

EC-TYPE EXAMINATION CERTIFICATE

Equipment or Protective System Intended for use
in Potentially Explosive Atmospheres
Directive 94/9/EC

EC-Type Examination Certificate Number : **BAS98ATEX7293**

Equipment or Protective System: **MTL4046 ISOLATING DRIVER 4/20mA FOR HART
VALVE POSITIONERS**

Manufacturer: **MEASUREMENT TECHNOLOGY LTD**

Address: **Luton, Bedfordshire, LU1 3JJ**

This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

98(C)0776 dated 21 October 1998

Compliance with the Essential Health and Safety Requirements has been assured by compliance with:


EN50014: 1997 EN50020: 1994

except in respect of those requirements listed at item 18 of the Schedule.

If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

The marking of the equipment or protective system shall include the following:-

 II [1] G [EEEx ia] IIC (-20°C ≤ T_a ≤ 60°C)

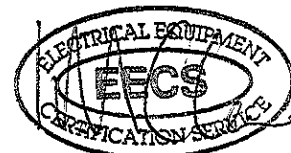
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File No: EECS 0703/02/270

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.



Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244



I M CLEARE
DIRECTOR
25 November 1998



Schedule

EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX7293

Description of Equipment or Protective System

An MTL4046 Isolating/Driver 4/20mA for HART Valve Positioners enables the interconnection of apparatus located in the hazardous area with unspecified apparatus located in non-hazardous area. The MTL4046 is designed to restrict the transfer of energy by the limitation of voltage and current.

The MTL4046 apparatus comprises three isolating transformers which provide galvanic isolation between the hazardous area and the non-hazardous area circuitry and a detection circuit with zener diodes/resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board and housed in a moulded plastic enclosure. Terminals are provided for the hazardous area and non-hazardous area connections.

Terminals 7 to 14

$$U_m = 250 \text{ V a.c. r.m.s.}$$

The circuit connected to the safe area terminals CON3, CON4 and CON5 is designed to operate from a d.c. supply voltage of up to 35V.

Terminals 2/3 wrt 4/5

$$U_o = 28 \text{ V}$$

$$I_o = 93 \text{ mA}$$

$$P_o = 0.65 \text{ W}$$

$$C_i = 0 \text{ } \mu\text{F}$$

$$L_i = 0 \text{ mH}$$

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the load connected to the output terminals must not exceed the following values:

GROUP	CAPACITANCE in μF	INDUCTANCE in mH	OR L/R RATIO in $\mu\text{H}/\text{ohm}$
IIC	0.083	4.30	56
IIB	0.650	17.72	210
IIA	2.150	36.02	444

Report No.

98(C)0776



Schedule

EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX7293

17 Special Conditions For Safe Use

None

18. Essential Health and Safety Requirements

Essential Health & Safety Requirements not covered by standards listed in Section 9		
Clause	Subject	Compliance
1.0.1	Principles of integrated explosion protection	Report No 98(C)0776 Clause 6.1.0.1
1.0.2	Analysis of possible operating faults	Report No 98(C)0776 Clause 6.1.0.2
1.0.5	Marking	Report No 98(C)0776 Clause 6.1.0.5
1.0.6	Instructions	Report No 98(C)0776 Clause 6.1.0.6
1.1.3	Changes in characteristics of materials and combinations thereof	Report No 98(C)0776 Clause 6.1.1.3
1.2.1	Design with regard to technological knowledge	Report No 98(C)0776 Clause 6.1.2.1
1.2.2	Components for incorporation or replacement	Report No 98(C)0776 Clause 6.1.2.2
1.2.4	Dust deposits	Report No 98(C)0776 Clause 6.1.2.4
1.2.5	Additional means of protection	Report No 98(C)0776 Clause 6.1.2.5
1.2.7	Protection against other hazards	Report No 98(C)0776 Clause 6.1.2.7
1.3.1	Hazards arising from different ignition sources	Report No 98(C)0776 Clause 6.1.3.1
1.4.2	Withstanding attack by aggressive substances	Report No 98(C)0776 Clause 6.1.4.2
1.5.1	General Requirements for Safety Devices	Report No 98(C)0776 Clause 6.1.5.1
1.5.2	Safety device failure	Report No 98(C)0776 Clause 6.1.5.2
1.6.4	Hazards arising from connections	Report No 98(C)0776 Clause 6.1.6.4
2.1.1	Category 1G	Report No 98(C)0776 Clause 6.2.1.1

