

DC-DC Converter DATA Sheet

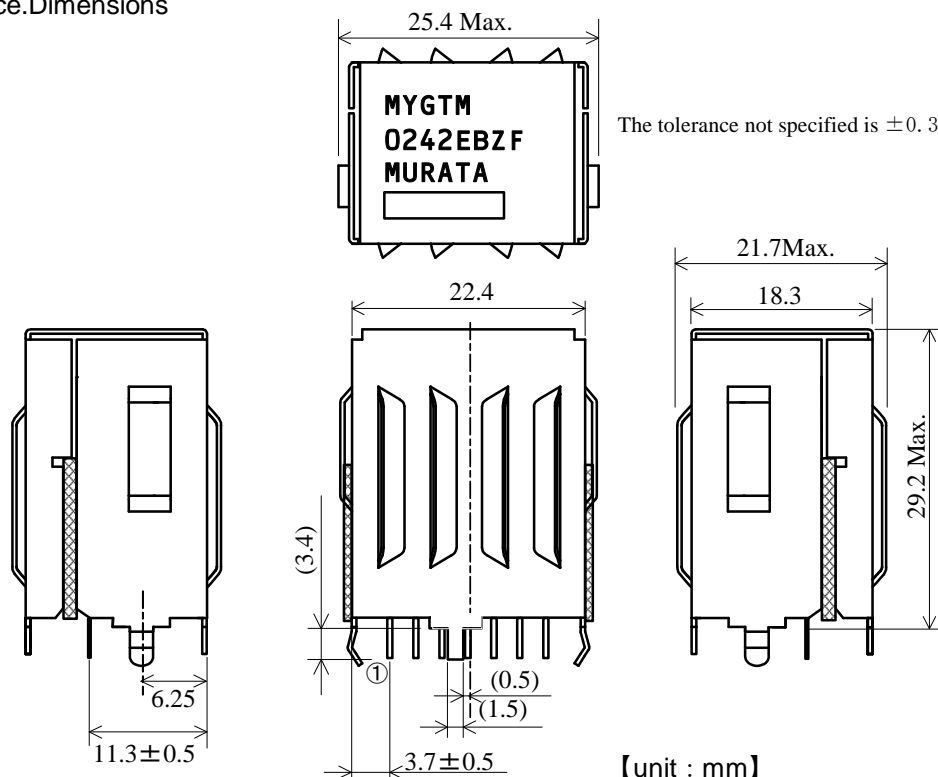
MYGTM0242EBZF

1.Features

- Single output/SIL/non-isolated type DC-DC converter with high output voltage(24V/2.5A).
- High efficiency and small size have been achieved.
- High input range (30.0V to 40.0V) .
- Shield case type.



2. Appearance.Dimensions



【unit : mm】

()...reference value

Pin Pitch a= 2.5 \pm 0.3mm

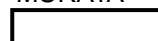
Distance between the both roots of Pin.

Tolerance is not accumulated.

Marking

- (1) Manufacturer Parts Number
- (2) Manufacturer ID
- (3) Lot No.

MYGTM0242EBZF
MURATA



Initial Character(Manufacturer ID)
C : Shenzhen Murata Mfg.Co.,Ltd.
N : Wakura Murata Mfg.Co.,Ltd.
R : Kanazu Murata Mfg.Co.,Ltd.

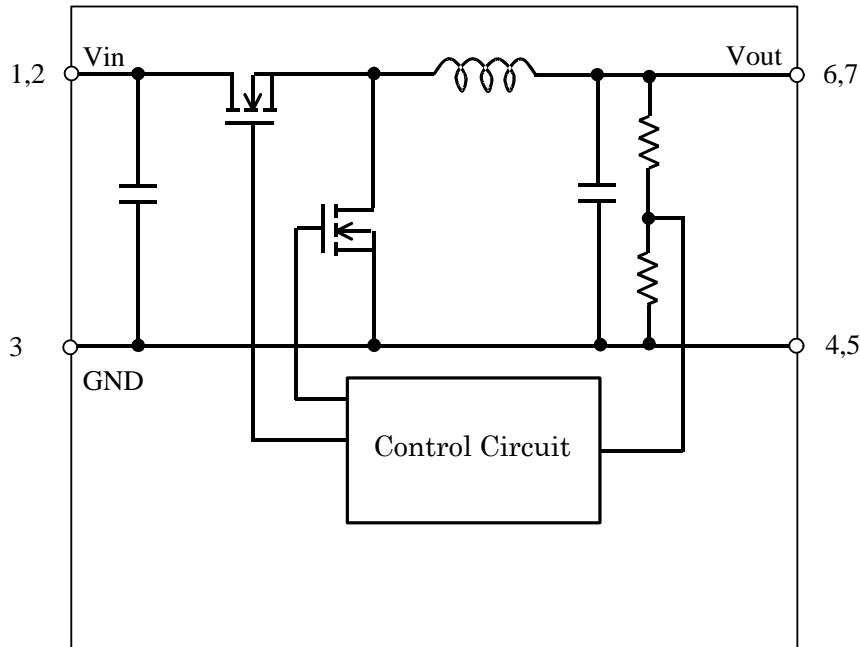
Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

