

Product / Process Change Notification

2013-02-01

!! UPDATE !!

OS-PCN-2012-039-A1

Dear Customer,

the previous OS-PCN-2012-039-A now affects further types / other changes, please see next page.

Relocation of photodiode chip production *and introduction of additional chip source*

Important information for your attention:

- Please respond to this PCN by indicating your decision on the approval form, sign it and return to your sales partner before **March 5th, 2013**.
- OSRAM aligns with the widely-recognized JEDEC STANDARD "JESD46-B", which stipulates: "Lack of acknowledgement of the PCN within 30 days constitutes acceptance of the change".

Your prompt reply will help OSRAM OS to assure a smooth and well executed transition. If OSRAM does not hear from your side by the due date, we will assume your full acceptance to this proposed change and its implementation.

Your attention and response to this matter is greatly appreciated.

Please direct your inquiry to your local Sales office.

Product / Process Change Notification

2013-02-01

!! UPDATE !!

OS-PCN-2012-039-A1

- Updated Information in *ITALIC/BLUE TYPE*
- Original PCN(Master) see PCN N° OS-PCN-2012-039-A dated November 15th, 2012

SUBJECT OF CHANGE: Relocation of photodiode chip production *and introduction of additional chip source*

PRODUCTS AFFECTED: *See 1_cip_OS-PCN-2012-039-A1_ProdList*

REASON OF CHANGE:

- A) Supplier concentrates production of photodiode chips to only one existing location
- B) Improved security of delivery performance, through the availability of an additional source.

DESCRIPTION OF CHANGE:	<u>OLD</u>	<u>NEW</u>
Change A)	Location 1	Location 2 Same supplier
<i>Change B)</i>	<i>Current chip sources</i>	<i>Current chip sources + additional chip source</i>

Note: There is no change in content for Change A, except adaption of qualification plan - see 2_cip_OS-PCN-2012-039-A1_QualPlan. Additional

PRODUCT IDENTIFICATION: Date code

Product / Process Change Notification

2013-02-01

!! UPDATE !!

OS-PCN-2012-039-A1

**TIME SCHEDULE
(Change A)**

Final qualification report [see 2_cip_OS-PCN-2012-039-A1_QualPlan](#)
Samples available 01.12.2012 earliest
([see 1_cip_OS-PCN-2012-039-A1_ProdList](#))
15.02.2013
Production release 15.03.2013
Start of delivery or earlier if released by customer

**TIME SCHEDULE
(Change B)**

Final qualification report [available](#)
([see 2_cip_OS-PCN-2012-039-A1_QualPlan](#))
Samples available [available](#)
([see 1_cip_OS-PCN-2012-039-A1_ProdList](#))
Production release **30.04.2013**
Start of delivery **31.05.2013**
or earlier if released by customer

ASSESSMENT:

No change in product characteristics
No change in product data sheet
No change in production equipment

DOCUMENTATION:

[1_cip_OS-PCN-2012-039-A1_ProdList](#)
[2_cip_OS-PCN-2012-039-A1_QualPlan](#)
[3_cip_OS-PCN-2012-039-A1_QualData_Relocation_BPW34S](#)
[4_cip_OS-PCN-2012-039-A1_QualData_Relocation_SF203](#)
[5_cip_OS-PCN-2012-039-A1_QualData_AddChip_BPW34S](#)
[6_cip_OS-PCN-2012-039-A1_QualData_AddChip_BPW34FAS](#)
[7_cip_OS-PCN-2012-039-A1_QualData_AddChip_SF206K](#)

Product / Process Change Notification

2013-02-01

!! UPDATE !!

OS-PCN-2012-039-A1

Customer Approval Form

Relocation of photodiode chip production *and introduction of additional chip source*

Please list product(s) affected in your application(s):
.....

Please check the appropriate box below:

- We agree with the proposed change and accept start of shipment upon availability of new version.**
- We have objections:**
.....
- We need more information:**
.....
- We need the following samples:**
.....

Sender: Company: Name:

Address/Location:

Signature Date

Please return to your Sales partner: Name:

Address/Location:

TELEPHONE FAX E-MAIL

Product / Process Change Notification

2013-02-01

!! UPDATE !!

OS-PCN-2012-039-A1

Relocation of photodiode chip production and introduction of additional chip source

01.02.2013

Products affected:

<u>Device</u>	<u>Change A (relocation) / Samples available</u>	<u>Change B (additional source) / Samples available</u>	<u>FGR#</u>
BPX 65	available on request *)	<i>not affected</i>	7005
SFH 203	available	<i>not affected</i>	5108
SFH 203 FA	available	<i>not affected</i>	5109
SFH 203 P	available on request *)	<i>not affected</i>	5110
SFH 203 PFA	available on request *)	<i>not affected</i>	5111
SFH 213	available on request *)	<i>not affected</i>	5130
SFH 213 FA	available	<i>not affected</i>	5131
SFH 214 FA	available on request *)	<i>not affected</i>	5133
SFH 250	available on request *)	<i>not affected</i>	7800
SFH 250 V	available on request *)	<i>not affected</i>	7801
SFH 2500 FA	available on request *)	<i>not affected</i>	5103
SFH 2505	available	<i>not affected</i>	5106
SFH 2505 FA	available on request *)	<i>not affected</i>	5107
SFH 2400	08.02.2013	<i>not affected</i>	5201
SFH 2400 FA	08.02.2013	<i>not affected</i>	5202
SFH 2400 R	available on request *)	<i>not affected</i>	5201
SFH 2400 FAR	available on request *)	<i>not affected</i>	5202
BP 104 F	available on request *)	<i>available on request **)</i>	5408
BP 104 FAS	available	01.04.2013	5419
BP 104 FS	available on request *)	<i>available on request **)</i>	5407
BP 104 S	available	01.04.2013	5406
BP 104 FASR	available on request *)	<i>available on request **)</i>	5419
BP 104 SR	available on request *)	<i>available on request **)</i>	5406
SFH 225 FA	available on request *)	<i>available on request **)</i>	5117
BP 104 BS	available on request *)	<i>available on request *)</i>	5409
BPW 34	available	08.02.2013	5410
BPW 34 S	available	08.02.2013	5413
BPW 34 F	available on request *)	<i>available on request *)</i>	5411
BPW 34 FA	available	08.02.2013	5412
BPW 34 FAS	available	08.02.2013	5415
BPW 34 FS	available	08.02.2013	5414
BPW 34 FASR	available on request *)	<i>available on request *)</i>	5415
BPW 34 SR	available on request *)	<i>available on request *)</i>	5413
BPW 34 FSR	available on request *)	<i>available on request *)</i>	5414
BPX 61	available on request *)	<i>available on request *)</i>	7004
SFH 205 F	available	<i>not affected</i>	5126
SFH 205 FA	available on request *)	<i>not affected</i>	5127
SFH 206 K	available	<i>not affected</i>	5129
SFH 235 FA	available	<i>not affected</i>	5118

*) 4 weeks lead time

**) 8 weeks lead time

Customer Information Package:

- qualification plan

Relocation of photodiode chip production and introduction of additional chip source

■ qualification plan – Change A: Relocation (1/3):

DIL-SMT:

BPW 34 S

Preconditioning:

MSL 4

TEST Planned	CONDITION	DURATION	SAMPLE SIZE
Resistance to soldering heat (RTSH)	Reflow 260°C	3x	3x30
Temperature cycle (TC)	-40°C/+100°C 15min each extreme	1000x	3x30
High temperature reverse bias (HTRB)	T _A = 100°C, U _r = 12,8 V	1000h	3x30
Temperature & humidity reverse bias (T&HRB)	T _A = 85°C, r.H.= 85%; U _r = 12,8 V	1000h	3x30
ESD HBM	2000V	-	3x10

Test finished: **PASS**

=> see 3_cip_OS-PCN-2012-039-A1_QualData_Relocation_BPW34

Relocation of photodiode chip production and introduction of additional chip source

■ qualification plan – Change A: Relocation (2/3):

SmartDIL:

SFH 2400

Preconditioning:

MSL 4

TEST Planned	CONDITION	DURATION	SAMPLE SIZE
Resistance to soldering heat (RTSH)	Reflow 260°C	3x	3x30
Temperature cycle (TC)	-40°C/+100°C 15min each extreme	1000x	3x30
High temperature reverse bias (HTRB)	T _A = 100°C, U _r = 16 V	1000h	3x30
Temperature & humidity reverse bias (T&HRB)	T _A = 85°C, r.H. = 85%; U _r = 16 V	1000h	3x30

Final report will be available on **April 8th**.

