کمیته ملی برق و الکترونیک ایران

Iranian National Electrotechnical Committee

نشست آشنایی با ساختار کمیته فنی INEC TC 47

متناظر با IEC/TC 47

"Semiconductor devices"

«وسایل نیمه‌هادی»

مکان: جلسه مجازی (سامانه جلسات آنلاین سازمان)

1399/8/25

«بسمه تعالی»

کمیته ملی برق و الکترونیک ایران (INEC)

دستور کار: نشست آشنایی با ساختار کمیته فنی **INEC TC 47**

زمان: روز یکشنبه مورخ 1399/8/25 از ساعت 10:00 الی 12:00

مکان: جلسه مجازی (لینک جهت شرکت در جلسه: https://vmeeting.ipm.ir/b/isi-f7g-ef2)

ردیف	ساعت	موضوع
1	10 الی 10:10	**تلاوت قرآن مجید**
2	10:10 الی 10:30	**خوشامدگویی**
3	10:30 الی 11:30	**الف- اهداف، وظایف، ساختار و فعالیت‌های سازمان بین‌المللی الکتروتکنیک (IEC) و کمیته ملی برق و الکترونیک ایران (INEC)** **ب- ساختار و فعالیت‌های کمیته فنی IEC TC 47**
4	11:30 الی 11:45	**معرفی رئیس و دبیر کمیته فنی متناظر INEC TC 47**
5	11:45 الی 12	**پرسش و پاسخ**

TC 47 at a glance

Committees and Subcommittees	Title	Publication	Work programme	Membership NO.
TC 47	Semiconductor devices	125	20	36
SC 47A	Integrated circuits	86	8	34
SC 47D	Semiconductor devices packaging	58	6	27
SC 47E	Discrete semiconductor devices	55	14	23
SC 47F	Micro-electromechanical systems	36	4	27

Iranian national standards which developed according to the standards of this technical committee are available in Iranian National Standardization Organization website.

TC 47 Semiconductor devices

Scope of TC 47

To prepare international standards for the design, manufacture, use and reuse of discrete semiconductor devices, integrated circuits, display devices, sensors, electronic component assemblies, interface requirements, and microelectromechanical devices, using environmentally sound practices.

Activities include wafer level reliability, package outlines, terms and definitions, quality issues, physical environmental testing, device specific test methods, device specifications and minimum content, pinouts, interface requirements, and applications.

Excluded from the scope are:

- Passive integrated circuits or networking containing resistors and capacitators or their combination (TC 40).

- Systems of photovoltaic conversion and all the elements in the entire photovoltaic energy system (TC 82)

- Devices covered by the scope of TC 22, TC 86 and JTC1.

- Discrete/integrated optoelectronic semiconductor devices for fiber optic telecommunications including hybrid modules (TC86).

Officers of TC 47

Chair	Mr Bob Mitchell (US)
Secretary	Mr Cheolung Cha (KR)
Assistant Secretary	Mr Deok-kee Kim (KR)
Assistant Secretary	Mr Namsu Kim (KR)

Central Office Contacts IEC Central Office Contacts

Technical Officer	Ms Suzanne Yap
Standards Project Administrator	Ms Poh Luan Teo
Editor	Ms Esther Monnet

TC Subcommittee(s) and/ or Working Group(s)

Label	Title
Subcommittees	
SC 47A	Integrated circuits
SC 47D	Semiconductor devices packaging
SC 47E	Discrete semiconductor devices
SC 47F	Micro-electromechanical systems
Working Groups	
Label	**Title**
WG 1	Terminology
WG 2	Climatic and mechanical tests
WG 5	Wafer Level Reliability for semiconductor devices
WG 6	Incubating Working Group
WG 7	Semiconductor devices for energy conversion and transfer

TC 47 Memberships

Row NO.	Country	Country Code	P/O Status	IEC Membership
1	Austria	AT	P-Member	Full Member
2	Belarus	BY	O-Member	Full Member
3	Belgium	BE	P-Member	Full Member
4	Brazil	BR	O-Member	Full Member
5	Bulgaria	BG	O-Member	Full Member
6	China	CN	P-Member	Full Member
7	Czech Republic	CZ	O-Member	Full Member
8	Denmark	DK	O-Member	Full Member
9	Finland	FI	O-Member	Full Member
10	France	FR	P-Member	Full Member
11	Germany	DE	P-Member	Full Member
12	Hungary	HU	O-Member	Full Member
13	India	IN	O-Member	Full Member
14	Iran	IR	O-Member	Full Member
15	Ireland	IE	O-Member	Full Member
16	Israel	IL	P-Member	Full Member
17	Italy	IT	P-Member	Full Member
18	Japan	JP	P-Member	Full Member
19	Republic of Korea	KR	P-Member	Full Member
20	Netherlands	NL	P-Member	Full Member
21	Norway	NO	O-Member	Full Member
22	Pakistan	PK	P-Member	Full Member
23	Philippines, Rep. of the	PH	O-Member	Full Member
24	Poland	PL	O-Member	Full Member
25	Romania	RO	O-Member	Full Member

Row NO.	Country	Country Code	P/O Status	IEC Membership
26	Russian Federation	RU	P-Member	Full Member
27	Serbia	RS	O-Member	Full Member
28	Singapore	SG	P-Member	Full Member
29	Spain	ES	O-Member	Full Member
30	Sweden	SE	O-Member	Full Member
31	Switzerland	CH	O-Member	Full Member
32	Thailand	TH	O-Member	Full Member
33	Turkey	TR	O-Member	Full Member
34	Ukraine	UA	O-Member	Full Member
35	United Kingdom	GB	P-Member	Full Member
36	United States of America	US	P-Member	Full Member

TC 47 Liaisons

Committee	Description
Internal IEC Liaison	
TC 56	Dependability
TC 91	Electronics assembly technology
TC 101	Electrostatics
TC 107	Process management for avionics
TC 110	Electronic displays
TC 111	Environmental standardization for electrical and electronic products and systems
TC 113	Nanotechnology for electrotechnical products and systems
TC 119	Printed Electronics
TC 124	Wearable electronic devices and technologies
Liaison ISO	
ISO/TC/22/SC31	Data communication

TC 47 Working Groups Liaisons

Working Groups	Description
Liaison C	
WG 1	Terminology
WG 2	Climatic and mechanical tests
WG 5	Wafer Level Reliability for semiconductor devices

TC 47 Publications

Row NO.	Reference, Edition, Date, Title		Row NO.	Reference, Edition, Date, Title
1	IEC 60747-1:2006+AMD1:2010 CSV Edition 2.1 (2010-08-23) Semiconductor devices - Part 1: General		8	IEC 60749-2:2002/COR1:2003 Edition 1.0 (2003-08-12) Corrigendum 1 - Semiconductor devices - Mechanical and climatic test methods - Part 2: Low air pressure
2	IEC 60747-1:2006 Edition 2.0 (2006-02-21) Semiconductor devices - Part 1: General		9	IEC 60749-3:2017 Edition 2.0 (2017-03-03) Semiconductor devices - Mechanical and climatic test methods - Part 3: External visual examination
3	IEC 60747-1:2006/COR1:2008 Edition 2.0 (2008-09-08) Corrigendum 1 - Semiconductor devices - Part 1: General		10	IEC 60749-4:2017 Edition 2.0 (2017-03-03) Semiconductor devices - Mechanical and climatic test methods - Part 4: Damp heat, steady state, highly accelerated stress test (HAST)
4	IEC 60747-1:2006/AMD1:2010 Edition 2.0 (2010-05-19) Amendment 1 - Semiconductor devices - Part 1: General		11	IEC 60749-5:2017 Edition 2.0 (2017-04-10) Semiconductor devices - Mechanical and climatic test methods - Part 5: Steady-state temperature humidity bias life test
5	IEC 60749-1:2002 Edition 1.0 (2002-08-30) Semiconductor devices - Mechanical and climatic test methods - Part 1: General		12	IEC 60749-6:2017 Edition 2.0 (2017-03-03) Semiconductor devices - Mechanical and climatic test methods - Part 6: Storage at high temperature
6	IEC 60749-1:2002/COR1:2003 Edition 1.0 (2003-08-12) Corrigendum 1 - Semiconductor devices - Mechanical and climatic test methods - Part 1: General		13	IEC 60749-7:2011 Edition 2.0 (2011-06-17) Semiconductor devices - Mechanical and climatic test methods - Part 7: Internal moisture content measurement and the analysis of other residual gases
7	IEC 60749-2:2002 Edition 1.0 (2002-04-12) Semiconductor devices - Mechanical and climatic test methods - Part 2: Low air pressure		14	IEC 60749-8:2002 Edition 1.0 (2002-08-30) Semiconductor devices - Mechanical and climatic test methods - Part 8: Sealing