19 DRAWINGS

Number	Sheet	Issue	Date	Description
CI 4046-2	1	1	6.98	Contents Sheet
CI 4046-2	2	1	6.98	Parts List
CI 4046-2	3	1	6.98	Circuit Diagram
CI 4046-2	4	1	6.98	Component Layout
CI 4046-2	5	1	6.98	General Assembly
CI 4046-2	6	1	6.98	Internal Construction
CI 4046-2	7	1	6.98	PCB Track Layout



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Schedule

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EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX7293

Number	Sheet	Issue	Date	Description
CI 4046-2	8	1	6.98	Transformer Winding Details
*CI4000-1	1	2	11.92	I.S. Transformer
*CI4000-1	2	2	11.92	I.S. Transformer

Drawing marked * are held on BASEEFA Certificate No 94C2193

This certificate may only be reproduced in its entirety and without any change, schedule included.

BASEEFA List Keywords
2ISOLBAR



1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use**
in Potentially explosive atmospheres
Directive 94/9/EC

3 **Supplementary EC-Type Examination Certificate Number: BAS98ATEX7293/1**

4 **Equipment or Protective System: MTL4046 ISOLATING DRIVER 4/20mA FOR HART**
VALVE POSITIONERS

5 **Manufacturer: MEASUREMENT TECHNOLOGY LIMITED**

6 **Address: Luton, Bedfordshire, LU1 3JJ**

7 This supplementary certificate extends EC-Type Examination Certificate No. to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

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File No: EECS 0703/02/270

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Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244



I M CLEARE
DIRECTOR
22 March 1999



Schedule

SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX7293/1

Description of the Variation to the Equipment or Protective System

VARIATION 1.1

To permit the removal of components, thus forming the new model designated MTL4046C.

Report Nos.

None

SPECIAL CONDITIONS FOR SAFE USE

None

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Sheet	Issue	Date	Description
CI4046-3	1	1	3.99	Contents sheet
CI4046-3	2	1	3.99	Parts list
CI4046-3	3	1	3.99	PCB component layout
CI4046-3	4	1	3.99	Circuit diagram
CI4046-3	5	1	3.99	General assembly and label
CI4046-3	6	1	3.99	Internal construction
CI4046-3	7	1	3.99	PCB track layout
CI4046-3	8	1	3.99	Transformer winding details

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1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

3 **Supplementary EC-Type Examination Certificate Number: BAS98ATEX7293/2**

4 **Equipment or Protective System: MTL4046 ISOLATING DRIVER 4/20mA FOR HART VALVE
POSITIONERS**

5 **Manufacturer: MEASUREMENT TECHNOLOGY LIMITED**

6 **Address: Luton, Bedfordshire, LU1 3JJ**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS98ATEX7293 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

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Tel: 01298 28000 Fax: 01298 28244



I M CLEARE
DIRECTOR
22 September 1999



13

Schedule

14

EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX7293/2

Description of the Variation to the Equipment or Protective System

VARIATION 2.1

To permit minor drawing amendments.

Report No.

None

SPECIAL CONDITIONS FOR SAFE USE

None

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Sheet	Issue	Date	Description
CI4046-2	1 of 8	2	7.99	Contents Sheet MTL 4046
CI4046-2	5 of 8	2	7.99	General Assembly and Label MTL4046
CI4046-3	1 of 8	2	7.99	Contents Sheet MTL4046C
CI4046-3	5 of 8	2	7.99	General Assembly and Label MTL4046C

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1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use**
3 **in Potentially explosive atmospheres**
4 **Directive 94/9/EC**

5 Supplementary EC-Type Examination Certificate Number: **BAS98ATEX7293/3**

6 Equipment or Protective System: **MTL4046 ISOLATING DRIVER 4/20mA FOR HART VALVE**
7 **POSITIONERS**

8 Manufacturer: **MEASUREMENT TECHNOLOGY LIMITED**

9 Address: **Luton, Bedfordshire, LU1 3JJ**

10 This supplementary certificate extends EC-Type Examination Certificate No. BAS98ATEX7293 to
11 apply to equipment or protective systems designed and constructed in accordance with the
12 specification set out in the Schedule of the said Certificate but having any variations specified in the
13 Schedule attached to this certificate and the documents therein referred to.

