

## 47... Series Electronic transformers



## Data Sheets

## One Regulated Output

## One Non Regulated Output

## Two Common Outputs

## Two Isolated Outputs

## Approvals

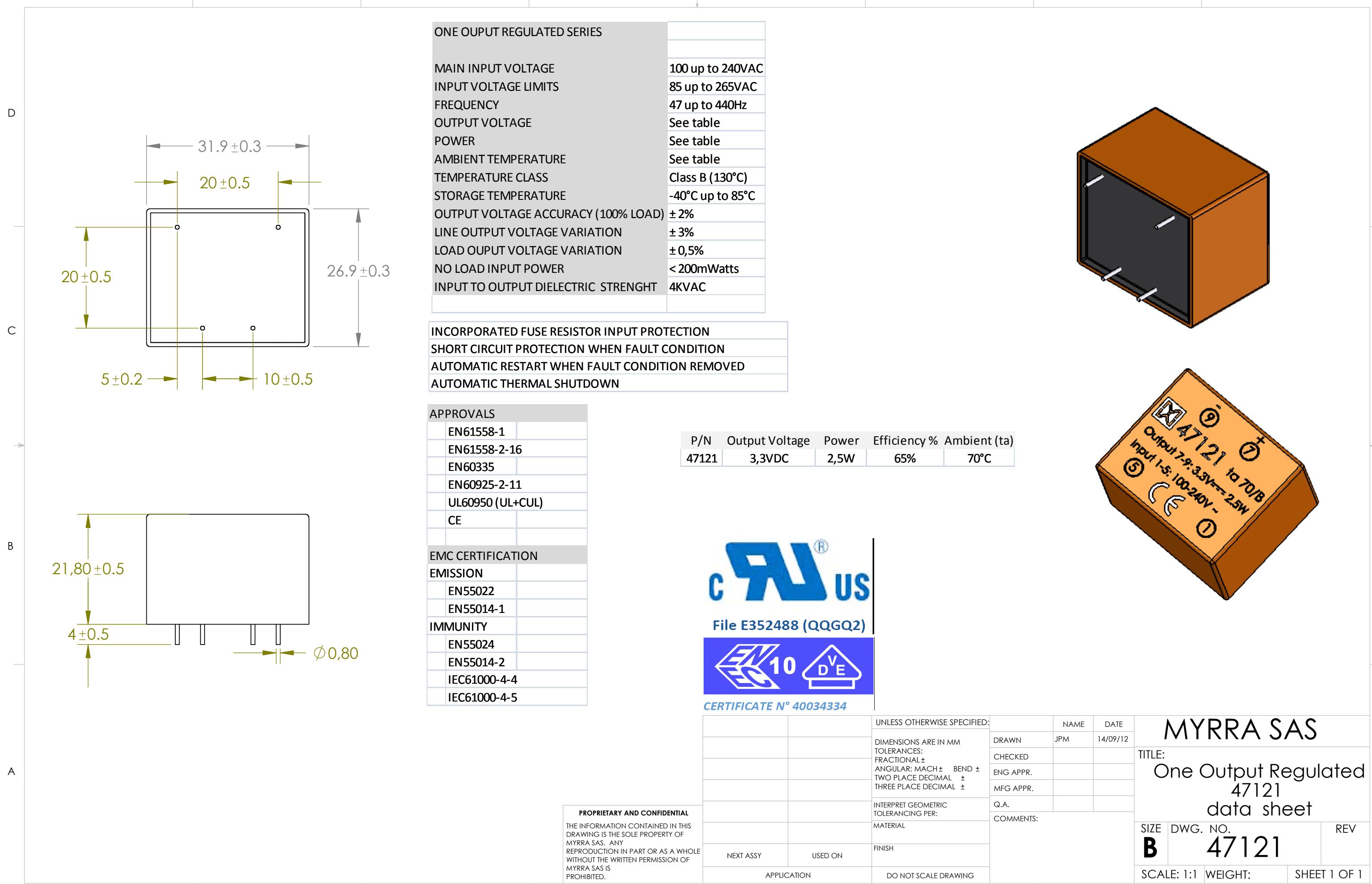
VDE

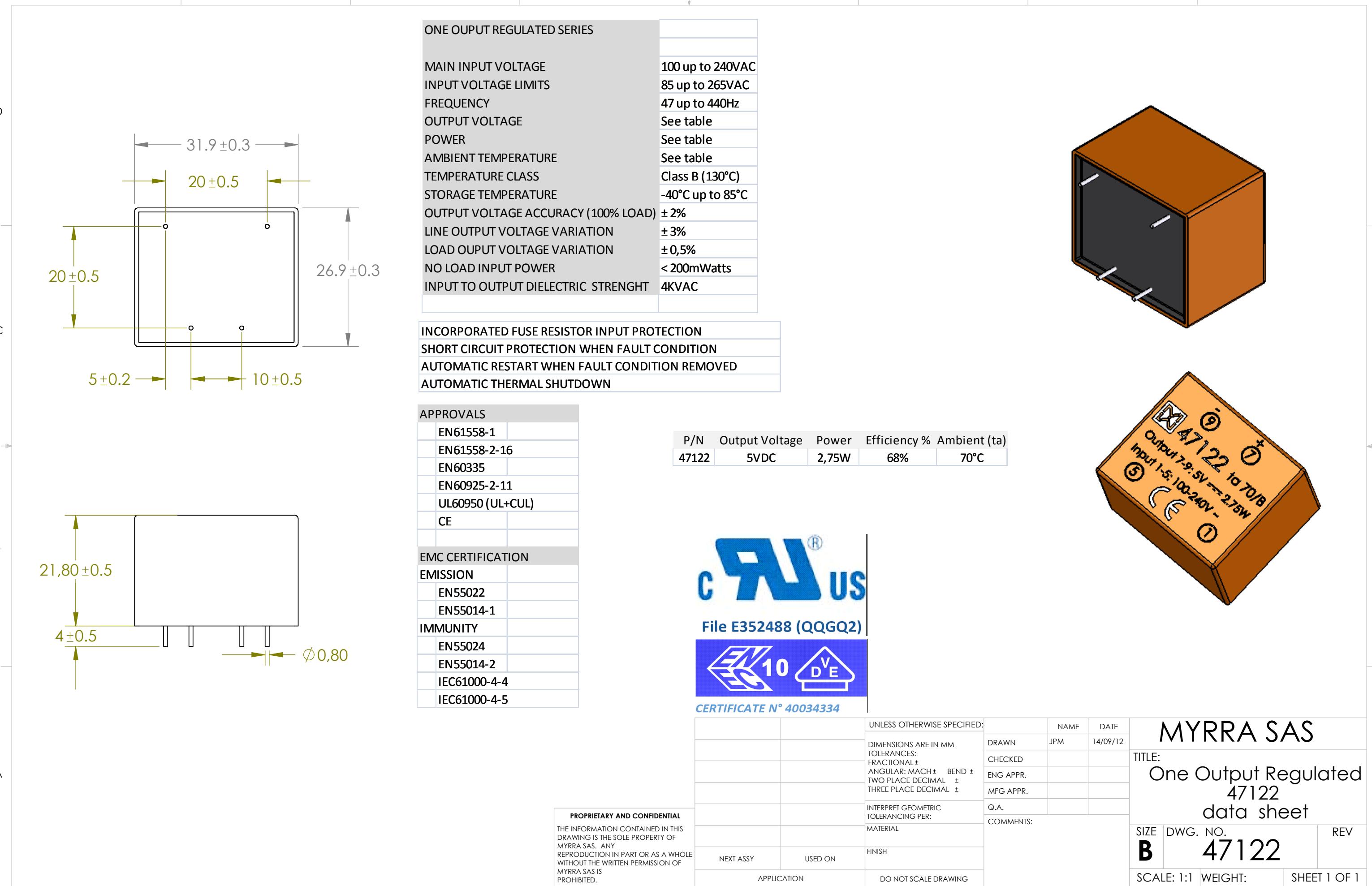
UL

## Specific Datas

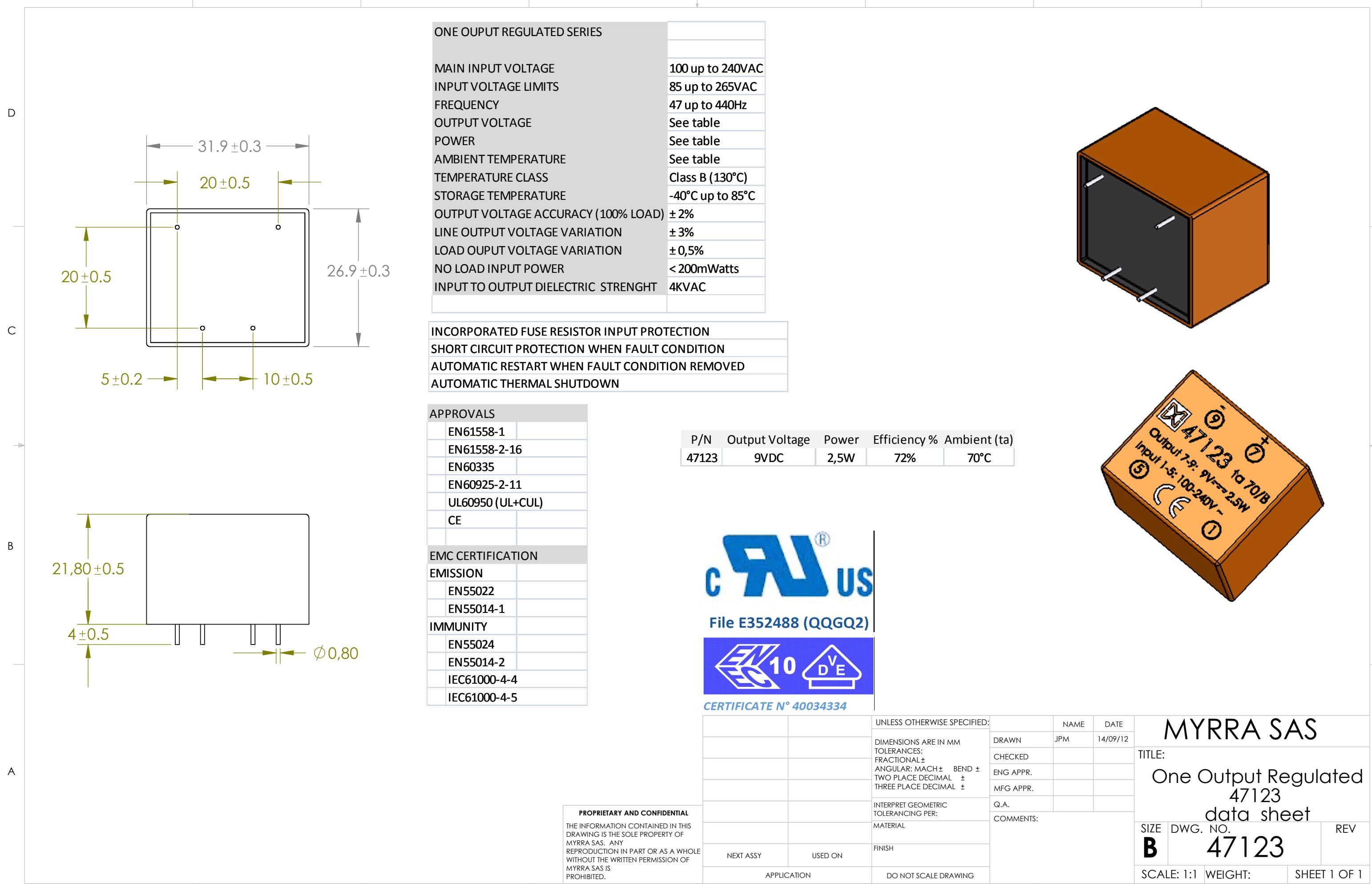
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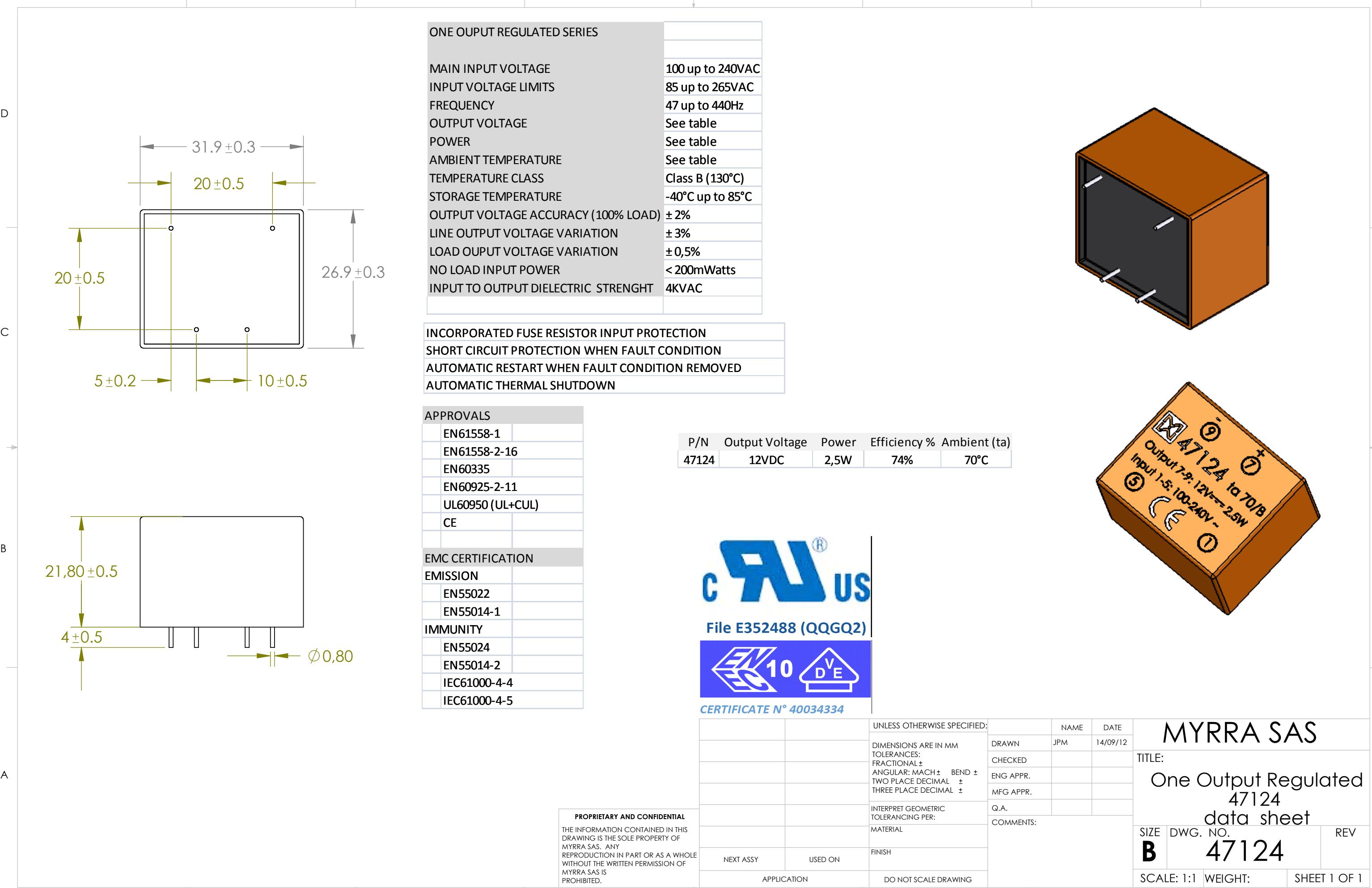
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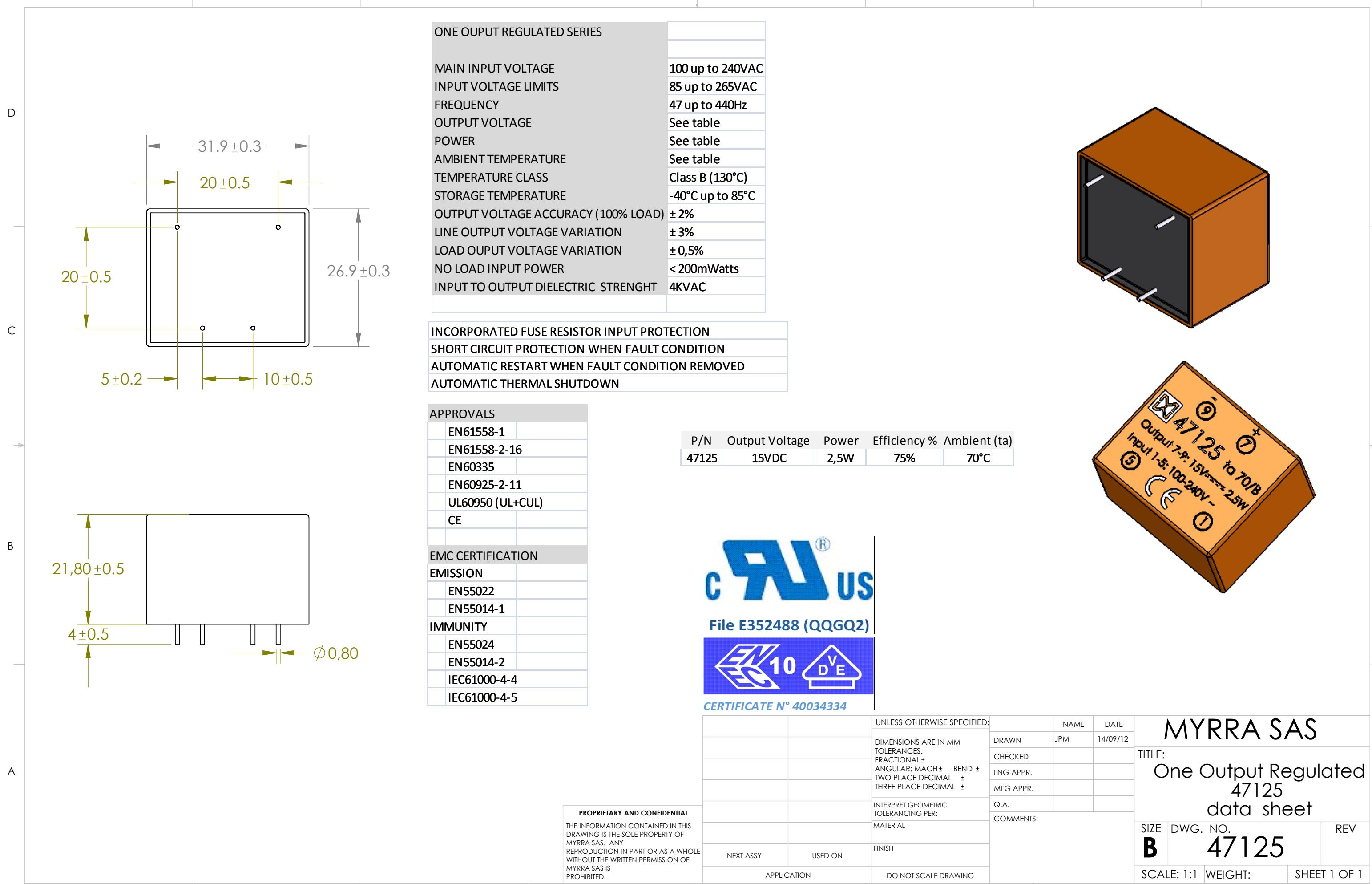


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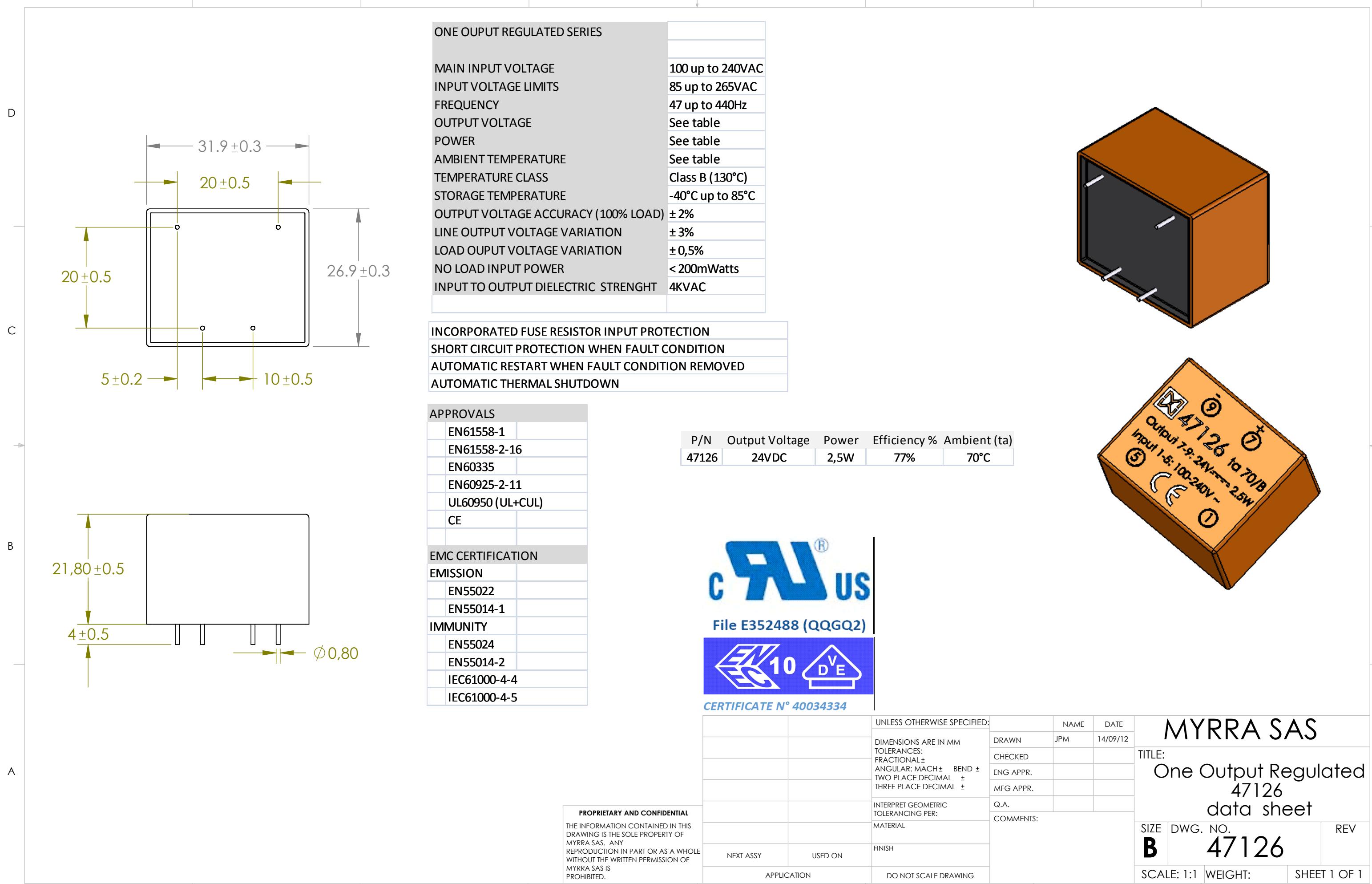