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15	IEC 60749-8:2002/COR1:2003 Edition 1.0 (2003-04-23) Corrigendum 1 - Semiconductor devices - Mechanical and climatic test methods - Part 8: Sealing		22	IEC 60749-11:2002/COR2:2003 Edition 1.0 (2003-08-13) Corrigendum 2 - Semiconductor devices - Mechanical and climatic test methods - Part 11: Rapid change of temperature - Two-fluid-bath method
16	IEC 60749-8:2002/COR2:2003 Edition 1.0 (2003-08-12) Corrigendum 2 - Semiconductor devices - Mechanical and climatic test methods - Part 8: Sealing		23	IEC 60749-12:2017 Edition 2.0 (2017-12-13) Semiconductor devices - Mechanical and climatic test methods - Part 12: Vibration, variable frequency
17	IEC 60749-9:2017 Edition 2.0 (2017-03-03) Semiconductor devices - Mechanical and climatic test methods - Part 9: Permanence of marking		24	IEC 60749-13:2018 Edition 2.0 (2018-02-15) Semiconductor devices - Mechanical and climatic test methods - Part 13: Salt atmosphere
18	IEC 60749-10:2002 Edition 1.0 (2002-04-09) Semiconductor devices - Mechanical and climatic test methods - Part 10: Mechanical shock		25	IEC 60749-14:2003 Edition 1.0 (2003-08-07) Semiconductor devices - Mechanical and climatic test methods - Part 14: Robustness of terminations (lead integrity)
19	IEC 60749-10:2002/COR1:2003 Edition 1.0 (2003-08-13) Corrigendum 1 - Semiconductor devices - Mechanical and climatic test methods - Part 10: Mechanical shock		26	IEC 60749-15:2020 Edition 3.0 (2020-07-14) Semiconductor devices - Mechanical and climatic test methods - Part 15: Resistance to soldering temperature for through-hole mounted devices
20	IEC 60749-11:2002 Edition 1.0 (2002-04-12) Semiconductor devices - Mechanical and climatic test methods - Part 11: Rapid change of temperature - Two-fluid-bath method		27	IEC 60749-15:2020 RLV Edition 3.0 (2020-07-14) Semiconductor devices - Mechanical and climatic test methods - Part 15: Resistance to soldering temperature for through-hole mounted devices
21	IEC 60749-11:2002/COR1:2003 Edition 1.0 (2003-01-30) Corrigendum 1 - Semiconductor devices - Mechanical and climatic test methods - Part 11: Rapid change of temperature - Two-fluid-bath method		28	IEC 60749-16:2003 Edition 1.0 (2003-01-17) Semiconductor devices - Mechanical and climatic test methods - Part 16: Particle impact noise detection (PIND

Row NO.	Reference, Edition, Date, Title		Row NO.	Reference, Edition, Date, Title
29	IEC 60749-17:2019 Edition 2.0 (2019-03-28) Semiconductor devices - Mechanical and climatic test methods - Part 17: Neutron irradiation		36	IEC 60749-20:2020 RLV Edition 3.0 (2020-08-31) Semiconductor devices - Mechanical and climatic test methods - Part 20: Resistance of plastic encapsulated SMDs to the combined effect of moisture and soldering hea
30	IEC 60749-18:2019 Edition 2.0 (2019-04-10) Semiconductor devices - Mechanical and climatic test methods - Part 18: Ionizing radiation (total dose)		37	IEC 60749-20-1:2019 RLV Edition 2.0 (2019-06-26) Semiconductor devices - Mechanical and climatic test methods - Part 20-1: Handling, packing, labelling and shipping of surface-mount devices sensitive to the combined effect of moisture and soldering heat
31	IEC 60749-18:2019 RLV Edition 2.0 (2019-04-10) Semiconductor devices - Mechanical and climatic test methods - Part 18: Ionizing radiation (total dose)		38	IEC 60749-20-1:2019 Edition 2.0 (2019-06-26) Semiconductor devices - Mechanical and climatic test methods - Part 20-1: Handling, packing, labelling and shipping of surface-mount devices sensitive to the combined effect of moisture and soldering heat
32	IEC 60749-19:2003+AMD1:2010 CSV Edition 1.1 (2010-11-29) Semiconductor devices - Mechanical and climatic test methods - Part 19: Die shear strength		39	IEC 60749-21:2011 Edition 2.0 (2011-04-07) Semiconductor devices - Mechanical and climatic test methods - Part 21: Solderability
33	IEC 60749-19:2003 Edition 1.0 (2003-02-13) Semiconductor devices - Mechanical and climatic test methods - Part 19: Die shear strength		40	IEC 60749-22:2002 Edition 1.0 (2002-09-12) Semiconductor devices - Mechanical and climatic test methods - Part 22: Bond strength
34	IEC 60749-19:2003/AMD1:2010 Edition 1.0 (2010-07-28) Amendment 1 - Semiconductor devices - Mechanical and climatic test methods - Part 19: Die shear strength		41	IEC 60749-22:2002/COR1:2003 Edition 1.0 (2003-08-13) Corrigendum 1 - Semiconductor devices - Mechanical and climatic test methods - Part 22: Bond strength
35	IEC 60749-20:2020 Edition 3.0 (2020-08-31) Semiconductor devices - Mechanical and climatic test methods - Part 20: Resistance of plastic encapsulated SMDs to the combined effect of moisture and soldering heat		42	IEC 60749-23:2004+AMD1:2011 CSV Edition 1.1 (2011-03-30) Semiconductor devices - Mechanical and climatic test methods - Part 23: High temperature operating life

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43	IEC 60749-23:2004 Edition 1.0 (2004-02-23) Semiconductor devices - Mechanical and climatic test methods - Part 23: High temperature operating life		49	IEC 60749-27:2006 Edition 2.0 (2006-07-18) Semiconductor devices - Mechanical and climatic test methods - Part 27: Electrostatic discharge (ESD) sensitivity testing - Machine model (MM)
44	IEC 60749-23:2004/AMD1:2011 Edition 1.0 (2011-01-27) Amendment 1 - Semiconductor devices - Mechanical and climatic test methods - Part 23: High temperature operating life		50	IEC 60749-27:2006/AMD1:2012 Edition 2.0 (2012-09-25) Amendment 1 - Semiconductor devices - Mechanical and climatic test methods - Part 27: Electrostatic discharge (ESD) sensitivity testing - Machine model (MM)
45	IEC 60749-24:2004 Edition 1.0 (2004-03-09) Semiconductor devices - Mechanical and climatic test methods - Part 24: Accelerated moisture resistance - Unbiased HAST		51	IEC 60749-28:2017 Edition 1.0 (2017-03-28) Semiconductor devices - Mechanical and climatic test methods - Part 28: Electrostatic discharge (ESD) sensitivity testing - Charged device model (CDM) - device level
46	IEC 60749-25:2003 Edition 1.0 (2003-07-11) Semiconductor devices - Mechanical and climatic test methods - Part 25: Temperature cycling		52	IEC 60749-29:2011 Edition 2.0 (2011-04-07) Semiconductor devices - Mechanical and climatic test methods - Part 29: Latch-up test
47	IEC 60749-26:2018 Edition 4.0 (2018-01-15) Semiconductor devices - Mechanical and climatic test methods - Part 26: Electrostatic discharge (ESD) sensitivity testing - Human body model (HBM)		53	IEC 60749-30:2020 Edition 2.0 (2020-08-17) Semiconductor devices - Mechanical and climatic test methods - Part 30: Preconditioning of non-hermetic surface mount devices prior to reliability testing
48	IEC 60749-27:2006+AMD1:2012 CSV Edition 2.1 (2012-09-25) Semiconductor devices - Mechanical and climatic test methods - Part27: Electrostatic discharge (ESD) sensitivity testing - Machine model (MM)		54	IEC 60749-30:2020 RLV Edition 2.0 (2020-08-17) Semiconductor devices - Mechanical and climatic test methods - Part 30: Preconditioning of non-hermetic surface mount devices prior to reliability testing

