

3-GTJ-2040 : JIG For MGDM205 & MGDM250

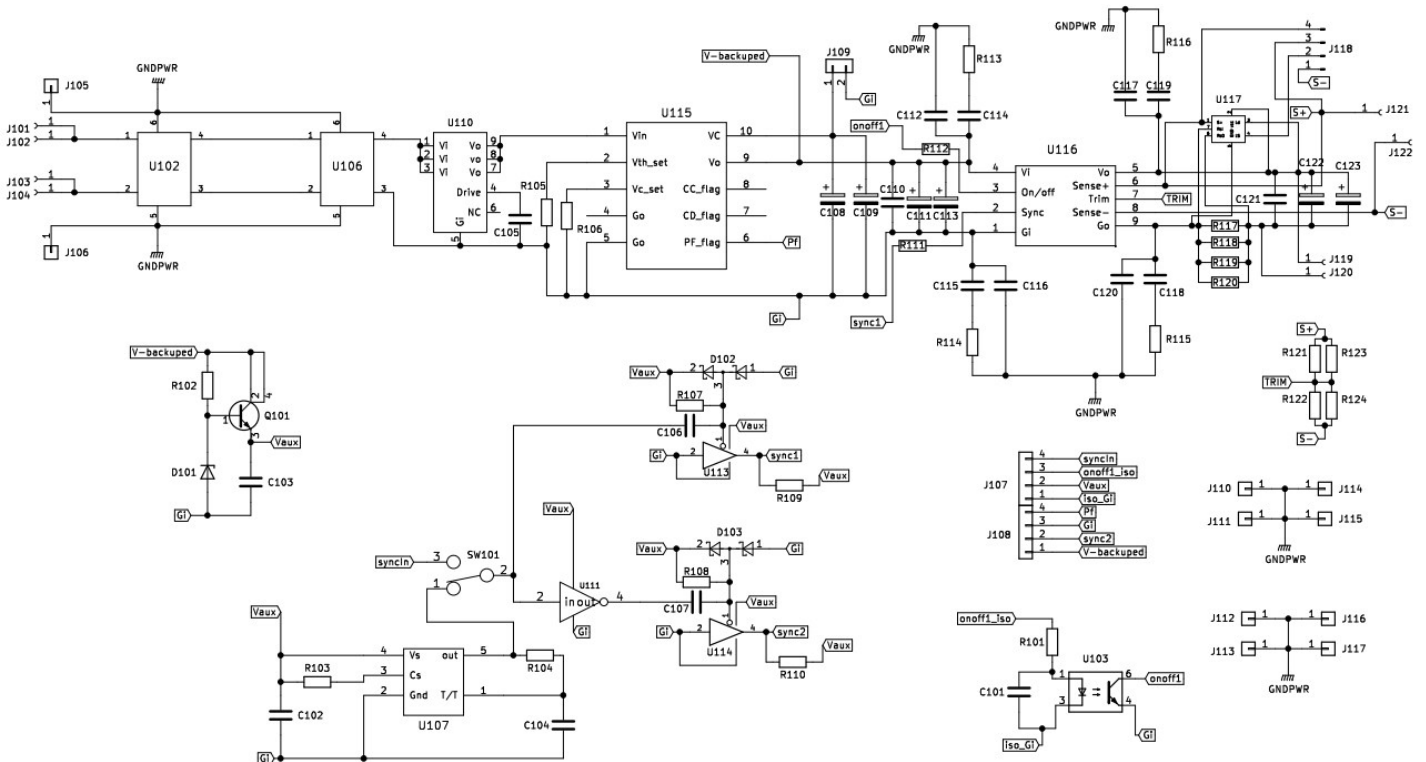
3.1-Board Description

GTJ2040 is a test jig that can be used to evaluate a large range of converters from the quarter brick families of Gaia-converter, along with filters, surge limiter and hold up modules. Testing can be performed with regards to the Mil-STD461, Mil-STD704, Mil-STD 1275, DO 160 avionic and military standards. The GTJ2040 enable evaluation of global power architectures.