Pin Number and Function

Pin No.	Symbol	Function
1,2	Vin	Input
3,4,5	GND	GND
6,7	Vout	Output

3. Block Diagram



4. Environmental Conditions

- | | |
|----------------------------------|--|
| 4.1. Input Voltage Range | +30.0V ~ +40.0V |
| 4.2. Operating Temperature Range | 0°C ~ +80°C (Temperature gradient 25°C/H) |
| 4.3. Storage Temperature Range | -20°C ~ +85°C (Temperature gradient 25°C/H) |
| 4.4. Operating Humidity Range | 10% ~ 85% (No water condenses in any cases.) |
| 4.5. Storage Humidity Range | 5% ~ 90% (No water condenses in any cases.) |

5. Absolute Maximum Ratings

Input Voltage +45V

※No voltage, no matter how instantaneous, shall be applied beyond the absolute maximum voltage rating to this product. If you apply any voltage over this limit the product characteristics will deteriorate or the product itself will be destroyed. Even though it may continue operating for a while after the over-voltage event, its life will likely be shortened significantly. Reliability and life of the module may degrade similarly if the maximum operating voltage rating is continuously exceeded. This product is designed to operate within the maximum operating voltage rating specification.

Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., Ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

6. Characteristics

6.1. Electrical Characteristics (Ta=25 °C)

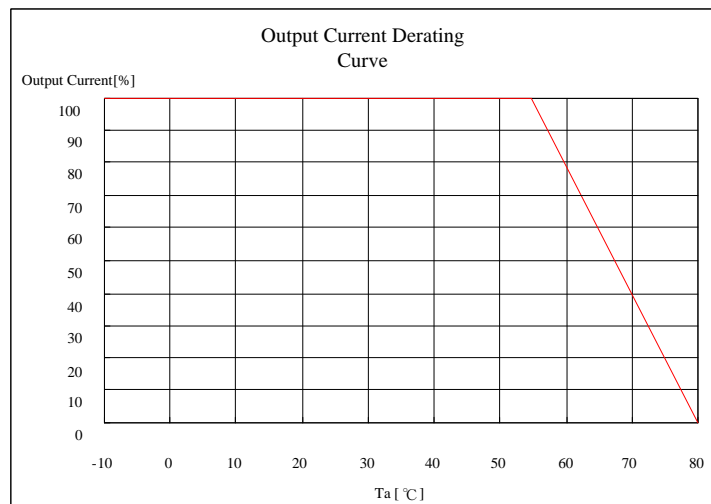
Item	Symbol	Condition	Value			Unit
			Min.	Typ.	Max.	
Input Voltage Range	Vin		30.0	37.0	40.0	V
Output Voltage	Vo	Vin=30.0-40.0V Io=0~2.5A	23.28	24.0	24.72	V
Load Current	Io	Vin=30.0~40.0V	0.0	—	2.5	A
Pulse Load Current	I _p	Vin=30.0-40.0V t=600msmax/4.1s Slew Rate=100μs	2.5	—	4.0	A
Ripple Voltage	Vrip	Vin=37.0V, Io=2.5A, BW = 20MHz	—	80	—	mV(p-p)
Efficiency	EFF	Vin =40.0V, Io=2.5A	—	95	—	%
Protection Circuit	SCP	Automatic return type short circuit protection circuit is built in.				

<Caution>

The above electrical characteristics are guaranteed with the condition that the impedance of the input voltage source is sufficiently low as shown in section 10. Connecting an input inductance or using an input power supply with output inductance may cause an unstable operation of this device. Please check the proper operation of this device with the peripheral circuits on your system.

6.2. Output Current Derating

When using this product at Ta ≥ 55 °C, it is used by the following output current de-rating.

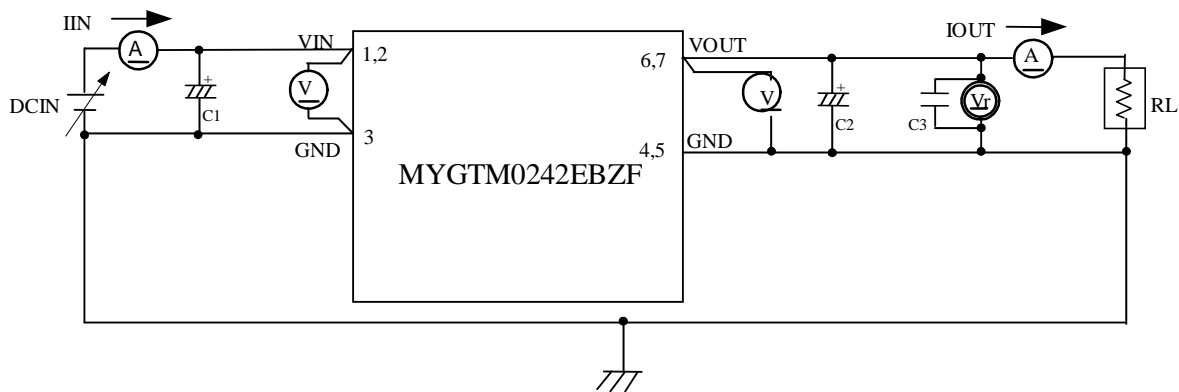




Note:


