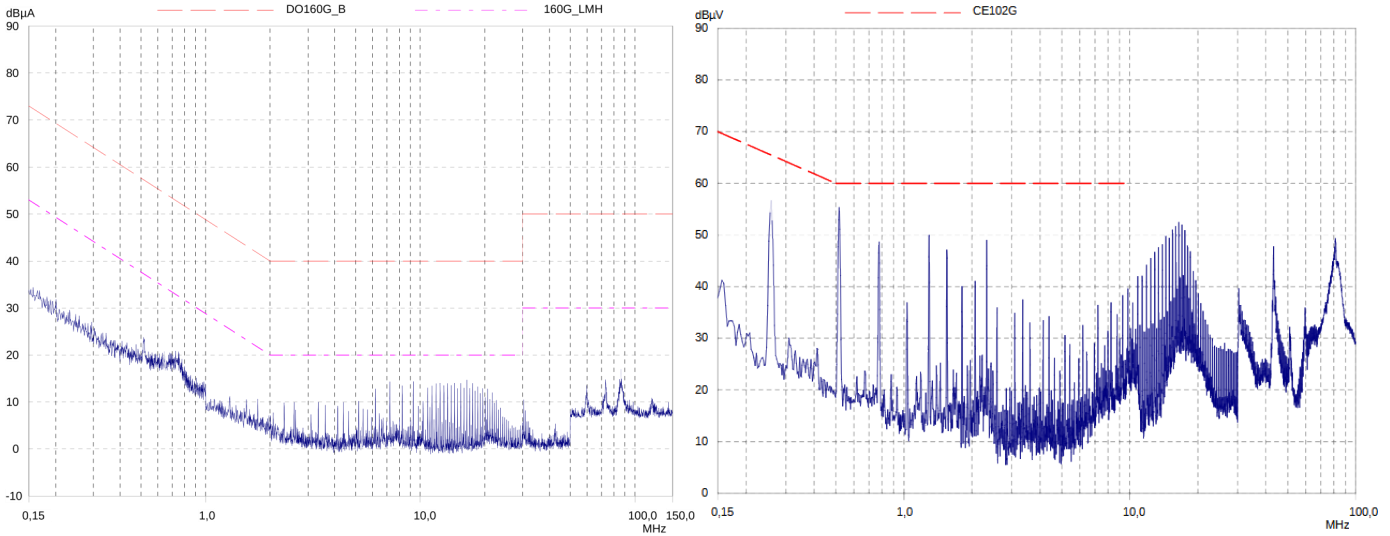
Input side		Output side	
J101(J103)	VI (Input+)	J115/J116	Vo (output+)
J102(J104)	Gin(Input-)	J118/J117	Go (output-)
J105(1)	On/off+	J119(1)	Sense-
J105(2)	On/off-	J119(2)	Trim
J105(3)	Gin	J119(3)	LoadSharing
J105(4)	Sync	J119(4)	Sense+
J105(5)	Ph2	J114(1)	V backup+
J105(6)	Gin	J114(2)	V backup-



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4.7-EXPECTED PERFORMANCES

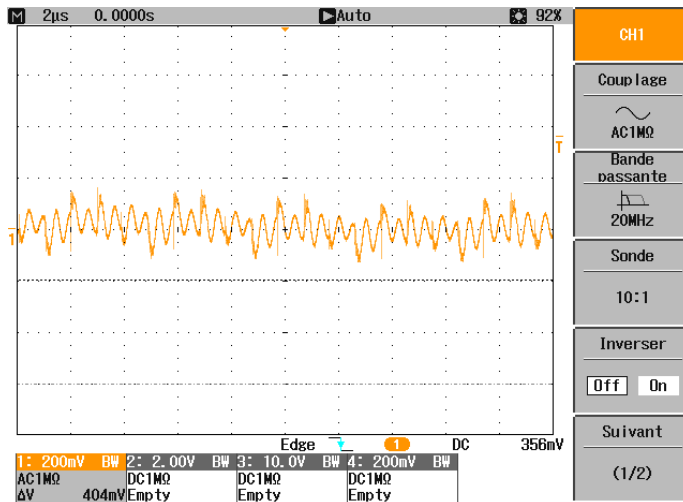
4.7.1-MIL-STD 461 DO 160



4.7.2-POWER EFFICIENCY

Input Voltage/current	Output Voltage/current	Output POWER (W)	efficiency
26.05/21	12.09/41.3	500	91 %
26.1/18.4	12.1/36.02	436	92%
26.9/10.2	12.12/21.2	257	93%

4.7.3-OUTPUT RIPPLE



Output ripple of MGDS500HE at : 12Vdc 500W,