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

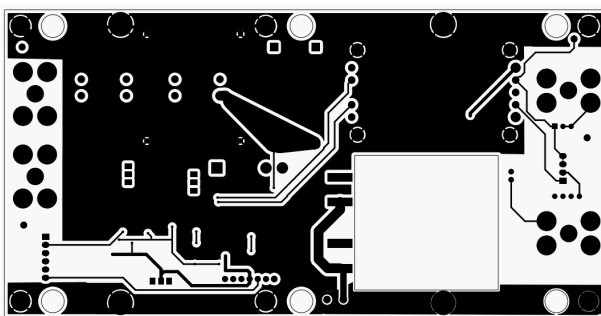
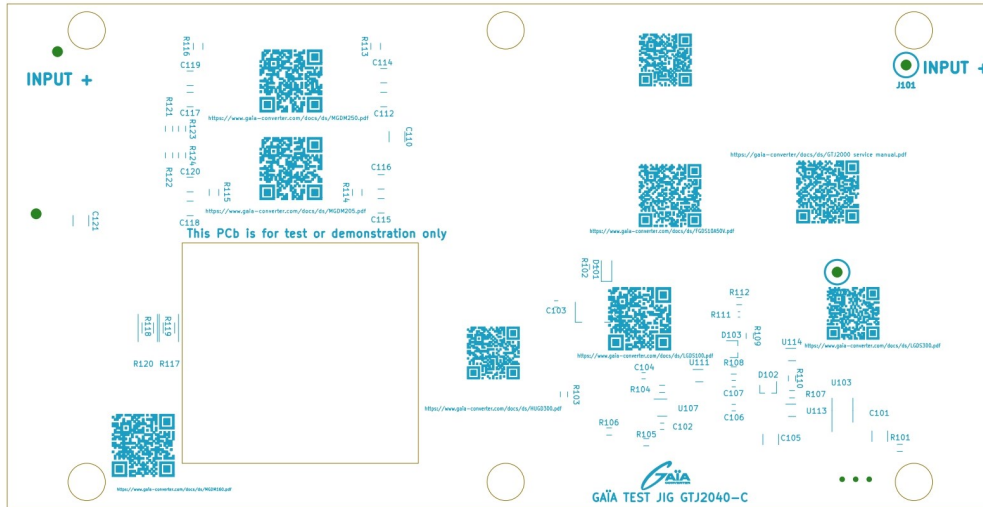
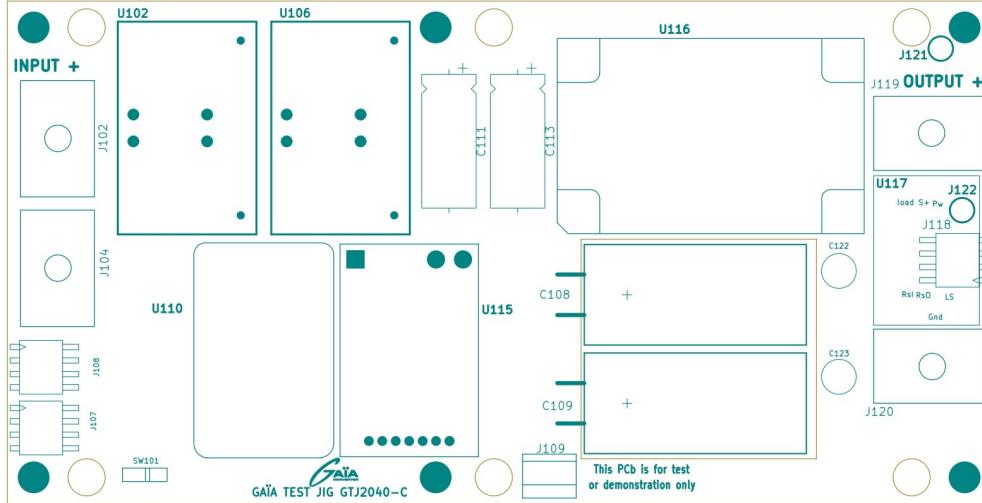