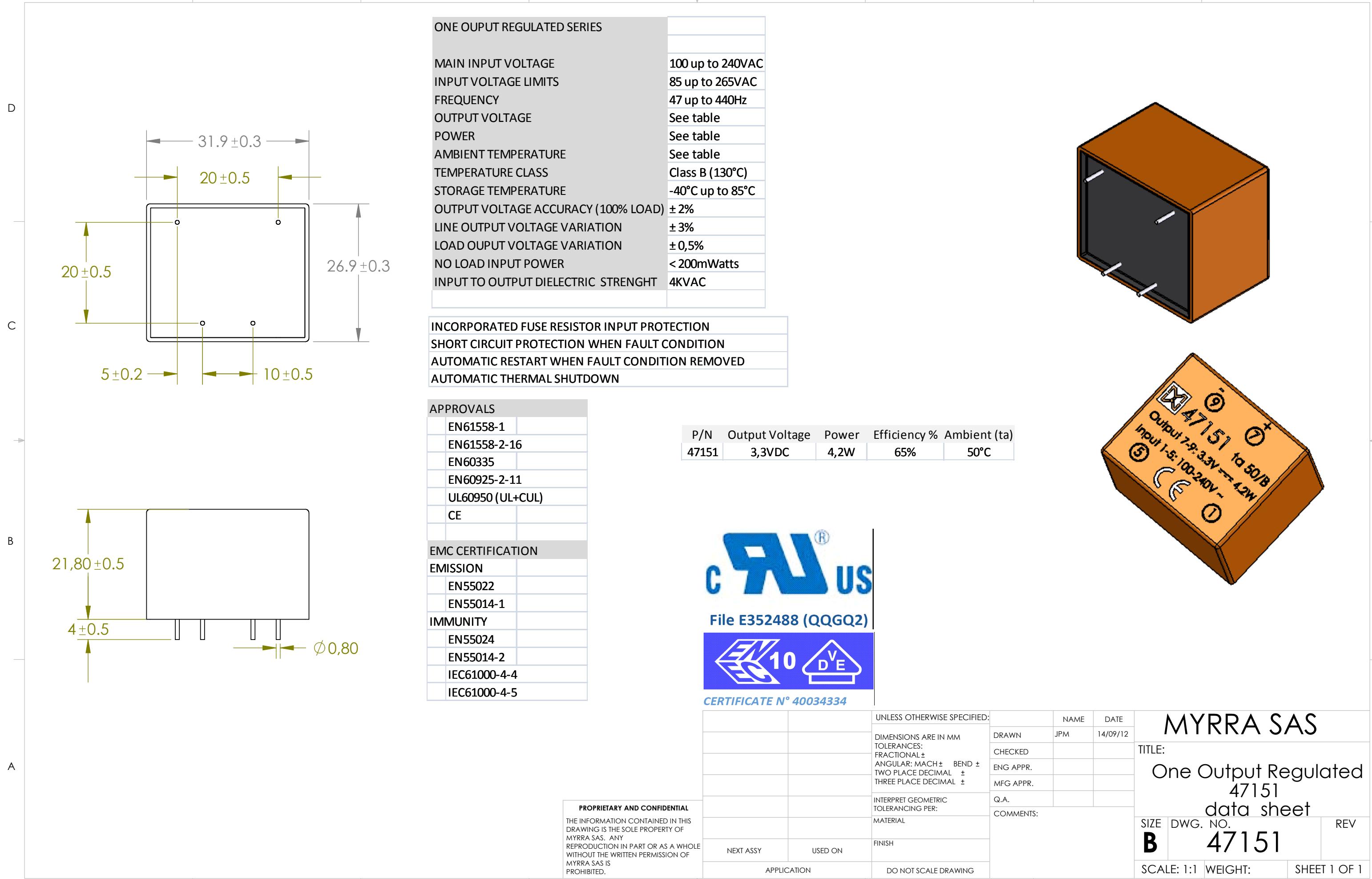
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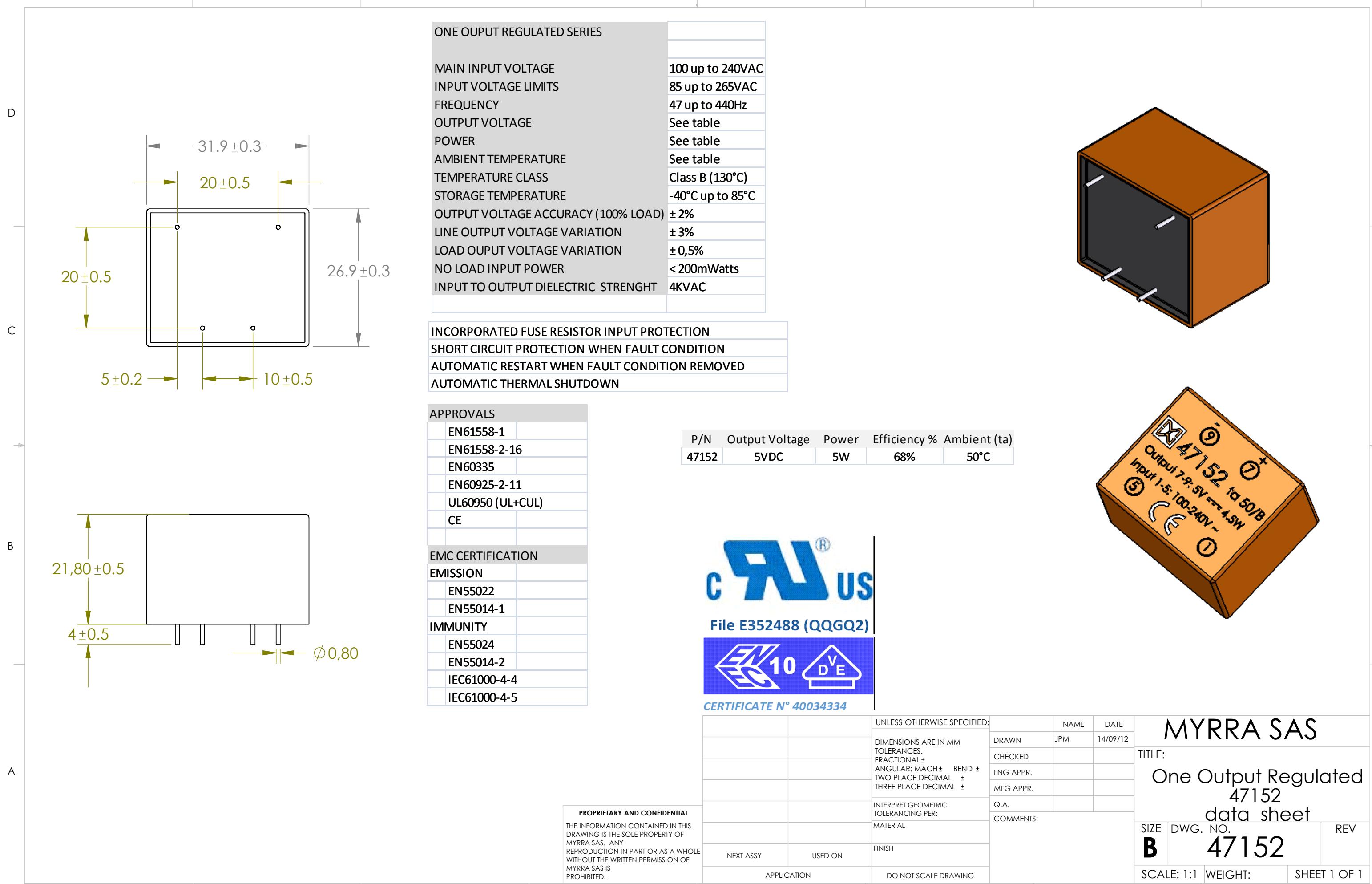
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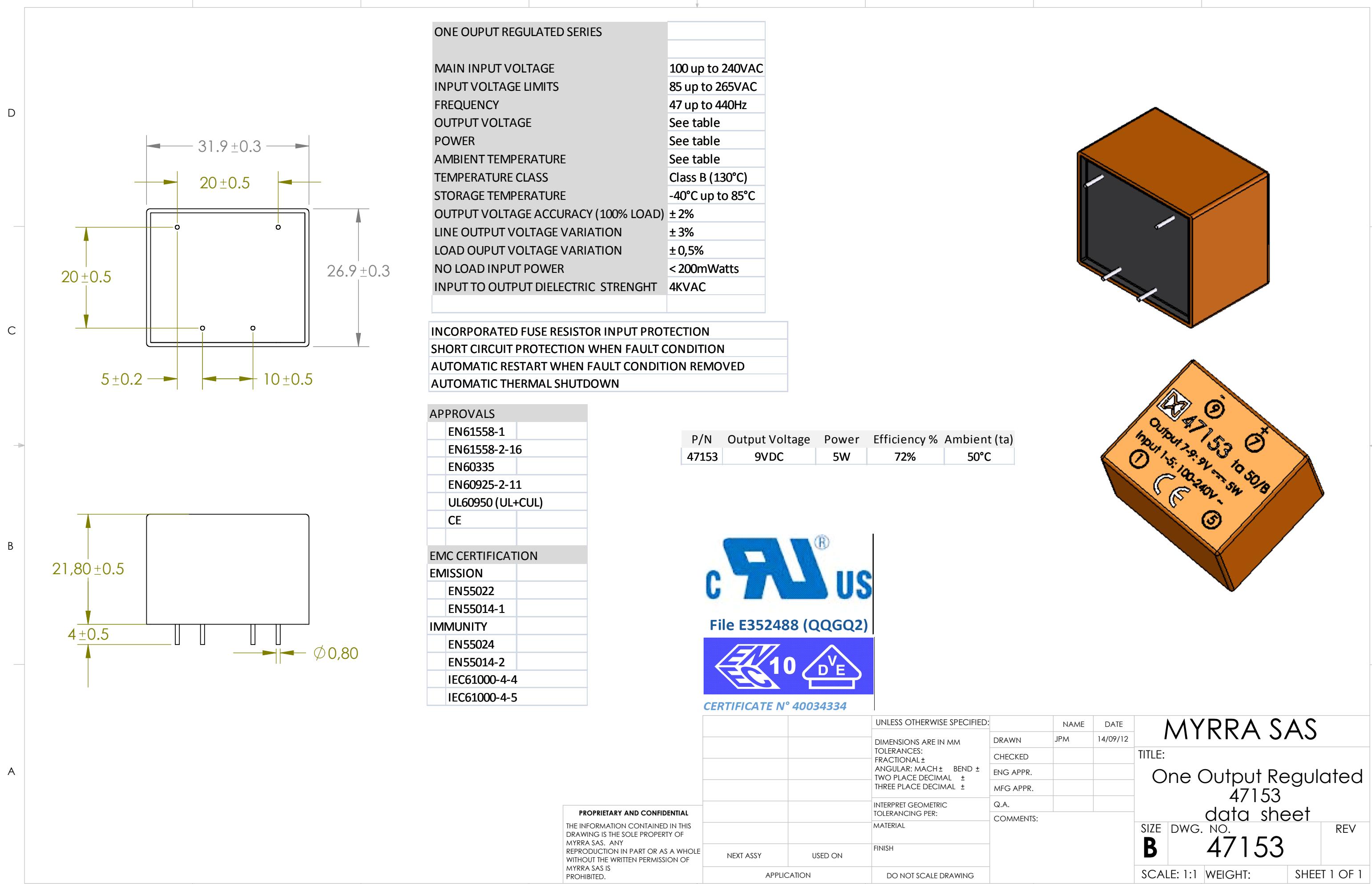
8 7 6 5 4 3 2 1



8 7 6 5 4 3 2 1



8 7 6 5 4 3 2 1



ONE OUTPUT REGULATED SERIES	
MAIN INPUT VOLTAGE	100 up to 240VAC
INPUT VOLTAGE LIMITS	85 up to 265VAC
FREQUENCY	47 up to 440Hz
OUTPUT VOLTAGE	See table
POWER	See table
AMBIENT TEMPERATURE	See table
TEMPERATURE CLASS	Class B (130°C)
STORAGE TEMPERATURE	-40°C up to 85°C
OUTPUT VOLTAGE ACCURACY (100% LOAD)	± 2%
LINE OUTPUT VOLTAGE VARIATION	± 3%
LOAD OUTPUT VOLTAGE VARIATION	± 0,5%
NO LOAD INPUT POWER	< 200mWatts
INPUT TO OUTPUT DIELECTRIC STRENGHT	4KVAC

INCORPORATED FUSE RESISTOR INPUT PROTECTION  
SHORT CIRCUIT PROTECTION WHEN FAULT CONDITION  
AUTOMATIC RESTART WHEN FAULT CONDITION REMOVED  
AUTOMATIC THERMAL SHUTDOWN

APPROVALS	
EN61558-1	
EN61558-2-16	
EN60335	
EN60925-2-11	
UL60950 (UL+CUL)	
CE	

EMC CERTIFICATION	
EMISSION	
EN55022	
EN55014-1	
IMMUNITY	
EN55024	
EN55014-2	
IEC61000-4-4	
IEC61000-4-5	

P/N	Output Voltage	Power	Efficiency %	Ambient (ta)
47154	12VDC	5W	75%	50°C



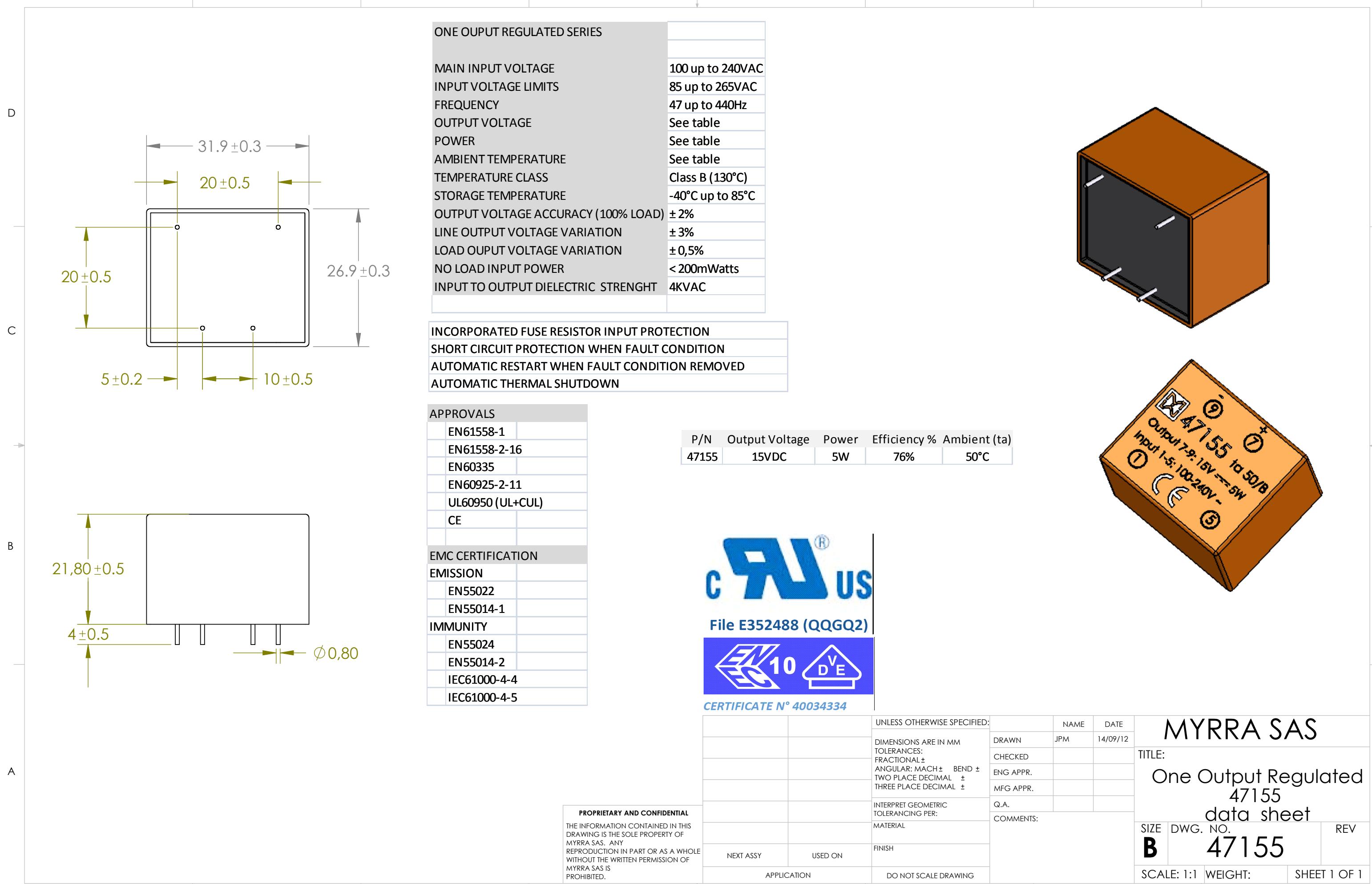
File E352488 (QQGQ2)



