1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 99ATEX2203** Issue: **9**

4 Equipment: **A Range of Amplified and Passive Pressure Sensors**

5 Applicant: **Kulite Semiconductor Products Inc.**

6 Address: One Willow Tree Road
Leonia
New Jersey 07605
USA

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

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2006 EN 60079-11:2007 EN 60079-26:2007
IEC 60079-0:2007 Edition 5 (used for guidance in respect of marking)

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

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

II 1 G
Ex ia IIC T4 Ga (Ta = -60°C to +80°C)
Ex ia IIC T3 Ga (Ta = -60°C to +125°C)
Ex ia IIC T2 Ga (Ta = -60°C to +230°C)

Project Number 70030789

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13 DESCRIPTION OF EQUIPMENT

The Kulite range of amplified and passive pressure sensors are essentially modular in construction. The sensing element is a silicon diaphragm that is housed within an oil filled capsule. The amplified transducers contain a hybrid circuit and may also contain a capacitor array and filters for E.M.C protection. The passive transducers contain just the sensing element and compensation resistors. All sensors can be configured to read either absolute, gauge or differential pressure. The pressure port type and electrical connection to the transducer can be specified by the user.

All sensors are to be used in conjunction with suitably certified associated apparatus.

Type I Transducers

Description:	Silicone Diaphragm Oil-Filled Design, Amplified, EMC Filters and Capacitor Array
Mode:	Absolute, Gauge and Differential
Parameters:	U_i = 33.0 V
	I_i = 250 mA
	P_i = 1.0 W
	C_i = 51.5 nF
	L_i = 150 µH
Example model numbers:	IS-APTE-XXX-1000 Series
	IS-IPTE-1100 Series
	IS-BME-1100 Series
	IS-BMDE-1100 Series
	IS-ISTE-1000 Series
	IS-KF-1040 Series
	IS-KF-1041 Series
	IS-EPS-XXX-1000 Series
	IS-TC-1500 Series
	IS-APTE-DC-XXX Series
	IS-ETM-XXX-375 & 500 Series
	PT213A Series
	IS-EFT-1000 Series
	IS-NE-XXX-375 Series
	IS-KE-XXX-375 Series
	IS-ETQ-XXX Series
	PT2000A Series
	IS-ETL-XXX-190 & 312 & 375 Series
	IS-ETLR Series
	Other Kulite Models complying with Type I design specification may be included
	Type II or Type III Kulite Pressure Transducer with KA-XXX Series (in-line amplifier)

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE **Sira 99ATEX2203**
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Type II Transducers

Description:	Silicone Diaphragm Oil-Filled Design, Unamplified
Mode:	Absolute, Gauge and Differential
Parameters:	U_i = 55 V
	I_i = 250 mA
	P_i = 1.0 W
	C_i = 16.5 nF
	L_i = 150 µH
Example model numbers:	IS-APT-XXX-1000 Series
	IS-IPT-1100 Series
	IS-IPT-750 Series
	IS-BM-1100 Series
	IS-BM-750 Series
	IS-BMD-1100 Series
	IS-IST-1000 Series
	PT213A Series (unamplified)
	IS-HKM-375 Series
	IS-HEM-375 Series
	IS-HKM-3X Series
	IS-HKM-XXX-375
	IS-HEM-XXX-375 Series & 500 Series
	IS-IPT-4-750 Series
	PT2000A Series (unamplified)
	Other Kulite Models complying with Type II design specification may be included

Type III Transducers

Description:	Silicone Diaphragm & Metal Diaphragm Designs, Unamplified
Mode:	Absolute, Gauge and Differential
Parameters:	U_i = 55 V
	I_i = 250 mA
	P_i = 1.0 W
	C_i = 16.5 nF
	L_i = 150 µH
Example model numbers:	IS-XTM-190 Series
	IS-XTL-190 Series
	IS-XTHL-XXX Series
	IS-XCHL-XXX Series
	IS-ECS-13L Series
	Other Kulite Models complying with Type III design specification may be included

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SCHEDULE

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Type IV Transducers

Description:	Silicone Diaphragm Oil-Filled or Leadless Design, Amplified (internal or in-line) fitted with a platinum RTD (Resistance Temperature Detector)
Mode:	Absolute, Gauge and Differential
Parameters:	U_i = 33 V I_i = 250 mA P_i = 1.0 W C_i = 51.5 nF (The value of Ci includes the capacitance of the integral cable.) L_i = 150 µH
Example model numbers:	IS-EPTS-312 Series IS-ETL/T-312 Series IS-ETL/T-375 Series IS-ETLR/T-635 Series Other Kulite Models complying with the Type IV design specification may be included Type V Kulite Pressure Transducer with KA-XXX Series (in line amplifier)