1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

7. Test Circuit


7.1 Test Circuit



  : Digital Multi meter HP34401A equivalent (Agilent Technologies)

 : Ripple Voltmeter RM-101 equivalent (Keisokugiken)

 RL : Electronic Load Device EUL-150αXL equivalent (Fujitsu access)

 : DC Power Supply HP6654A equivalent (Agilent Technologies)

- C1 : Low Impedance Aluminum Electrolytic Capacitor (EY-500E□□332MM40S : NIPPON CHEMI-CON)
 C2 : Low Impedance Aluminum Electrolytic Capacitor (EKZE350ETD681MK20S : NIPPON CHEMI-CON)
 C3 : Ceramic Capacitor 0.1μF

Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

8. Typical Characteristics Data

8.1 Static Electrical Characteristics

$V_{in}=30V, 37V, 40V$, $V_{out}=24V$
 ($T_a=25\text{ }^\circ\text{C}$, $C_{in}=EKY-500E\text{ }332MM40S$, $C_{out}=EKZE350ETD681MK20S$)

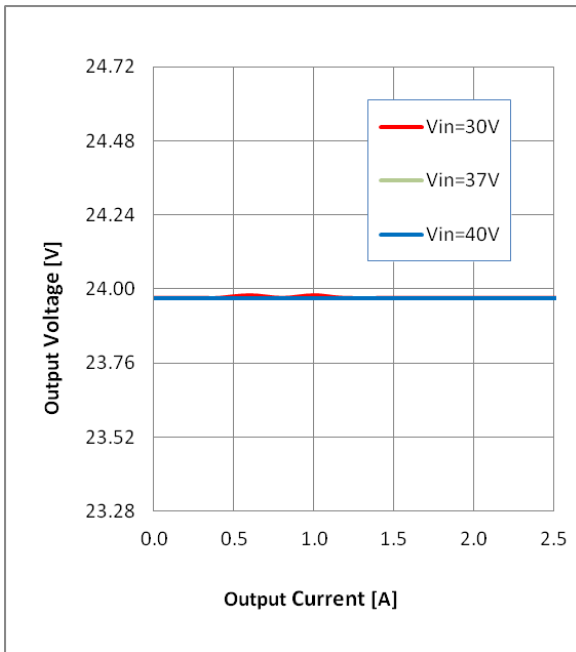


Fig.8-1-1. Output Voltage v.s. Output Current

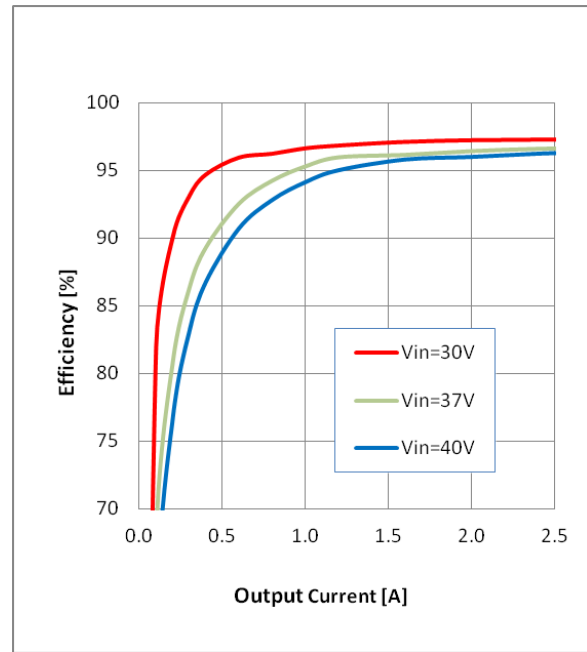


Fig.8-1-2. Efficiency v.s. Output Current

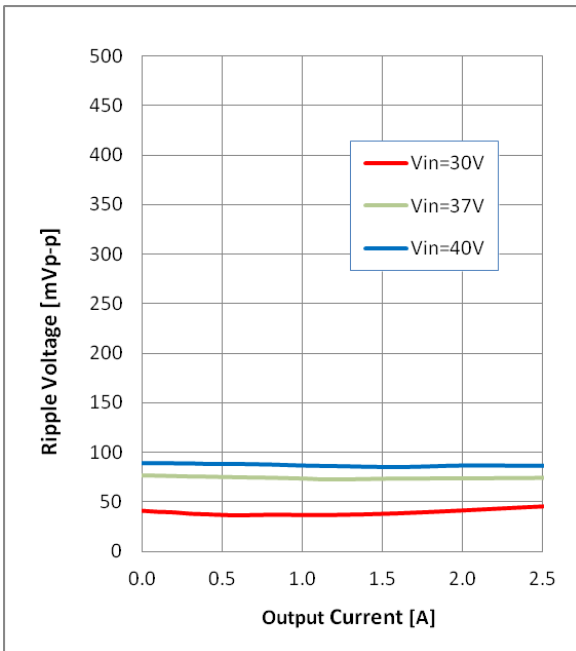


Fig.8-1-3. Ripple Voltage v.s. Output Current

Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

8.2 Dynamic Electrical Characteristics

Vin=37V, Vout=24V

(Ta=25 °C, Cin= EKY-500E□□332MM40S, Cout= EKZE350ETD681MK20S)

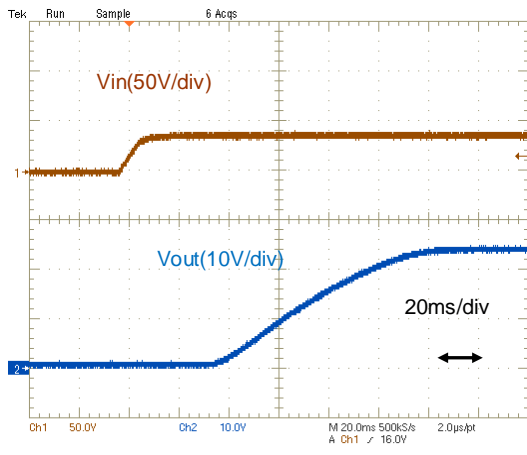


Fig.8-2-1. Start-up Waveform(Io=0A)

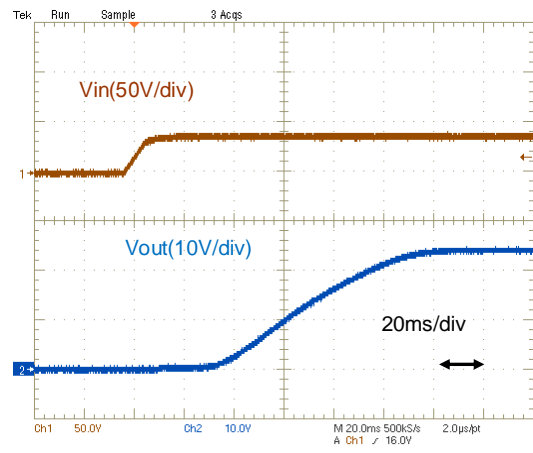


Fig.8-2-2. Start-up Waveform(Io=2.5A)

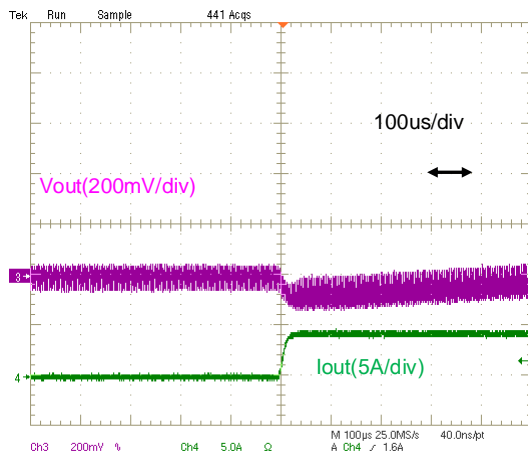


Fig.8-2-3. Load Transient Response (Io=0 → 4A)

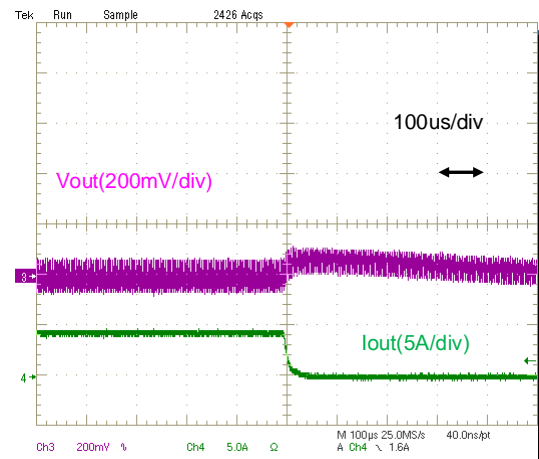


Fig.8-2-4. Load Transient Response (Io=4A → 0A)

Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

10. Mounting Condition

10.1 Soldering

10.1.1 Flux

Please solder the products with no-cleaning type Rosin Flux which leaves little residue and low activity. Do not use cleaning type flux, in case that you wash the products after using cleaning type flux, they may damage mounting parts on the products and may cause defective or low quality products.

10.1.2 Solder

Please recommend use of the solder Sn-3Ag-0.5Cu.
When use other solders, use it after examining at customer.

10.1.3 Condition of soldering

Please solder under the following condition.