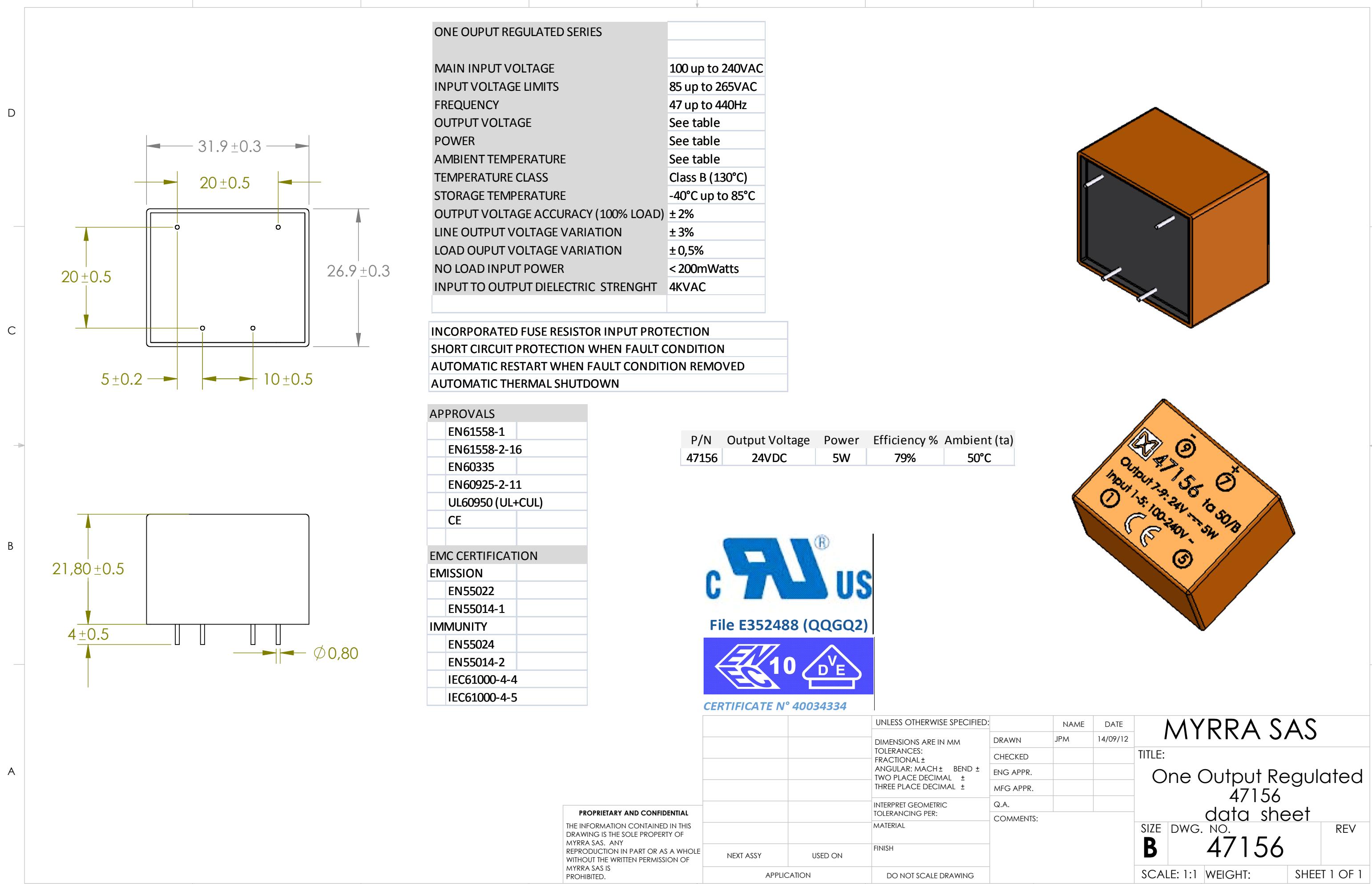
CERTIFICATE N° 40034334

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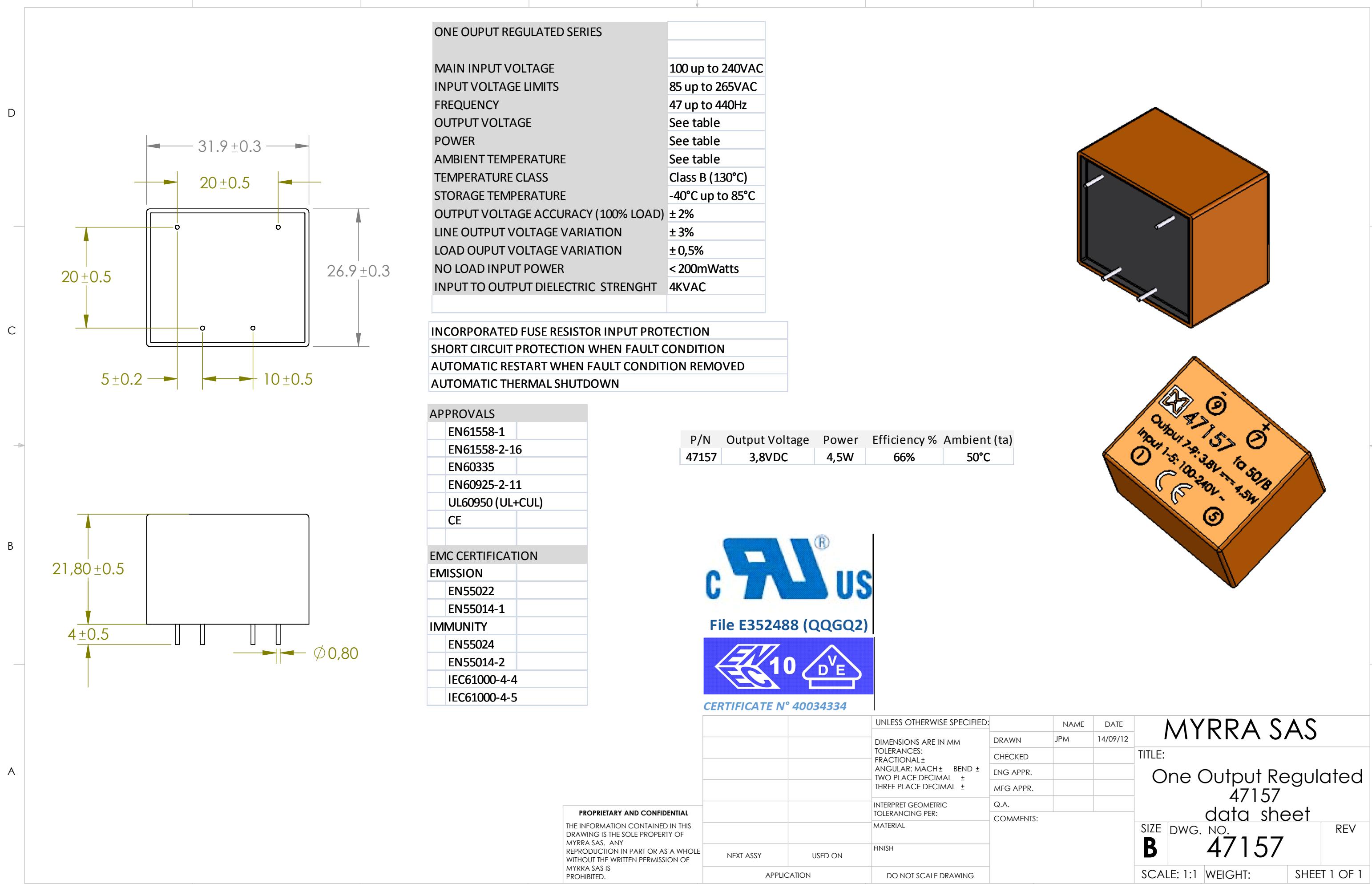
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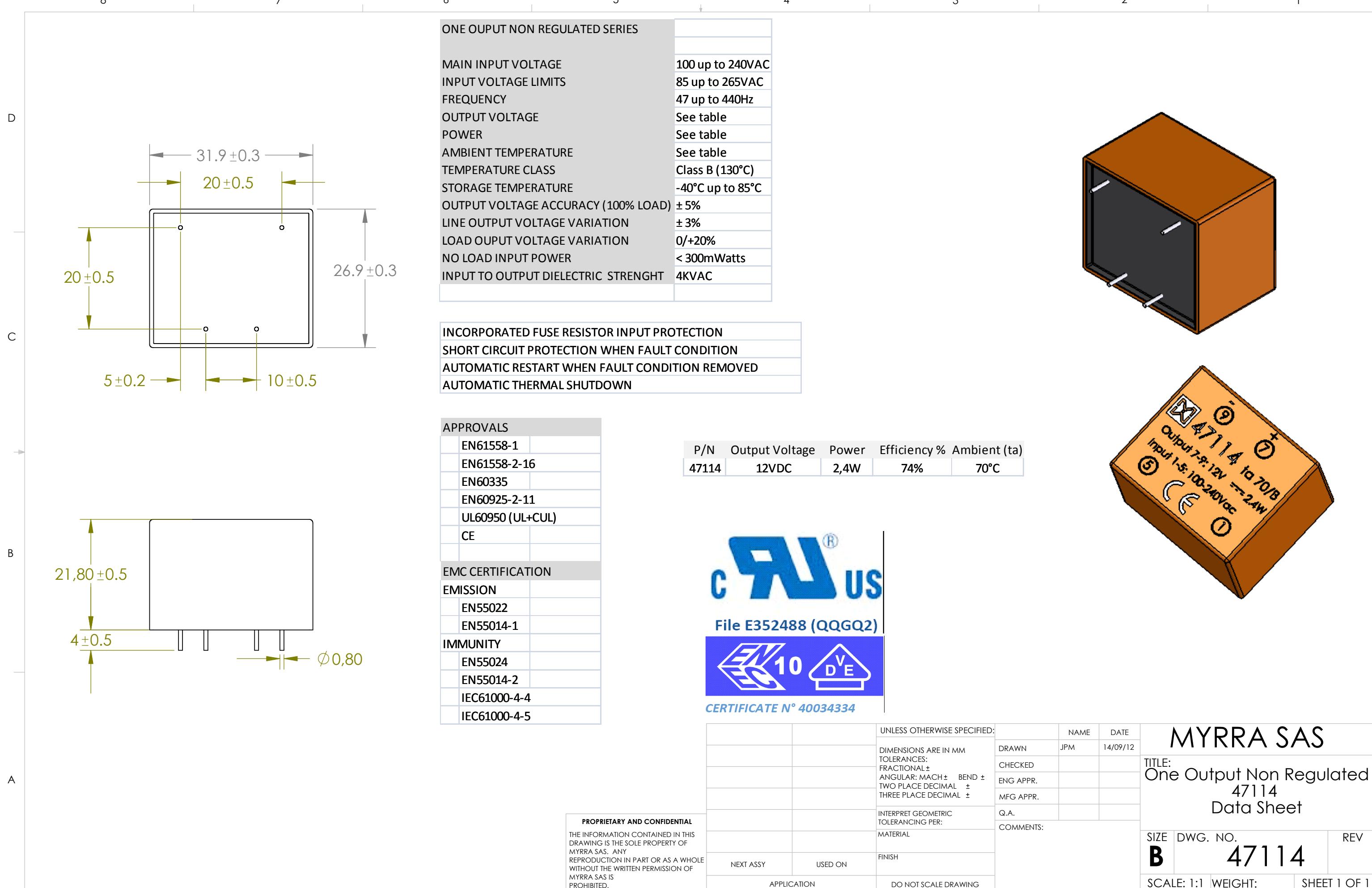
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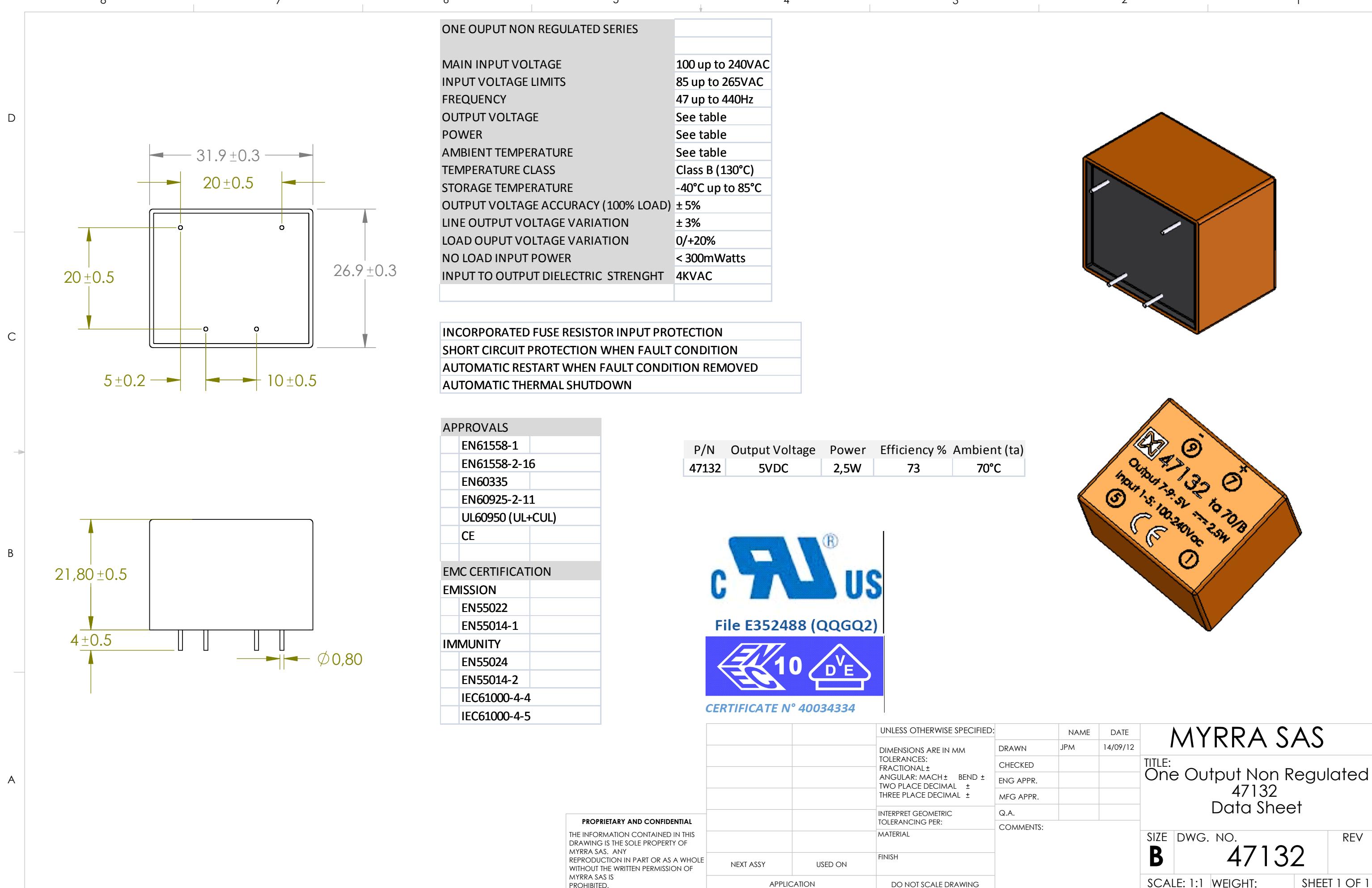
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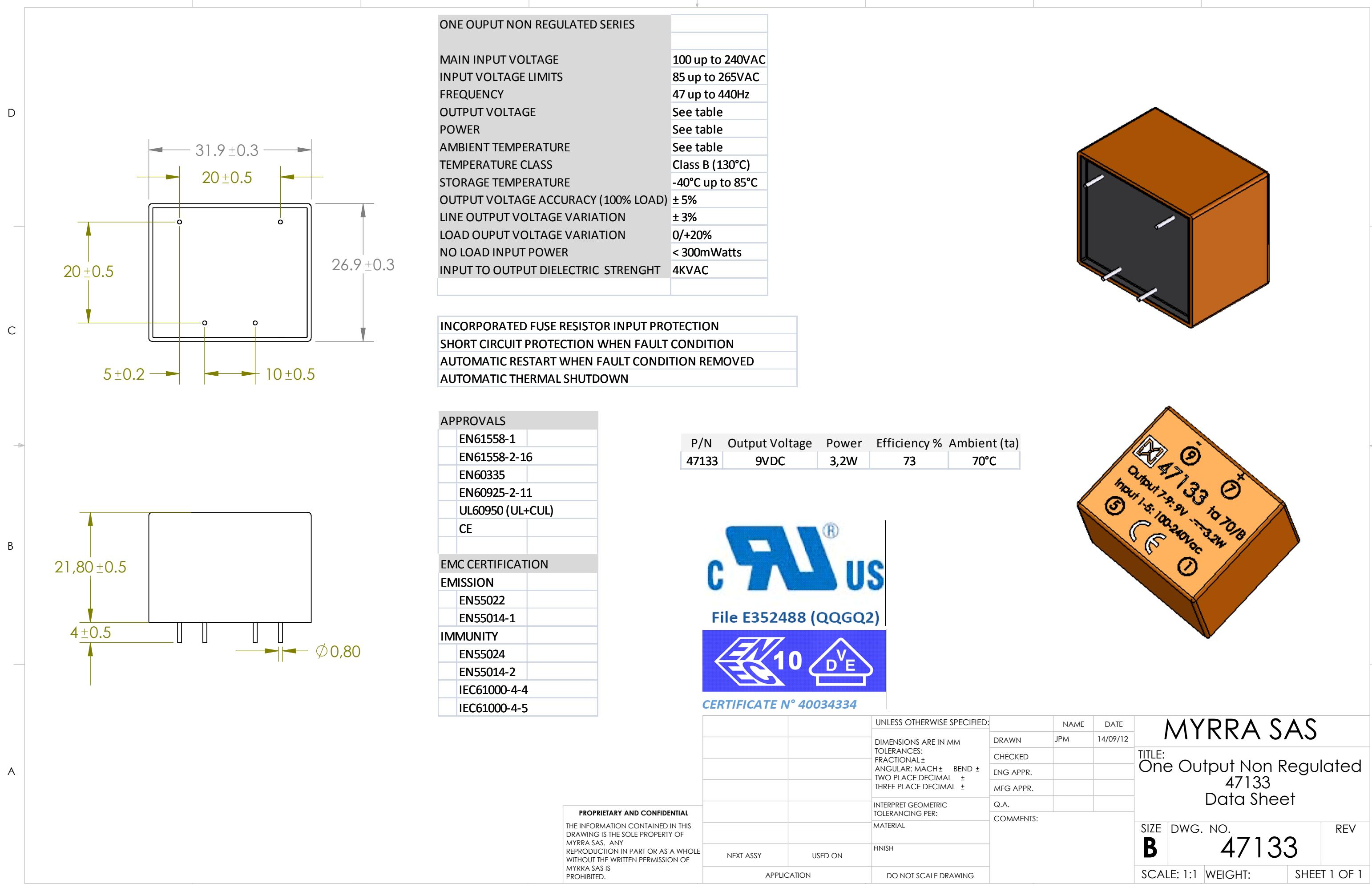
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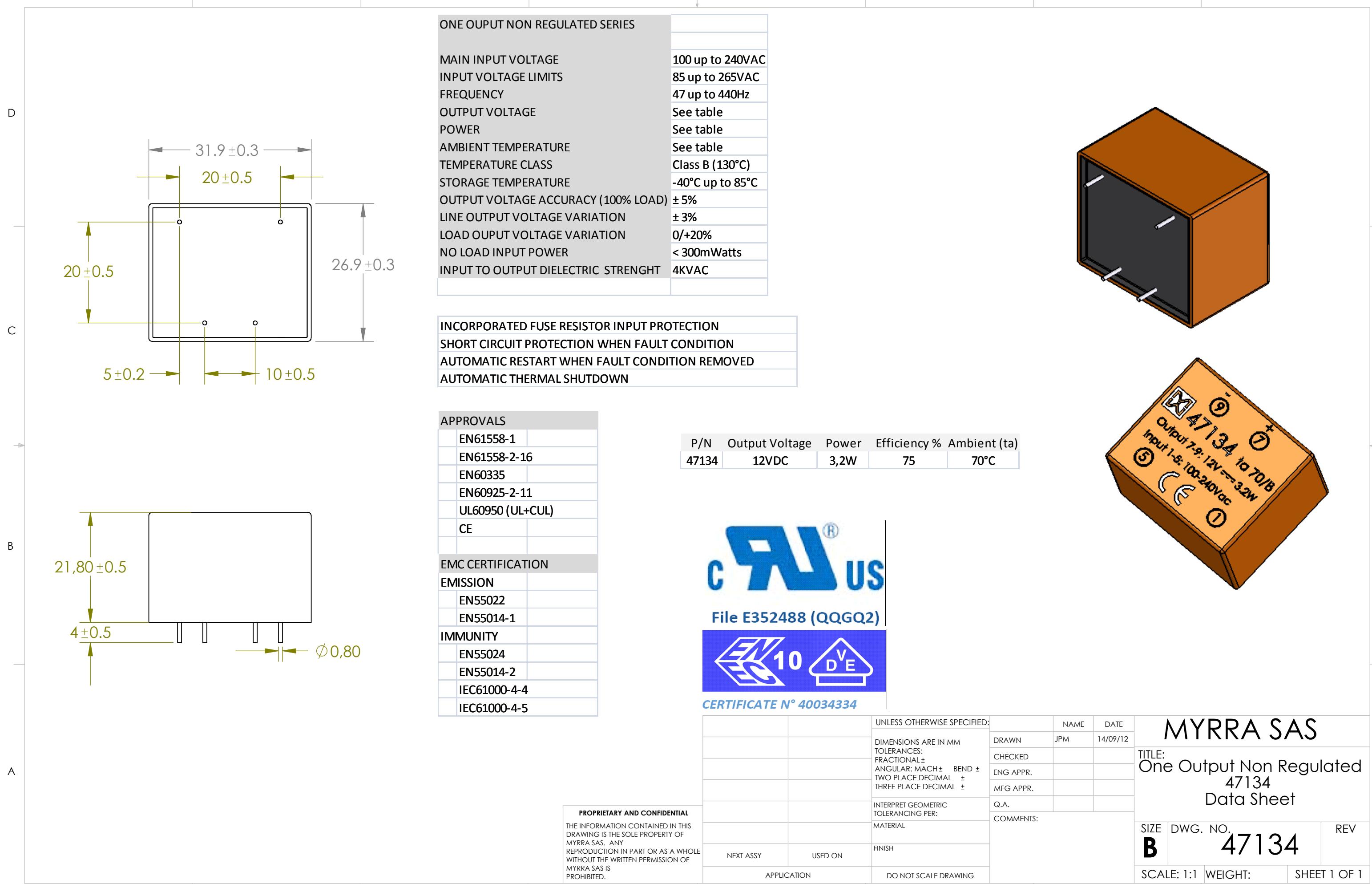
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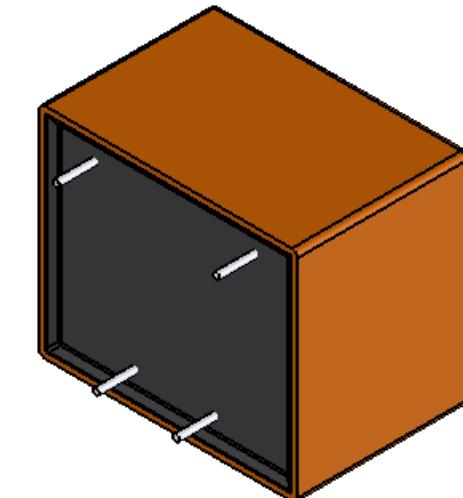
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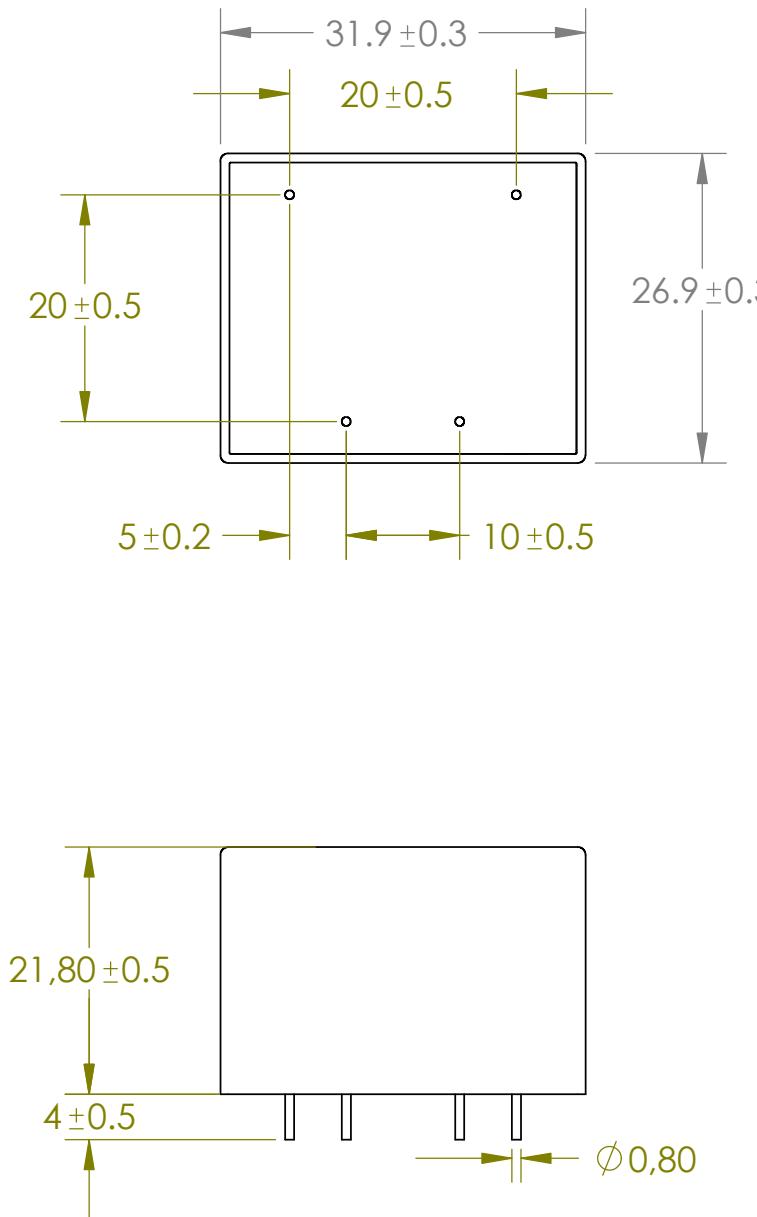
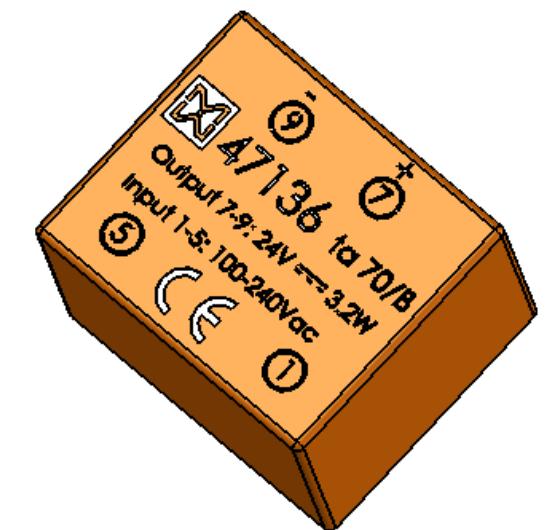
8 7 6 5 4 3 2 1