Relocation of photodiode chip production and introduction of additional chip source

■ qualification plan – Change A: Relocation (3/3):

**5mm Radial:
Preconditioning:**

**SFH 203
1x TTW soldering**

TEST Planned	CONDITION	DURATION	SAMPLE SIZE
Resistance to soldering heat (RTSH)	Reflow 260°C	3x	3x30
Temperature cycle (TC)	-40°C/+100°C 15min each extreme	1000x	3x30
High temperature reverse bias (HTRB)	T _A = 100°C, U _r = 16 V	1000h	3x30
Temperature & humidity reverse bias (T&HRB)	T _A = 85°C, r.H. = 85%; U _r = 16 V	1000h	3x30
ESD HBM	2000V	-	3x10

Test finished: **PASS**

=> see [4_cip_OS-PCN-2012-039-A1_QualData_Relocation_SF203](#)

Relocation of photodiode chip production and introduction of additional chip source

■ qualification plan – Change B: add. chip source (1/3):

DIL-SMT:

BPW 34 S

Preconditioning:

MSL 4

TEST Planned	CONDITION	DURATION	SAMPLE SIZE
Resistance to soldering heat (RTSH)	Reflow 260°C	3x	3x30
Temperature cycle (TC)	-40°C/+100°C 15min each extreme	1000x	3x30
Temperature & humidity reverse bias (T&HRB)	T _A = 85°C, r.H. = 85%; U _r = 12,8 V	1000h	3x30

Test finished: **PASS**

=> see 5_cip_OS-PCN-2012-039-A1_QualData_AddChip_BPW34S

Relocation of photodiode chip production and introduction of additional chip source

■ qualification plan – Change B: add. chip source (2/3):

DIL-SMT:

BPW 34 FAS

Preconditioning:

MSL 4

TEST Planned	CONDITION	DURATION	SAMPLE SIZE
Resistance to soldering heat (RTSH)	Reflow 260°C	3x	3x30
Temperature cycle (TC)	-40°C/+100°C 15min each extreme	1000x	3x30
High temperature reverse bias (HTRB)	T _A = 100°C, U _r = 12,8 V	1000h	3x30
Temperature & humidity reverse bias (T&HRB)	T _A = 85°C, r.H. = 85%; U _r = 12,8 V	1000h	3x30

Test finished: **PASS**

=> see 6_cip_OS-PCN-2012-039-A1_QualData_AddChip_BPW34FAS

Relocation of photodiode chip production and introduction of additional chip source

■ qualification plan – Change B: add. chip source (3/3):

**5mm Radial:
Preconditioning:**

**SFH 206K
1x TTW soldering**

TEST Planned	CONDITION	DURATION	SAMPLE SIZE
Resistance to soldering heat (RTSH)	Reflow 260°C	3x	3x30
Temperature cycle (TC)	-40°C/+100°C 15min each extreme	1000x	3x30
High temperature reverse bias (HTRB)	T _A = 85°C, U _r = 26 V	1000h	3x30
Temperature & humidity reverse bias (T&HRB)	T _A = 85°C, r.H. = 85%; U _r = 26 V	1000h	3x30
ESD HBM	2000V	-	3x10

Test finished: **PASS**

=> see 7_cip_OS-PCN-2012-039-A1_QualData_AddChip_SFH206K

SUBJECT: Qualification of chip from new production location according to OS-PCN-2012-039-A1

DEVICE: BPW 34S

Report No.: 130031C1

Family Package: DIL-SMT

Date: 25.01.13

Preconditioning: Jedec Level IV

TEST PERFORMED	CONDITION	DURATION	SAMPLE SIZE	FAILURES		
				Elec.	Opt.	Vis.
Resistance to soldering heat (RTSH) <i>JESD22-A113</i>	Reflow soldering 260°C	3x	3x30	0	0	0
High temperature reverse bias (HTRB) <i>JESD22-A108</i>	T _A = 100°C V _r = 12,8V	1000h	3x30	0	0	-
Temperature & humidity reverse bias (T&HRB) <i>JESD22A101</i>	+85°C/85%r.H. V _r = 12,8V	1000h	3x30	0	0	-
Temperature cycle (TC) <i>JESD22-A104</i>	-40°C/+100°C 15min each extreme	1000c	3x30	0	0	-
ESD (HBM) <i>JS-001-2012</i>	Human body model	2000V	3x10	0	0	-

Failure criteria:

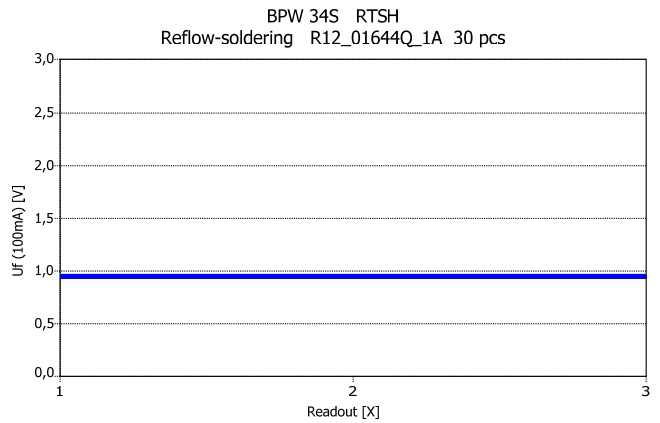
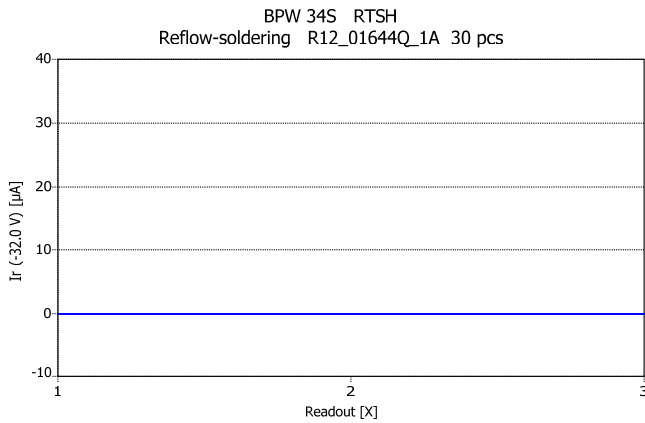
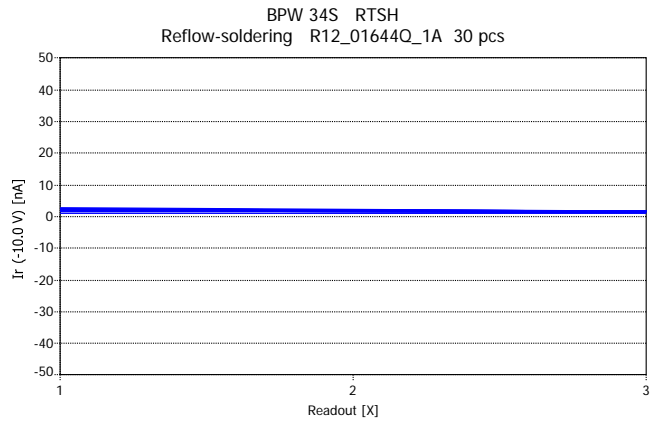
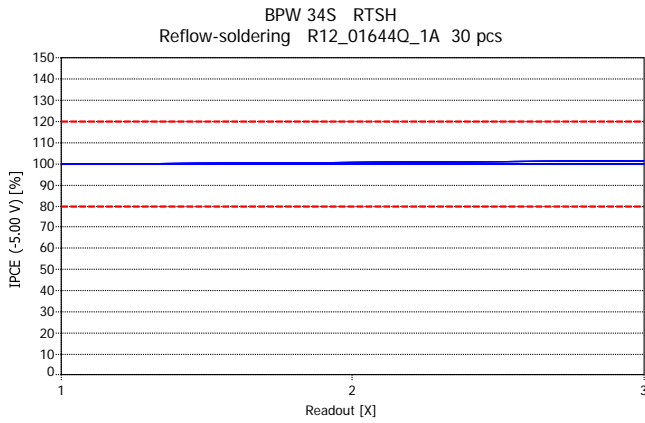
- Electrical failures:
 - V_f (I_f = 100mA) > 1,5V; ± 10% from initial value
 - IR (V_r = 32V E=0) > 5µA
 - IR (V_r = 10V E=0) > 30nA
- Optical failures:
 - I_p (V_r = 5V) absolute limit: ± 20% max. from initial value
- Visual failures:
 - broken or damaged package or leads

Conclusion: Devices fulfill the reliability requirements.

Status	Page	Departement	Performed by	Reviewed by
Qualification Report	1 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

RTSH Reflow-Soldering

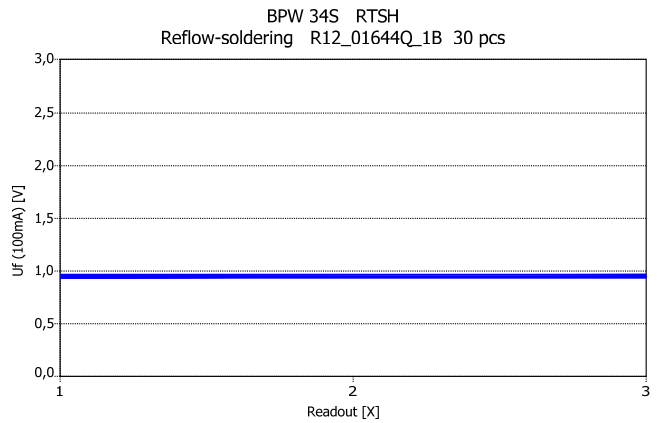
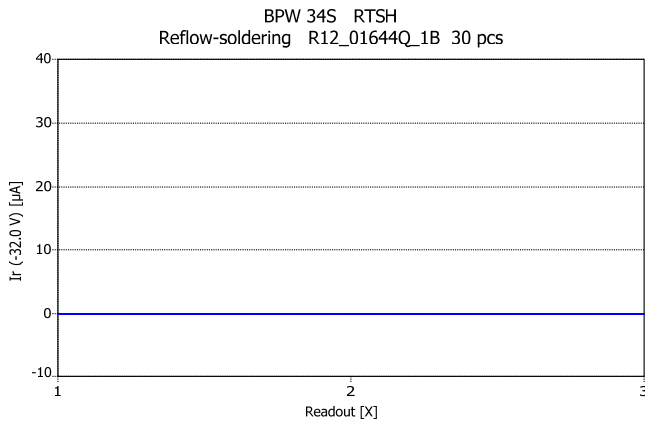
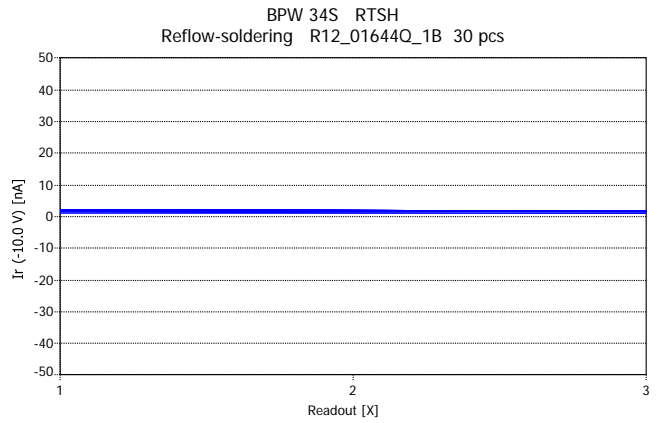
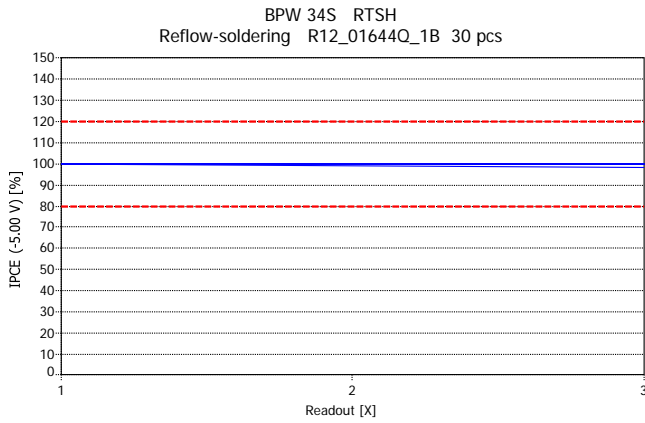
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	2 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