- Flow soldering Preheating : $120\pm 10^{\circ}\text{C}$ 60~120 seconds
- Soldering : $255\pm 5^{\circ}\text{C}$
- Time within : 10 seconds
- Condition of iron soldering : under 380°C , 4 seconds at maximum
(Only iron less than 30W should be used.)

10.2 Cleaning

Please do not wash the products.

11. Packaging Specification

11.1. Packing form

These are packed in a tray(See Fig.11-1)

11.2. The number of products in pack specification form.

66pcs./tray

If the products have fraction, may not follow this specification.

11.3. Packaging Form

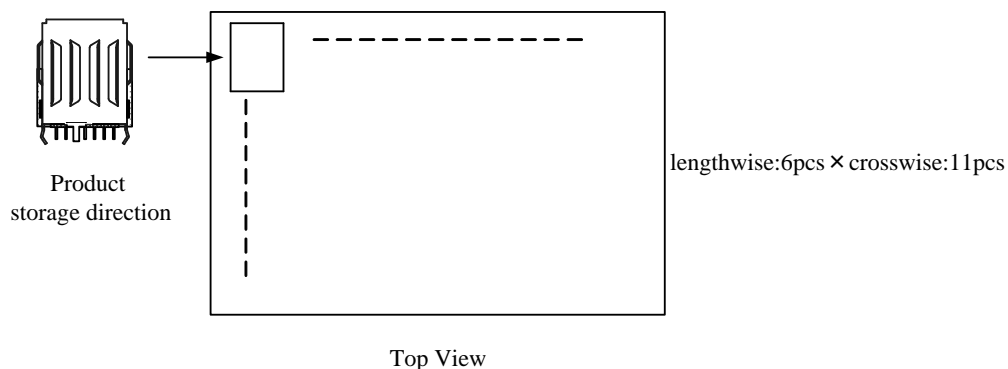
11.3.1. Case of reuseable box is used.

These trayies packed products are packaging for Fig. 11-2.

11.3.2. Case of reuseable box is not used

These trayies packed products are packaging for Fig. 11-3.

The product is arranged in the tray as follows.



Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

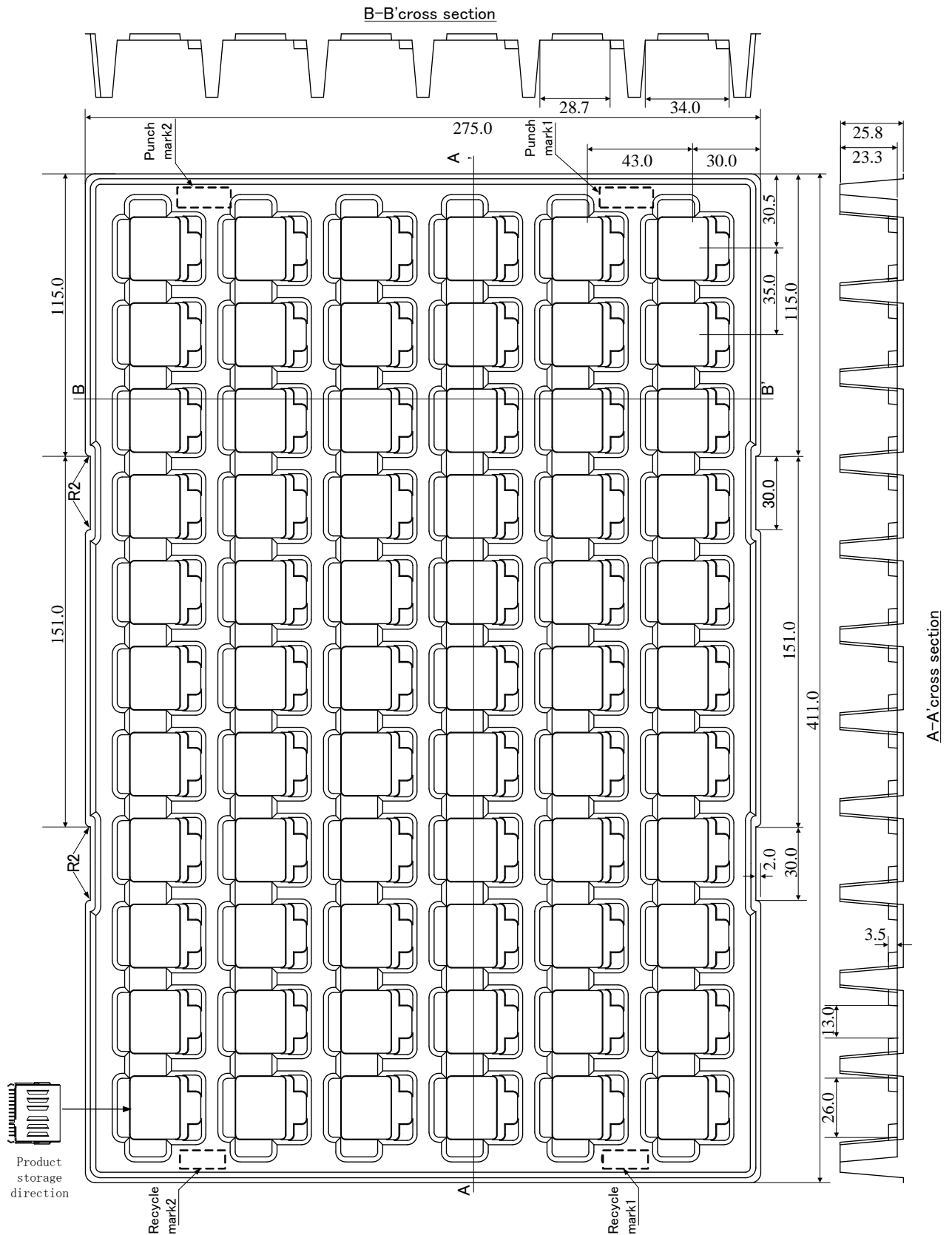


Fig.11-1

Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

As in Figure 11-2, 10 trays are packed up in the outside packing box .(Number of packed traies is 9 and Empty traies is 1)
 When there is a fraction, packing up the empty tray. (Number of all traies is allways 10.)
 Then, traies piles up alternately.

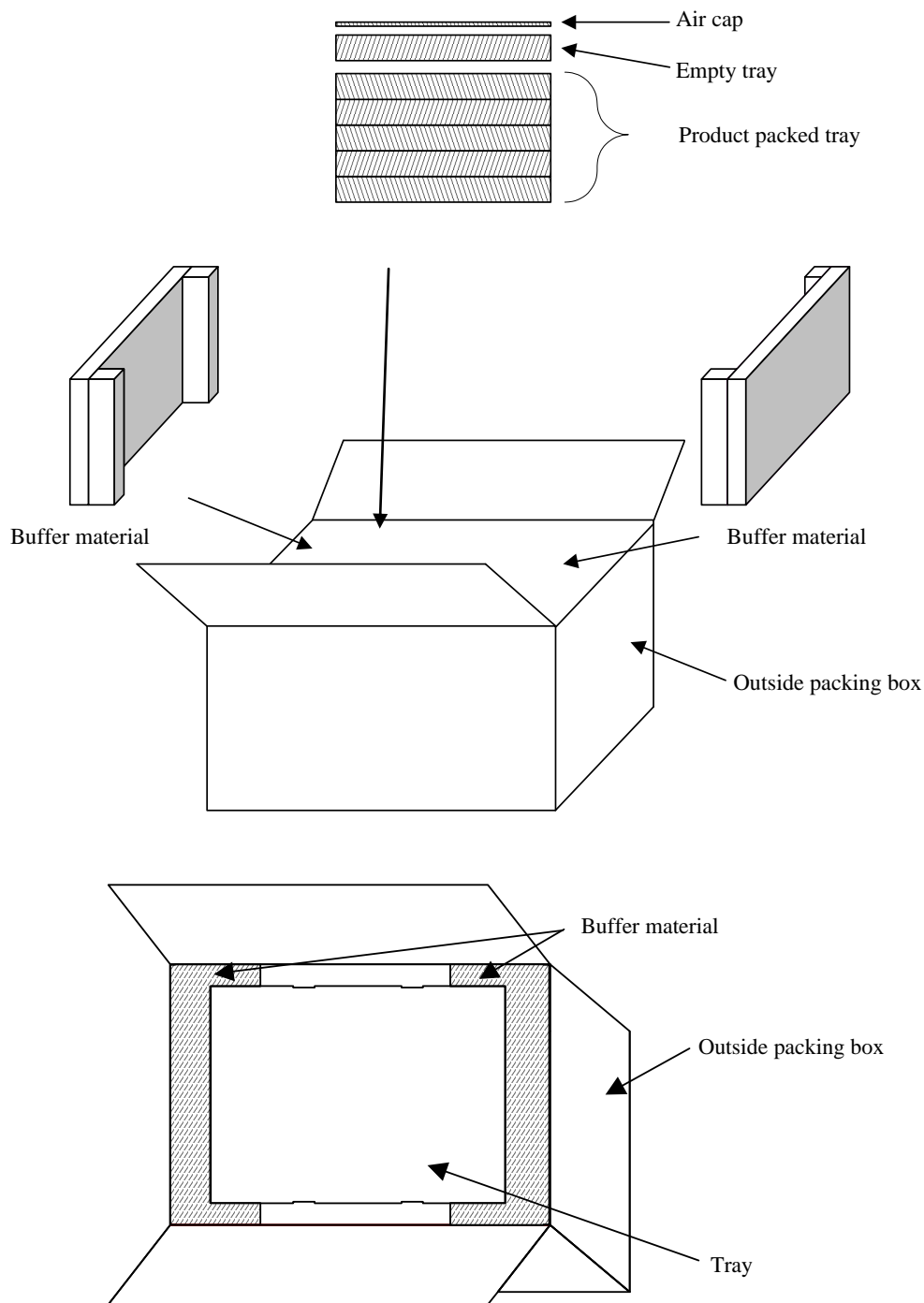


Fig.11-2

Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

As in Figure11-3, 10 trays fixed by banding band are packed up in the corrugated fiberboard box.
 (Number of packed trays is 9 and Empty trays is 1.)
 When there is a fraction, fixed the empty trays by banding band. (Number of all trays is always 10.)
 Then, trays piles up alternately.