3.2-SCHEMATIC DIAGRAM

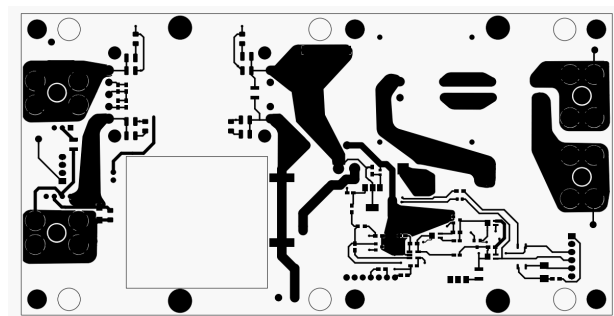


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3.3-BOARD DRAWINGS



Copper top layout



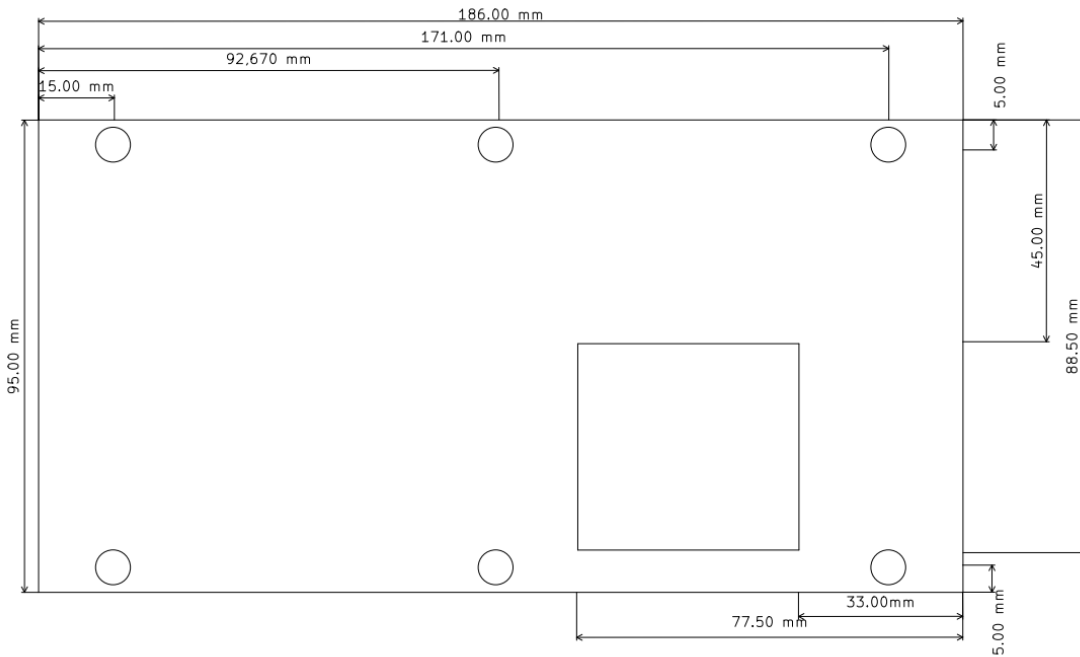
Copper bottom layout

GTJ2040-C

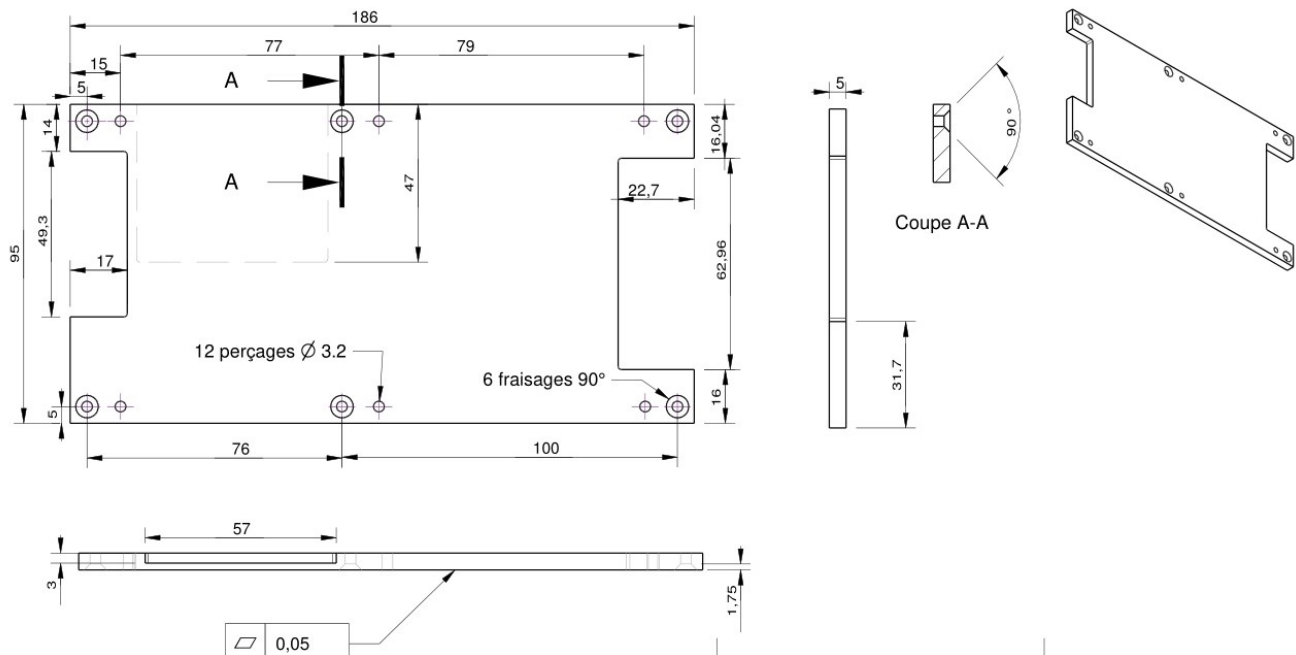
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3.3-BOARD DRAWINGS