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Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
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I M CLEARE
DIRECTOR
23 August 2000



13

Schedule14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX7293/3****Description of the Variation to the Equipment or Protective System****VARIATION 3.1**

To permit the change in output parameters, thus forming the model designated MTL4046S.

Electrical Parameters**Terminals 2/3 wrt 4/5**

$$U_o = 22V \quad I_o = 100 \text{ mA} \quad P_o = 0.55W$$

$$C_i = 0 \quad L_i = 0$$

Load Parameters

The capacitance and inductance or the inductance to resistance (L/R) ratio of the load connected to the output terminals must not exceed the following values:

GROUP	CAPACITANCE in μF	INDUCTANCE in mH	OR	L/R RATIO in $\mu H/\text{ohm}$
IIC	0.17	3.72		67
IIB	1.14	15.51		252
IIA	4.2	31.35		531

Report No.

BASEEFA Certification Report No. 00(C)0688 dated 21 August 2000

Special Conditions for Safe Use

None.

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

<u>Number</u>	<u>Sheet</u>	<u>Issue</u>	<u>Date</u>	<u>Description</u>
CI4046-4	1	1	7.00	Parts List
CI4046-4	2	1	7.00	Circuit Diagram
CI4046-4	3	1	7.00	Component Layout



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Schedule

14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX7293/3**

<u>Number</u>	<u>Sheet</u>	<u>Issue</u>	<u>Date</u>	<u>Description</u>
CI4046-4	4	1	7.00	General Assembly and Label
CI4046-4	5	1	7.00	Internal Construction
CI4046-4	6	1	7.00	PCB Layout
CI4046-4	7	1	7.00	Transformer Details

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1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

3 **Supplementary EC-Type Examination Certificate Number: BAS98ATEX7293/4**

4 **Equipment or Protective System: MTL4046 ISOLATING DRIVER 4/20mA FOR HART VALVE
POSITIONERS**

5 **Manufacturer: MEASUREMENT TECHNOLOGY LIMITED**

6 **Address: Luton, Bedfordshire, LU1 3JJ**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS98ATEX7293 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

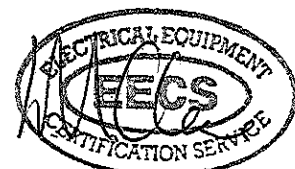
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File No: EECS 0703/02/270

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Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244



I M CLEARE
DIRECTOR
15 November 2000



13

Schedule

14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX7293/4**

Description of the Variation to the Equipment or Protective System

VARIATION 4.1

To permit the individual voltage of zener diodes D1 to D4 used on the MTL4046S as detailed in Variation 3.1 to be raised to 14V max. These zener diodes continue to be two-thirds rated and the output of the apparatus remains at $U_o = 22V$.

Report No.

See original certificate.

Special Conditions For Safe Use

See original certificate.

Essential Health and Safety Requirements

See original certificate.

DRAWING

Number	Sheet	Issue	Date	Description
CI4046-4	1	2	09.00	MTL4046S Parts List

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1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

3 **Supplementary EC-Type Examination Certificate Number: BAS98ATEX7293/5**

4 **Equipment or Protective System: MTL4046 ISOLATING DRIVER 4/20mA FOR HART
VALVE POSITIONERS**

5 **Manufacturer: MEASUREMENT TECHNOLOGY LIMITED**

6 **Address: Luton, Bedfordshire, LU1 3JJ**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS98ATEX7293 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

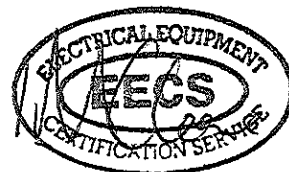
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I M CLEARE
DIRECTOR
22 August 2002



13

Schedule

14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX7293/5**

Description of the Variation to the Equipment or Protective System

VARIATION 5.1

To permit minor changes to the circuit and printed circuit board for the MTL4046, MTL4046C and the MTL4046S. These changes do not affect the intrinsic safety assessment.

Report No.

Not applicable.

Special Conditions For Safe Use

Not applicable.