ONE OUTPUT NON REGULATED SERIES	
MAIN INPUT VOLTAGE	100 up to 240VAC
INPUT VOLTAGE LIMITS	85 up to 265VAC
FREQUENCY	47 up to 440Hz
OUTPUT VOLTAGE	See table
POWER	See table
AMBIENT TEMPERATURE	See table
TEMPERATURE CLASS	Class B (130°C)
STORAGE TEMPERATURE	-40°C up to 85°C
OUTPUT VOLTAGE ACCURACY (100% LOAD)	± 5%
LINE OUTPUT VOLTAGE VARIATION	± 3%
LOAD OUTPUT VOLTAGE VARIATION	0/+20%
NO LOAD INPUT POWER	< 300mWatts
INPUT TO OUTPUT DIELECTRIC STRENGHT	4KVAC



- INCORPORATED FUSE RESISTOR INPUT PROTECTION
- SHORT CIRCUIT PROTECTION WHEN FAULT CONDITION
- AUTOMATIC RESTART WHEN FAULT CONDITION REMOVED
- AUTOMATIC THERMAL SHUTDOWN



APPROVALS	
	EN61558-1
	EN61558-2-16
	EN60335
	EN60925-2-11
	UL60950 (UL+CUL)
	CE

EMC CERTIFICATION	
EMISSION	
	EN55022
	EN55014-1
IMMUNITY	
	EN55024
	EN55014-2
	IEC61000-4-4
	IEC61000-4-5

P/N	Output Voltage	Power	Efficiency %	Ambient (ta)
47136	24VDC	3,2W	80	70°C



File E352488 (QQGQ2)



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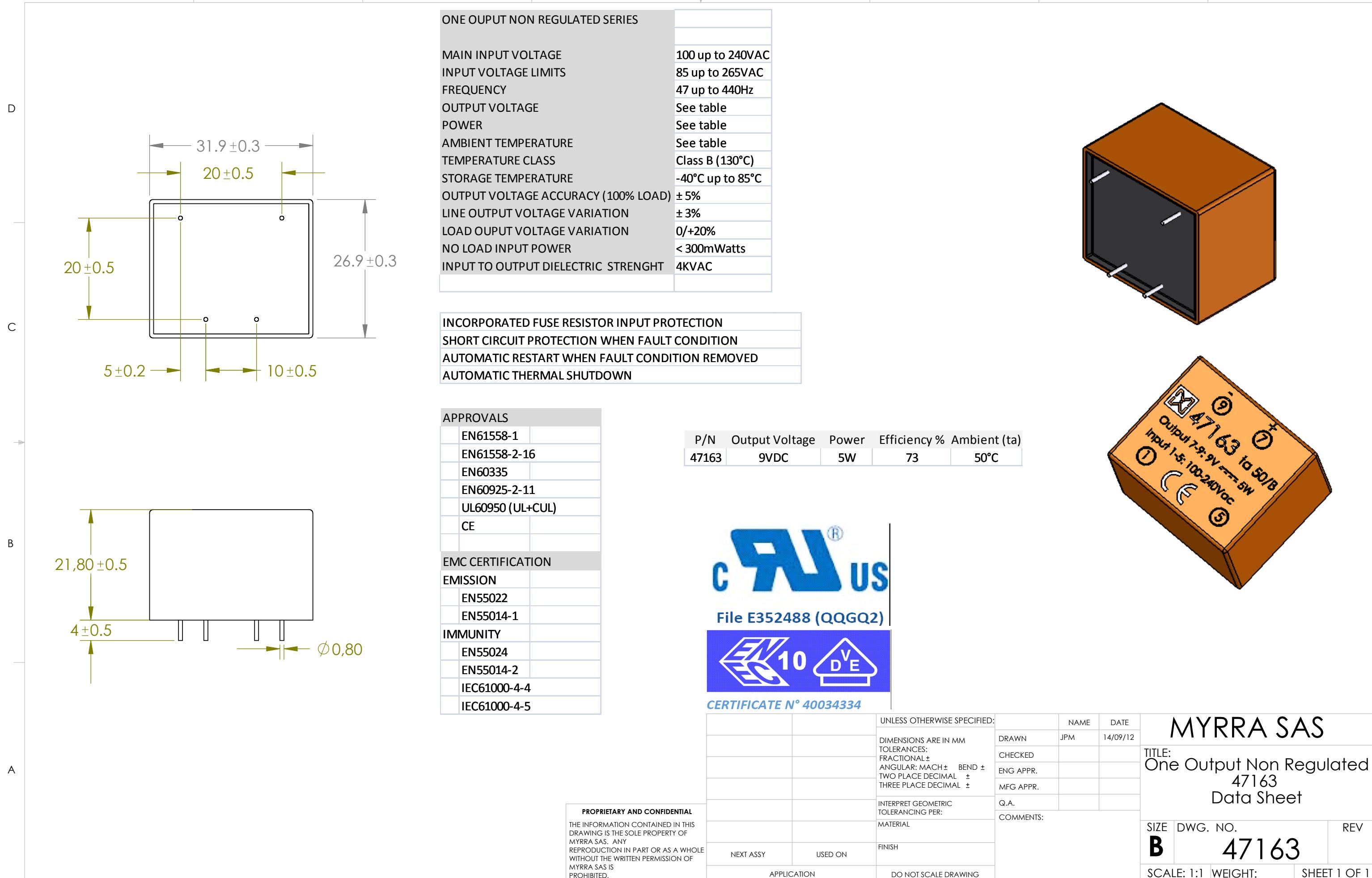
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		DIMENSIONS ARE IN MM	DRAWN	JPM	14/09/12		
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm$	ENG APPR.				
		ANGULAR: MACH $\pm$ BEND $\pm$	MFG APPR.				
		TWO PLACE DECIMAL $\pm$	Q.A.				
		THREE PLACE DECIMAL $\pm$	<b>COMMENTS:</b>				
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL				<b>SIZE</b> <b>DWG. NO.</b> <b>B</b> <b>47136</b> <b>REV</b>	
ROLE	NEXT ASSY	USED ON	FINISH				
	APPLICATION		DO NOT SCALE DRAWING		SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

# MYRRA SAS

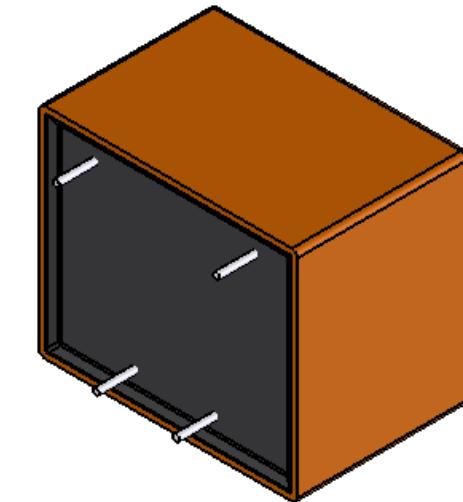
**TITLE:**  
One Output Non Regulated  
47136  
Data Sheet

SIZE	DWG. NO.	REV
<b>B</b>	<b>47136</b>	
SCALE: 1:1 WEIGHT:		SHEET 1 OF 1

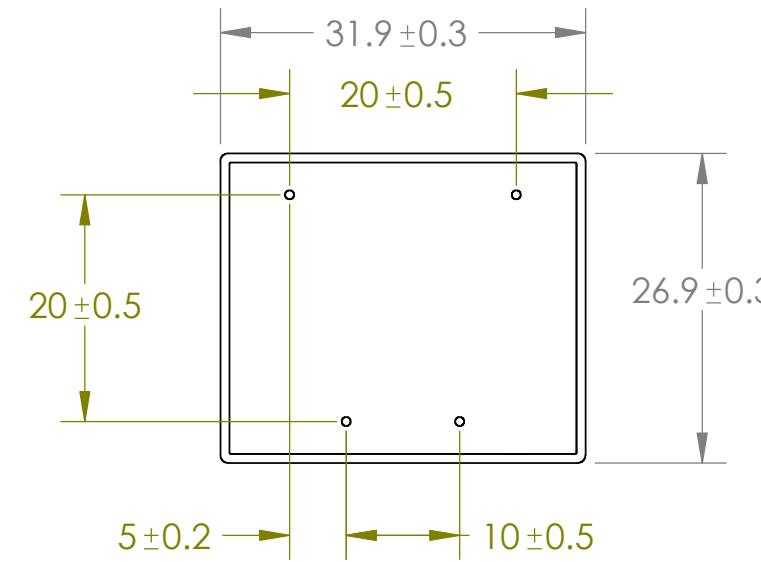
8 7 6 5 4 3 2 1



ONE OUTPUT NON REGULATED SERIES	
MAIN INPUT VOLTAGE	100 up to 240VAC
INPUT VOLTAGE LIMITS	85 up to 265VAC
FREQUENCY	47 up to 440Hz
OUTPUT VOLTAGE	See table
POWER	See table
AMBIENT TEMPERATURE	See table
TEMPERATURE CLASS	Class B (130°C)
STORAGE TEMPERATURE	-40°C up to 85°C
OUTPUT VOLTAGE ACCURACY (100% LOAD)	± 5%
LINE OUTPUT VOLTAGE VARIATION	± 3%
LOAD OUTPUT VOLTAGE VARIATION	0/+20%
NO LOAD INPUT POWER	< 300mWatts
INPUT TO OUTPUT DIELECTRIC STRENGHT	4KVAC



- INCORPORATED FUSE RESISTOR INPUT PROTECTION
- SHORT CIRCUIT PROTECTION WHEN FAULT CONDITION
- AUTOMATIC RESTART WHEN FAULT CONDITION REMOVED
- AUTOMATIC THERMAL SHUTDOWN



APPROVALS	
	EN61558-1
	EN61558-2-16
	EN60335
	EN60925-2-11
	UL60950 (UL+CUL)
	CE
EMC CERTIFICATION	
EMISSION	
	EN55022
	EN55014-1
IMMUNITY	
	EN55024
	EN55014-2
	IEC61000-4-4
	IEC61000-4-5

P/N	Output Voltage	Power	Efficiency %	Ambient (ta)
47164	12VDC	5W	75	50°C



File E352488 (QQGQ2)

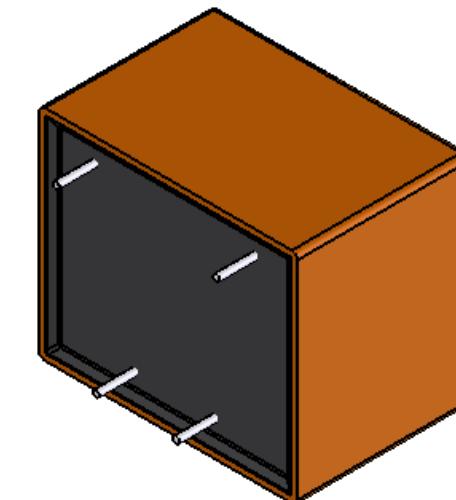


CERTIFICATE N° 40034334

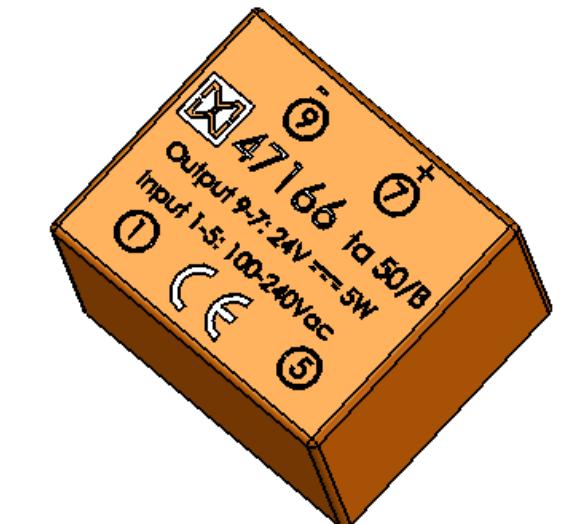
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			CHECKED			
			ENG APPR.			
			MFG APPR.			
			INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:   			
		FINISH				
NEXT ASSY  USED ON		APPLICATION				
		DO NOT SCALE DRAWING				
<b>ENTIAL</b>  IN THIS Y OF  A WHOLE ON OF	<b>SIZE</b> <b>DWG. NO.</b>			<b>REV</b>		
	<b>B</b>	<b>47164</b>				
	<b>SCALE: 1:1</b>		<b>WEIGHT:</b>		<b>SHEET 1 OF 1</b>	

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ONE OUTPUT NON REGULATED SERIES	
MAIN INPUT VOLTAGE	100 up to 240VAC
INPUT VOLTAGE LIMITS	85 up to 265VAC
FREQUENCY	47 up to 440Hz
OUTPUT VOLTAGE	See table
POWER	See table
AMBIENT TEMPERATURE	See table
TEMPERATURE CLASS	Class B (130°C)
STORAGE TEMPERATURE	-40°C up to 85°C
OUTPUT VOLTAGE ACCURACY (100% LOAD)	± 5%
LINE OUTPUT VOLTAGE VARIATION	± 3%
LOAD OUTPUT VOLTAGE VARIATION	0/+20%
NO LOAD INPUT POWER	< 300mWatts
INPUT TO OUTPUT DIELECTRIC STRENGHT	4KVAC



- INCORPORATED FUSE RESISTOR INPUT PROTECTION
- SHORT CIRCUIT PROTECTION WHEN FAULT CONDITION
- AUTOMATIC RESTART WHEN FAULT CONDITION REMOVED
- AUTOMATIC THERMAL SHUTDOWN



File E352488 (QQGQ2)



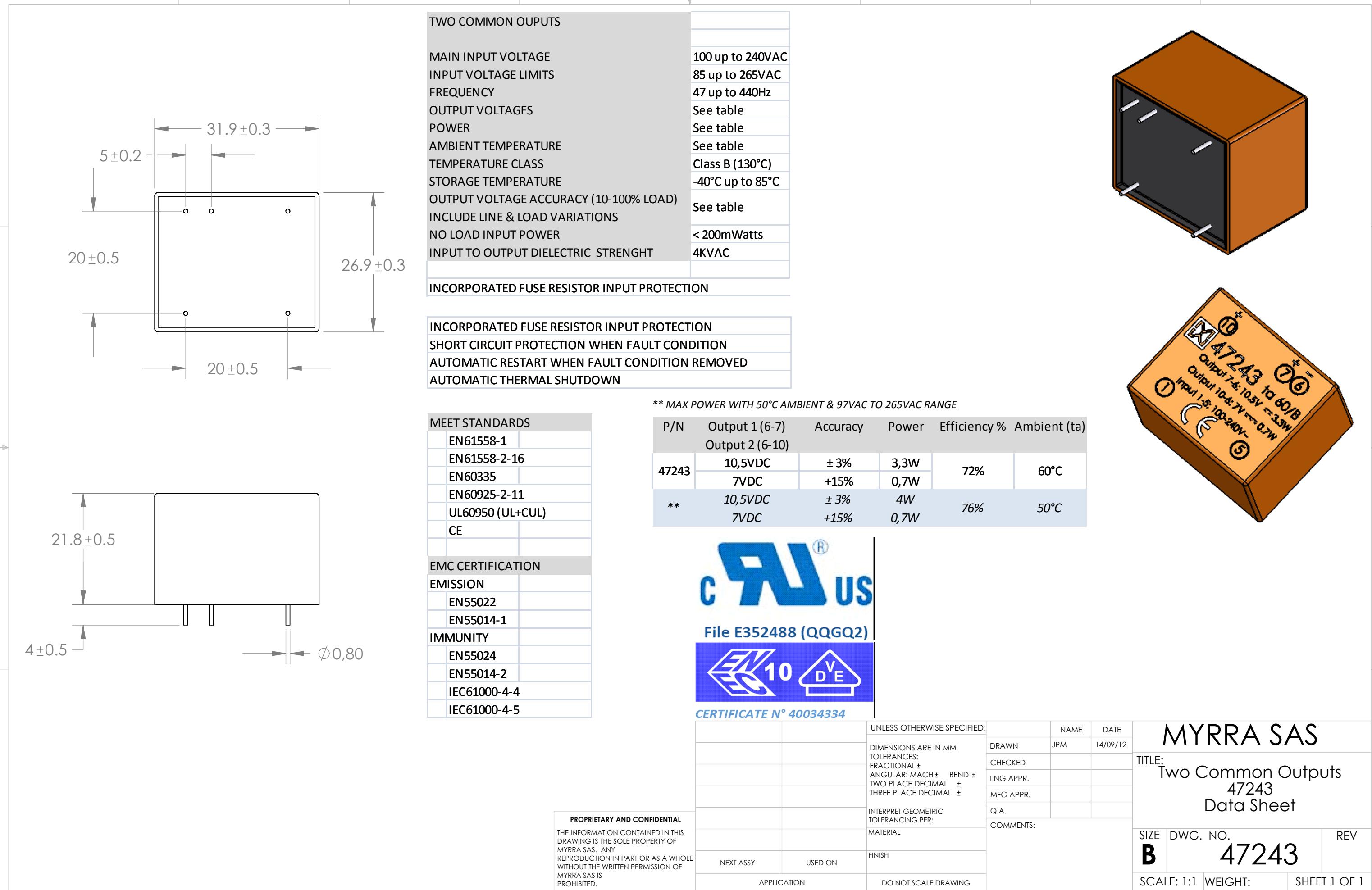
**CERTIFICATE N° 40034334**

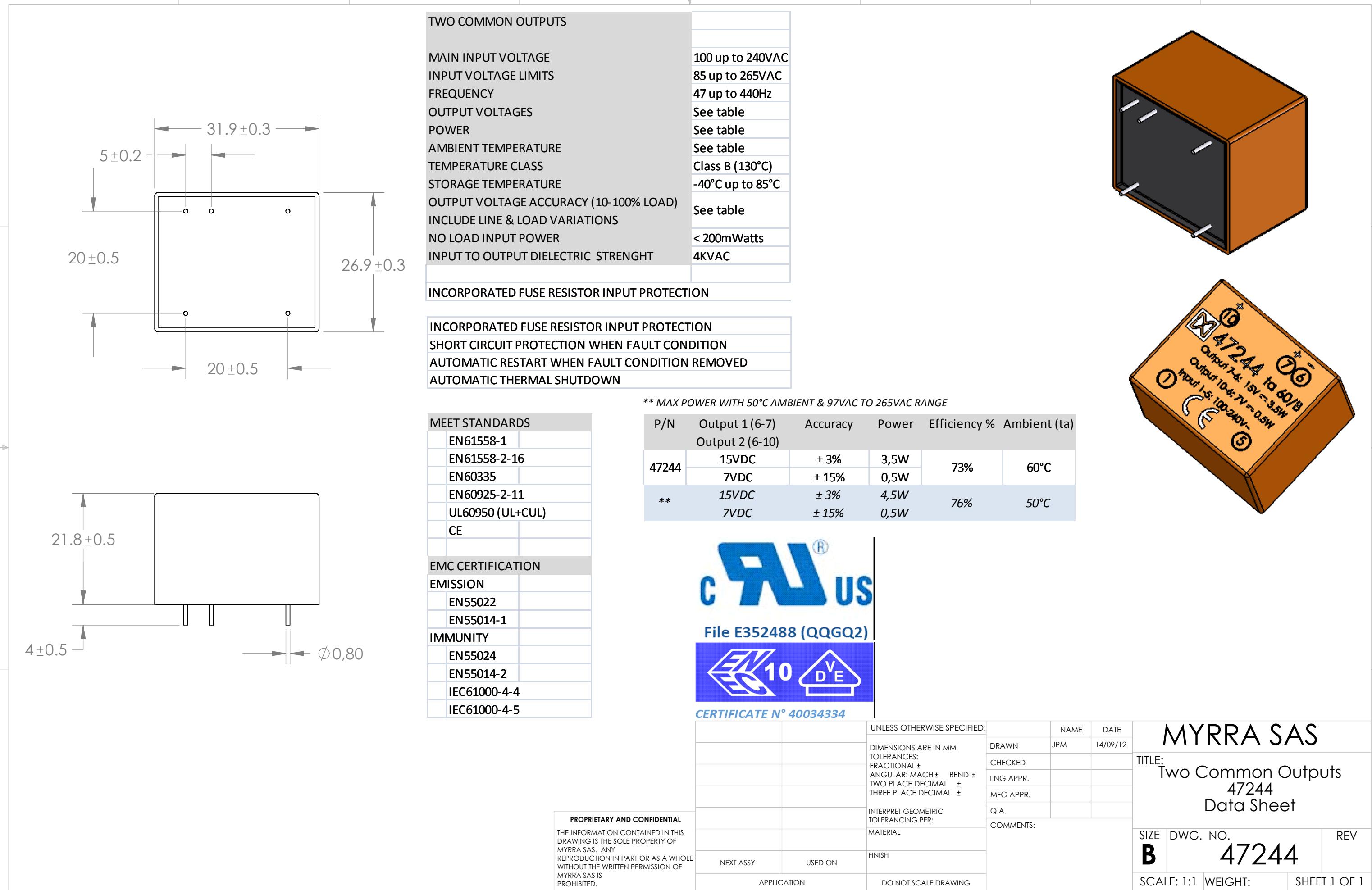
APPROVALS	
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	EN61558-2-16
	EN60335
	EN60925-2-11
	UL60950 (UL+CUL)
	CE
EMC CERTIFICATION	
EMISSION	
	EN55022
	EN55014-1
IMMUNITY	
	EN55024
	EN55014-2
	IEC61000-4-4
	IEC61000-4-5