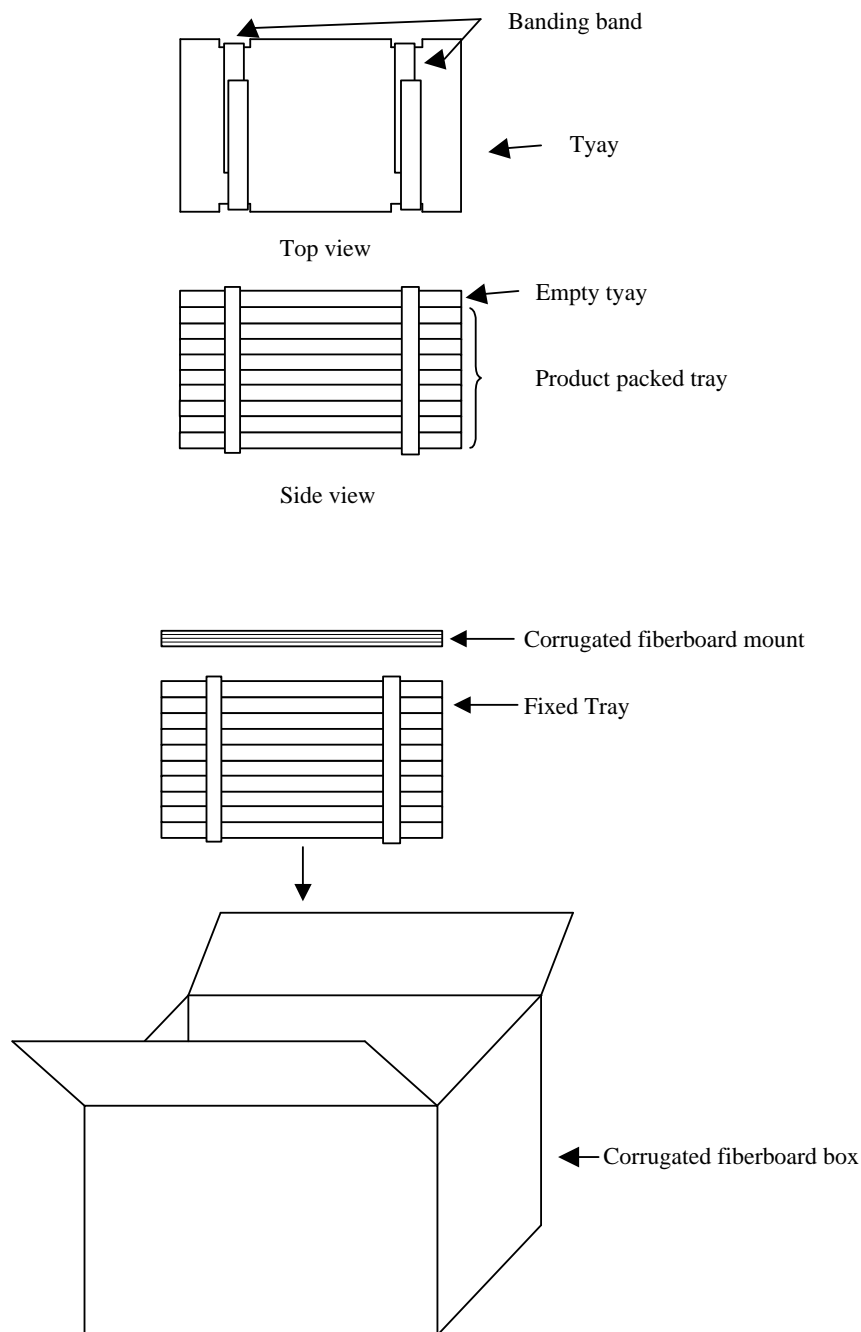


Fig.11-3

Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

Item	Specification
Packaging form typical classification	Box
Dimensions of packaging form (typ.)	<p>Case of reuseable box is used.</p> <p>W = 538 (mm) D = 368 (mm) H = 284 (mm)</p> <p>Case of reuseable box is not used</p> <p>W = 432 (mm) D = 296 (mm) H = 264 (mm)</p>
The number of products in packaging form	594 (pcs)
Mass of one product	17 (g) Typ
Remark	<p>• If the products have fraction, may not follow this specification.</p> <p>※On the Packing case, the following is indicated.</p> <p>Murata Parts No.</p> <p>Quantity</p>

Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

12. Notice

12.1. Input / Output capacitor

When an inductance or a switch device is connected to the input line, or when you use a power supply with output inductance as the input voltage source, the input voltage of the DC-DC converter will be fluctuated. By this input voltage fluctuation, the transient load response of the DC-DC converter may be deteriorated or abnormal oscillation may occur. So please confirm normal operation on each application.