RTSH Reflow-Soldering

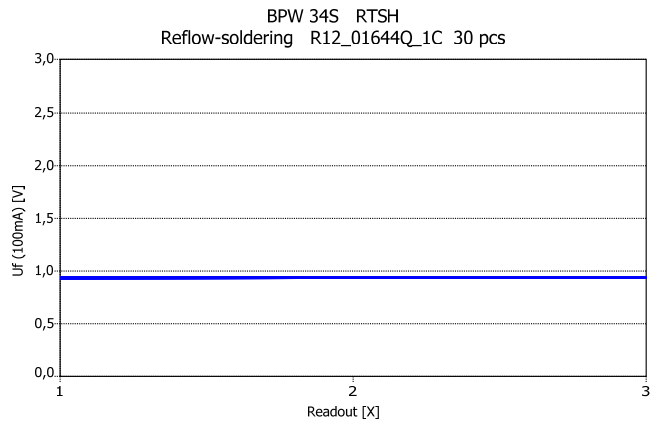
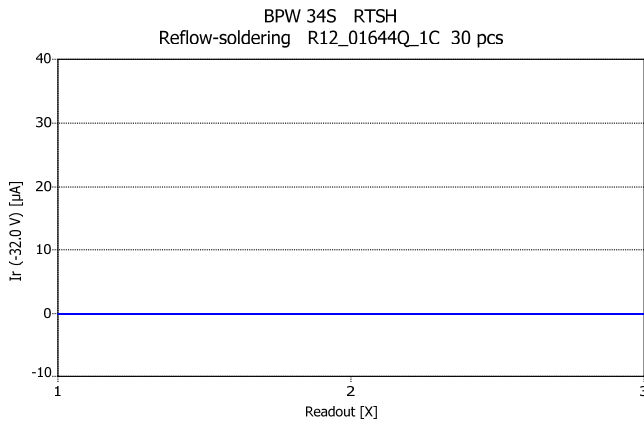
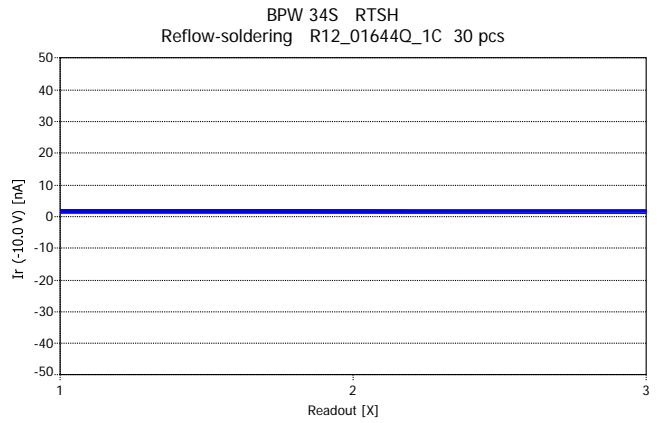
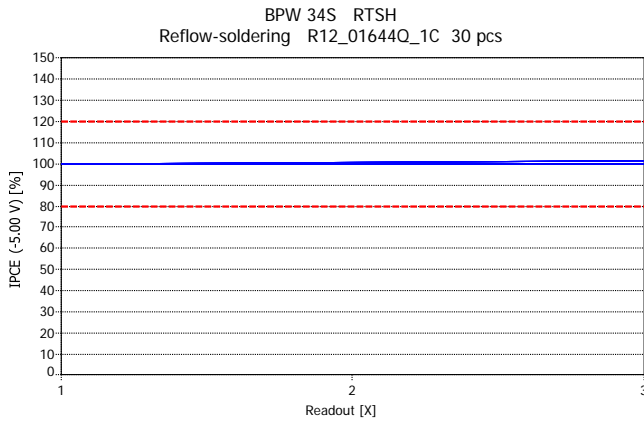
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	3 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

RTSH Reflow-Soldering

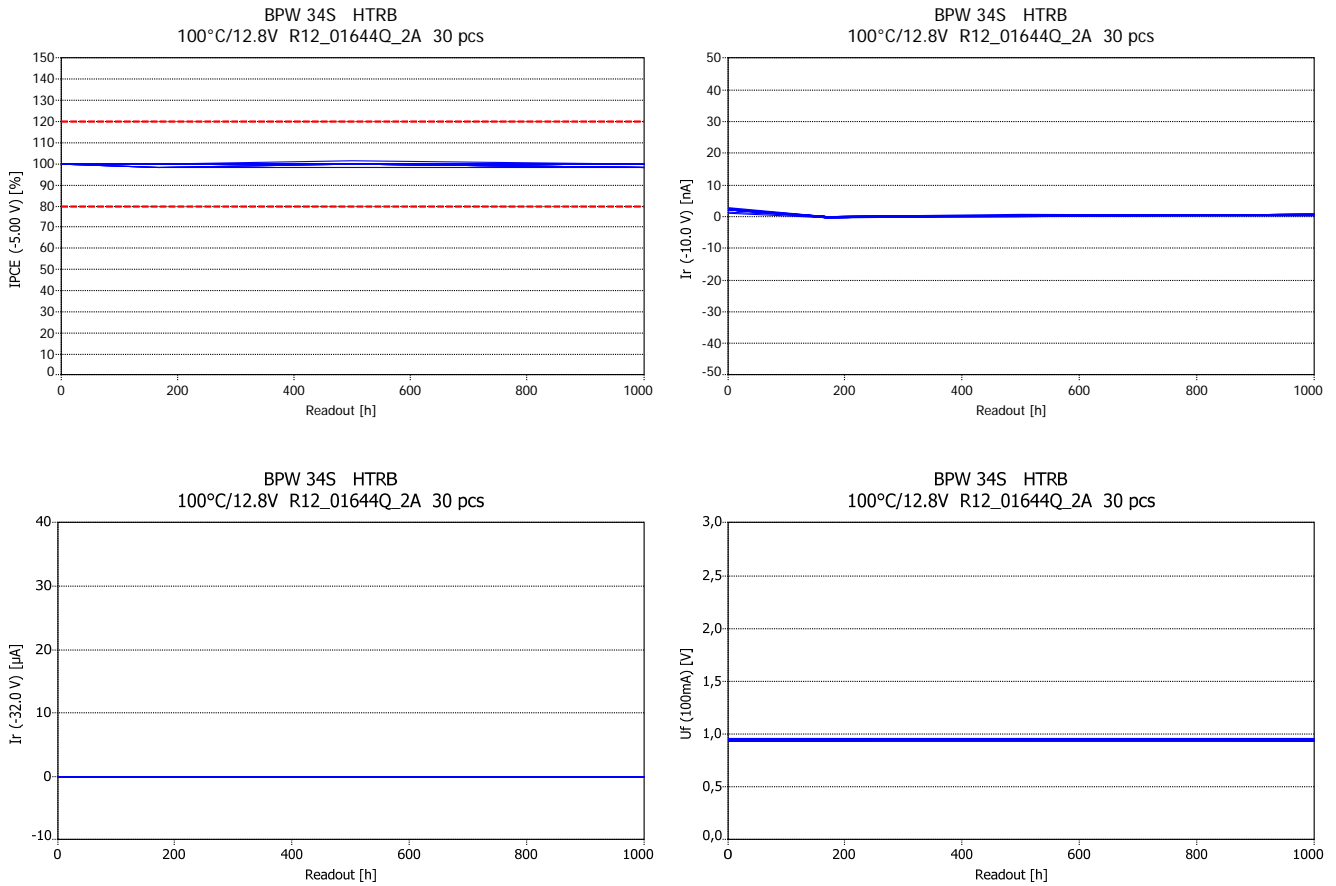
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	4 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