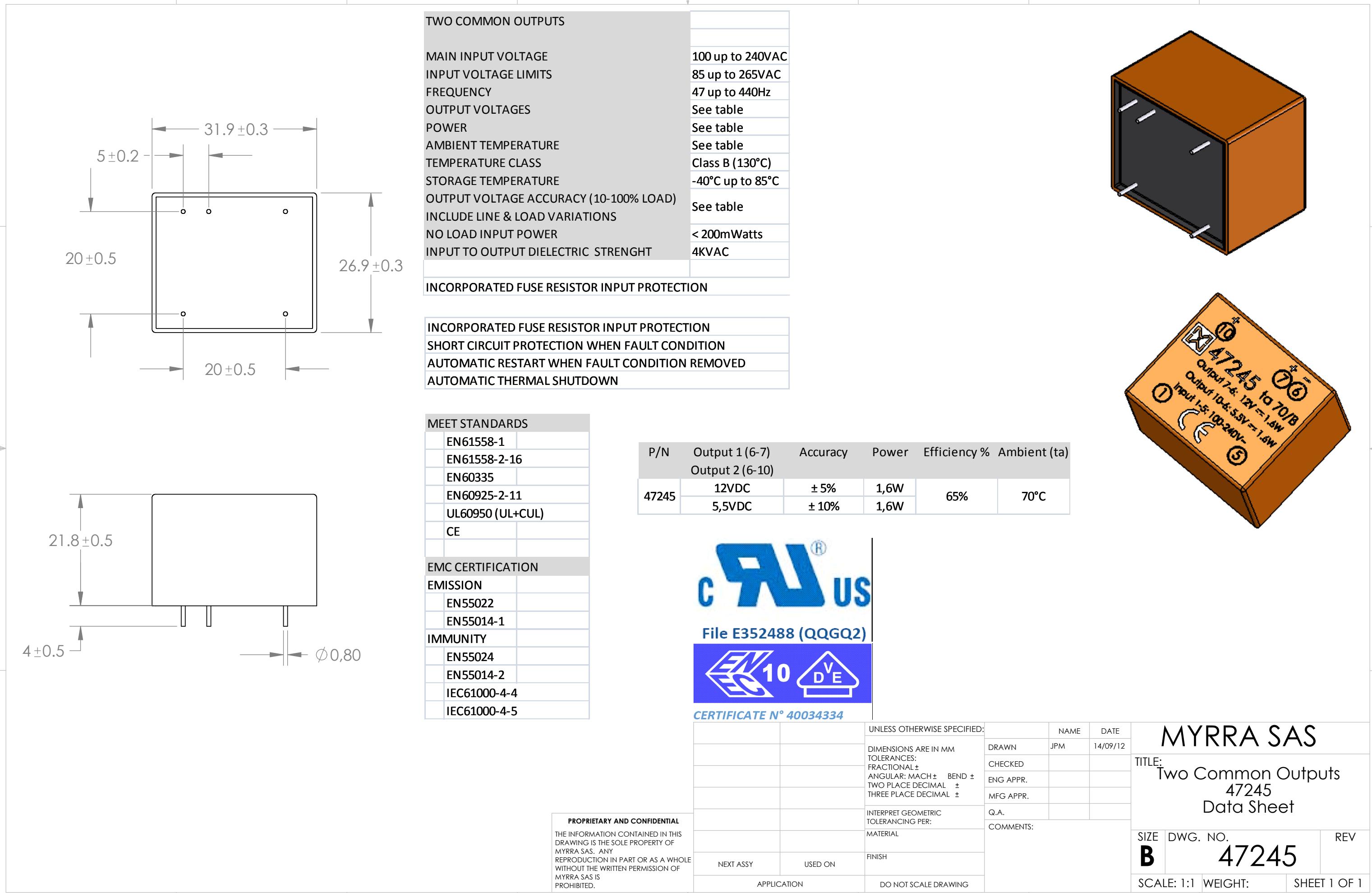
P/N	Output Voltage	Power	Efficiency %	Ambient (ta)
47166	24VDC	5W	80	50°C

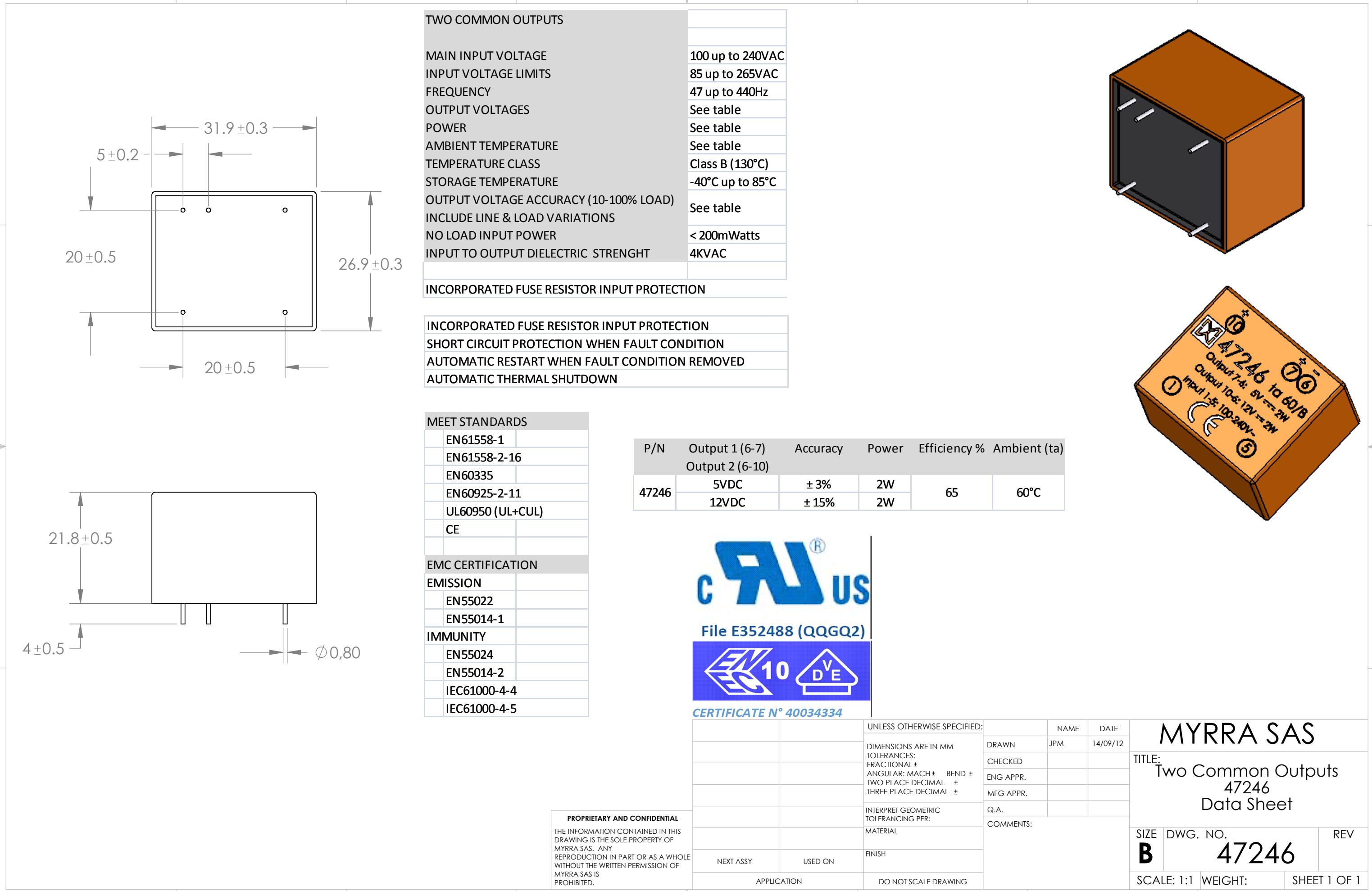
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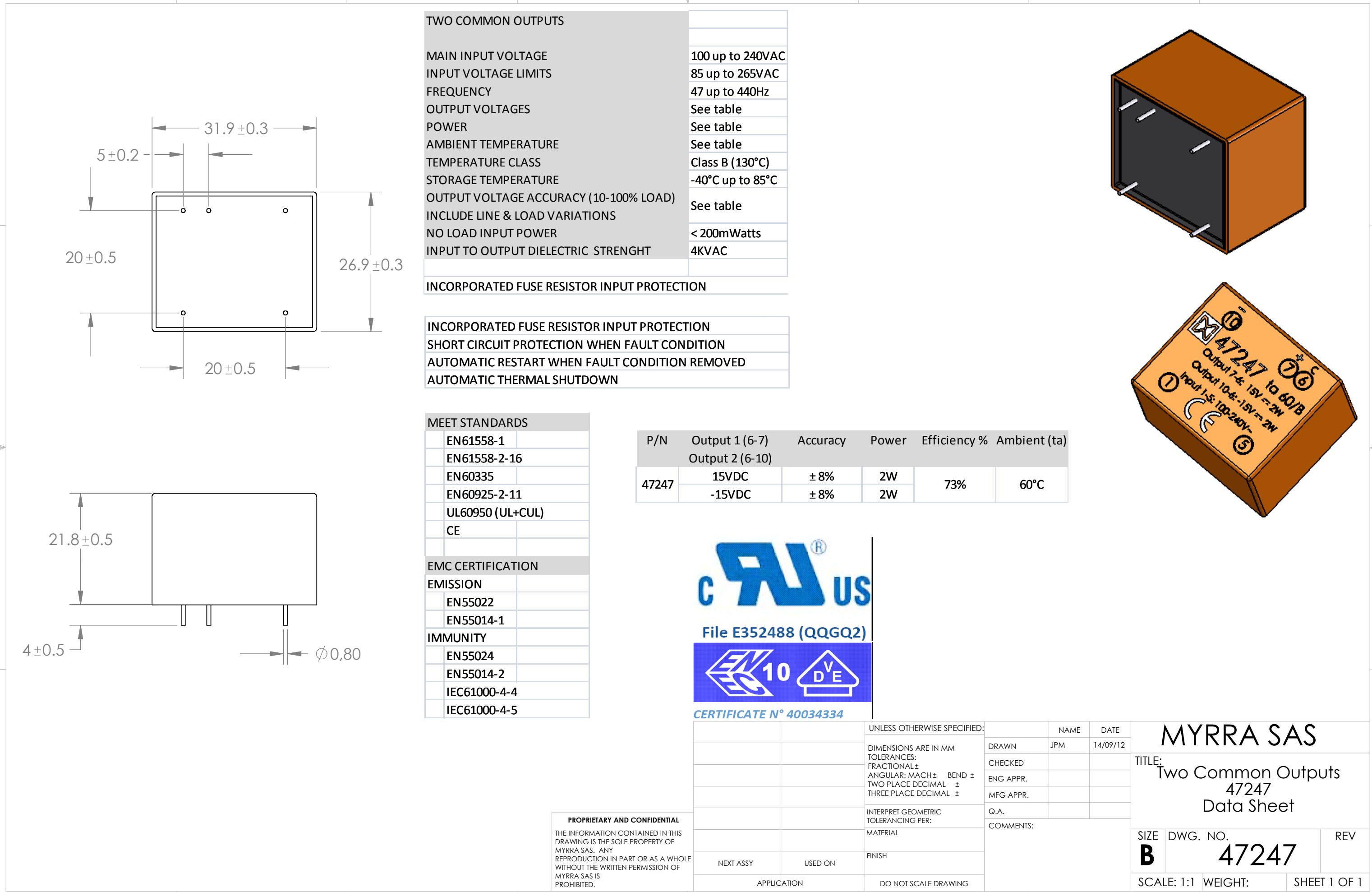
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		TOLERANCES:	CHECKED			
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		ANGULAR: MACH $\pm$ BEND $\pm$	MFG APPR.			
		TWO PLACE DECIMAL $\pm$	Q.A.			
		THREE PLACE DECIMAL $\pm$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				
E	NEXT ASSY	USED ON	FINISH			
APPLICATION			DO NOT SCALE DRAWING			
			SCALE: 1:1	WEIGHT:	SHEET 1 OF 1	
			SIZE	DWG. NO.	REV	
			<b>B</b>	<b>47166</b>		