Type V Transducers

Description:	Silicone Diaphragm Oil-Filled Design, Leadless & Metal Diaphragm Designs Unamplified fitted with a platinum RTD (Resistance Temperature Detector)
Mode:	Absolute, Gauge and Differential
Parameters:	U_i = 55 V I_i = 250 mA P_i = 1.0 W C_i = 16.5 nF (The value of Ci includes the capacitance of the integral cable.) L_i = 150 µH
Example model numbers:	IS-HKL/T-1-235 Series IS-HKL/T-312 Series IS-HKL-T-375 Series Other Kulite Models complying with the Type V design specification may be included

Variation 1 - This variation introduced the following changes:

i. The addition of the letters IS into the model numbers to clearly identify those units that are manufactured to the intrinsically safe standards.
ii. The introduction of the following products into the list of Type II compliant model numbers.

PT213A Series (unamplified) PT2000A Series (unamplified)

Variation 2 - This variation introduced the following change:

i. The introduction of the following products into the list of Type I compliant model numbers:
IS-EPS-XXX-100 Series
IS-TC-1500 Series
IS-APTE-DC-XXX Series
IS-ETL-XXX-190 & 312 & 375 Series
IS-ETLR Series

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Variation 3 - This variation introduced the following change:

i. An input parameter, Ii = 200 mA, was added to the list of parameters for the Type I, II and III transducers; the Description of Equipment was amended accordingly.

Variation 4 - This variation introduced the following changes:

i. The minimum ambient temperature was reduced from –40°C to –60°C.
ii. The additional coding of EEx ia IIC T3 (-60°C to +125°C).

Variation 5 - This variation introduced the following change:

i. The removal of the UK manufacturing site from the certificate.

Variation 6 - This variation introduced the following changes:

i. Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 series of standards, the documents originally listed in section 9, EN 50014:1997, EN 50020:1994 and EN 50284:1999, were replaced by those currently listed, the markings in section 12 were updated accordingly and the conditions were modified to recognise the requirements of the latest standards.
ii. Example model numbers were included in the Description of Equipment.

Variation 7 - This variation introduced the following change:

ii. The additional coding of Ex ia IIC T2 (-60°C to +230°C).

Variation 8 - This variation introduced the following change:

i. The introduction of a Type IV and a Type V Transducers, the Description of Equipment was modified to recognise these models.

Variation 9 - This variation introduced the following changes:

i. The input current (Ii) for all Type I to Type V Transducers was increased from 200 mA to 250 mA, all other parameters remain unchanged. The description was amended accordingly.
ii. The introduction of the IS-ETM-XXX-500 series products into the list of Type I compliant model numbers, these were added to the description.
iii. The introduction of the IS-HEM-XXX-500 series products into the list of Type II compliant model numbers, these were added to the description.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report No.	Comment
0	14 April 2000	R52X6300A	The release of the prime certificate.
1	28 July 2000	52V7119	The introduction of Variation 1.
2	5 June 2003	52V10270	The introduction of Variation 2.

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Issue	Date	Report No.	Comment
3	11 April 2007	R52A16163A	This Issue covers the following changes: • All previously issued certification were rationalised into a single certificate Issue 3, Issues 0 to 2 referenced above are only intended to reflect the history of the previous certification and have not been issued as actual documents. • The introduction of Variation 3.
4	20 August 2007	R52A16725A	The introduction of Variation 4.
5	31 December 2008	R52A15022A	The introduction of Variation 5.
6	24 November 2009	R20026A	The introduction of Variation 6.
7	20 May 2010	R21572A/00	The introduction of Variation 7.
8	27 September 2013	R29896A/00	The introduction of Variation 8.
9	20 July 2015	R70030789A	The introduction of Variation 9.

15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)

None

16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

17 **CONDITIONS OF CERTIFICATION**

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

17.3 A test voltage of 500 Vrms in accordance with clause 10.3 of EN 60079-11:2007 shall be applied between the intrinsically safe circuit of the transducer and its enclosure. The test voltage shall be increased steadily to the specified value in a period of not less than 10 s and then maintained for at least 60 s. During this period no breakdown or current in excess of 5mA shall be observed.