HTRB 100°C/12,8V

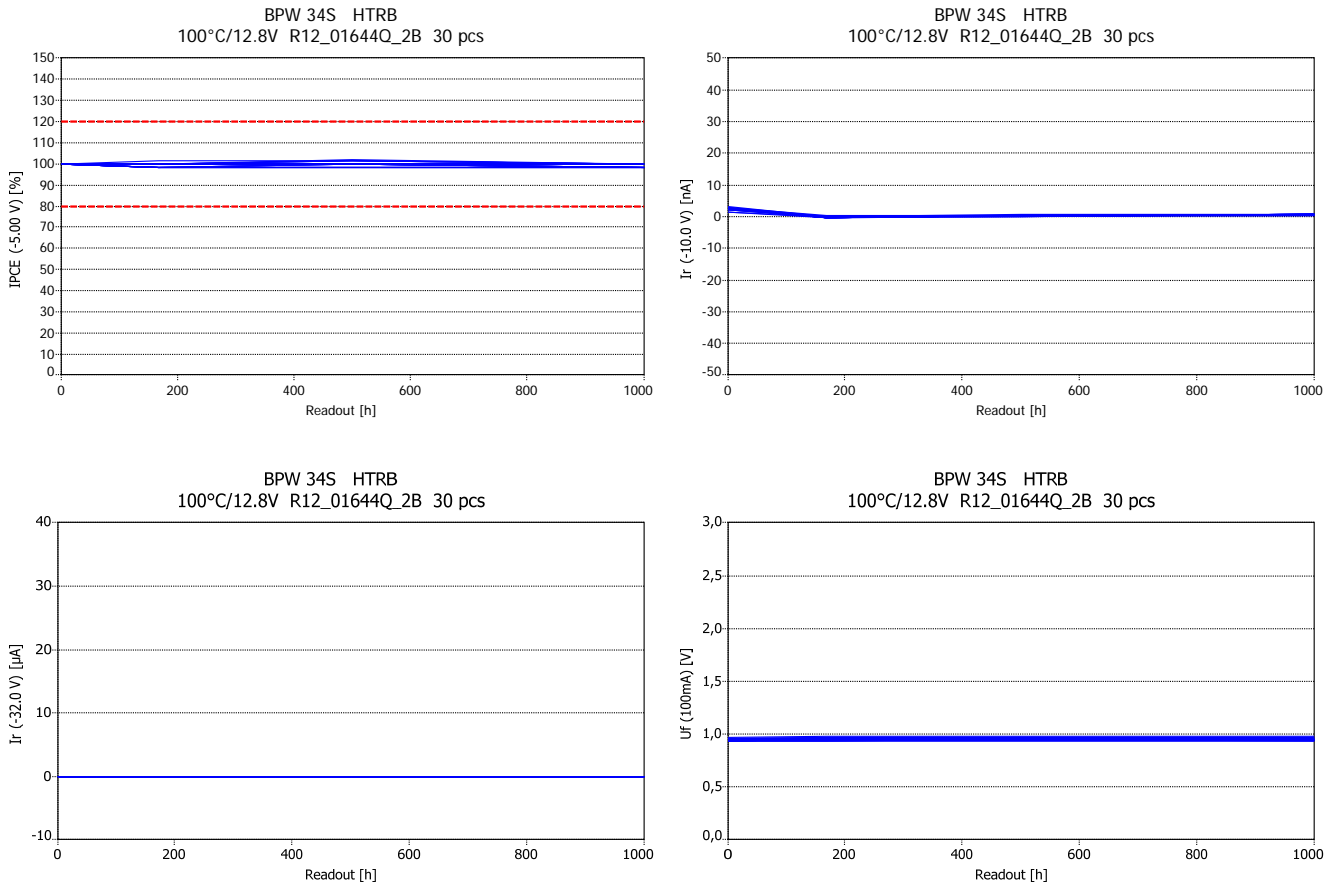
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	5 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

HTRB 100°C/12,8V

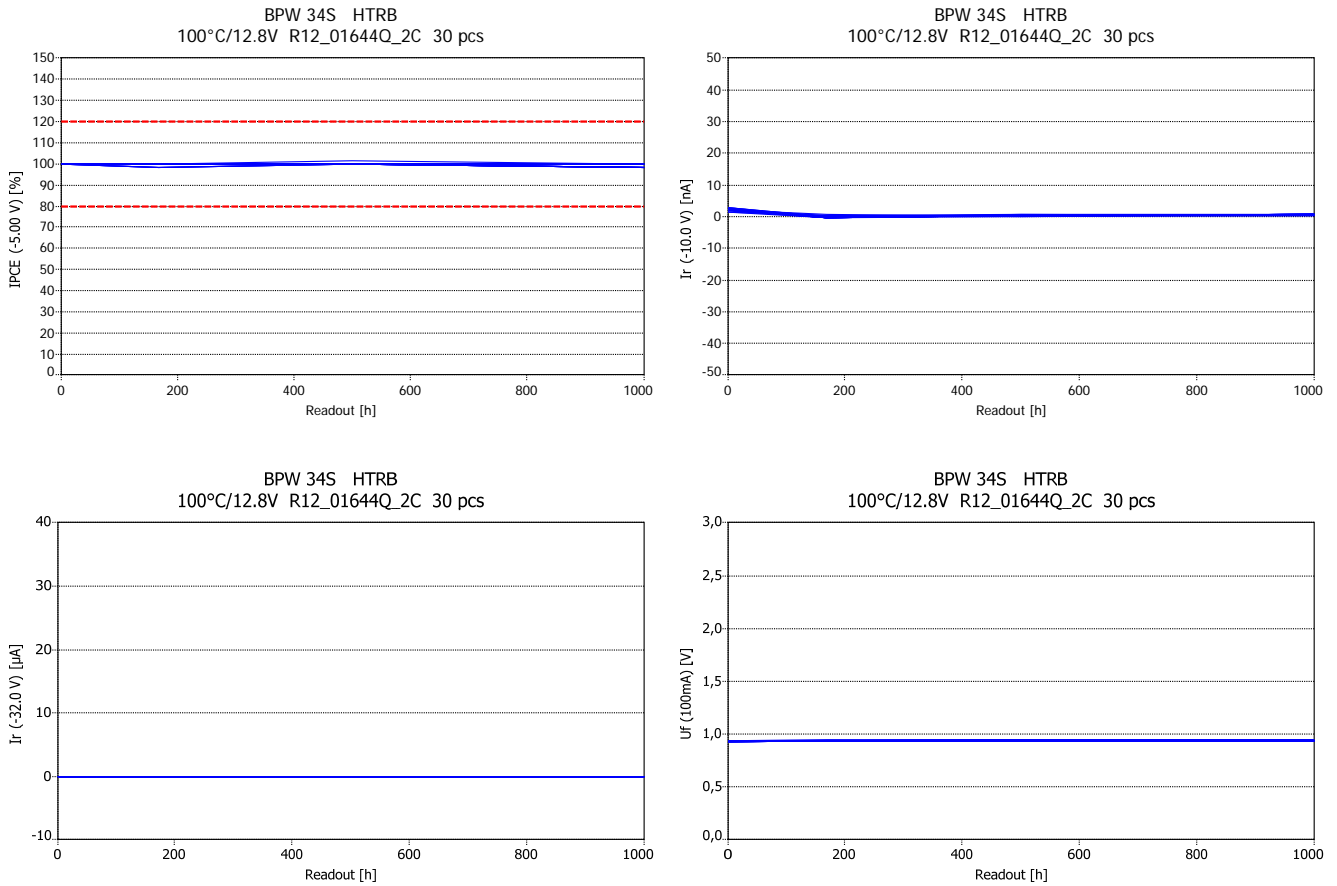
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	6 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