Please use external input capacitor in order to decrease inductance of input line.

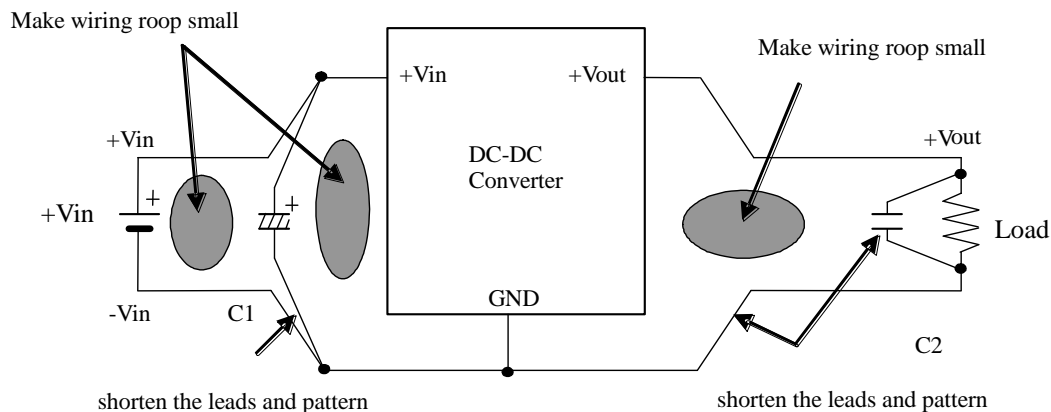
In case you use external output capacitor in order to improve transient load response, please use input capacitor to prevent abnormal oscillation. When you use external capacitors, following capacitors are recommendable.

Output capacitor: Please use capacitors less than 680 μ F

12.2. Wiring of input / output capacitor

In the case of input / output capacitor connection, in order to reduce electrical noise, please design PCBs with consideration of the following item.

- ①. Please be sure to check normal operation on your system.
- ②. Please use low impedance capacitors with good high frequency characteristic.
- ③. Please shorten those leads of each capacitor as much as possible, and make sure the lead inductance is low.
- ④. Both input-side and output side, please make the wiring loop between plus and minus as small as possible. The influence of leakage inductance can be reduced.
- ⑤. Please design the print pattern of the main circuit as wide and short as possible.



12.3. This product should not be operated in parallel or in series.

12.4. Please do not use a connector or a socket to connect this product to your product.
The electric characteristics may be deteriorated by the influence of contact resistance.

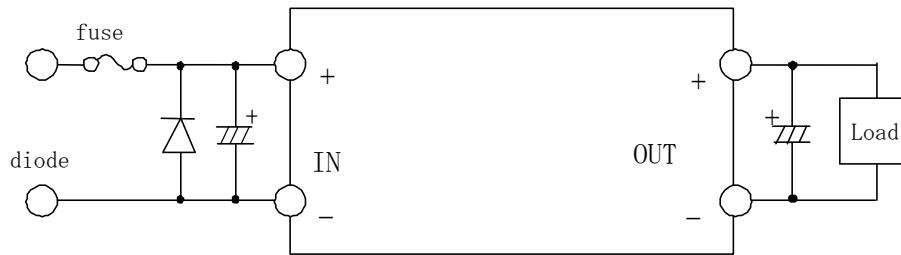
12.5. Be sure to provide an appropriate fail-safe function on your product to prevent secondary damage that may be caused due to abnormal functional or failure of this product.

12.6. Inrush current protection is not a feature of this product.

Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

12.7. Please connect the input terminals with the correct polarity. If you connect this by mistake, it may break the DC-DC converter. In the case of destruction of the DC-DC converter inside, over input current may flow, and so DC-DC converter maybe occurred abnormal temperature rise, or your product may be damaged. Please add a diode and fuse per the following diagram to protect them.



Standard of fuse : current rating 10A

※Please select diode and fuse after confirming the operation of your product.



Note

1. Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.
2. Please contact our main sales office or nearby sales office before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property or this products for any other applications that described in the above.
 - ① Aircraft equipment
 - ② Aerospace equipment
 - ③ Undersea equipment
 - ④ Power plant control equipment
 - ⑤ Medical equipment
 - ⑥ Transportation equipment (vehicles, trains, ships, etc.)
 - ⑦ Traffic signal equipment
 - ⑧ Disaster prevention /crime prevention equipment
 - ⑨ Data-processing equipment
 - ⑩ Application of similar complexity and/or reliability requirements to the applications listed in the above.
3. This catalog is indicated in March 2013. About the written contents, since changing without a preliminary announcement for improvement and supply are sometimes stopped, please confirm in case of ordering. If written contents are unknown, please ask to our main sales office or nearby sales office.

Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.