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55	IEC 60749-31:2002 Edition 1.0 (2002-08-30) Semiconductor devices - Mechanical and climatic test methods - Part 31: Flammability of plastic-encapsulated devices (internally induced)		62	IEC 60749-33:2004 Edition 1.0 (2004-03-09) Semiconductor devices - Mechanical and climatic test methods - Part 33: Accelerated moisture resistance - Unbiased autoclave
56	IEC 60749-31:2002/COR1:2003 Edition 1.0 (2003-08-13) Corrigendum 1 - Semiconductor devices - Mechanical and climatic test methods - Part 31: Flammability of plastic-encapsulated devices (internally induced)		63	IEC 60749-34:2010 Edition 2.0 (2010-10-28) Semiconductor devices - Mechanical and climatic test methods - Part 34: Power cycling
57	IEC 60749-32:2002+AMD1:2010 CSV Edition 1.1 (2010-11-29) Semiconductor devices - Mechanical and climatic test methods - Part 32: Flammability of plastic-encapsulated devices (externally induced)		64	IEC 60749-35:2006 Edition 1.0 (2006-07-18) Semiconductor devices - Mechanical and climatic test methods - Part 35: Acoustic microscopy for plastic encapsulated electronic components
58	IEC 60749-32:2002/AMD1:2010 Edition 1.0 (2010-07-28) Amendment 1 - Semiconductor devices - Mechanical and climatic test methods - Part 32: Flammability of plastic-encapsulated devices (externally induced)		65	IEC 60749-36:2003 Edition 1.0 (2003-02-13) Semiconductor devices - Mechanical and climatic test methods - Part 36: Acceleration, steady state
59	IEC 60749-32:2002 Edition 1.0 (2002-08-30) Semiconductor devices - Mechanical and climatic test methods - Part 32: Flammability of plastic-encapsulated devices (externally induced)		66	IEC 60749-37:2008 Edition 1.0 (2008-01-30) Semiconductor devices - Mechanical and climatic test methods - Part 37: Board level drop test method using an accelerometer
60	IEC 60749-32:2002/COR1:2003 Edition 1.0 (2003-08-13) Corrigendum 1 - Semiconductor devices - Mechanical and climatic test methods - Part 32: Flammability of plastic-encapsulated devices (externally induced)		67	IEC 60749-38:2008 Edition 1.0 (2008-02-12) Semiconductor devices - Mechanical and climatic test methods - Part 38: Soft error test method for semiconductor devices with memory
61	IEC 60749-32:2002/AMD1:2010 Edition 1.0 (2010-07-28) Amendment 1 - Semiconductor devices - Mechanical and climatic test methods - Part 32: Flammability of plastic-encapsulated devices (externally induced)		68	IEC 60749-39:2006 Edition 1.0 (2006-07-24) iconductor devices - Mechanical and climatic test methods - Part 39: Measurement of moisture diffusivity and water solubility in organic materials used for semiconductor components

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69	IEC 60749-40:2011 Edition 1.0 (2011-07-13) Semiconductor devices - Mechanical and climatic test methods - Part 40: Board level drop test method using a strain gauge		77	IEC TR 62258-3:2010 Edition 2.0 (2010-08-06) Semiconductor die products - Part 3: Recommendations for good practice in handling, packing and storage
70	IEC 60749-41:2020 Edition 1.0 (2020-07-22) Semiconductor devices - Mechanical and climatic test methods - Part 41: Standard reliability testing methods of non-volatile memory devices		78	IEC TR 62258-4:2012 Edition 2.0 (2012-08-08) Semiconductor die products - Part 4: Questionnaire for die users and suppliers
71	IEC 60749-42:2014 Edition 1.0 (2014-08-12) Semiconductor devices - Mechanical and climatic test methods - Part 42: Temperature and humidity storage		79	IEC 62258-5:2006 Edition 1.0 (2006-08-29) Semiconductor die products - Part 5: Requirements for information concerning electrical simulation
72	IEC 60749-43:2017 Edition 1.0 (2017-06-15) Semiconductor devices - Mechanical and climatic test methods - Part 43: Guidelines for IC reliability qualification plans		80	IEC 62258-6:2006 Edition 1.0 (2006-08-28) Semiconductor die products - Part 6: Requirements for information concerning thermal simulation
73	IEC 60749-44:2016 Edition 1.0 (2016-07-21) Semiconductor devices - Mechanical and climatic test methods - Part 44: Neutron beam irradiated single event effect (SEE) test method for semiconductor devices		81	IEC TR 62258-7:2007 Edition 1.0 (2007-08-23) Semiconductor die products - Part 7: XML schema for data exchange
74	IEC 62047-28:2017 Edition 1.0 (2017-01-20) Semiconductor devices - Micro-electromechanical devices - Part 28: Performance testing method of vibration-driven MEMS electret energy harvesting devices		82	IEC TR 62258-8:2008 Edition 1.0 (2008-05-14) Semiconductor die products - Part 8: EXPRESS model schema for data exchange
75	IEC 62258-1:2009 Edition 2.0 (2009-04-07) Semiconductor die products - Part 1: Procurement and use		83	IEC 62373:2006 Edition 1.0 (2006-07-18) Bias-temperature stability test for metal-oxide, semiconductor, field-effect transistors (MOSFET)
76	IEC 62258-2:2011 Edition 2.0 (2011-05-25) Semiconductor die products - Part 2: Exchange data formats		84	IEC 62373-1:2020 Edition 1.0 (2020-07-15) Semiconductor devices - Bias-temperature stability test for metal-oxide, semiconductor, field-effect transistors (MOSFET) - Part 1: Fast BTI test for MOSFET