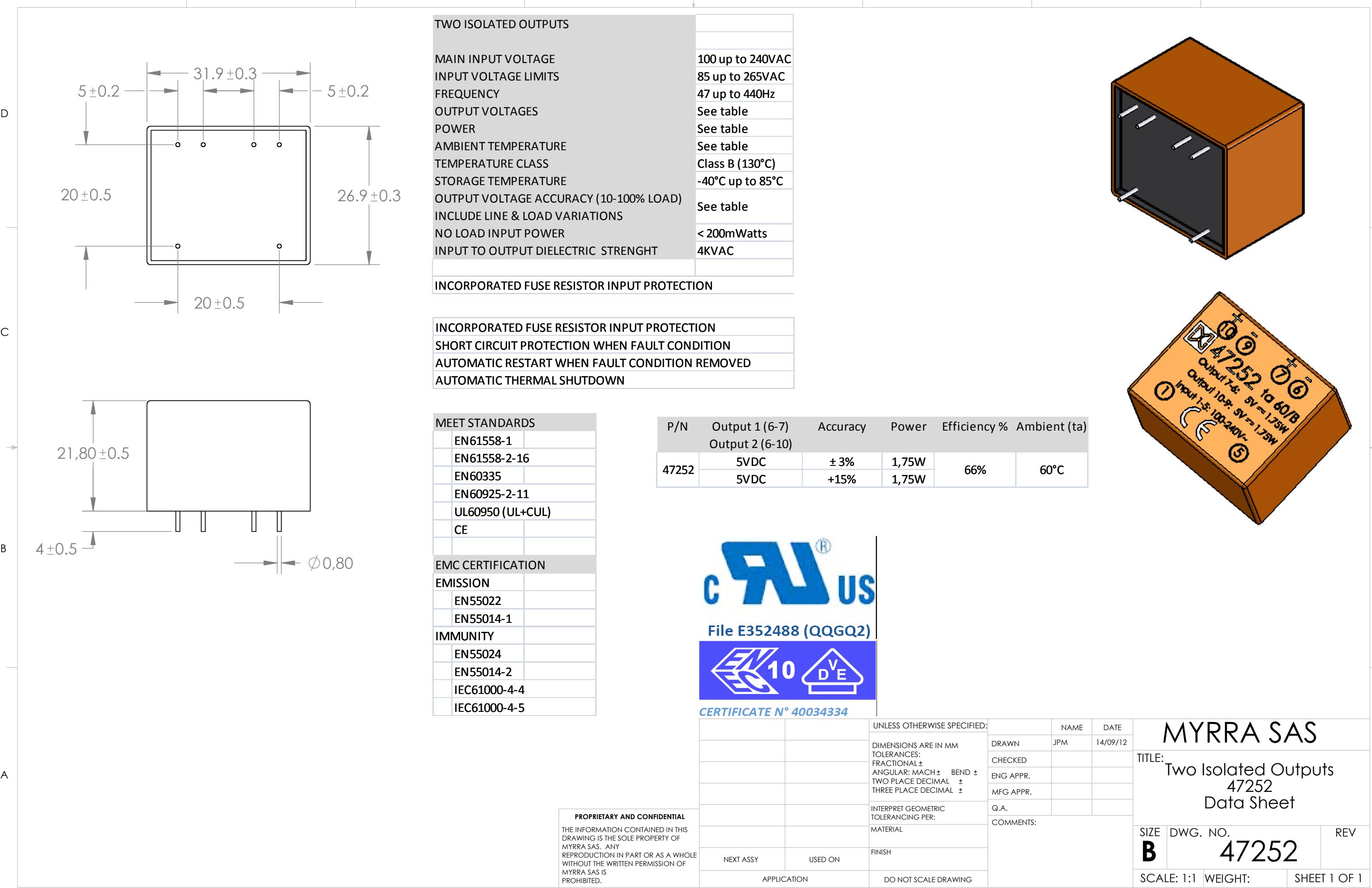


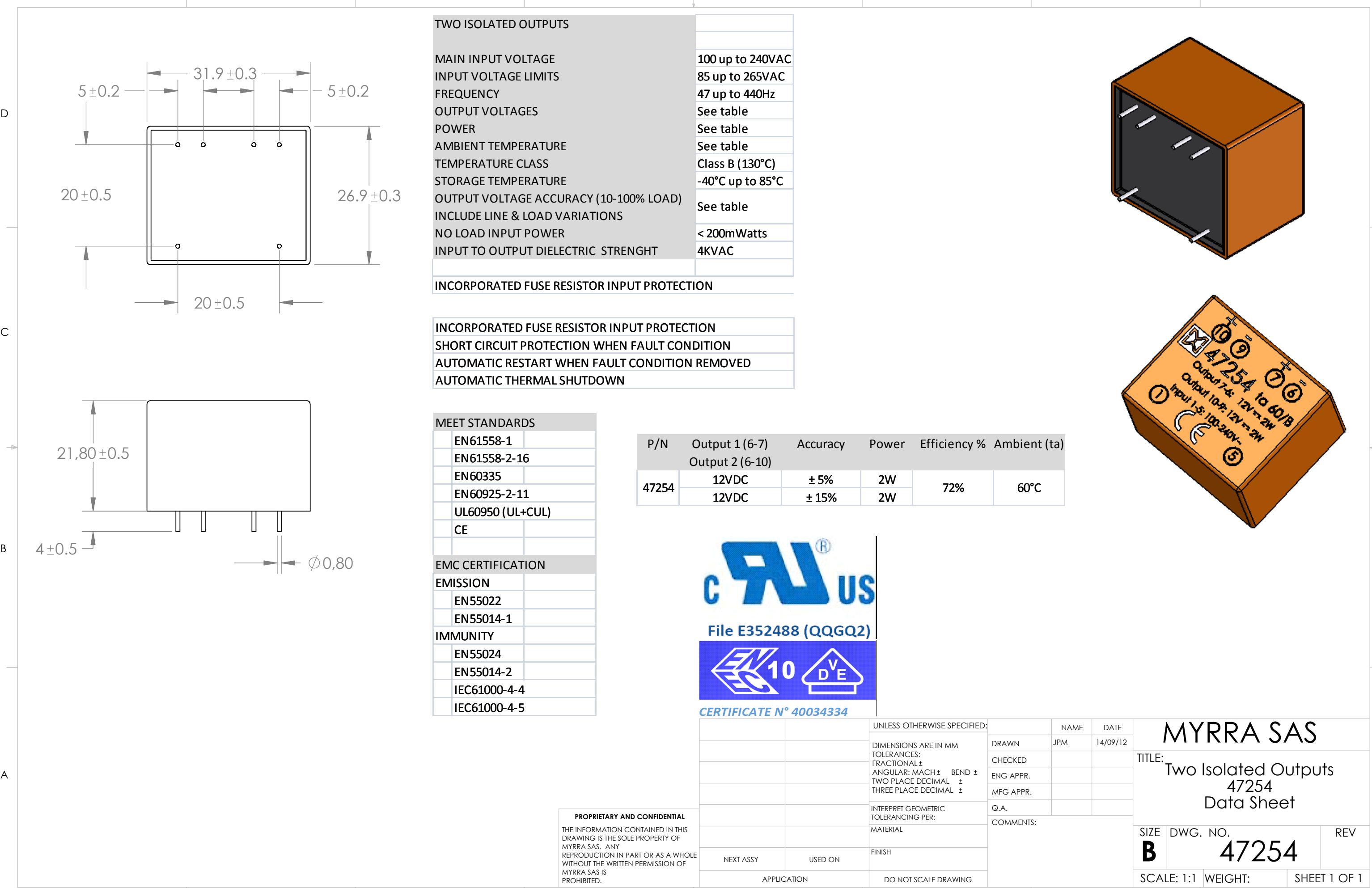


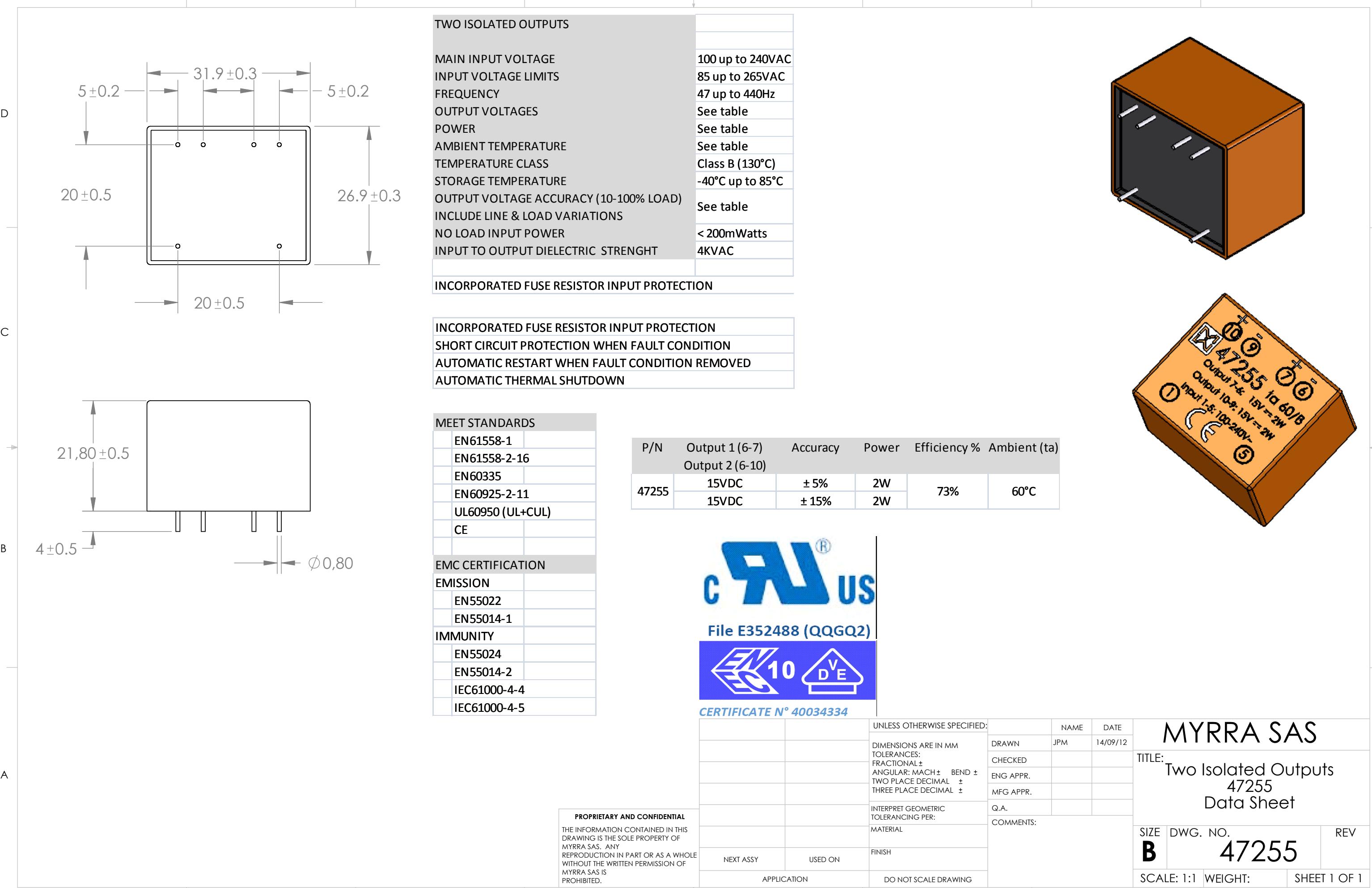


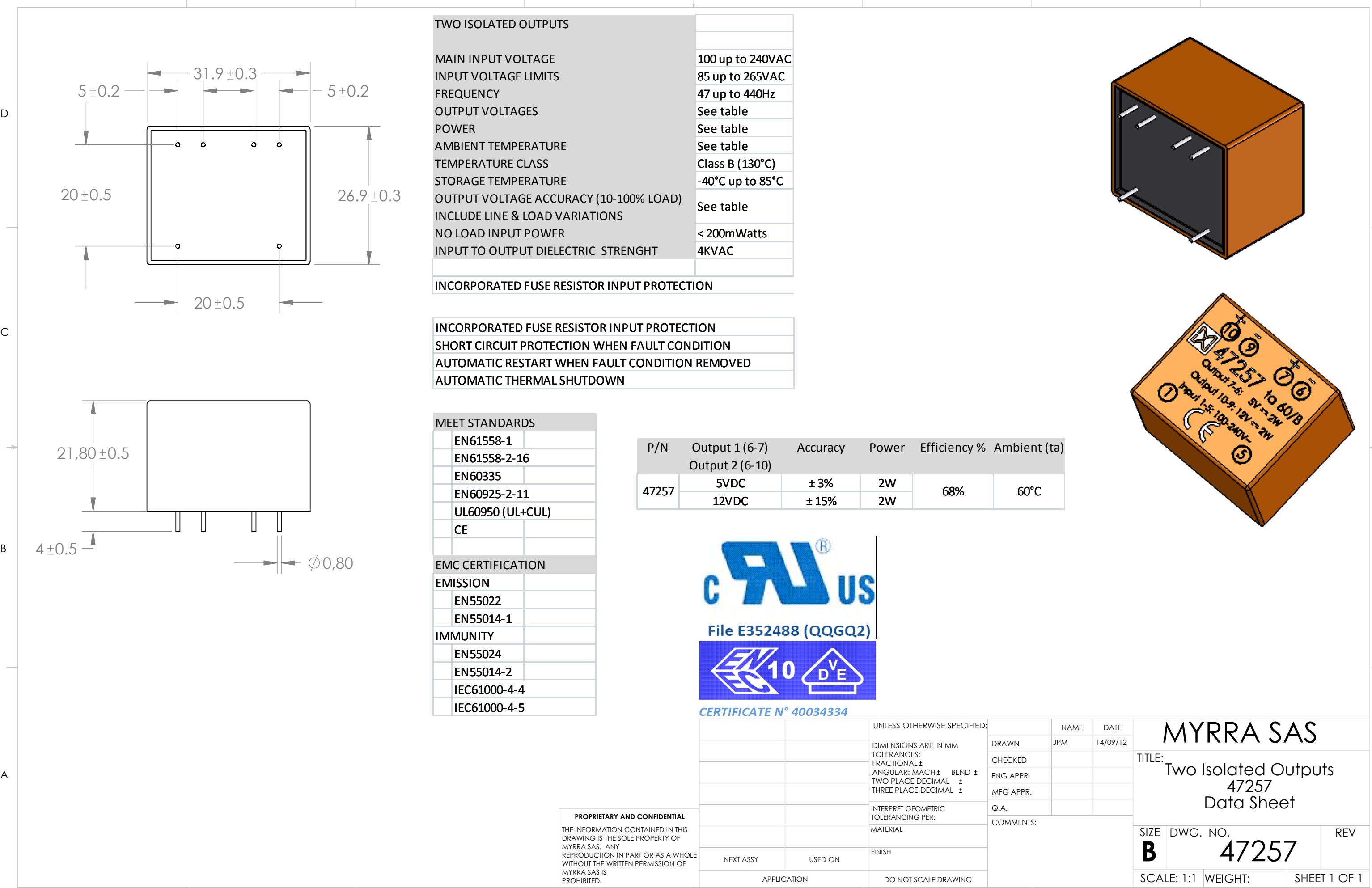


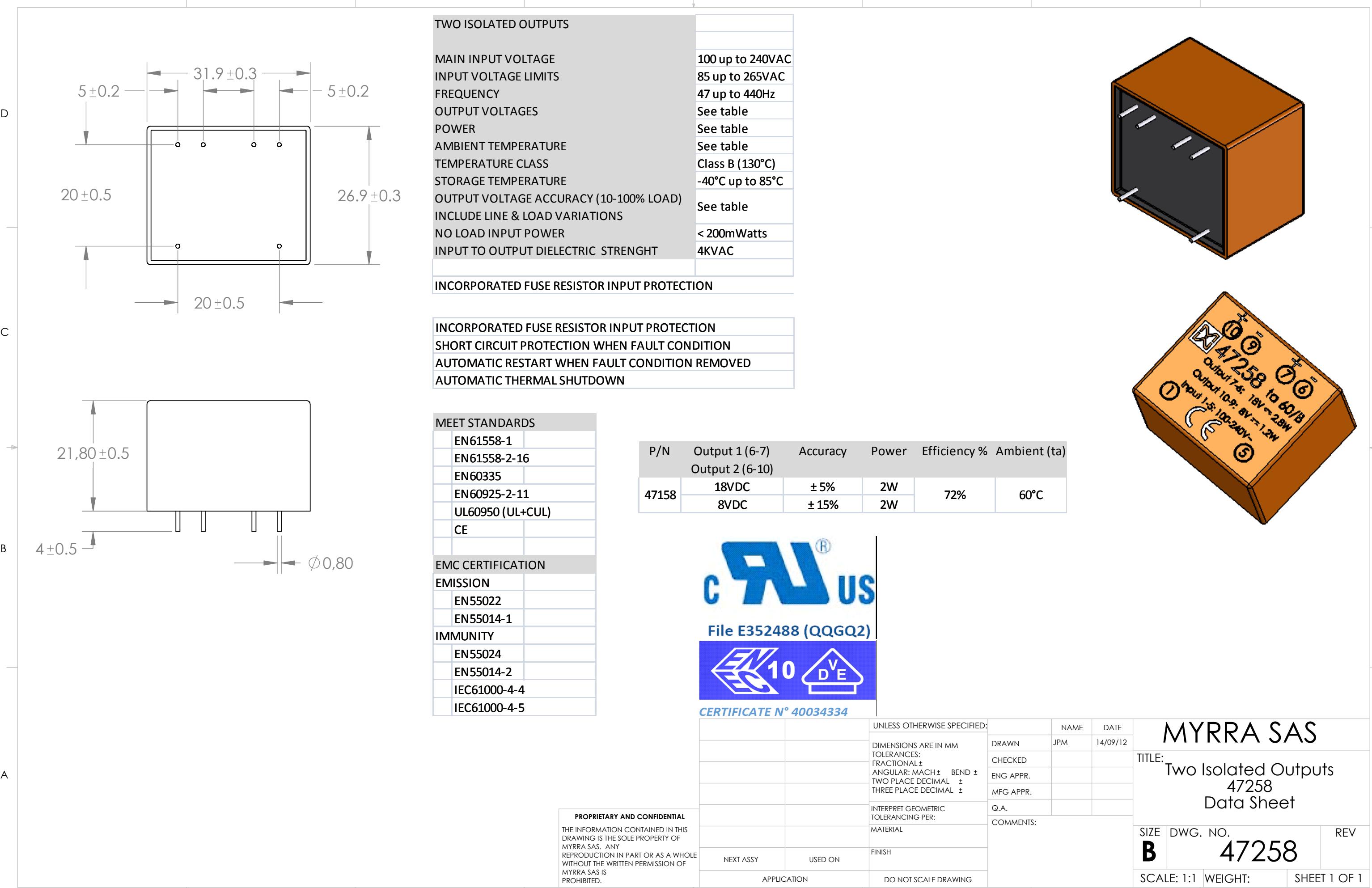












**ZEICHENENEHMIGUNG  
MARKS APPROVAL**

Myrra S.A.  
2 Bd. de la haye  
Z.A. de Bussy St. Georges  
77607 BUSSY ST. GEORGES  
FRANCE

ist berechtigt, für ihr Produkt /  
*is authorized to use for their product*

**Netzgerät**  
**Power supply unit**  
**Switch mode power supply unit (IP00)**

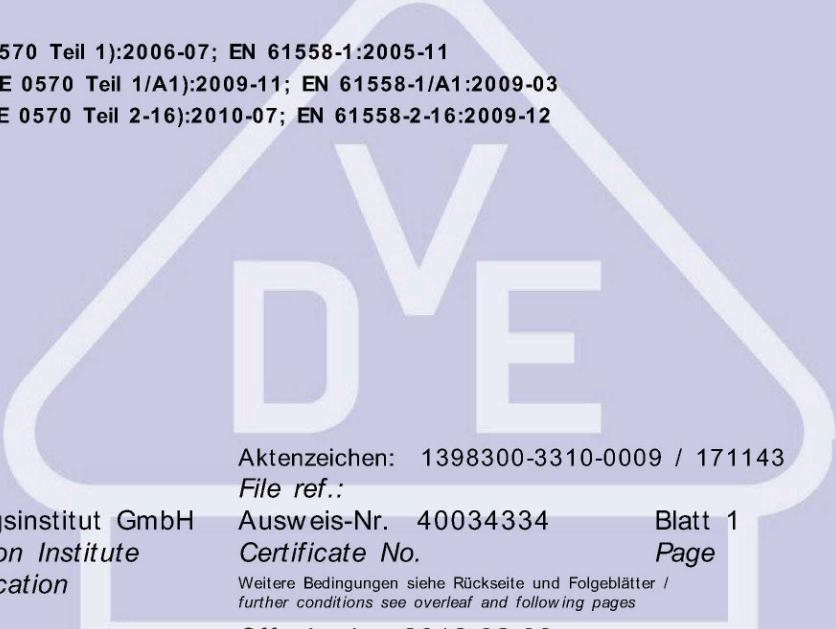
die hier abgebildeten markenrechtlich geschützten Zeichen  
für die ab Blatt 2 aufgeführten Typen zu benutzen /  
*the legally protected Marks as shown below for the types referred to on page 2 ff.*



oder - or

Geprüft und zertifiziert nach /  
*Tested and certified according to*

DIN EN 61558-1 (VDE 0570 Teil 1):2006-07; EN 61558-1:2005-11  
DIN EN 61558-1/A1 (VDE 0570 Teil 1/A1):2009-11; EN 61558-1/A1:2009-03  
DIN EN 61558-2-16 (VDE 0570 Teil 2-16):2010-07; EN 61558-2-16:2009-12



**VDE**

Aktenzeichen: 1398300-3310-0009 / 171143  
File ref.:

Ausweis-Nr. 40034334  
Certificate No.

Blatt 1  
Page

Weitere Bedingungen siehe Rückseite und Folgeblätter /  
further conditions see overleaf and following pages

Offenbach, 2012-02-03  
(letzte Änderung/updated 2012-09-06 )

<http://www.vde.com/zertifikat>  
<http://www.vde.com/certificate>

VDE Prüf- und Zertifizierungsinstitut GmbH  
VDE Testing and Certification Institute  
Zertifizierungsstelle / Certification



VDE Zertifikate sind nur gültig bei Veröffentlichung unter:  
VDE certificates are valid only when published on:

**VDE**



Name und Sitz des Genehmigungs-Inhabers / *Name and registered seat of the Certificate holder*  
Myrra S.A., 2 Bd. de la haye, Z.A. de Bussy St. Georges, 77607 BUSSY ST. GEORGES, FRANCE

Aktenzeichen / *File ref.*  
1398300-3310-0009 / 171143 / FG13 / MG

letzte Änderung / *updated* Datum / *Date*  
2012-09-06 2012-02-03

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40034334  
*This supplement is only valid in conjunction with page 1 of the Certificate No. 40034334.*

**Netzgerät**

**Power supply unit**

**Switch mode power supply unit (IP00)**

Typ(en) / *Type(s):*

1) 47114	(Appendix No. 01 - 03)
2) Type series 47132-47136	(Appendix No. 01 - 03)
3) Type series 47162-47166	(Appendix No. 01 - 03)
4) 47124SLI	(Appendix No. 04 - 06)
5) Type series 47121-47126	(Appendix No. 04 - 06)
6) Type series 47151-47157	(Appendix No. 04 - 06)
7) Type series 47243-47247	(Appendix No. 04, 05, 07)

Warenzeichen  
*Trademark*

myrra

Bemessungsspannung primär  
*Rated voltage primary*

AC 100-240V

Bemessungsfrequenz  
*Rated frequency*

50/60 Hz

Bemessungsleistung  
*Rated output*

2,4 W	
Für / for 1)	
2,5 W...max. 3,2 W	
Für / for 2)	
4,5 W...max. 5 W	
Für / for 3)	
2,5 W	
Für / for 4)	
2,5 W...max. 2,75 W	
Für / for 5)	
4,5 W...max. 5 W	
Für / for 6)	
3,2 W...max. 5 W	
Für / for 7)	

Fortsetzung siehe Blatt 3 /  
*continued on page 3*

Name und Sitz des Genehmigungs-Inhabers / *Name and registered seat of the Certificate holder*  
Myrra S.A., 2 Bd. de la haye, Z.A. de Bussy St. Georges, 77607 BUSSY ST. GEORGES, FRANCE

Aktenzeichen / *File ref.*  
1398300-3310-0009 / 171143 / FG13 / MG

letzte Änderung / *updated* Datum / *Date*  
2012-09-06 2012-02-03

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40034334  
*This supplement is only valid in conjunction with page 1 of the Certificate No. 40034334.*

Bemessungsspannung sekundär <i>Rated voltage secondary</i>	DC 12 V (SELV) Für / for 1), 4) DC 5 V...24 V (SELV) Für / for 2), 3)  DC 3,3 V...24 V (SELV) Für / for 5), 6) SEC 1: DC 5 V...15 V (SELV) SEC 2 : DC 5,5 V...15 V (SELV) Anmerkung/remark: SEK1 und SEK2 haben die selbe Masse (sind nicht voneinander getrennt) SEC1 and SEC2 have the same ground (they are not separated) Für / for 7) (Einzelheiten siehe Anlagen / details see Appendices) Für / for 1), 2), 3), 4), 5), 6), 7)
Bemessungsstrom sekundär <i>Rated current secondary</i>	siehe Anlagen / see Appendices
Bemessungsumgebungstemperatur <i>Rated ambient temperature</i>	siehe Anlagen / see Appendices
Kurzschlussfestigkeit <i>Short circuit protection</i>	bedingt kurzschlussfest <i>non-inherently short circuit proof</i>
Schutzart <i>Degree of protection</i>	IP 00
Aufbau und Ausführung <i>Construction and design</i>	Vergossene Schaltnetzteile (IP00), mit der gleichen Grundfläche wie EI30 Transformator <i>Encapsulated switch mode power supply unit (IP00), with the same footprint as EI30 transformer.</i> Verstärkte und / oder doppelte Isolierung zwischen Primär und Sekundärseite <i>Reinforce and/or double insulation between primary circuit and secondary circuit.</i>

Fortsetzung siehe Blatt 4 /  
*continued on page 4*

# VDE Prüf- und Zertifizierungsinstitut

## Zeichengenehmigung

Ausweis-Nr. / Blatt /  
Certificate No. page  
40034334 4

Name und Sitz des Genehmigungs-Inhabers / Name and registered seat of the Certificate holder  
Myrra S.A., 2 Bd. de la haye, Z.A. de Bussy St. Georges, 77607 BUSSY ST. GEORGES, FRANCE

Aktenzeichen / File ref.  
1398300-3310-0009 / 171143 / FG13 / MG

letzte Änderung / updated Datum / Date  
2012-09-06 2012-02-03

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40034334  
This supplement is only valid in conjunction with page 1 of the Certificate No. 40034334.

### Isolierstoffklasse

#### B, Anmerkung:

Trotz Isolierstoffklasse B dürfen die Wicklungstemperaturen aller Schaltnetzteile der zugelassenen Serie im Normalbetrieb nach Abs. 14 die Grenze von 91 °C (für 1), 2), 3)) 111 °C (für 4), 5), 6), 7)) nicht überschreiten.

Grund: siehe nachfolgend aufgeführte Prüftemperatur für die Zyklenprüfung nach Abs. 26.2.4.1.

#### B, Remark:

*In spite of class B the temperature of all switch mode power supply unit of the series should not increase the max.*

*winding temperature of*

*91 °C (for 1), 2), 3))*

*111 °C (for 4), 5), 6), 7))*

*during the normal heating test acc. to clause 14.*

*Reason: see the following test temperature of clause 26.2.4.1.*

### Insulation class

P1 nach Abschnitt 26.2.4.1 (Test B), für Anwendungen in P2 or P3 geeignet (Anmerkung: Zyklenprüfung 26.2.4.1, geprüft mit der nach Abs. 14 max. gemessenen Wicklungstemperatur + 10 K = 101 °C oder 121 °C)

*P1 acc. to cls. 26.2.4.1 (Test B), for use in P2 or P3 environments (Remark: 26.2.4.1 cycling test, tested by the max. measured winding temperature acc. to clause 14 + 10 K = 101 °C or 121 °C)*

### Verschmutzungsgrad

### Degree of pollution

DIN EN 60335-1:2010-11; EN 60335-1: 2002 + A1:2004 + A11:2004 + A12 :2006 + A2:2006 + A13:2008 + A14:2010; Abschnitt/clause 22.42, 24 and 30.