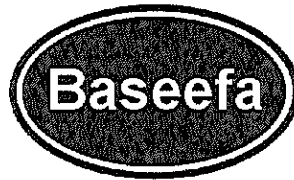
Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Sheet	Issue	Date	Description
CI4046-2	1	3	02.02	MTL4046 Contents Sheet
CI4046-2	3	2	02.02	MTL4046 Circuit Diagram
CI4046-2	7	2	02.02	MTL4046 PCB Track Layout
CI4046-3	1	3	02.02	MTL4046C Contents Sheet
CI4046-3	3	2	02.02	MTL4046C Circuit Diagram
CI4046-3	7	2	02.02	MTL4046C PCB Track Layout
CI4046-4	2	2	02.02	MTL4046S Circuit Diagram
CI4046-4	6	2	02.02	MTL4046S PCB Track Layout

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1 **SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC**

3 Supplementary EC - Type Examination Certificate Number: **BAS98ATEX7293/6**

4 Equipment or Protective System: **MTL4046 Isolating Driver 4/20mA for Hart Valve Positioners**

5 Manufacturer: **Measurement Technology Limited**

6 Address: **Luton, Bedfordshire, LU1 3JJ**

7 This supplementary certificate extends EC - Type Examination Certificate No. BAS98ATEX7293 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

The original certificate was issued by The Electrical Equipment Certification Service, Notified Body Number 0600, which retains responsibility for its original documentation. Baseefa (2001) Ltd., Notified Body Number 1180, is responsible only for the additional work relating to this supplementary certificate and any other supplementary certificate it has issued.

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Baseefa (2001) Ltd. Customer Reference No. 0703

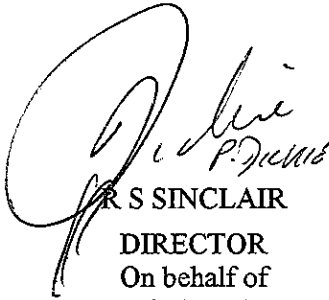
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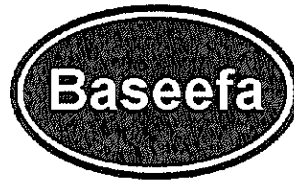
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Baseefa (2001) Ltd.

Health and Safety Laboratory Site, Harpur Hill,
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Derbyshire, SK17 9BJ


P. S. SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.



13

Schedule

14

Certificate Number BAS98ATEX7293/6

15

Description of the variation to the Equipment or Protective System

Variation 6.1

To permit the change of marking of model MTL 4046 to the following code: -

⊕ II [1] GD [EEx ia] IIC (-20°C ≤ T_a ≤ +60°C)

16

Report Number

None

17

Special Conditions for Safe Use

None

18

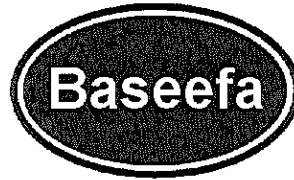
Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

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Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4046-2	5 of 8	3	07.04	General Assembly and Label



1 SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

**2 Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC**

3 Supplementary EC - Type Examination Certificate Number: BAS98ATEX7293/7

4 Equipment or Protective System: MTL4046 Isolating Driver 4/20mA for Hart Valve Positioners

5 Manufacturer: Measurement Technology Limited

6 Address: Luton, Bedfordshire, LU1 3JJ

7 This supplementary certificate extends EC - Type Examination Certificate No. BAS98ATEX7293 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

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Baseefa Customer Reference No. 0703

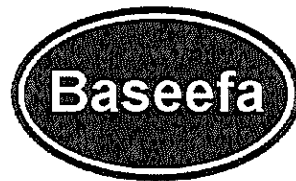
Project File No. 05/0451

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Baseefa

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Baseefa is a trading name of Baseefa (2001) Ltd
Registered in England No. 4305578 at the above address

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.



13

Schedule

14

Certificate Number BAS98ATEX7293/7

15

Description of the variation to the Equipment or Protective System

Variation 7.1

To permit minor drawing changes that do not affect the original intrinsic safety assessment.

16

Report Number

None.

17

Special Conditions for Safe Use

None

18

Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

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Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4046-2	4	2	7.05	MTL4046 PCB Component Layout
CI4046-3	4	2	7.05	MTL4046C PCB Component Layout
CI4046-3	8	2	7.05	MTL4046C Transformer Winding Details
CI4046-4	3	2	7.05	MTL4046S PCB Component Layout