Row NO.	Reference, Edition, Date, Title		Row NO.	Reference, Edition, Date, Title
85	IEC 62374:2007 Edition 1.0 (2007-03-29) Semiconductor devices - Time dependent dielectric breakdown (TDDB) test for gate dielectric films		92	IEC 62435-3:2020 Edition 1.0 (2020-02-18) Electronic components - Long-term storage of electronic semiconductor devices - Part 3: Data
86	IEC 62374-1:2010 Edition 1.0 (2010-09-29) Semiconductor devices - Part 1: Time-dependent dielectric breakdown (TDDB) test for inter-metal layers		93	IEC 62435-4:2018 Edition 1.0 (2018-06-05) Electronic components - Long-term storage of electronic semiconductor devices - Part 4: Storage
87	IEC 62415:2010 Edition 1.0 (2010-05-19) Semiconductor devices - Constant current electromigration test		94	IEC 62435-5:2017 Edition 1.0 (2017-01-20) Electronic components - Long-term storage of electronic semiconductor devices - Part 5: Die and wafer devices
88	IEC 62416:2010 Edition 1.0 (2010-04-26) Semiconductor devices - Hot carrier test on MOS transistors		95	IEC 62435-6:2018 Edition 1.0 (2018-08-29) Electronic components - Long-term storage of electronic semiconductor devices - Part 6: Packaged or finished devices
89	IEC 62417:2010 Edition 1.0 (2010-04-22) Semiconductor devices - Mobile ion tests for metal-oxide semiconductor field effect transistors (MOSFETs		96	IEC 62435-7:2020 PRV Edition 1.0 (2020-10-09) Electronic components - Long-term storage of electronic semiconductor devices - Part 7: Micro-electromechanical devices
90	IEC 62418:2010 Edition 1.0 (2010-04-22) Semiconductor devices - Metallization stress void test		97	IEC 62435-8:2020 Edition 1.0 (2020-07-08) Electronic components - Long-term storage of electronic semiconductor devices - Part 8: Passive electronic devices
91	IEC 62435-1:2017 Edition 1.0 (2017-01-20) Electronic components - Long-term storage of electronic semiconductor devices - Part 1: General		98	IEC 62483:2013 Edition 1.0 (2013-09-25) Environmental acceptance requirements for tin whisker susceptibility of tin and tin alloy surface finishes on semiconductor devices
99	IEC 62435-2:2017 Edition 1.0 (2017-01-24) Electronic components - Long-term storage of electronic semiconductor devices - Part 2: Deterioration mechanisms		105	IEC 62615:2010 Edition 1.0 (2010-05-31) Electrostatic discharge sensitivity testing - Transmission line pulse (TLP) - Component level

Row NO.	Reference, Edition, Date, Title		Row NO.	Reference, Edition, Date, Title
100	IEC 62779-1:2016 Edition 1.0 (2016-02-18) Semiconductor devices - Semiconductor interface for human body communication - Part 1: General requirements		106	IEC 62830-3:2017 Edition 1.0 (2017-03-28) Semiconductor devices - Semiconductor devices for energy harvesting and generation - Part 3: Vibration based electromagnetic energy harvesting
101	IEC 62779-2:2016 Edition 1.0 (2016-02-18) Semiconductor devices - Semiconductor interface for human body communication - Part 2: Characterization of interfacing performances		107	IEC 62830-4:2019 Edition 1.0 (2019-02-27) Semiconductor devices - Semiconductor devices for energy harvesting and generation - Part 4: Test and evaluation methods for flexible piezoelectric energy harvesting devices
102	IEC 62779-3:2016 Edition 1.0 (2016-04-26) Semiconductor devices - Semiconductor interface for human body communication - Part 3: Functional type and its operational conditions		108	IEC 62830-6:2019 Edition 1.0 (2019-07-25) Semiconductor devices - Semiconductor devices for energy harvesting and generation - Part 6: Test and evaluation methods for vertical contact mode triboelectric energy harvesting devices
103	IEC 62779-4:2020 Edition 1.0 (2020-02-07) Semiconductor devices - Semiconductor interface for human body communication - Part 4: Capsule endoscope		108	IEC 62880-1:2017 Edition 1.0 (2017-08-23) Semiconductor devices - Stress migration test standard - Part 1: Copper stress migration test standard
104	IEC 62830-1:2017 Edition 1.0 (2017-03-03) Semiconductor devices - Semiconductor devices for energy harvesting and generation - Part 1: Vibration based piezoelectric energy harvesting		110	IEC 62951-1:2017 Edition 1.0 (2017-04-10) Semiconductor devices - Flexible and stretchable semiconductor devices - Part 1: Bending test method for conductive thin films on flexible substrates
105	IEC 62830-2:2017 Edition 1.0 (2017-01-20) Semiconductor devices - Semiconductor devices for energy harvesting and generation - Part 2: Thermo power based thermoelectric energy harvesting		117	IEC 62951-2:2019 Edition 1.0 (2019-04-17) Semiconductor devices - Flexible and stretchable semiconductor devices - Part 2: Evaluation method for electron mobility, sub-threshold swing and threshold voltage of flexible devices

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112	IEC 62951-3:2018 Edition 1.0 (2018-11-07) Semiconductor devices - Flexible and stretchable semiconductor devices - Part 3: Evaluation of thin film transistor characteristics on flexible substrates under bulging		120	IEC 62969-3:2018 Edition 1.0 (2018-05-07) Semiconductor devices - Semiconductor interface for automotive vehicles - Part 3: Shock driven piezoelectric energy harvesting for automotive vehicle sensors
113	IEC 62951-4:2019 Edition 1.0 (2019-02-27) Semiconductor devices - Flexible and stretchable semiconductor devices - Part 4: Fatigue evaluation for flexible conductive thin film on the substrate for flexible semiconductor devices		121	IEC 62969-4:2018 Edition 1.0 (2018-06-18) Semiconductor devices - Semiconductor interface for automotive vehicles - Part 4: Evaluation method of data interface for automotive vehicle sensors
114	IEC 62951-5:2019 Edition 1.0 (2019-02-27) Semiconductor devices - Flexible and stretchable semiconductor devices - Part 5: Test method for thermal characteristics of flexible materials		122	IEC 63068-1:2019 Edition 1.0 (2019-01-30) Semiconductor devices - Non-destructive recognition criteria of defects in silicon carbide homoepitaxial wafer for power devices - Part 1: Classification of defects
115	IEC 62951-6:2019 Edition 1.0 (2019-05-06) Semiconductor devices - Flexible and stretchable semiconductor devices - Part 6: Test method for sheet resistance of flexible conducting films		123	IEC 63068-2:2019 Edition 1.0 (2019-01-30) Semiconductor devices - Non-destructive recognition criteria of defects in silicon carbide homoepitaxial wafer for power devices - Part 2: Test method for defects using optical inspection
116	IEC 62951-7:2019 Edition 1.0 (2019-02-27) Semiconductor devices - Flexible and stretchable semiconductor devices - Part 7: Test method for characterizing the barrier performance of thin film encapsulation for flexible organic semiconductor		124	IEC 63068-3:2020 Edition 1.0 (2020-07-13) Semiconductor devices - Non-destructive recognition criteria of defects in silicon carbide homoepitaxial wafer for power devices - Part 3: Test method for defects using photoluminescence
117	IEC 62969-1:2017 Edition 1.0 (2017-12-13) Semiconductor devices - Semiconductor interface for automotive vehicles - Part 1: General requirements of power interface for automotive vehicle sensors		125	IEC TR 63133:2017 Edition 1.0 (2017-10-11) Semiconductor devices - Scan based ageing level estimation for semiconductor devices
118	IEC 62969-2:2018 Edition 1.0 (2018-03-08) Semiconductor devices - Semiconductor interface for automotive vehicles - Part 2: Efficiency evaluation methods of wireless power transmission using resonance for automotive vehicles sensors		6126	IEC 63150-1:2019 Edition 1.0 (2019-05-10) Semiconductor devices - Measurement and evaluation methods of kinetic energy harvesting devices under practical vibration environment - Part 1: Arbitrary and random mechanical vibrations

SC 47A Integrated circuits

Scope SC 47A

To prepare international standards for both semiconductor and hybrid integrated circuits, for electronic equipment and systems.