HTRB 100°C/12,8V

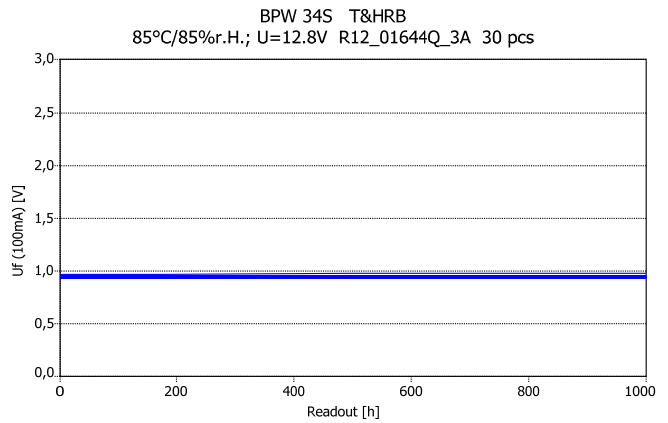
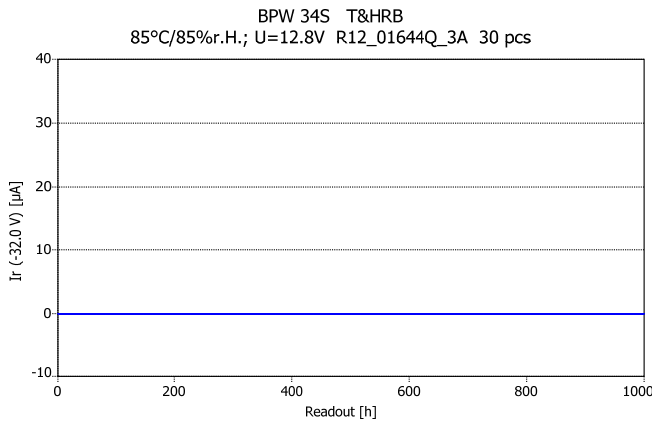
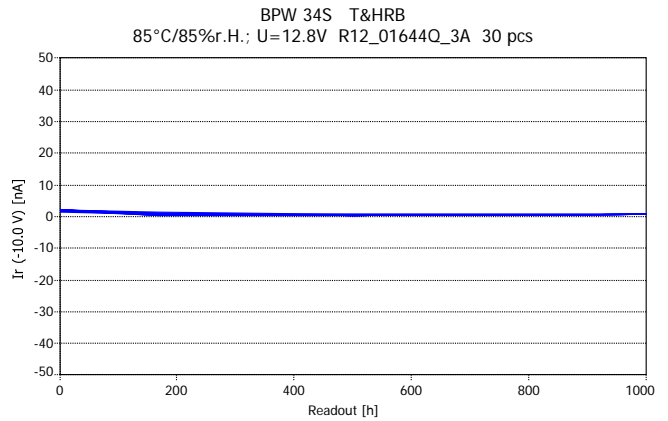
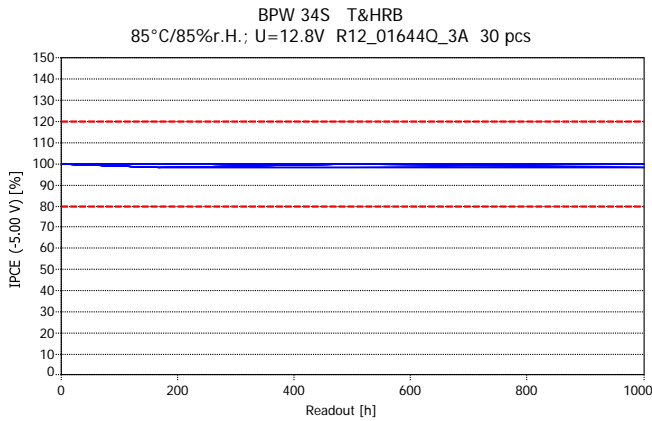
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	7 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

T&HRB 85°C/85%r.H.; 12,8V

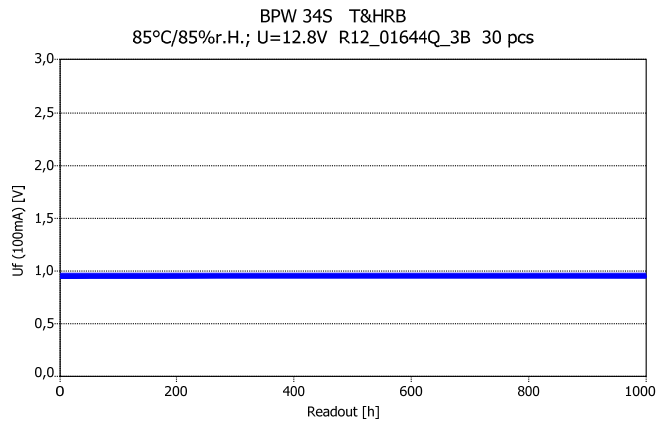
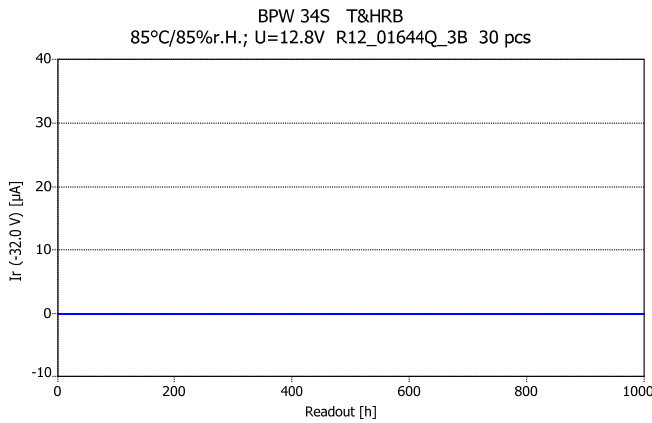
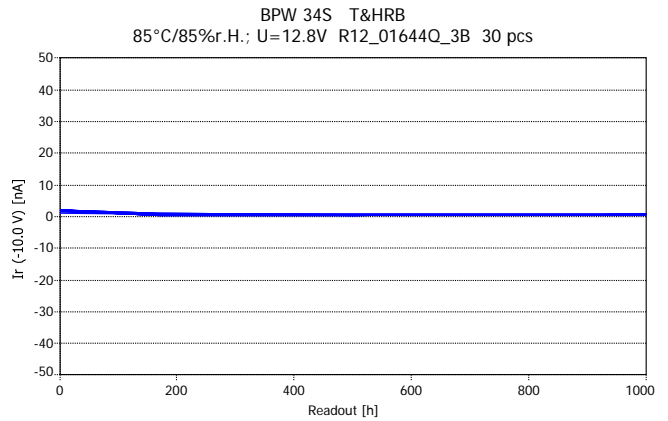
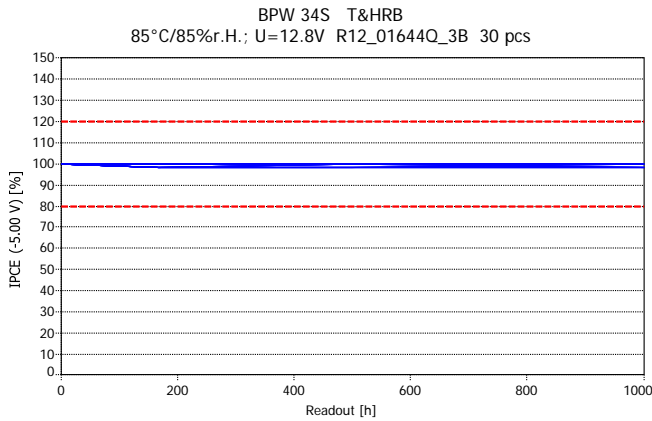
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	8 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

T&HRB 85°C/85%r.H.; 12,8V

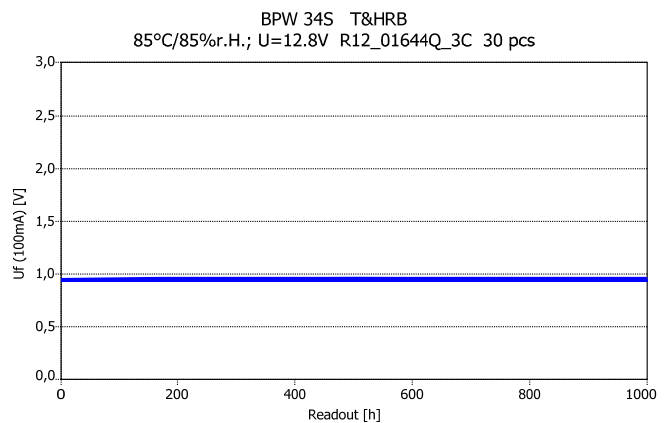
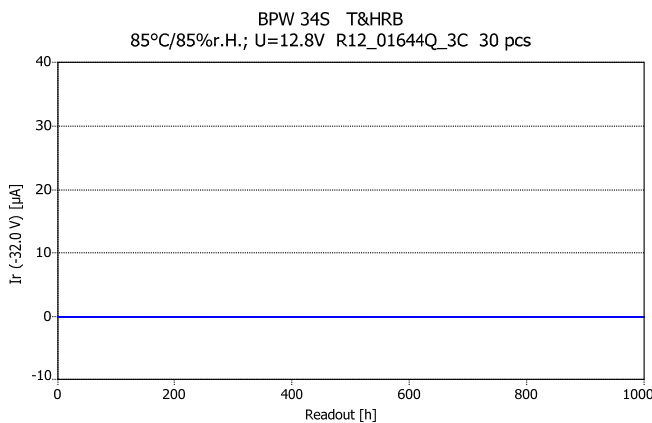
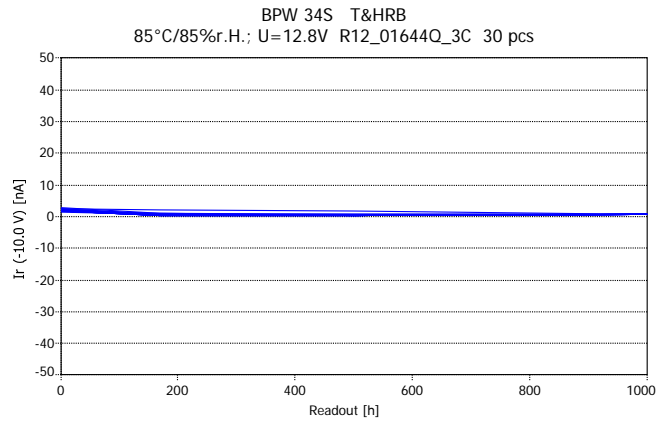
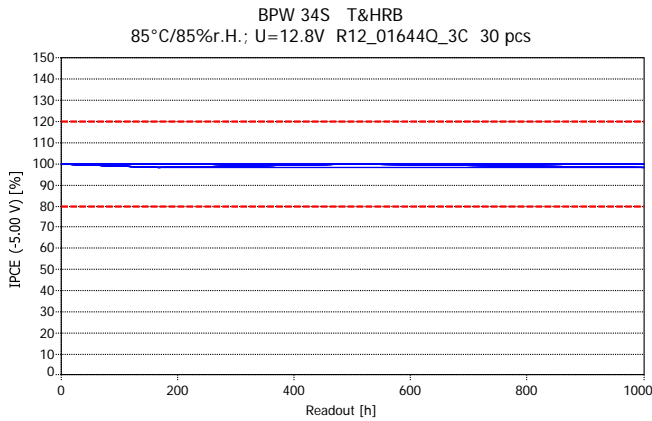
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	9 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