BOARD MECHANICAL DRAWING



BASE-PLATE MECHANICAL DRAWING



GTJ2040-C

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3.4-BILL OF MATERIALS

designator	description	Qty	possible part-number	Supplier	comment
C101	1nF	1	VJ1206Y102KXE	Vishay	
C102,C103	100nF-50v	1	06035C104K4T2A	AVX	
C104	3,3nF – 50v	1	06035C332MAT	AVX	
C105	Any value	1			DS LGDS3000K
C106,C107	220pF	2	VJ0603A221JXAT	Vishay	
C108,C109	3300µF/63v	2	UVY1J332MRD	Nichicon	Hold-up capacitor
C110	Any value	1	1210 size	Vishay	
C112,C116,C117 ,C120	22nF 100V MLCC	4		KEMET	Not mendatory
C114,C115,C118,C119	100nF 100V MLCC	4	VJ1210Y104MXB	Vishay	
C111,C113	100µF / 100V	2	107TTA100M	CORNELL DUBLIER	
C122,C123	Any value	2		Nichicon	47µF /63v
R101	470 ohms	1	CRCV0603	Vishay	
R103	1Mohms	1	CRCV0603	Vishay	
R104,R107,R108	1k ohms	3	CRCV0603	Vishay	
R105,R106	Any value	2	CRCV0603	Vishay	DS HUGD300
R113,R114,R115,R116	10 ohms	4	CRCV1206	Vishay	
R102,R109,R110	4,7kohms	3	CRCV0603	Vishay	
R111	0 OHMS	1	CRCW08050000Z0EAHP	Vishay	Configuration straps
R121,R122,R123,R124	Any value	4		Vishay	Configuration resistors TRIM
R117,R118,R119,R120	Any value	4	1206 or 2512 format	Vishay	Configuration resistors current
J102,J104,J119,J120	Terminal blocks	4	OT-047-M5	Block masters	
J101,J103,J121,J122	Test point	4	TEST-1(BK)	Multicomp	
J107,J108,J118	Connector	3	KK-254_AE-6410-04/H	MOLEX	
J109	Connector	1	897-0843	RS PRO	
J110,J111,J114,J115	Entretoises 14mm	4	3754494	Farnell	For BasePlate
SW101	Switch SIL 1 mm	1	45030101442	WURTH ELEKTRONIK	
U102, U106	EMI FILTER 20A	1	FGDS20A50	GAÏA-CONVERTER	
U103	Optocoupleur	1	TLP185	Toshiba	
U107	Timer/Oscillator	1	MIC1557-B	Microchip	
U110	TRANSIENT LIMITOR	1	LGDS3000K	GAÏA-CONVERTER	
U111	Inverting Schmitt trigger	1	74HC1G14	Philips	
U113,U114	Bus buffer/line driver	2	74HC1G125	Philips	
U115	Hold-up	1	HUGD300	GAÏA-CONVERTER	
U116	Quarter brick converter	1	MGDS155HE	GAÏA-CONVERTER	
U117	Load sharing	1	GTJ2051A	GAÏA-CONVERTER	
Q101	Transistor NPN	1	FZT653	Diodes Inc	
D101	Diode zener	1	MMSZ5v6 0,1W	OnSemiconductor	
D102,D103	Diode	2	BAT54S	Vishay	

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3.5-COMPATIBLE MODULES

Compatible Modules	comment	Compatibles Modules	comment
FGDS10A50	Lower case height	MGDS155OI	
FGDS20A50		MGDS155OJ	
FGDS35A50		MGDS160HC	
LGDS100PK	For P< 100W	MGDS160HE	
LGDS300PK		MGDS160HF	
HUGD300	Includes reverse polarity	MGDS160HI	
MGDS155HC		MGDS160HJ	
MGDS155HE		MGDS205HC	
MGDS155HF		MGDS205HE	
MGDS155HI		MGDS250HC	
MGDS155HJ		MGDS250HE	
MGDS155OC		MGDS250HI	
MGDS155OE		MGDS250HJ	
MGDS155OF			

3.6-ASSEMBLY & OPERATION

Board Assembly : Start by populating smallest components (SMD resistors and SMD capacitors) on the bottom side of JIG, and then on top side. Populate in a second stage all touchhole components. Note the GTJ2051 is only mandatory only for paralleling 2 boards.