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30	Switzerland	CH	O-Member	Full Member
31	Turkey	TR	O-Member	Full Member
32	Ukraine	UA	O-Member	Full Member
33	United Kingdom	GB	P-Member	Full Member
34	United States of America	US	P-Member	Full Member

SC 47A Liaisons

Internal IEC Liaison	
Committee	**Description**
TC 40	Capacitors and resistors for electronic equipment
SC 47D	Semiconductor devices packaging
TC 91	Electronics assembly technology

SC 47A Publications

Row NO.	Reference, Edition, Date, Title	Row NO.	Reference, Edition, Date, Title
1	**IEC 60748-1:2002** Edition 2.0 (2002-05-08) Semiconductor devices - Integrated circuits - Part 1: General	7	**IEC 60748-2-1:1991** Edition 1.0 (1991-10-01) Semiconductor devices - Integrated circuits - Part 2-1: Digital integrated circuits - Blank detail specification for bipolar monolithic digital integrated circuit gates (excluding uncommitted logic arrays)
2	**IEC 60748-2:1997** Edition 2.0 (1997-12-22) Semiconductor devices - Integrated circuits - Part 2: Digital integrated circuits	8	**IEC 60748-2-5:1992** Edition 1.0 (1992-01-31) Semiconductor devices - Integrated circuits - Part 2: Digital integrated circuits - Section five: Blank detail specification for complementary MOS digital integrated circuits (series 4000 B and 4000 UB)
3	**IEC 60748-2-4:1992** Edition 1.0 (1992-01-30) Semiconductor devices - Integrated circuits - Part 2: Digital integrated circuits - Section four: Family specification for complementary MOS digital integrated circuits, series 4000 B and 4000 UB	9	**IEC 60748-2-2:1992/AMD1:1994** Edition 1.0 (1994-06-07) Amendment 1 - Semiconductor devices. Integrated circuits - Part 2: Digital integrated circuits - Section two: Family specification for HCMOS digital integrated circuits, series 54/74 HC, 54/74 HCT, 54/74 HCU
4	**IEC 60748-2-2:1992** Edition 1.0 (1992-02-29) Semiconductor devices. Integrated circuits - Part 2: Digital integrated circuits - Section two: Family specification for HCMOS digital integrated circuits, series 54/74 HC, 54/74 HCT, 54/74 HCU	10	**IEC 60748-2-3:1992** Edition 1.0 (1992-02-20) Semiconductor devices - Integrated circuits - Part 2: Digital integrated circuits - Section three: Blank detail specification for HCMOS digital integrated circuits (series 54/74 HC, 54/74 HCT, 54/74 HCU)
5	**IEC 60748-2-6:1991** Edition 1.0 (1991-11-15) Semiconductor devices. Integrated circuits - Part 2: Digital integrated circuits - Section Six: Blank detail specification for microprocessor integrated circuits	11	**IEC 60748-5:1997** Edition 1.0 (1997-05-30) Semiconductor devices - Integrated circuits - Part 5: Semicustom integrated circuits
6	**IEC 60748-2-7:1992** Edition 1.0 (1992-10-23) Semiconductor devices. Integrated circuits - Part 2: Digital integrated circuits - Section seven: Blank detail specification for integrated circuit fusible-link programmable bipolar read-only memories	12	**IEC 60748-11:1990** Edition 1.0 (1990-12-20) Semiconductor devices - Integrated circuits - Part 11: Sectional specification for semiconductor integrated circuits excluding hybrid circuits

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17	**IEC 60748-3:1986/AMD2:1994/COR1:1996** Edition 1.0 (1996-06-11) Corrigendum 1 to Amendment 2 - Semiconductor devices. Integrated circuits. Part 3: Analogue integrated circuits	24	**IEC 60748-2-20:2008** Edition 2.0 (2008-02-27) Semiconductor devices - Integrated circuits - Part 2-20: Digital integrated circuits - Family specification - Low voltage integrated circuits
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75	**IEC 62228-3:2019** Edition 1.0 (2019-03-11) Integrated circuits - EMC evaluation of transceivers - Part 3: CAN transceivers	83	**IEC 62433-2:2017** Edition 2.0 (2017-01-27) EMC IC modelling - Part 2: Models of integrated circuits for EMI behavioural simulation - Conducted emissions modelling (ICEM-CE)
76	**IEC TS 62404:2007** Edition 1.0 (2007-02-20) Logic digital integrated circuits - Specification for I/O interface model for integrated circuit (IMIC version 1.3)	84	**IEC TR 62433-2-1:2010** Edition 1.0 (2010-10-05) EMC IC modelling - Part 2-1: Theory of black box modelling for conducted emission
77	**IEC 62433-1:2019** Edition 1.0 (2019-03-08) EMC IC modelling - Part 1: General modelling framework	85	**IEC 62433-3:2017** Edition 1.0 (2017-01-27) EMC IC modelling - Part 3: Models of integrated circuits for EMI behavioural simulation - Radiated emissions modelling (ICEM-RE)
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79	**IEC 62433-4:2016** Edition 1.0 (2016-05-25) EMC IC modelling - Part 4: Models of integrated circuits for RF immunity behavioural simulation - Conducted immunity modelling (ICIM-CI)		

SC 47D Semiconductor devices packaging

SC 47D Scope

To prepare international standards on the mechanical and thermal aspects of semiconductor packages, package assembly technologies and measuring methods, including wafer level packaging.

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9	Germany	DE	P-Member	Full Member
10	Iran	IR	O-Member	Full Member
11	Italy	IT	O-Member	Full Member
12	Japan	JP	P-Member	Full Member
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14	Netherlands	NL	O-Member	Full Member
15	Pakistan	PK	P-Member	Full Member
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18	Romania	RO	O-Member	Full Member
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21	Spain	ES	O-Member	Full Member
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27	United States of America	US	P-Member	Full Member

SC 47D Liaisons

Committee	Description
Internal IEC Liaison	
SC 3D	Classes, Properties and Identification of products - Common Data Dictionary (CDD)
TC 40	Capacitors and resistors for electronic equipment
SC 47A	Integrated circuits
SC 65E	Devices and integration in enterprise systems
TC 91	Electronics assembly technology

SC 47D Working Groups Liaisons

Working Groups	Description
Liaison C	
WG 1	Package outlines
WG 2	Terms, definitions, measuring methods and related requirement for semiconductor devices packaging

SC 47D Publications

Row NO.	Reference, Edition, Date, Title		Row NO.	Reference, Edition, Date, Title
1	**IEC 60191-2:2012 DB** Edition 1.0 (2012-09-21) Mechanical standardization of semiconductor devices - Part 2: Dimensions		9	**IEC 60191-2:1966/AMD4:2001** Edition 1.0 (2001-11-27) Amendment 4 - Mechanical standardization of semiconductor devices - Part 2: Dimensions
2	**IEC 60191-1:2018** Edition 3.0 (2018-01-23) Mechanical standardization of semiconductor devices - Part 1: General rules for the preparation of outline drawings of discrete devices		10	**IEC 60191-2:1966/AMD5:2002** Edition 1.0 (2002-02-12) Amendment 5 - Mechanical standardization of semiconductor devices. Part 2: Dimensions
3	**IEC 60191-2:1966** Edition 1.0 (1966-01-01) Mechanical standardization of semiconductor devices. Part 2: Dimensions		11	**IEC 60191-2:1966/AMD6:2002** Edition 1.0 (2002-05-01) Amendment 6 - Mechanical standardization of semiconductor devices. Part 2: Dimensions
4	**IEC 60191-2:1966/AMD1:2001** Edition 1.0 (2001-03-15) Amendment 1 - Mechanical standardization of semiconductor devices - Part 2: Dimensions		12	**IEC 60191-2:1966/AMD7:2002** Edition 1.0 (2002-05-10) Amendment 7 - Mechanical standardization of semiconductor devices. Part 2: Dimensions
5	**IEC 60191-2:1966/AMD2:2001** Edition 1.0 (2001-06-20) Amendment 2 - Mechanical standardization of semiconductor devices - Part 2: Dimensions		13	**IEC 60191-2:1966/AMD8:2003** Edition 1.0 (2003-06-27) Amendment 8 - Mechanical standardization of semiconductor devices. Part 2: Dimensions
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8	**IEC 60191-2:1966/AMD11:2004** Edition 1.0 (2004-11-23) Amendment 11 - Mechanical standardization of semiconductor devices - Part 2: Dimensions		16	**IEC 60191-2:1966/AMD13:2006** Edition 1.0 (2006-07-17) Amendment 13 - Mechanical standardization of semiconductor devices - Part 2: Dimensions