DIN EN 60950-1:2011-11 + A12:2011-08; EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011

Abschnitt/clause 1.5, 1.6, 1.7, 2.1, 2.2, 2.4, 2.5, 2.7, 2.9, 2.10, 4.5, 4.7, 5.2, 5.3 and Annex C

### Weitere Prüfbestimmung(en) Further standard(s)

Weitere Angaben siehe Anlage  
Nr.

1 - 7

Further information see  
appendix no.

Fortsetzung siehe Blatt 5 /  
continued on page 5

# VDE Prüf- und Zertifizierungsinstitut Zeichengenehmigung

Ausweis-Nr. / Blatt /  
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40034334 5

Name und Sitz des Genehmigungs-Inhabers / *Name and registered seat of the Certificate holder*  
Myrra S.A., 2 Bd. de la haye, Z.A. de Bussy St. Georges, 77607 BUSSY ST. GEORGES, FRANCE

Aktenzeichen / *File ref.*  
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letzte Änderung / *updated* Datum / *Date*  
2012-09-06 2012-02-03

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40034334  
*This supplement is only valid in conjunction with page 1 of the Certificate No. 40034334.*

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Dieser Zeichengenehmigungs-Ausweis bildet eine Grundlage für die EG-Konformitätserklärung und CE-Kennzeichnung durch den Hersteller oder dessen Bevollmächtigten und bescheinigt die Konformität mit den grundlegenden Schutzzanforderungen der **EG-Niederspannungsrichtlinie 2006/95/EG** mit ihren Änderungen.

*This Marks Approval is a basis for the EC Declaration of Conformity and the CE Marking by the manufacturer or his agent and proves the conformity with the essential safety requirements of the EC Low-Voltage Directive 2006/95/EC including amendments.*

VDE Prüf- und Zertifizierungsinstitut GmbH  
*VDE Testing and Certification Institute*  
Fachgebiet FG13  
*Section FG13*

# VDE Prüf- und Zertifizierungsinstitut Zeichengenehmigung

Ausweis-Nr. / Beiblatt /  
Certificate No. Supplement  
40034334

Name und Sitz des Genehmigungs-Inhabers / *Name and registered seat of the Certificate holder*  
Myrra S.A., 2 Bd. de la haye, Z.A. de Bussy St. Georges, 77607 BUSSY ST. GEORGES, FRANCE

Aktenzeichen / *File ref.*  
1398300-3310-0009 / 171143 / FG13 / MG

letzte Änderung / *updated* Datum / *Date*  
2012-09-06 2012-02-03

Dieses Beiblatt ist Bestandteil des Zeichengenehmigungsausweises Nr. 40034334.  
*This supplement is part of the Certificate No. 40034334.*

## Netzgerät *Power supply unit* **Switch mode power supply unit (IP00)**

### Fertigungsstätte(n) *Place(s) of manufacture*

Referenz/Reference	Myrra SA
<b>30016393</b>	Zhongshan Myrra Electronic Co Ltd. No.39-2 Industrial Road, Xiaolan Industrial Zone, Xiaolan Town 528415 ZHONGSHAN CITY Guangdong CHINA

VDE Prüf- und Zertifizierungsinstitut GmbH  
*VDE Testing and Certification Institute*  
Fachgebiet FG13  
*Section FG13*

# VDE Prüf- und Zertifizierungsinstitut

## Zeichengenehmigung

Ausweis-Nr. / Infoblatt /  
Certificate No. Info sheet  
40034334

Name und Sitz des Genehmigungs-Inhabers / Name and registered seat of the Certificate holder  
Myrra S.A., 2 Bd. de la haye, Z.A. de Bussy St. Georges, 77607 BUSSY ST. GEORGES, FRANCE

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2012-09-06 2012-02-03

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This supplement is only valid in conjunction with page 1 of the Certificate No. 40034334.

### Genehmigung zum Benutzen des auf Seite 1 abgebildeten markenrechtlich geschützten Zeichens des VDE:

Grundlage für die Benutzung sind die Allgemeinen Geschäftsbedingungen (AGB) der VDE Prüf- und Zertifizierungsinstitut GmbH ([www.vde.com\AGB-Institut](http://www.vde.com\AGB-Institut)). Das Recht zur Benutzung erstreckt sich nur auf die bezeichnete Firma mit den genannten Fertigungsstätten und die oben aufgeführten Produkte mit den zugeordneten Bezeichnungen. Die Fertigungsstätte muss so eingerichtet sein, dass eine gleichmäßige Herstellung der geprüften und zertifizierten Ausführung gewährleistet ist.

Die Genehmigung ist so lange gültig wie die VDE-Bestimmungen gelten, die der Zertifizierung zugrunde gelegen haben, sofern sie nicht auf Grund anderer Bedingungen aus der VDE Prüf- und Zertifizierungsordnung (PM102) zurückgezogen werden muss.

Der Gültigkeitszeitraum einer VDE-GS-Zeichengenehmigung kann auf Antrag verlängert werden. Bei gesetzlichen und / oder normativen Änderungen kann die VDE-GS-Zeichengenehmigung ihre Gültigkeit zu einem früheren als dem angegebenen Datum verlieren.

Produkte, die das Biozid Dimethylfumarat (DMF) enthalten, dürfen gemäß der Kommissionsscheidung 2009/251/EG nicht mehr in den Verkehr gebracht oder auf dem Markt bereitgestellt werden.

Der VDE-Zeichengenehmigungsausweis wird ausschließlich auf der ersten Seite unterzeichnet.

### **Approval to use the legally protected Mark of the VDE as shown on the first page:**

*Basis for the use are the general terms and conditions of the VDE Testing and Certification Institute ([www.vde.com\terms-institute](http://www.vde.com\terms-institute)). The right to use the mark is granted only to the mentioned company with the named places of manufacture and the listed products with the related type references. The place of manufacture shall be equipped in a way that a constant manufacturing of the certified construction is assured.*

*The approval is valid as long as the VDE specifications are in force, on which the certification is based on, unless it is withdrawn according to the VDE Testing and Certification Procedure (PM102E).*

*The validity period of a VDE-GS-Mark Approval may be prolonged on request. In case of changes in legal and / or normative requirements, the validity period of a VDE-GS-Mark Approval may be shortened.*

*Products containing the biocide dimethylfumarate (DMF) may not be marketed or made available on the EC market according to the Commission Decision 2009/251/EC.*

*The approval is solely signed on the first page.*



**Power Supplies, Information Technology Equipment Including Electrical Business Equipment - Component**

[Page Bottom](#)

**Power Supplies, Information Technology Equipment Including Electrical Business Equipment - Component**

See General Information for Power Supplies, Information Technology Equipment Including Electrical Business Equipment - Component

**MYRRA S A**

E352488

2 BIS BOULEVARD DE LA HAYE

BUSSY SAINT GEORGES

77607 MARNE VALLEE CEDEX 3, FRANCE

Model No.	Rated Input			Max Output					OC	SP	EP	FC	GC
	Volts	Hz	SC	V	A	VA							
<b>47114</b>	100-240 Vac	50/60	0	12dc	-	2.4	3	60950-1	20B	0	2		
<b>47121[*r]</b>	100-240ac	50/60	0	3.3dc	0.75	2.5	3	60950-1	20B	0	2		
<b>47122[*r]</b>	100-240ac	50/60	0	5dc	0.55	2.75	3	60950-1	20B	0	2		
<b>47123[*r]</b>	100-240ac	50/60	0	9dc	0.28	2.5	3	60950-1	20B	0	2		
<b>47124, 47124SLI[*r]</b>													
	100-240ac	50/60	0	12dc	0.21	2.5	3	60950-1	20B	0	2		
<b>47125[*r]</b>	100-240ac	50/60	0	15dc	0.17	2.5	3	60950-1	20B	0	2		
<b>47126[*r]</b>	100-240ac	50/60	0	24dc	0.1	2.5	3	60950-1	20B	0	2		
<b>47132[*r]</b>	100-240 Vac	50/60	0	5dc	-	2.5	3	60950-1	20B	0	2		
<b>47133[*r]</b>	100-240 Vac	50/60	0	9dc	-	3.2	3	60950-1	20B	0	2		
<b>47134[*r]</b>	100-240 Vac	50/60	0	12dc	-	3.2	3	60950-1	20B	0	2		
<b>47135[*r]</b>	100-240 Vac	50/60	0	18dc	-	3.2	3	60950-1	20B	0	2		
<b>47136[*r]</b>	100-240 Vac	50/60	0	24dc	-	3.2	3	60950-1	20B	0	2		
<b>47151[*r]</b>	100-240ac	50/60	0	3.3dc	1.36	4.5	3	60950-1	20B	0	2		
<b>47152[*r]</b>	100-240ac	50/60	0	5dc	0.9	4.5	3	60950-1	20B	0	2		
<b>47153[*r]</b>	100-240ac	50/60	0	9dc	0.55	5	3	60950-1	20B	0	2		
<b>47154[*r]</b>	100-240ac	50/60	0	12dc	0.42	5	3	60950-1	20B	0	2		
<b>47155[*r]</b>	100-240ac	50/60	0	15dc	0.33	5	3	60950-1	20B	0	2		
<b>47156[*r]</b>	100-240ac	50/60	0	24dc	0.21	5	3	60950-1	20B	0	2		
<b>47157[*r]</b>	100-240ac	50/60	0	3.8dc	1.18	4.5	3	60950-1	20B	0	2		
<b>47162[*r]</b>	100-240 Vac	50/60	0	5dc	-	4.5	3	60950-1	20B	0	2		
<b>47163[*r]</b>	100-240 Vac	50/60	0	9dc	-	5	3	60950-1	20B	0	2		
<b>47164[*r]</b>	100-240 Vac	50/60	0	12dc	-	5	3	60950-1	20B	0	2		
<b>47165[*r]</b>	100-240 Vac	50/60	0	18dc	-	5	3	60950-1	20B	0	2		
<b>47166[*r]</b>	100-240 Vac	50/60	0	24dc	-	5	3	60950-1	20B	0	2		
<b>47243</b>	100-240ac	50/60	0	10.5dc	0.38	4	3	60950-1	20B	0	2		
				7.0dc	0.1	0.7	3						
<b>47244</b>	100-240ac	50/60	0	15dc	0.3	4.5	3	60950-1	20B	0	2		
				7.0dc	0.07	0.5	3						
<b>47245[*r]</b>	100-240ac	50/60	0	12dc	0.13	1.6	3	60950-1	20B	0	2		

				5.5dc	0.29	1.6	3					
<b>47246[*r]</b>	100-240ac	50/60	0	12dc	0.17	2.0	3	60950-1	20B	0	2	
				5.0dc	0.4	2.0	3					
<b>47247[*r]</b>	100-240ac	50/60	0	15dc	0.13	2.0	3	60950-1	20B	0	2	
				-15dc	0.13	2.0	3					
<b>47252[*r]</b>	100-240ac	50/60	0	5.0dc	0.35	1.75	3	60950-1	20B	0	2	
				5.0dc	0.35	1.75	3					
<b>47254[*r]</b>	100-240ac	50/60	0	12dc	0.17	2.0	3	60950-1	20B	0	2	
				12dc	0.17	2.0	3					
<b>47255[*r]</b>	100-240ac	50/60	0	15dc	0.13	2.0	3	60950-1	20B	0	2	
				15dc	0.13	2.0	3					
<b>47257[*r]</b>	100-240ac	50/60	0	5.0dc	0.4	2.0	3	60950-1	20B	0	2	
				12dc	0.17	2.0	3					
<b>47258[*r]</b>	100-240ac	50/60	0	18dc	0.156	2.8	3	60950-1	20B	0	2	
				8.0dc	0.15	1.2	3					

[\*r] - Output values are rated.

Marking: Company name and catalog designation on the product or on the smallest unit container in which the product is packaged.

Last Updated on 2012-08-15

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**Supporting Documentation**

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
  - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
  - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
  - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

**Product Description**

The subject equipment is an AC-DC switching mode building-in power supply. It consists of switching type transformer, bridging capacitor, and other components, filled by adhesive compound, and then housed with plastic enclosure.

**Model Differences**

All models are similar with each other, except for transformer secondary windings, output ratings, and model designation.

Models 47124 and 47124SLI are identical, except for enclosure size and transformer size.  
See Enclosure 7-01 for details.

**Technical Considerations**

- Equipment mobility : for building-in
- Connection to the mains : to be determined in end product
- Operating condition : continuous
- Access location : to be determined in end product
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : --
- Class of equipment : Class II (double insulated)

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2011-12 (Information Technology Equipment - Safety - Part 1: General Requirements)
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	Switch mode power supply unit
<b>Model:</b>	47121, 47122, 47123, 47124, 47124SLI, 47125, 47126, 47151, 47152, 47153, 47154, 47155, 47156, 47157
<b>Rating:</b>	<p>Input:100-240V ~ , 50/60Hz, 0.2A.</p> <p>Output:</p> <p>model 47121: 3.3 Vdc, 2.5 W;</p> <p>model 47122: 5 Vdc, 2.75 W;</p> <p>model 47123: 9 Vdc, 2.5 W;</p> <p>model 47124: 12 Vdc, 2.5 W;</p> <p>model 47124SLI: 12 Vdc, 2.5 W;</p> <p>model 47125: 15 Vdc, 2.5 W;</p> <p>model 47126: 24 Vdc, 2.5 W;</p> <p>model 47151: 3.3 Vdc, 4.5 W;</p> <p>model 47152: 5 Vdc, 4.5 W;</p> <p>model 47153: 9 Vdc, 5 W;</p> <p>model 47154: 12 Vdc, 5 W;</p> <p>model 47155: 15 Vdc, 5 W;</p> <p>model 47156: 24 Vdc, 5 W;</p> <p>model 47157: 3.8 Vdc, 4.5 W.</p>
<b>Applicant Name and Address:</b>	ZHONGSHAN MYRRA ELECTRONIC CO LTD XIAOLAN INDUSTRIAL ZONE XIAOLAN TOWN ZHONGSHAN GUANGDONG 528415 CHINA

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

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Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: John Zhang

Reviewed by: Lucio Cinelli

- The following secondary output circuits are supplied by a Limited Power Source: All outputs
- The power supply terminals and/or connectors are: Not investigated for field wiring
- The maximum investigated branch circuit rating is: 20 A
- The investigated Pollution Degree is: 2
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBYJ2 insulation system with the indicated rating greater than Class A (105°C): T1 (Class B)
- The following end-product enclosures are required: Mechanical, Fire, Electrical

**Additional Information**

N/A

**Markings and instructions**

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Fuses - Non-operator access/soldered-in fuses	Unambiguous reference to service documentation for instructions for replacement of fuses replaceable only by service personnel
Limited Power Source Marking	"LPS" or "Limited Power Source." may be marked on unit.

**Special Instructions to UL Representative**

Inspect the transformer(s) listed in Production-Line Testing Requirements (Electric Strength Test Special Constructions) per AA1.1- (C). When the tests are conducted at other location, Inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in Production-Line Testing Requirements (Electric Strength Test Special Constructions) be conducted at the component manufacturer.

- Considered current rating of protective device as part of the building installation (A) : 20 A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 2000
- Altitude of test laboratory (m) : Not exceeded 2000
- Mass of equipment (kg) : Approx. 0.033
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 70 degree C for models 47121, 47122, 47123, 47124, 47124SLI, 47125, 47126; 50 degree C for models 47151, 47152, 47153, 47154, 47155, 47156, 47157.
- The product is intended for use on the following power systems: TN
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: C5A secondary
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): all outputs
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual.

#### **Engineering Conditions of Acceptability**

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following Production-Line tests are conducted for this product: Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary- SELV: 260 Vrms, 584 Vpk.
- The following secondary output circuits are SELV: All outputs
- The following secondary output circuits are at non-hazardous energy levels: All outputs
- The following secondary output circuits are Limited Current Circuits: C5A secondary

**Production-Line Testing Requirements****Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.**

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All models	Transformer T1	--	Primary to secondary	min. 300 0 Vac	or min. 4242 Vdc	at least 1 s

**Earthing Continuity Test Exemptions - This test is not required for the following models:**

All models

**Electric Strength Test Exemptions - This test is not required for the following models:**

--

**Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:**

--

**Sample and Test Specifics for Follow-Up Tests at UL**

Model	Component	Material	Test	Sample(s)	Test Specifics
--	--	--	--	--	--

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2007-03-27 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03 (Information Technology Equipment - Safety - Part 1: General Requirements)
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	Switch mode power supply unit
<b>Model:</b>	47114, 47132, 47133, 47134, 47135, 47136, 47162, 47163, 47164, 47165, 47166.
<b>Rating:</b>	Input: 100-240 Vac, 50/60 Hz, 0.2 A. Output: model 47114: 12 Vdc, 2.4 W; model 47132: 5 Vdc, 2.5 W; model 47133: 9 Vdc, 3.2 W; model 47134: 12 Vdc, 3.2 W; model 47135: 18 Vdc, 3.2 W; model 47136: 24 Vdc, 3.2 W; model 47162: 5 Vdc, 4.5 W; model 47163: 9 Vdc, 5 W; model 47164: 12 Vdc, 5 W; model 47165: 18 Vdc, 5 W; model 47166: 24 Vdc, 5 W.
<b>Applicant Name and Address:</b>	ZHONGSHAN MYRRA ELECTRONIC CO LTD XIAOLAN INDUSTRIAL ZONE XIAOLAN TOWN ZHONGSHAN GUANGDONG 528415 CHINA

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Prepared by: John Zhang

Reviewed by: Glenn Liu

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  - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
  - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

### **Product Description**

The subject equipment is an AC-DC switching mode building-in power supply. It consists of switching type transformer, bridging capacitor, and other components, filled by adhesive compound, and then housed with plastic enclosure.

### **Model Differences**

All models are similar with each other, except for transformer secondary windings, output ratings, and model designation.

See Enclosure 7-01 for details.

### **Technical Considerations**

- Equipment mobility : for building-in
- Connection to the mains : to be determined in end product
- Operating condition : continuous
- Access location : to be determined in end product
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Class II (double insulated)
- Considered current rating (A) : 20

- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 2000
- Altitude of test laboratory (m) : <2000
- Mass of equipment (kg) : approx. 0.033
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50 degree C for models 47162, 47163, 47164, 47165, 47166; 70 degree C for models 47114, 47132, 47133, 47134, 47135, 47136.
- The product is intended for use on the following power systems: TN
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: C5A secondary
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): output.
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual

#### **Engineering Conditions of Acceptability**

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following Production-Line tests are conducted for this product: Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary- SELV: 255 Vrms, 528 Vpk.
- The following secondary output circuits are SELV: All outputs
- The following secondary output circuits are at non-hazardous energy levels: All outputs
- The following secondary output circuits are Limited Current Circuits: C5A secondary
- The following secondary output circuits are supplied by a Limited Power Source: all outputs

- The power supply terminals and/or connectors are: Suitable for factory wiring only
- The maximum investigated branch circuit rating is: 20 A
- The investigated Pollution Degree is: 2
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBYJ2 insulation system with the indicated rating greater than Class A (105°C): T1 (Class B)
- The following end-product enclosures are required: Mechanical, Fire, Electrical

#### **Additional Information**

Correction with review:

Remove Class II symbol in Marking and Instructions requirement.

#### **Markings and instructions**

Clause Title	Marking or Instruction Details
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Power rating - Ratings	Ratings (voltage, frequency/dc, current)

#### **Special Instructions to UL Representative**

Inspect the transformer(s) listed in Production-Line Testing Requirements (Electric Strength Test Special Constructions) per AA1.1- (C). When the tests are conducted at other location, Inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in Production-Line Testing Requirements (Electric Strength Test Special Constructions) be conducted at the component manufacturer.

**Production-Line Testing Requirements**

**Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.**

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All models in this report	Transformer T1	--	Primary to Secondary	3000	4242	min. 1

**Earthing Continuity Test Exemptions - This test is not required for the following models:**

All models in this report

**Electric Strength Test Exemptions - This test is not required for the following models:**

**Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:**

N/A

**Sample and Test Specifics for Follow-Up Tests at UL**

Model	Component	Material	Test	Sample(s)	Test Specifics
--	--	--	--	--	--

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2011-12 (Information Technology Equipment - Safety - Part 1: General Requirements)
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	Switch mode power supply unit
<b>Model:</b>	47243, 47244, 47245, 47246, 47247
<b>Rating:</b>	<p>Input: 100-240V ~, 50/60Hz, 0.2A.</p> <p>Output:</p> <p>Model 47243: 10.5Vdc, 4W, 7.0Vdc, 0.7W, with <math>T_{ma}=50</math> degree C; 10.5Vdc, 3.3W, 7.0Vdc, 0.7W, with <math>T_{ma}=60</math> degree C.</p> <p>Model 47244: 15Vdc, 4.5W, 7.0Vdc, 0.5W, with <math>T_{ma}=50</math> degree C; 15Vdc, 3.5W, 7.0Vdc, 0.5W, with <math>T_{ma}=60</math> degree C.</p> <p>Model 47245: 12Vdc, 1.6W, 5.5Vdc, 1.6W, with <math>T_{ma}=70</math> degree C.</p> <p>Model 47246: 12Vdc, 2.0W, 5.0Vdc, 2.0W, with <math>T_{ma}=60</math> degree C.</p> <p>Model 47247: 15Vdc, 2.0W, -15Vdc, 2.0W, with <math>T_{ma}=60</math> degree C.</p> <p>See Enclosure 7-01 for details.</p>
<b>Applicant Name and Address:</b>	ZHONGSHAN MYRRA ELECTRONIC CO LTD XIAOLAN INDUSTRIAL ZONE XIAOLAN TOWN ZHONGSHAN GUANGDONG 528415 CHINA

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: John Zhang

Reviewed by: Lorenzo Iorio

**Supporting Documentation**

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
  - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
  - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
  - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

**Product Description**

The subject equipment is an AC-DC switching mode building-in power supply. It consists of switching type transformer, bridging capacitor, and other components, filled by adhesive compound, and then housed with plastic enclosure.