Based on involved power level, it is highly recommended to operate the GTJ2040 with a heatsink on DC/DC converter or the required base plate, and only a room temperature.

Warning, the board copper thickness (1 Oz) is not compliant with high temperature testing.

Board Operation :

The board can be connected according to the opposite schematics diagram, for performances testing. Be sure the DC/DC converter is properly cooled with an heatsink or a base plate even for short lasting testing.

Pinout:

Input side			
J102	Input+	J108(4)	Pf
J104	Input-	J107(1)	Iso-Gi
J108(1)	Vbackup	J107(2)	Vaux
J108(2)	Sinc2	J107(3)	On_off iso
J108(3)	gi	J107(4)	Sync_in
Output side			
J119	Output +	J118(1)	Sense-
J120	Output -	J118(2)	Share
J121	Test +	J118(3)	Sense+ (2)
J122	Test -	J118(4)	Sense+

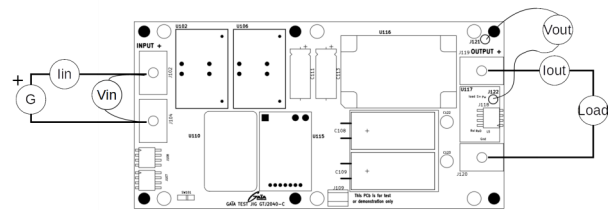
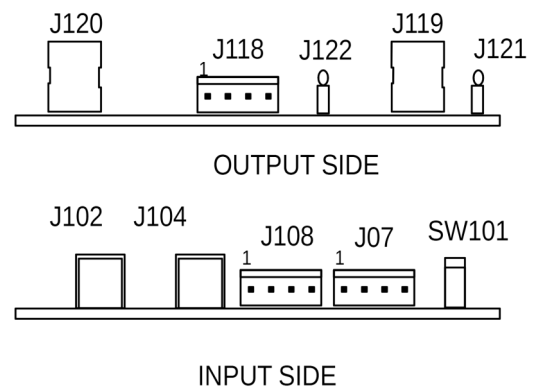
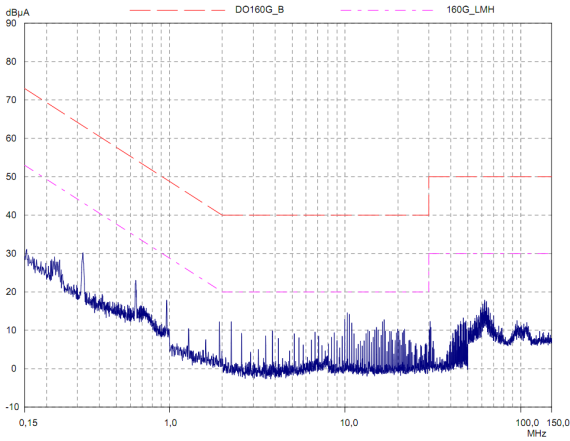


Figure 1

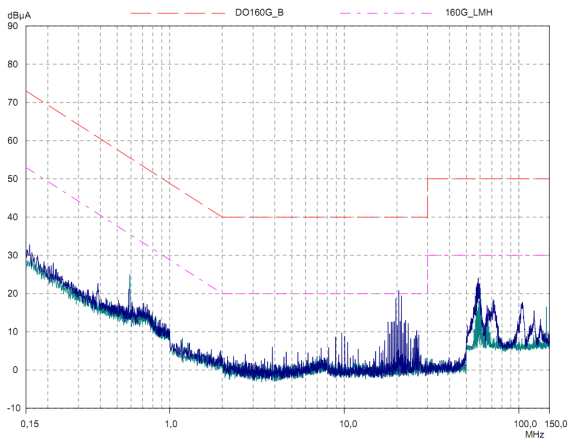
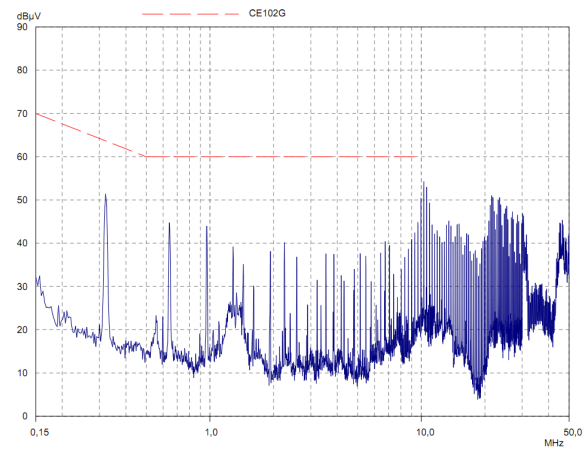