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18	**IEC 60191-2:1966/AMD15:2006** Edition 1.0 (2006-07-17) Amendment 15 - Mechanical standardization of semiconductor devices - Part 2: Dimensions		25	**IEC 60191-4:2013/AMD1:2018** Edition 3.0 (2018-03-27) Amendment 1 - Mechanical standardization of semiconductor devices - Part 4: Coding system and classification into forms of package outlines for semiconductor device packages
19	**IEC 60191-2:1966/AMD16:2007** Edition 1.0 (2007-07-25) Amendment 16 - Mechanical standardization of semiconductor devices - Part 2: Dimensions		26	**IEC 60191-5:1997** Edition 2.0 (1997-04-23) Mechanical standardization of semiconductor devices - Part 5: Recommendations applying to integrated circuit packages using tape automated bonding (TAB)
20	**IEC 60191-2:1966/AMD17:2008** Edition 1.0 (2008-05-27) Amendment 17 - Mechanical standardization of semiconductor devices - Part 2: Dimensions		27	**IEC 60191-6:2009** Edition 3.0 (2009-11-26) Mechanical standardization of semiconductor devices - Part 6: General rules for the preparation of outline drawings of surface mounted semiconductor device packages
21	**IEC 60191-2:1966/AMD18:2011** Edition 1.0 (2011-11-22) Amendment 18 - Mechanical standardization of semiconductor devices - Part 2: Dimensions		28	**IEC 60191-6-1:2001** Edition 1.0 (2001-10-30) Mechanical standardization of semiconductor devices - Part 6-1: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Design guide for gull-wing lead terminals
22	**IEC 60191-2:1966/AMD19:2012** Edition 1.0 (2012-10-02) Amendment 19 - Mechanical standardization of semiconductor devices - Part 2: Dimensions		29	**IEC 60191-6-2:2001** Edition 1.0 (2001-12-11) Mechanical standardization of semiconductor devices - Part 6-2: General rules for the preparation of outline drawings of surface mounted semiconductor devices packages - Design guide for 1,50 mm, 1,27 mm and 1,00 mm pitch ball and column terminal packages
23	**IEC 60191-2:1966/AMD20:2018** Edition 1.0 (2018-04-12) Amendment 20 - Mechanical standardization of semiconductor devices - Part 2: Dimensions		30	**IEC 60191-2:1966/AMD21:2020** Edition 1.0 (2020-02-13) Amendment 21 - Mechanical standardization of semiconductor devices - Part 2: Dimensions

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31	**IEC 60191-6-2:2001/COR1:2002** Edition 1.0 (2002-10-18) Corrigendum 1 - Mechanical standardization of semiconductor devices - Part 6-2: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Design guide for 1,50 mm, 1,27 mm and 1,00 mm pitch ball and column terminal packages		37	**IEC 60191-3:1999** Edition 2.0 (1999-10-29) Mechanical standardization of semiconductor devices - Part 3: General rules for the preparation of outline drawings of integrated circuits
32	**IEC 60191-6-3:2000** Edition 1.0 (2000-09-29) Mechanical standardization of semiconductor devices - Part 6-3: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Measuring methods for package dimensions of quad flat packs (QFP)		38	**IEC 60191-6-4:2003** Edition 1.0 (2003-06-11) Mechanical standardization of semiconductor devices - Part 6-4: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Measuring methods for package dimensions of ball grid array (BGA)
33	**IEC 60191-4:2013+AMD1:2018 CSV** Edition 3.1 (2018-03-27) Mechanical standardization of semiconductor devices - Part 4: Coding system and classification into forms of package outlines for semiconductor device packages		39	**IEC 60191-6-5:2001** Edition 1.0 (2001-08-27) Mechanical standardization of semiconductor devices - Part 6-5: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Design guide for fine-pitch ball grid array (FBGA)
34	**IEC 60191-6-10:2003** Edition 1.0 (2003-11-19) Mechanical standardization of semiconductor devices - Part 6-10: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Dimensions of P-VSON		40	**IEC 60191-6-6:2001** Edition 1.0 (2001-03-22) Mechanical standardization of semiconductor devices - Part 6-6: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Design guide for fine pitch land grid array (FLGA)
35	**IEC 60191-6-12:2011** Edition 2.0 (2011-06-08) Mechanical standardization of semiconductor devices - Part 6-12: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Design guidelines for fine-pitch land grid array (FLGA)		41	**IEC 60191-6-8:2001** Edition 1.0 (2001-08-27) Mechanical standardization of semiconductor devices - Part 6-8: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Design guide for glass sealed ceramic quad flatpack (G-QFP)
36	**IEC 60191-6-13:2016** Edition 2.0 (2016-09-27) Mechanical standardization of semiconductor devices - Part 6-13: Design guideline of open-top-type sockets for Fine-pitch Ball Grid Array (FBGA) and Fine-pitch Land Grid Array (FLGA)		42	**IEC 60191-6-18:2010/COR1:2010** Edition 1.0 (2010-05-31) Corrigendum 1 - Mechanical stardardization of semiconductor devices - Part 6-18: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Design guide for ball grid array (BGA)

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43	**IEC 60191-6-16:2007** Edition 1.0 (2007-04-26) Mechanical standardization of semiconductor devices - Part 6-16: Glossary of semiconductor tests and burn-in sockets for BGA, LGA, FBGA and FLGA		49	**IEC 60191-6-18:2010/COR2:2010** Edition 1.0 (2010-07-28) Corrigendum 2 - Mechanical standardization of semiconductor devices - Part 6-18: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Design guide for ball grid array (BGA)
44	**IEC 60191-6-17:2011** Edition 1.0 (2011-01-27) Mechanical standardization of semiconductor devices - Part 6-17: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Design guide for stacked packages - Fine-pitch ball grid array and fine-pitch land grid array (P-PFBGA and P-PFLGA)		50	**IEC 60191-6-19:2010** Edition 1.0 (2010-02-25) Mechanical standardization of semiconductor devices - Part 6-19: Measurement methods of the package warpage at elevated temperature and the maximum permissible warpage
45	**IEC 60191-6-18:2010** Edition 1.0 (2010-01-07) Mechanical standardization of semiconductor devices - Part 6-18: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Design guide for ball grid array (BGA)		51	**IEC 60191-6-20:2010** Edition 1.0 (2010-08-30) Mechanical standardization of semiconductor devices - Part 6-20: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Measuring methods for package dimensions of small outline J-lead packages (SOJ)
46	**IEC 60191-6-22:2012** Edition 1.0 (2012-12-11) Mechanical standardization of semiconductor devices - Part 6-22: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Design guide for semiconductor packages Silicon Fine-pitch Ball Grid Array and Silicon Fine-pitch Land Grid Array (S-FBGA and S-FLGA)		52	**IEC 60191-6-21:2010** Edition 1.0 (2010-08-30) Mechanical standardization of semiconductor devices - Part 6-21: General rules for the preparation of outline drawings of surface mounted semiconductor device packages - Measuring methods for package dimensions of small outline packages (SOP)
47	**IEC 60191-2T:1996** Edition 1.0 (1996-12-20) Eighteenth supplement		53	**IEC 60191-2Y:2000** Edition 1.0 (2000-06-16) Twenty-third supplement - Mechanical standardization of semiconductor devices - Part 2: Dimensions
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55	**IEC 60191-2V:1998** Edition 1.0 (1998-12-22) Twentieth supplement		57	**IEC 60191-2W:1999** Edition 1.0 (1999-07-29) Twenty-first supplement
56	**IEC 60191-2X:1999** Edition 1.0 (1999-09-30) Mechanical standardization of semiconductor devices - Part 2: Dimensions		58	**IEC 60191-2X:1999/COR1:2000** Edition 1.0 (2000-01-31) Corrigendum 1 - Mechanical standardization of semiconductor devices - Part 2: Dimensions

SC 47E Discrete semiconductor devices

SC 47E Scope

To prepare international standards for environmentally sound practice in the design, manufacture, use and reuse of discrete semiconductor devices. This includes terms and definitions, letter symbols, essential ratings and characteristics, measuring methods, and specifications.