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Certificate Annexe

Certificate Number: **Sira 99ATEX2203**

Equipment: **A Range of Amplified and Passive Pressure Sensors**

Applicant: **Kulite Semiconductor Products Inc.**

Issue 0

Number	Sheet	Rev.	Date	Description
230-A-45528	1 of 1	E	27 Mar 00	Type I Pressure Transducer Description And Compliant Models
220-B-45529	1 of 1	C	27 Mar 00	Kulite Pressure Transducer Type I - Assembly
230-A-45530	1 of 1	C	27 Mar 00	Parts List Kulite Pressure Transducer Type I
230-A-45536	1 of 1	C	27 Mar 00	Type II Pressure Transducer Description And Compliant Models
220-B-45537	1 of 1	B	27 Mar 00	Kulite Pressure Transducer Type II - Assembly
230-A-45538	1 of 1	B	27 Mar 00	Parts List Kulite Pressure Transducer Type II
820-B-45539	1 of 1	B	27 Mar 00	Typical Compensation Board Assembly & Wiring Diagram For Type II
820-B-45534	1 of 1	B	27 Mar 00	Typical Compensation Board Assembly & Wiring Diagram For Type I
220-B-45531	1 of 1	-	27 Mar 00	Sensor Capsule Sub-Assembly
230-A-45540	1 of 1	-	27 Mar 00	Type III Pressure Transducer Description And Compliant Models
230-A-45542	1 of 1	-	27 Mar 00	Kulite Pressure Transducer Type III
220-B-45541	1 of 1	-	27 Mar 00	Kulite Pressure Transducer Type III - Assembly
820-B-45543	1 of 1	-	27 Mar 00	Typical Compensation Board Assy. & Wiring Diagram
220-B-45545	1 of 1	-	27 Mar 00	Type III Pressure Transducer Assembly – Leadless Construction
230-A-45544	1 of 1	C	27 Mar 00	Marking Of Intrinsically Safe Kulite Pressure Transducers

Issue 1

Number	Sheet	Rev.	Date	Description
230-A-45528	1 of 1	F	27 Jun 00	Type I Pressure Transducer Description and Compliant Models
230-A-45536	1 of 1	D	27 Jun 00	Type II Pressure Transducer Description and Compliant Models
230-A-45540	1 of 1	A	27 Jun 00	Type III Pressure Transducer Description and Compliant Models

Issue 2

Number	Sheet	Rev.	Date	Description
230-A-45528	1 of 1	G	31 Dec 02	Type I Pressure Transducer Description and Compliant Models

Issue 3 No drawings were introduced.

Issue 4

Number	Sheet	Rev.	Date	Description
230-A-45544	1 of 1	D	12 Jul 07	Marking of intrinsically safe Kulite pressure transducers

Issue 5 No drawings were introduced.

Issue 6

Number	Sheet	Rev.	Date	Description
230-A-45528	1 of 1	H	02 Nov 09	Type I Pressure Transducer
230-A-45536	1 of 1	E	02 Nov 09	Type II Pressure Transducer
230-A-45540	1 of 1	B	02 Nov 09	Type III Pressure Transducer
230-A-45544	1 of 1	E	02 Nov 09	Marking of IS Kulite Pressure Transducers

Issue 7

Number	Sheet	Rev.	Date	Description
230-A-45544	1 of 1	F	05 May 10	Marking of intrinsically safe Kulite pressure transducers

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Certificate Annexe

Certificate Number: **Sira 99ATEX2203**

Equipment: **A Range of Amplified and Passive Pressure Sensors**

Applicant: **Kulite Semiconductor Products Inc.**

Issue 8

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
230-A-82231	1 of 1	-	27 Sep 13	Type IV – Combined pressure & temperature transducer
230-A-82233	1 of 1	-	27 Sep 13	Type V – Combined pressure & temperature transducer
230-A-82230	1 of 1	-	27 Sep 13	Marking of combined P & T transducer - ATEX

Issue 9

Drawing	Sheets	Rev.	Date (Sira stamp)	Description
230-A-45528	1 of 1	J	13 Jul 15	Type I Pressure Transducer
230-A-45536	1 of 1	F	13 Jul 15	Type II Pressure Transducer
230-A-45540	1 of 1	C	13 Jul 15	Type III Pressure Transducer
230-A-82231	1 of 1	A	13 Jul 15	Type IV – Combined pressure & temperature transducer
230-A-82233	1 of 1	A	13 Jul 15	Type V – Combined pressure & temperature transducer

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