**Model Differences**

All models are similar with each other, except for transformer secondary windings, output ratings, and model designation.

See Enclosure 7-01 for details.

**Technical Considerations**

- Equipment mobility : for building-in
- Connection to the mains : to be determined in end product
- Operating condition : continuous
- Access location : to be determined in end product
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : --
- Class of equipment : Class II (double insulated)

- Considered current rating of protective device as part of the building installation (A) : 20 A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 2000
- Altitude of test laboratory (m) : Not exceeded 2000
- Mass of equipment (kg) : Approx. 0.033
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50/60 degree C for models 47243, 47244; 60 degree C for model 47246, 47247; 70 degree C for model 47245
- The product is intended for use on the following power systems: TN
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: C4A secondary
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): all outputs
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual.

#### **Engineering Conditions of Acceptability**

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following Production-Line tests are conducted for this product: Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary- SELV: 259 Vrms, 588 Vpk.
- The following secondary output circuits are SELV: All outputs
- The following secondary output circuits are at non-hazardous energy levels: All outputs
- The following secondary output circuits are Limited Current Circuits: C4A secondary

- The following secondary output circuits are supplied by a Limited Power Source: All outputs
- The power supply terminals and/or connectors are: Not investigated for field wiring
- The maximum investigated branch circuit rating is: 20 A
- The investigated Pollution Degree is: 2
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBYJ2 insulation system with the indicated rating greater than Class A (105°C): T1 (Class B)
- The following end-product enclosures are required: Mechanical, Fire, Electrical

**Additional Information**

N/A

**Markings and instructions**

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Fuses - Non-operator access/soldered-in fuses	Unambiguous reference to service documentation for instructions for replacement of fuses replaceable only by service personnel
Limited Power Source Marking	"LPS" or "Limited Power Source." may be marked on unit.

**Special Instructions to UL Representative**

Inspect the transformer(s) listed in Production-Line Testing Requirements (Electric Strength Test Special Constructions) per AA1.1- (C). When the tests are conducted at other location, Inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in Production-Line Testing Requirements (Electric Strength Test Special Constructions) be conducted at the component manufacturer.

**Production-Line Testing Requirements****Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.**

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All models	Transformer T1	--	Primary to secondary	min. 300 0 Vac	or min. 4242 Vdc	at least 1 s

**Earthing Continuity Test Exemptions - This test is not required for the following models:**

All models

**Electric Strength Test Exemptions - This test is not required for the following models:**

--

**Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:**

--

**Sample and Test Specifics for Follow-Up Tests at UL**

Model	Component	Material	Test	Sample(s)	Test Specifics
--	--	--	--	--	--

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2011-12 (Information Technology Equipment - Safety - Part 1: General Requirements)
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	Switch mode power supply unit
<b>Model:</b>	47252, 47254, 47255, 47257, 47258
<b>Rating:</b>	Input:100-240V ~ , 50/60Hz, 0.2A. Output: Model 47252: 5.0Vdc, 1.75W, 5.0Vdc, 1.75W; Model 47254: 12Vdc, 2.0W, 12Vdc, 2.0W; Model 47255: 15Vdc, 2.0W, 15Vdc, 2.0W; Model 47257: 5.0Vdc, 2.0W, 12Vdc, 2.0W; Model 47258: 18Vdc, 2.8W, 8.0Vdc, 1.2W. See Enclosure 7-01 for details.
<b>Applicant Name and Address:</b>	ZHONGSHAN MYRRA ELECTRONIC CO LTD XIAOLAN INDUSTRIAL ZONE XIAOLAN TOWN ZHONGSHAN GUANGDONG 528415 CHINA

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: John Zhang

Reviewed by: Benjamin Mapes

**Supporting Documentation**

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
  - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
  - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
  - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

**Product Description**

The subject equipment is an AC-DC switching mode building-in power supply. It consists of switching type transformer, bridging capacitor, and other components, filled by adhesive compound, and then housed with plastic enclosure.

**Model Differences**

All models are similar with each other, except for transformer secondary windings, output ratings, and model designation.

See Enclosure 7-01 for details.

**Technical Considerations**

- Equipment mobility : for building-in
- Connection to the mains : to be determined in end product
- Operating condition : continuous
- Access location : to be determined in end product
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : --
- Class of equipment : Class II (double insulated)

- Considered current rating of protective device as part of the building installation (A) : 20 A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 2000 m
- Altitude of test laboratory (m) : Not exceeded 2000 m
- Mass of equipment (kg) : Approx. 0.033 kg
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 60 degree C
- The product is intended for use on the following power systems: TN
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: C4A secondary
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): all outputs
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual.

#### **Engineering Conditions of Acceptability**

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following Production-Line tests are conducted for this product: Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary- SELV: 248 Vrms, 584 Vpk.
- The following secondary output circuits are SELV: All outputs
- The following secondary output circuits are at non-hazardous energy levels: All outputs
- The following secondary output circuits are Limited Current Circuits: C4A secondary

- The following secondary output circuits are supplied by a Limited Power Source: All outputs
- The power supply terminals and/or connectors are: Not investigated for field wiring
- The maximum investigated branch circuit rating is: 20 A
- The investigated Pollution Degree is: 2
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBYJ2 insulation system with the indicated rating greater than Class A (105°C): T1 (Class B)
- The following end-product enclosures are required: Mechanical, Fire, Electrical

**Additional Information**

N/A

**Markings and instructions**

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Fuses - Non-operator access/soldered-in fuses	Unambiguous reference to service documentation for instructions for replacement of fuses replaceable only by service personnel
Limited Power Source Marking	"LPS" or "Limited Power Source." may be marked on unit.

**Special Instructions to UL Representative**

Inspect the transformer(s) listed in Production-Line Testing Requirements (Electric Strength Test Special Constructions) per AA1.1- (C). When the tests are conducted at other location, Inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in Production-Line Testing Requirements (Electric Strength Test Special Constructions) be conducted at the component manufacturer.

**Production-Line Testing Requirements****Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.**

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All models	Transformer T1	--	Primary to secondary	min. 300 0 Vac	or min. 4242 Vdc	at least 1 s

**Earthing Continuity Test Exemptions - This test is not required for the following models:**

All models

**Electric Strength Test Exemptions - This test is not required for the following models:**

--

**Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:**

--

**Sample and Test Specifics for Follow-Up Tests at UL**

Model	Component	Material	Test	Sample(s)	Test Specifics
--	--	--	--	--	--

**The characteristics of 47X Series**

FAMILY	Model NO.	AC input voltage range	AC input frequency range	Input Inrush Current	Hold up time	Turn on delay	Vout	Iout (CR mode)	Max Capacitive load	The actual test value of Ripple & Noise	The defined value of Ripple & Noise	Ta
Family1	47121	85V~265V	47~440Hz	20A max	5mS Min	3S max	3.3V	750mA	8200uF	262mVp-p Max	350mVp-p Max	70°C
	47122	85V~265V	47~440Hz	20A max	5mS Min	3S max	5.0V	550mA	5600uF	152mVp-p Max	200mVp-p Max	70°C
	47123	85V~265V	47~440Hz	20A max	5mS Min	3S max	9.0V	270mA	2200uF	120mVp-p Max	200mVp-p Max	70°C
	47124	85V~265V	47~440Hz	20A max	5mS Min	3S max	12.0V	210mA	1000uF	118mVp-p Max	200mVp-p Max	70°C
	47124SLI	85V~265V	47~440Hz	20A max	5mS Min	3S max	12.0V	210mA	1000uF	119mVp-p Max	200mVp-p Max	70°C
	47124WOC	85V~265V	47~440Hz	20A max	5mS Min	3S max	12.0V	210mA	1000uF	119mVp-p Max	200mVp-p Max	70°C
	47125	85V~265V	47~440Hz	20A max	5mS Min	3S max	15.0V	170mA	680uF	108mVp-p Max	200mVp-p Max	70°C
	47126	85V~265V	47~440Hz	20A max	5mS Min	3S max	24.0V	110mA	8200uF	110mVp-p Max	200mVp-p Max	70°C
	47151	85V~265V	47~440Hz	30A max	5mS Min	3S max	3.3V	1350mA	8200uF	132mVp-p Max	200mVp-p Max	50°C
	47152	85V~265V	47~440Hz	30A max	5mS Min	3S max	5.0V	900mA	5600uF	150mVp-p Max	200mVp-p Max	50°C
	47153	85V~265V	47~440Hz	30A max	5mS Min	3S max	9.0V	550mA	680uF	142mVp-p Max	200mVp-p Max	50°C
	47153WOC	85V~265V	47~440Hz	30A max	5mS Min	3S max	9.0V	550mA	680uF	142mVp-p Max	200mVp-p Max	50°C
	47154	85V~265V	47~440Hz	30A max	5mS Min	3S max	12.0V	420mA	680uF	131mVp-p Max	200mVp-p Max	50°C
	47155	85V~265V	47~440Hz	30A max	5mS Min	3S max	15.0V	320mA	680uF	122mVp-p Max	200mVp-p Max	50°C
	47156	85V~265V	47~440Hz	30A max	5mS Min	3S max	24.0V	210mA	220uF	120mVp-p Max	200mVp-p Max	50°C
	47157	85V~265V	47~440Hz	30A max	5mS Min	3S max	3.8V	1180mA	680uF	151mVp-p Max	200mVp-p Max	50°C
Family2	47114	85V~265V	47~440Hz	20A max	5mS Min	4S max	12V	200mA				70°C
	47132	85V~265V	47~440Hz	20A max	5mS Min	4S max	5.0V	500mA				70°C
	47133	85V~265V	47~440Hz	25A max	5mS Min	4S max	9.0V	360mA				70°C
	47134	85V~265V	47~440Hz	25A max	5mS Min	4S max	12.0V	270mA	8200uF	132mVp-p Max	200mVp-p Max	70°C
	47135	85V~265V	47~440Hz	25A max	5mS Min	4S max	18.0V	180mA				70°C
	47136	85V~265V	47~440Hz	25A max	5mS Min	4S max	24.0V	130mA				70°C
	47162	85V~265V	47~440Hz	30A max	5mS Min	4S max	5.0V	900mA				50°C
	47163	85V~265V	47~440Hz	30A max	5mS Min	4S max	9.0V	560mA				50°C
	47164	85V~265V	47~440Hz	30A max	5mS Min	4S max	12.0V	420mA	8200uF	112mVp-p Max	200mVp-p Max	50°C
	47165	85V~265V	47~440Hz	30A max	5mS Min	4S max	18.0V	280mA				50°C
Family3	E7166	85V~265V	47~440Hz	30A max	5mS Min	4S max	24.0V	210mA	8200uF	115mVp-p Max	200mVp-p Max	50°C
	47166	85V~265V	47~440Hz	30A max	5mS Min	4S max	24.0V	210mA	8200uF	115mVp-p Max	200mVp-p Max	50°C
	47243	85V~265V	47~440Hz	30A max	5mS Min	3S max	10.5V	380mA	470uF	500mVp-p Max	600mVp-p Max	50°C
		85V~265V	47~440Hz		5mS Min	3S max	7.0V	100mA	470uF	120mVp-p Max	200mVp-p Max	
	47244	85V~265V	47~440Hz	30A max	5mS Min	3S max	15V	300mA	470uF	700mVp-p Max	800mVp-p Max	50°C
		85V~265V	47~440Hz		5mS Min	3S max	7.0V	70mA	470uF	153mVp-p Max	200mVp-p Max	
	47243	85V~265V	47~440Hz	30A max	5mS Min	3S max	10.5V	315mA	680uF	130mVp-p Max	200mVp-p Max	60°C
		85V~265V	47~440Hz		5mS Min	3S max	7.0V	100mA	470uF	120mVp-p Max	200mVp-p Max	
	47244	85V~265V	47~440Hz	30A max	5mS Min	3S max	15V	234mA	470uF	480mVp-p Max	600mVp-p Max	60°C
		85V~265V	47~440Hz		5mS Min	3S max	7.0V	70mA	470uF	131mVp-p Max	200mVp-p Max	
Family4	47245	85V~265V	47~440Hz	25A max	5mS Min	3S max	12V	130mA	1000uF	130mVp-p Max	200mVp-p Max	70°C
		85V~265V	47~440Hz		5mS Min	3S max	5.5V	300mA	1000uF	160mVp-p Max	250mVp-p Max	
	47246	85V~265V	47~440Hz	30A max	5mS Min	3S max	5.0V	400mA	470uF	138mVp-p Max	200mVp-p Max	60°C
		85V~265V	47~440Hz		5mS Min	3S max	12V	170mA	470uF	108mVp-p Max	200mVp-p Max	
	47247	85V~265V	47~440Hz	30A max	5mS Min	3S max	15V	130mA	470uF	109mVp-p Max	200mVp-p Max	60°C
		85V~265V	47~440Hz		5mS Min	3S max	-15V	130mA	470uF	106mVp-p Max	200mVp-p Max	
	47252	85V~265V	47~440Hz	25A max	5mS Min	3S max	5.0V	350mA	4000uF	131mVp-p Max	200mVp-p Max	60°C
		85V~265V	47~440Hz		5mS Min	3S max	5.0V	350mA	4000uF	151mVp-p Max	200mVp-p Max	
Family4	47254	85V~265V	47~440Hz	30A max	5mS Min	3S max	12V	165mA	220uF	101mVp-p Max	200mVp-p Max	60°C
		85V~265V	47~440Hz		5mS Min	3S max	12V	165mA	220uF	106mVp-p Max	200mVp-p Max	
	47255	85V~265V	47~440Hz	30A max	5mS Min	3S max	15V	135mA	470uF	99mVp-p Max	200mVp-p Max	60°C
		85V~265V	47~440Hz		5mS Min	3S max	15V	135mA	470uF	102mVp-p Max	200mVp-p Max	
	47257	85V~265V	47~440Hz	30A max	5mS Min	3S max	5.0V	400mA	1000uF	100mVp-p Max	200mVp-p Max	60°C
		85V~265V	47~440Hz		5mS Min	3S max	12V	170mA	1000uF	92mVp-p Max	200mVp-p Max	
Family4	47258	85V~265V	47~440Hz	30A max	5mS Min	3S max	18V	150mA	220uF	98mVp-p Max	200mVp-p Max	60°C
		85V~265V	47~440Hz		5mS Min	3S max	8.0V	150mA	220uF	106mVp-p Max	200mVp-p Max	

**Note:**

1.0 Ripple & Noise: the measuring will be terminated with a 47uF AL E-Cap and a 0.1uF Cer-Cap. An oscilloscope set at 20MHz bandwidth.

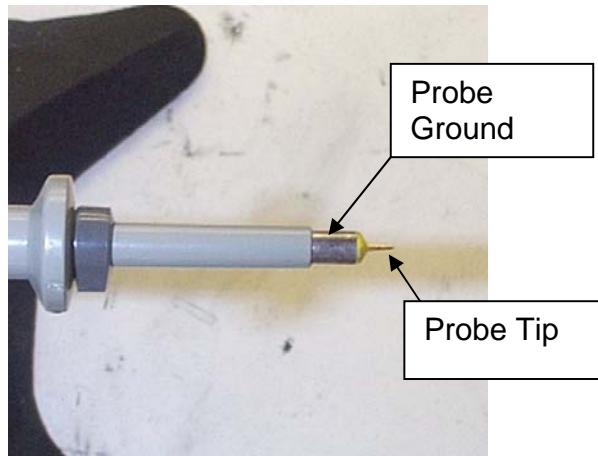
2.0 Hold up time: 5mS Min@ 100Vac ~240Vac, and DC with full load.

3.0 Input Inrush Current: 30A Max @85Vac~265Vac input, cold start and DC with full load.

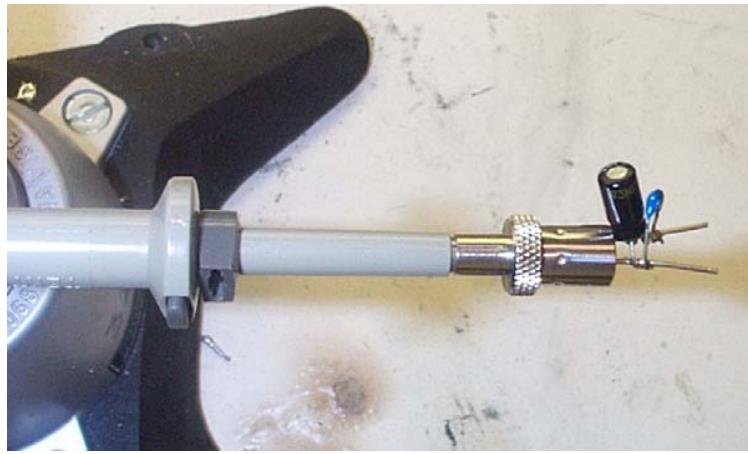
## 1 Ripple Measurement

For DC output ripple measurements, a modified oscilloscope test probe must be utilized in order to reduce spurious signals due to pickup. The details of the probe modification are provided in Figure 1 and Figure 2.

The probe is affixed with two capacitors tied in parallel across the probe tip. The capacitors include one 0.1  $\mu$ F/50 V ceramic type and one 22  $\mu$ F/50 or 47uF/50V aluminum electrolytic.(Note:the aluminum electrolytic type capacitor is polarized, so proper polarity across DC outputs must be maintained) (as below):

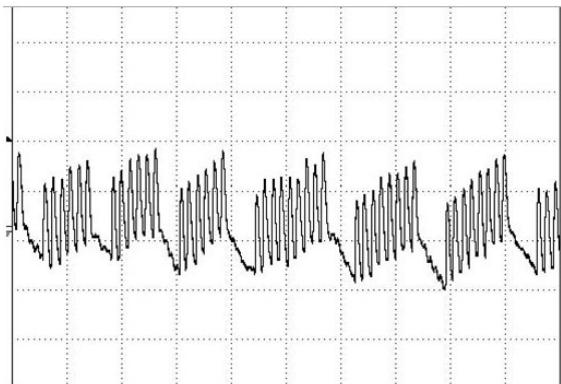


**Figure 1** – Oscilloscope Probe Prepared for Ripple Measurement. (End Cap and Ground Lead Removed)

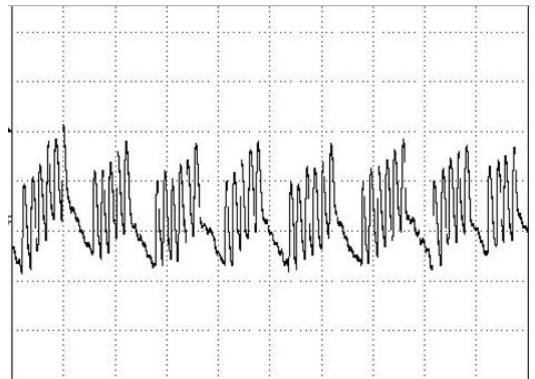


**Figure 2** –Modified with wires for probe ground for ripple measurement, and two parallel decoupling capacitors added.

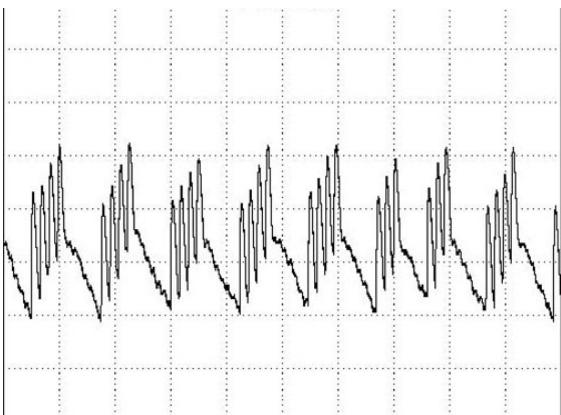
## 2 Measurement Results



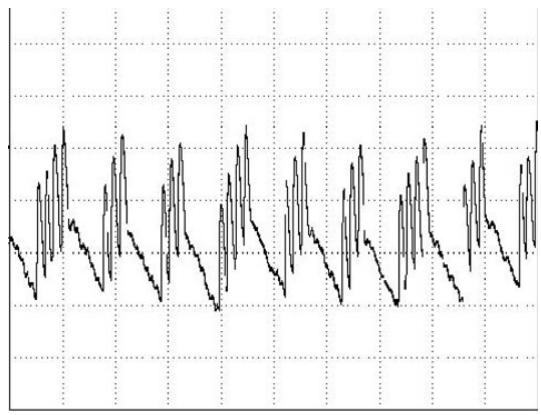
**Figure 3** – Ripple, 85 VAC, Full Load. 100 us, 50 mV / div.



**Figure 4** – 5 V Ripple, 115 VAC, Full Load. 100 us, 50 mV / div.



**Figure 5** – Ripple, 230 VAC, Full Load. 100 us, 50 mV / div.



**Figure 6** – Ripple, 265 VAC, Full Load. 100 us, 50 mV / div.