SC 47E Officers

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13	Japan	JP	P-Member	Full Member
14	Korea, Republic of	KR	P-Member	Full Member
15	Netherlands	NL	P-Member	Full Member
16	Poland	PL	O-Member	Full Member
17	Russian Federation	RU	P-Member	Full Member
18	Singapore	SG	P-Member	Full Member
19	Spain	ES	O-Member	Full Member
20	Sweden	SE	O-Member	Full Member
21	Switzerland	CH	P-Member	Full Member
22	United Kingdom	GB	P-Member	Full Member
23	United States of America	US	P-Member	Full Member

SC 47E Liaisons

Committee	Description
Internal IEC Liaison	
SC 34A	Electric light sources
TC 49	Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection
TC 91	Electronics assembly technology
TC 108	Safety of electronic equipment within the field of audio/video, information technology and communication technology
Liaison ISO	
ISO/TC 172/SC 9	Laser and electro-optical systems

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2	**IEC 60747-3:2013** Edition 2.0 (2013-07-09) Semiconductor devices - Part 3: Discrete devices: Signal, switching and regulator diodes		9	**IEC 60747-5-10:2019** Edition 1.0 (2019-12-11) Semiconductor devices - Part 5-10: Optoelectronic devices - Light emitting diodes - Test method of the internal quantum efficiency based on the room-temperature reference point
3	**IEC 60747-4:2007+AMD1:2017 CSV** Edition 2.1 (2017-01-30) Semiconductor devices - Discrete devices - Part 4: Microwave diodes and transistors		10	**IEC 60747-5-11:2019** Edition 1.0 (2019-12-11) Semiconductor devices - Part 5-11: Optoelectronic devices - Light emitting diodes - Test method of radiative and nonradiative currents of light emitting diodes
4	**IEC 60747-4:2007** Edition 2.0 (2007-08-23) Semiconductor devices - Discrete devices - Part 4: Microwave diodes and transistors		11	**IEC 60747-6:2016** Edition 3.0 (2016-04-13) Semiconductor devices - Part 6: Discrete devices - Thyristors
5	**IEC 60747-4:2007/AMD1:2017** Edition 2.0 (2017-01-30) Amendment 1 - Semiconductor devices - Discrete devices - Part 4: Microwave diodes and transistors		12	**IEC 60747-7:2010+AMD1:2019 CSV** Edition 3.1 (2019-09-23) Semiconductor devices - Discrete devices - Part 7: Bipolar transistors
6	**IEC 60747-5-4:2006** Edition 1.0 (2006-02-23) Semiconductor devices - Discrete devices - Part 5-4: Optoelectronic devices - Semiconductor lasers		13	**IEC 60747-7:2010** Edition 3.0 (2010-12-16) Semiconductor devices - Discrete devices - Part 7: Bipolar transistors
7	**IEC 60747-5-5:2020** Edition 2.0 (2020-07-20) Semiconductor devices - Part 5-5: Optoelectronic devices - Photocouplers		14	**IEC 60747-7:2010/AMD1:2019** Edition 3.0 (2019-09-23) Amendment 1 - Semiconductor devices - Discrete devices - Part 7: Bipolar transistors

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16	**IEC 60747-5-7:2016** Edition 1.0 (2016-02-23) Semiconductor devices - Part 5-7: Optoelectronic devices - Photodiodes and phototransistors		24	**IEC 60747-9:2019** Edition 3.0 (2019-11-13) Semiconductor devices - Part 9: Discrete devices - Insulated-gate bipolar transistors (IGBTs)
17	**IEC 60747-5-8:2019** Edition 1.0 (2019-11-13) Semiconductor devices - Part 5-8: Optoelectronic devices - Light emitting diodes - Test method of optoelectronic efficiencies of light emitting diodes		25	**IEC 60747-14-1:2010** Edition 2.0 (2010-01-21) Semiconductor devices - Part 14-1: Semiconductor sensors - Generic specification for sensors
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33	**IEC 60747-16-3:2002** Edition 1.0 (2002-05-07) Semiconductor devices - Part 16-3: Microwave integrated circuits - Frequency converters		41	**IEC 60747-16-2:2001** Edition 1.0 (2001-03-22) Semiconductor devices - Part 16-2: Microwave integrated circuits - Frequency prescalers
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35	**IEC 60747-16-3:2002/AMD2:2017** Edition 1.0 (2017-08-16) Amendment 2 - Semiconductor devices - Part 16-3: Microwave integrated circuits - Frequency converters		43	**IEC 60747-16-5:2013+AMD1:2020 CSV** Edition 1.1 (2020-07-14) Semiconductor devices - Part 16-5: Microwave integrated circuits - Oscillators
36	**IEC 60747-16-4:2004+AMD1:2009+AMD2:2017 CSV** Edition 1.2 (2017-08-16) Semiconductor devices - Part 16-4: Microwave integrated circuits - Switches		44	**IEC 60747-16-5:2013** Edition 1.0 (2013-06-19) Semiconductor devices - Part 16-5: Microwave integrated circuits - Oscillators
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38	**IEC 60747-16-4:2004** Edition 1.0 (2004-07-28) Semiconductor devices - Part 16-4: Microwave integrated circuits - Switches		46	**IEC 60747-16-5:2013/AMD1:2020/COR1:2020** Edition 1.0 (2020-09-03) Corrigendum 1 - Semiconductor devices - Part 16-5: Microwave integrated circuits - Oscillators

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47	**IEC 60747-16-4:2004/AMD1:2009** Edition 1.0 (2009-03-10) Amendment 1 - Semiconductor devices - Part 16-4: Microwave integrated circuits - Switches		52	**IEC 60747-16-6:2019** Edition 1.0 (2019-06-26) Semiconductor devices - Part 16-6: Microwave integrated circuits - Frequency multipliers
48	**IEC 60747-16-4:2004/AMD2:2017** Edition 1.0 (2017-08-16) Amendment 2 - Semiconductor devices - Part 16-4: Microwave integrated circuits - Switches		53	**IEC 60747-16-10:2004** Edition 1.0 (2004-07-15) Semiconductor devices - Part 16-10: Technology Approval Schedule (TAS) for monolithic microwave integrated circuits
49	**IEC 60747-18-2:2020** Edition 1.0 (2020-02-07) Semiconductor devices - Part 18-2: Semiconductor bio sensors - Evaluation process of lens-free CMOS photonic array sensor package modules		54	**IEC 60747-17:2020** Edition 1.0 (2020-09-21) Semiconductor devices - Part 17: Magnetic and capacitive coupler for basic and reinforced insulation
50	**IEC 60747-18-3:2019** Edition 1.0 (2019-12-11) Semiconductor devices - Part 18-3: Semiconductor bio sensors - Fluid flow characteristics of lens-free CMOS photonic array sensor package modules with fluidic system		55	**IEC 60747-18-1:2019** Edition 1.0 (2019-05-20) Semiconductor devices - Part 18-1: Semiconductor bio sensors - Test method and data analysis for calibration of lens-free CMOS photonic array sensors
51	**IEC 60747-19-1:2019** Edition 1.0 (2019-11-22) Semiconductor devices - Part 19-1: Smart sensors - Control scheme of smart sensors			