T&HRB 85°C/85%r.H.; 12,8V

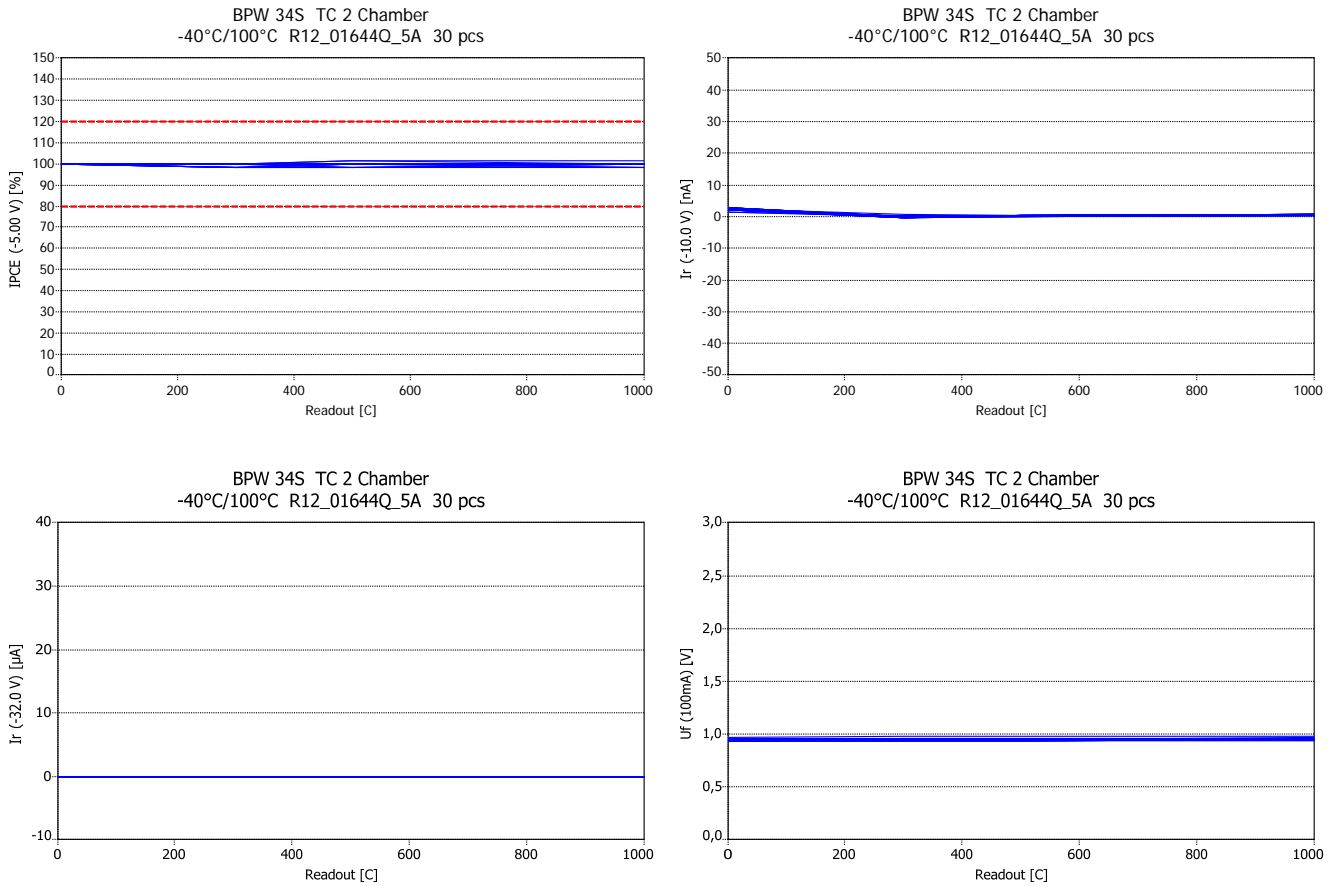
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	10 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

TC 2 Chamber -40/100°C

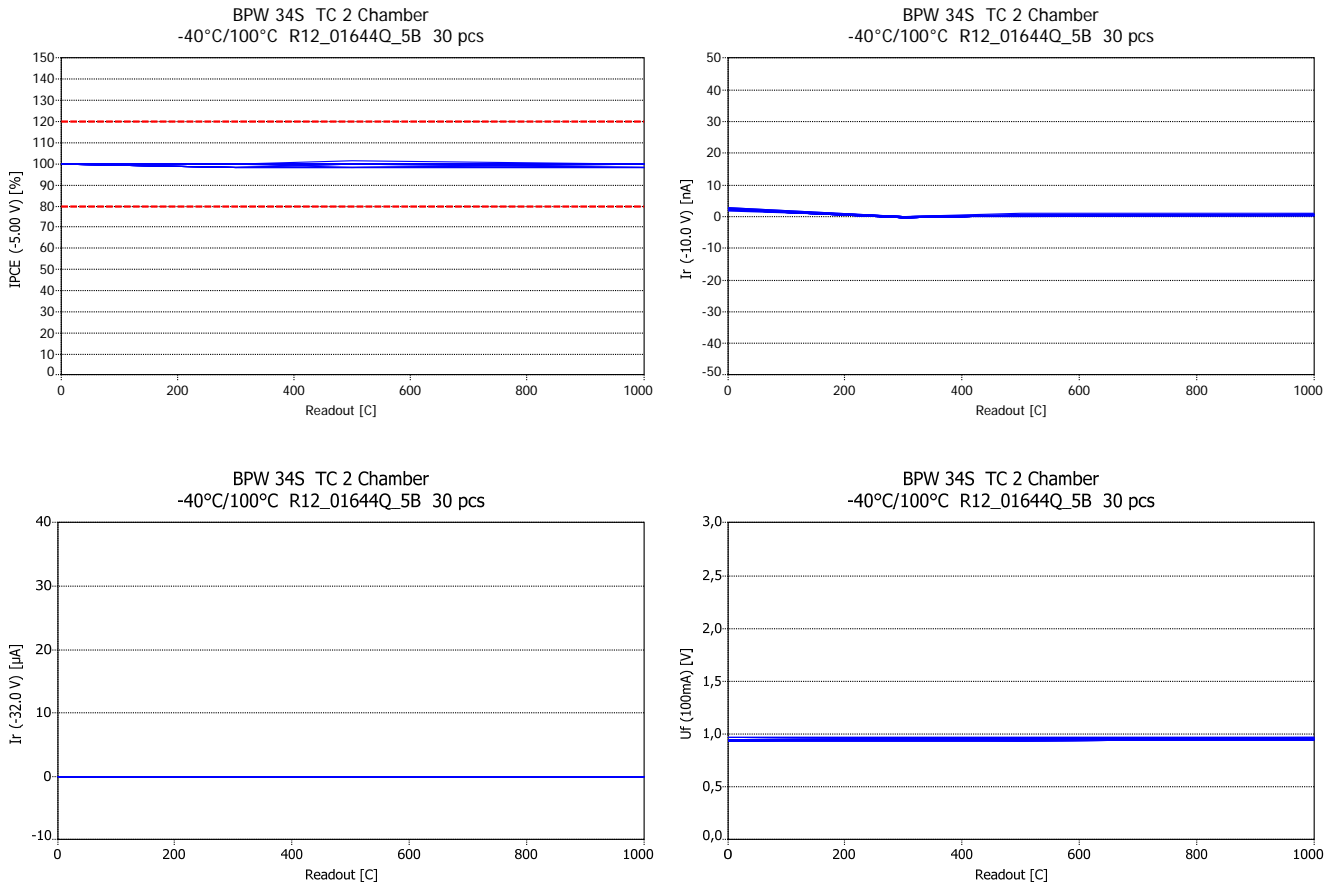
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	11 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