3-GTJ-2040 : JIG For MGDM155 to MGDM250

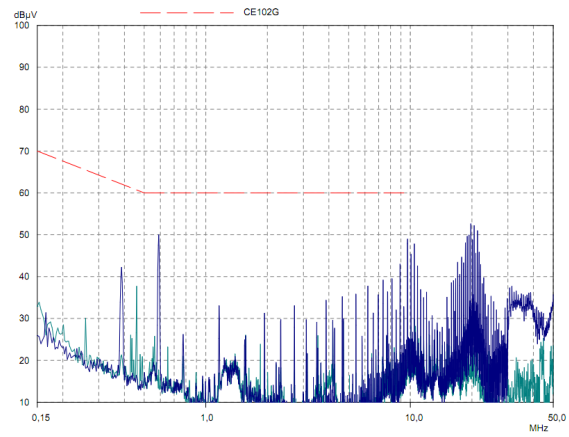
3.7-EXPECTED PERFORMANCES EXAMPLES



MGDS160HC EMI performance



MGDS1550J EMI performance



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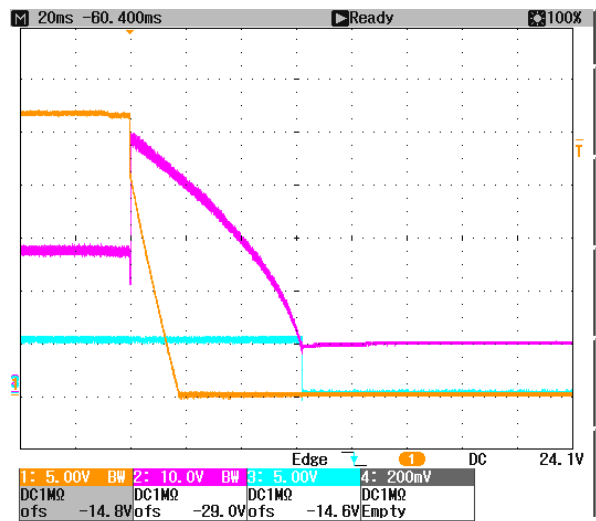
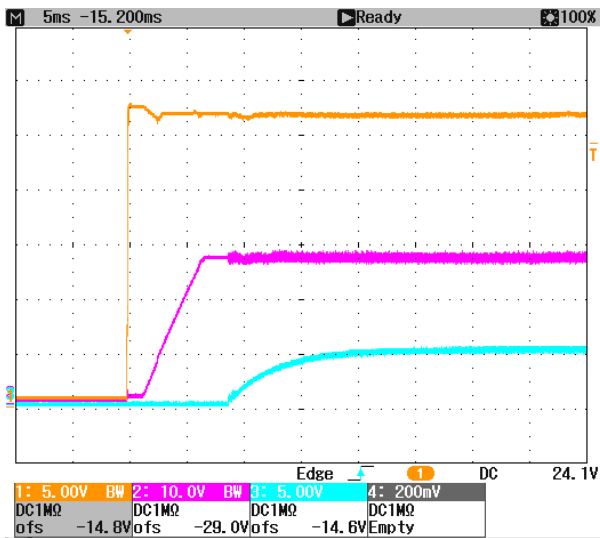
3.7-EXPECTED PERFORMANCES EXAMPLES

Power Efficiency (25°C):

Converter vi= 28v	50w	100w	150w	200w	250w
MGDS205HC	86.7%	88.7%	88%	86,2%	---
MGDS250HI	81,6%	86,3%	87%	86,6%	86%
MGDS160HJ	79,6%	82,6%	83,9%	---	---
MGDS155HE	85,9%	89,4%	88,6%	---	---

Hold-up Operation

MGDS205HC



Ch1 = input 28Vdc
 Ch2 = DC/DC converter Input
 Ch3 = DC/DC converter Output