SC 47F Micro-electromechanical systems

SC 47F Scope

To prepare international standards for environmentally sound practice in the design, manufacture, use and reuse of micro-electromechanical systems. This includes terms and definitions, letter symbols, essential ratings and characteristics, measuring methods, reliability testing methods, and material testing method

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9	Italy	IT	O-Member	Full Member
10	Japan	JP	P-Member	Full Member
11	Korea, Republic of	KR	P-Member	Full Member
12	Netherlands	NL	O-Member	Full Member
13	Pakistan	PK	O-Member	Full Member
14	Poland	PL	O-Member	Full Member
15	Russian Federation	RU	P-Member	Full Member
16	Singapore	SG	P-Member	Full Member
17	Spain	ES	O-Member	Full Member
18	Sweden	SE	O-Member	Full Member
19	Switzerland	CH	O-Member	Full Member
20	United States of America	US	P-Member	Full Member

SC 47F Liaisons

Committee	**Description**
Internal IEC Liaison	
TC 49	Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection
TC 119	Printed Electronics

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Row NO.	Reference, Edition, Date, Title		Row NO.	Reference, Edition, Date, Title
1	**IEC 62047-1:2016** Edition 2.0 (2016-01-06) Semiconductor devices - Micro-electromechanical devices - Part 1: Terms and definitions		8	**IEC 62047-9:2011** Edition 1.0 (2011-07-13) Semiconductor devices - Micro-electromechanical devices - Part 9: Wafer to wafer bonding strength measurement for MEMS
2	**IEC 62047-2:2006** Edition 1.0 (2006-08-15) Semiconductor devices - Micro-electromechanical devices - Part 2: Tensile testing method of thin film materials		9	**IEC 62047-9:2011/COR1:2012** Edition 1.0 (2012-03-08) Corrigendum 1 - Semiconductor devices - Micro-electromechanical devices - Part 9: Wafer to wafer bonding strength measurement for MEMS
3	**IEC 62047-3:2006** Edition 1.0 (2006-08-15) Semiconductor devices - Micro-electromechanical devices - Part 3: Thin film standard test piece for tensile testing		10	**IEC 62047-10:2011** Edition 1.0 (2011-07-26) Semiconductor devices - Micro-electromechanical devices - Part 10: Micro-pillar compression test for MEMS materials
4	**IEC 62047-4:2008** Edition 1.0 (2008-08-21) Semiconductor devices - Micro-electromechanical devices - Part 4: Generic specification for MEMS		11	**IEC 62047-10:2011/COR1:2012** Edition 1.0 (2012-02-28) Corrigendum 1 - Semiconductor devices - Micro-electromechanical devices - Part 10: Micro-pillar compression test for MEMS materials
5	**IEC 62047-5:2011** Edition 1.0 (2011-07-13) Semiconductor devices - Micro-electromechanical devices - Part 5: RF MEMS switches		12	**IEC 62047-11:2013** Edition 1.0 (2013-07-17) Semiconductor devices - Micro-electromechanical devices - Part 11: Test method for coefficients of linear thermal expansion of free-standing materials for micro-electromechanical systems
6	**IEC 62047-5:2011/COR1:2012** Edition 1.0 (2012-03-08) Corrigendum 1 - Semiconductor devices - Micro-electromechanical devices - Part 5: RF MEMS switches		13	**IEC 62047-12:2011** Edition 1.0 (2011-09-13) Semiconductor devices - Micro-electromechanical devices - Part 12: Bending fatigue testing method of thin film materials using resonant vibration of MEMS structures
7	**IEC 62047-6:2009** Edition 1.0 (2009-04-07) Semiconductor devices - Micro-electromechanical devices - Part 6: Axial fatigue testing methods of thin film materials		14	**IEC 62047-13:2012** Edition 1.0 (2012-02-28) Semiconductor devices - Micro-electromechanical devices - Part 13: Bend - and shear - type test methods of measuring adhesive strength for MEMS structures

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15	**IEC 62047-7:2011** Edition 1.0 (2011-06-16) Semiconductor devices - Micro-electromechanical devices - Part 7: MEMS BAW filter and duplexer for radio frequency control and selection		22	**IEC 62047-14:2012** Edition 1.0 (2012-02-28) Semiconductor devices - Micro-electromechanical devices - Part 14: Forming limit measuring method of metallic film materials
16	**IEC 62047-8:2011** Edition 1.0 (2011-03-14) Semiconductor devices - Micro-electromechanical devices - Part 8: Strip bending test method for tensile property measurement of thin films		23	**IEC 62047-16:2015** Edition 1.0 (2015-03-05) Semiconductor devices - Micro-electromechanical devices - Part 16: Test methods for determining residual stresses of MEMS films - Wafer curvature and cantilever beam deflection methods
17	**IEC 62047-18:2013** Edition 1.0 (2013-07-17) Semiconductor devices - Micro-electromechanical devices - Part 18: Bend testing methods of thin film materials		24	**IEC 62047-17:2015** Edition 1.0 (2015-03-05) Semiconductor devices - Micro-electromechanical devices - Part 17: Bulge test method for measuring mechanical properties of thin films
18	**IEC 62047-19:2013** Edition 1.0 (2013-07-17) Semiconductor devices - Micro-electromechanical devices - Part 19: Electronic compasses		25	**IEC 62047-26:2016** Edition 1.0 (2016-01-07) Semiconductor devices - Micro-electromechanical devices - Part 26: Description and measurement methods for micro trench and needle structures
19	**IEC 62047-20:2014** Edition 1.0 (2014-06-26) Semiconductor devices - Micro-electromechanical devices - Part 20: Gyroscopes		26	**IEC 62047-27:2017** Edition 1.0 (2017-01-20) Semiconductor devices - Micro-electromechanical devices - Part 27: Bond strength test for glass frit bonded structures using micro-chevron-tests (MCT)
20	**IEC 62047-21:2014** Edition 1.0 (2014-06-19) Semiconductor devices - Micro-electromechanical devices - Part 21: Test method for Poisson's ratio of thin film MEMS materials		27	**IEC 62047-29:2017** Edition 1.0 (2017-11-22) Semiconductor devices - Micro-electromechanical devices - Part 29: Electromechanical relaxation test method for freestanding conductive thin-films under room temperature
21	**IEC 62047-22:2014** Edition 1.0 (2014-06-19) Semiconductor devices - Micro-electromechanical devices - Part 22: Electromechanical tensile test method for conductive thin films on flexible substrates		28	**IEC 62047-30:2017** Edition 1.0 (2017-09-15) Semiconductor devices - Micro-electromechanical devices - Part 30: Measurement methods of electro-mechanical conversion characteristics of MEMS piezoelectric thin film

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30	**IEC 62047-33:2019** Edition 1.0 (2019-04-05) Semiconductor devices - Micro-electromechanical devices - Part 33: MEMS piezoresistive pressure-sensitive device		34	**IEC 62047-32:2019** Edition 1.0 (2019-01-24) Semiconductor devices - Micro-electromechanical devices - Part 32: Test method for the nonlinear vibration of MEMS resonators
31	**IEC 62047-34:2019** Edition 1.0 (2019-04-05) Semiconductor devices - Micro-electromechanical devices - Part 34: Test methods for MEMS piezoresistive pressure-sensitive device on wafer		45	**IEC 62047-36:2019** Edition 1.0 (2019-04-05) Semiconductor devices - Micro-electromechanical devices - Part 36: Environmental and dielectric withstand test methods for MEMS piezoelectric thin films
32	**IEC 62047-35:2019** Edition 1.0 (2019-11-22) Semiconductor devices - Micro-electromechanical devices - Part 35: Test method of electrical characteristics under bending deformation for flexible electro-mechanical devices		36	**IEC 62047-37:2020** Edition 1.0 (2020-04-28) Semiconductor devices - Micro-electromechanical devices - Part 37: Environmental test methods of MEMS piezoelectric thin films for sensor application