TC 2 Chamber -40/100°C

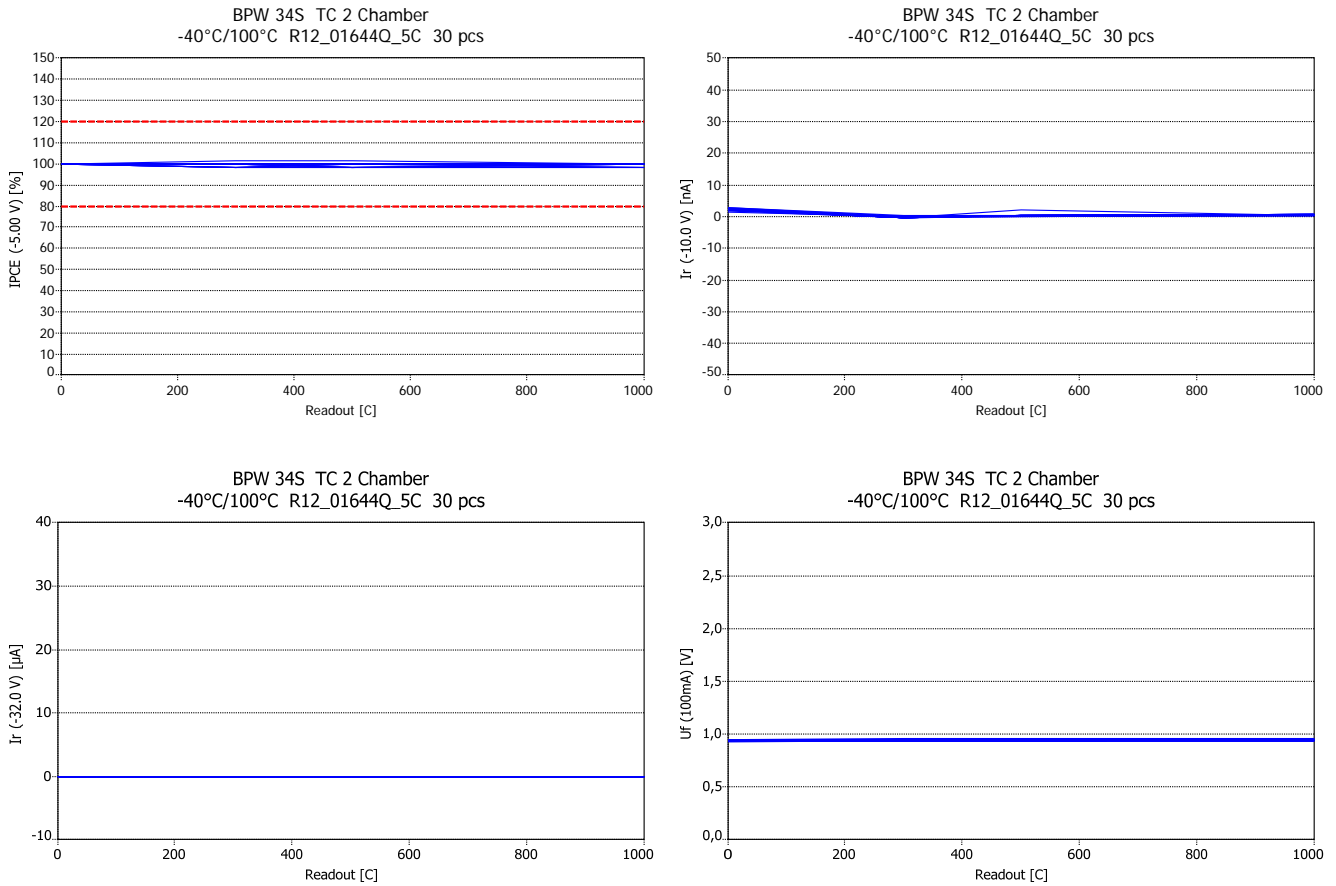
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	12 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

TC 2 Chamber -40/100°C

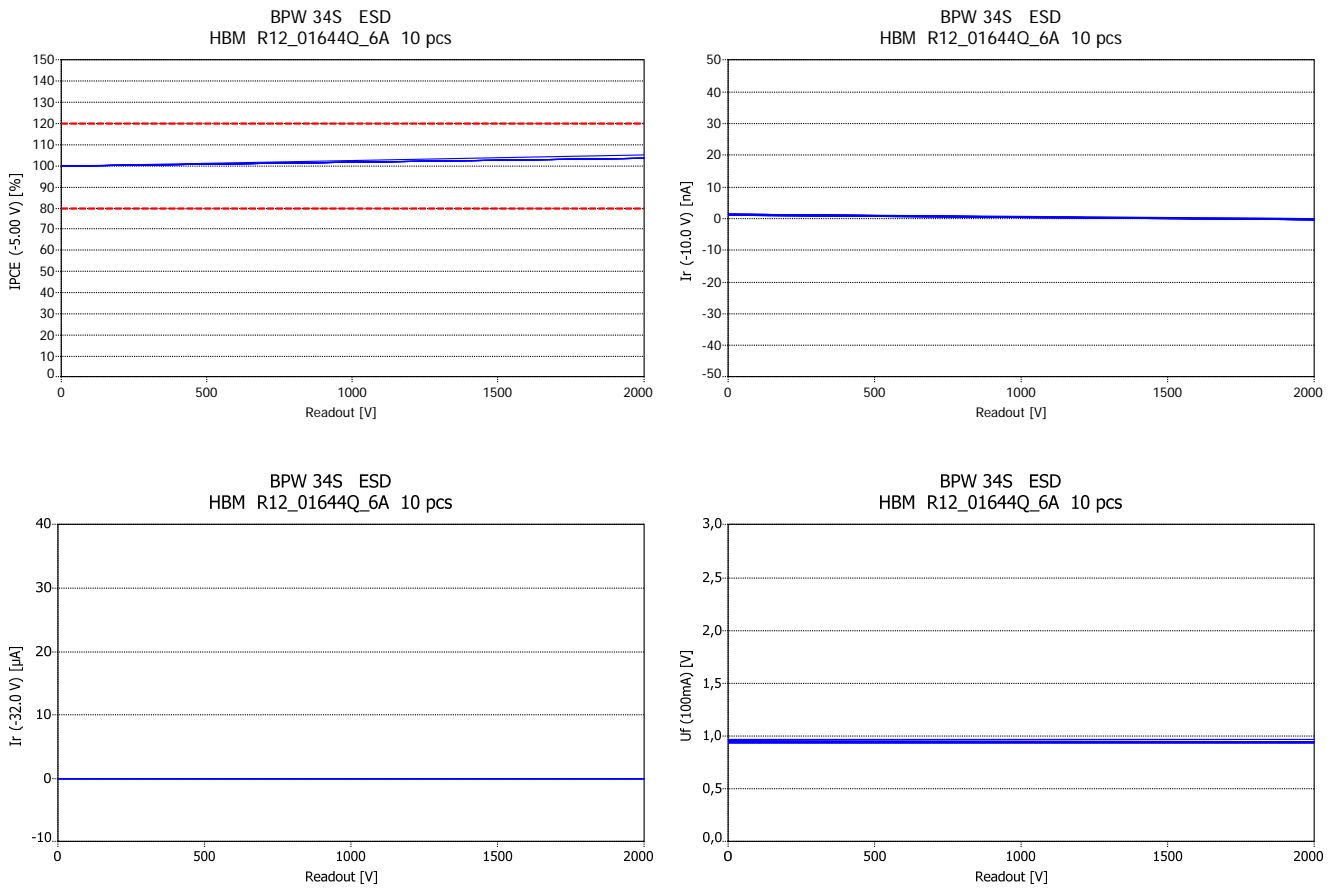
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	13 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

ESD Human body model

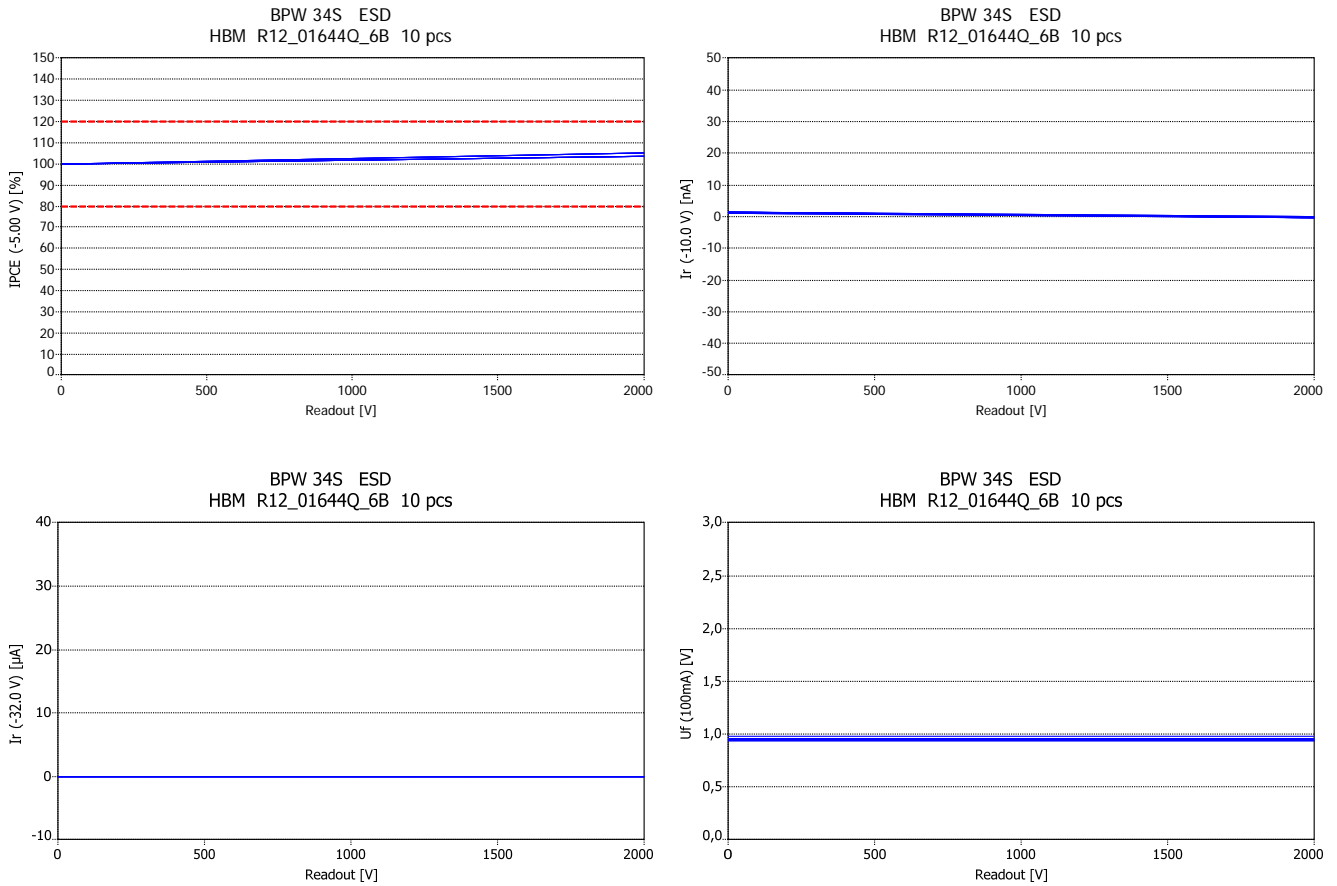
Lot A



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Qualification Report	14 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

ESD Human body model

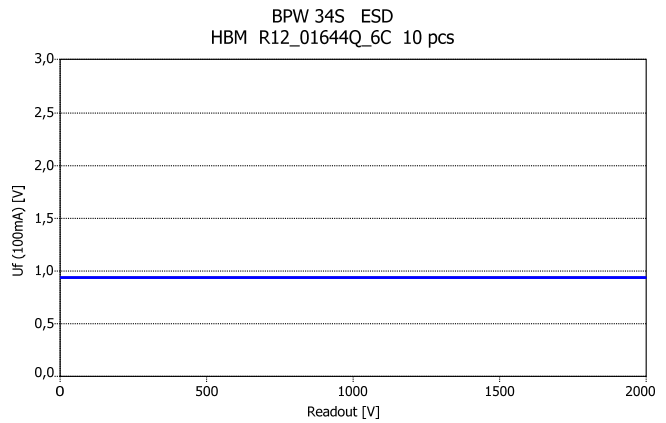
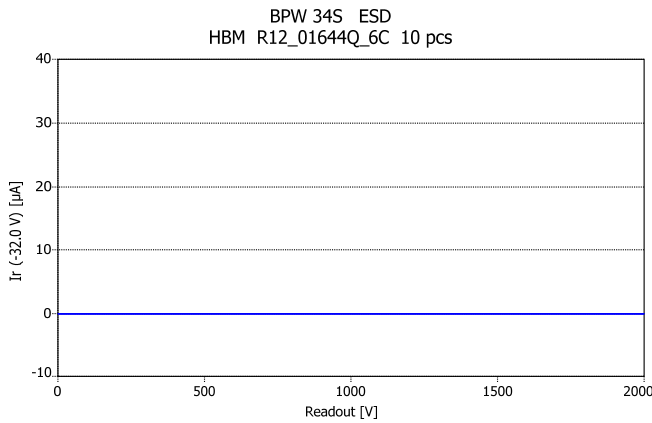
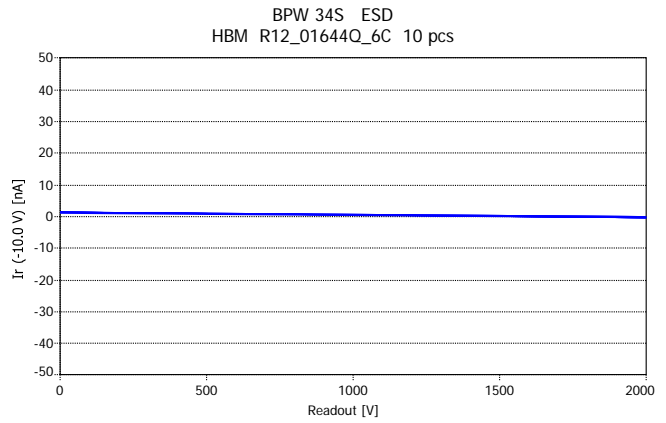
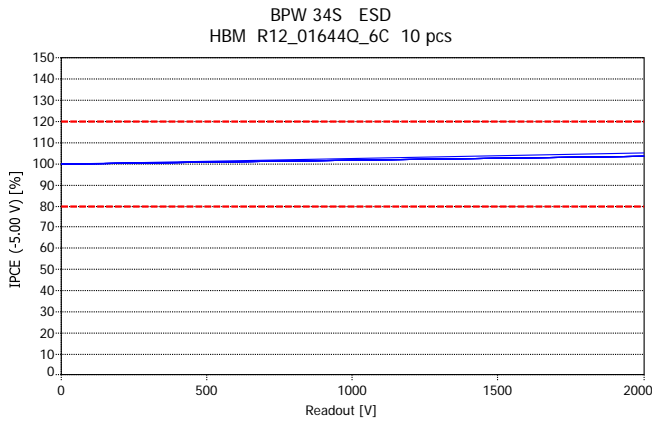
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	15 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

ESD Human body model

Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	16 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

SUBJECT: Qualification of chip from new production location according to OS-PCN-2012-039-A1

DEVICE: SFH 203
Family Package: 5mm Radial

Report No.: 130032C1
Date: 25.01.13

Preconditioning: 1xTTW-Soldering

TEST PERFORMED	CONDITION	DURATION	SAMPLE SIZE	FAILURES		
				Elec.	Opt.	Vis.
Resistance to soldering heat (RTSH) <i>JESD22-B106</i>	TTW soldering 260°C	3x	3x30	0	0	0
High temperature reverse bias (HTRB) <i>JESD22-A108</i>	T _A = 100°C V _r = 16V	1000h	3x30	0	0	-
Temperature & humidity reverse bias (T&HRB) <i>JESD22A101</i>	+85°C/85%r.H. V _r = 16V	1000h	3x30	0	0	-
Temperature cycle (TC) <i>JESD22-A104</i>	-40°C/+100°C 15min each extreme	1000c	3x30	0	0	-
ESD (HBM) <i>JS-001-2012</i>	Human body model	2000V	3x10	0	0	-

Failure criteria:

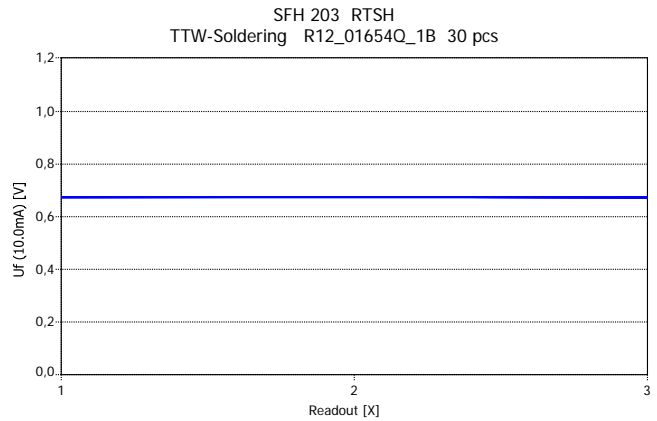
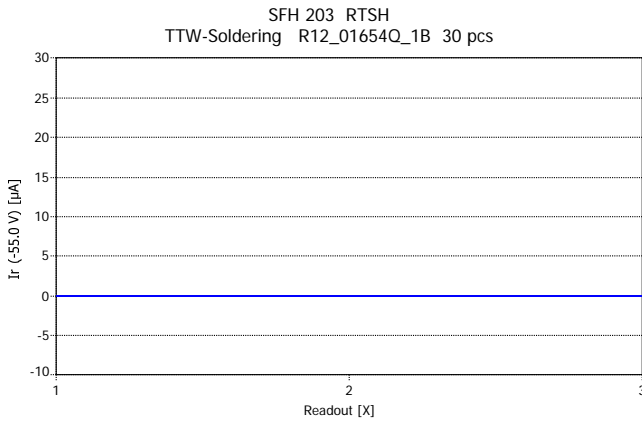
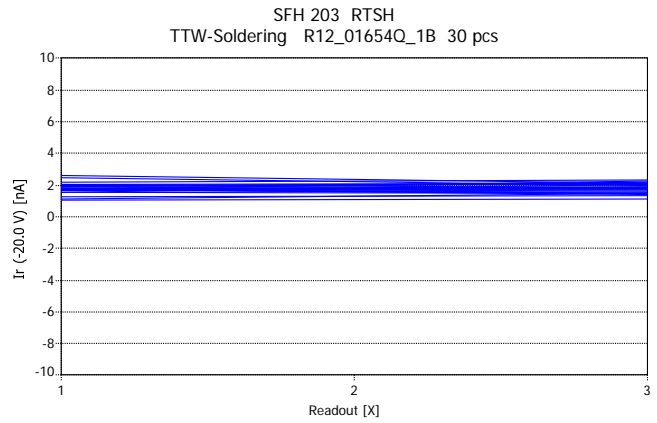
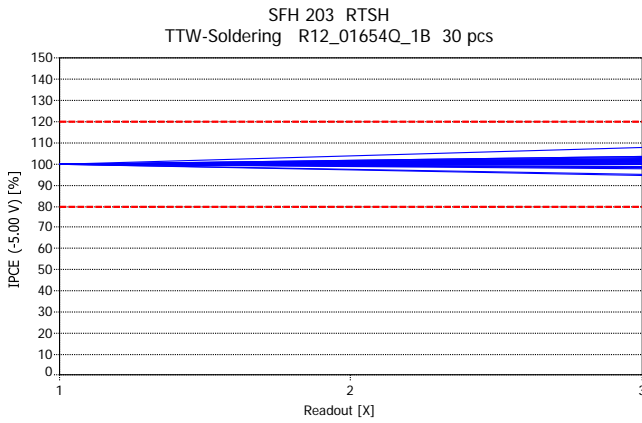
- Electrical failures:
 - V_f (I_f = 10mA) > 1,2V; ± 10% from initial value
 - I_R (V_r = 20V) > 5nA
 - I_R (V_r = 50V) > 30µA
- Optical failures:
 - I_p (V_r = 5V) absolute limit: ± 20% max. from initial value
- Visual failures:
 - broken or damaged package or leads

Conclusion: Devices fulfill the reliability requirements.

Status	Page	Departement	Performed by	Reviewed by
Qualification Report	1 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

RTSH TTW-Soldering

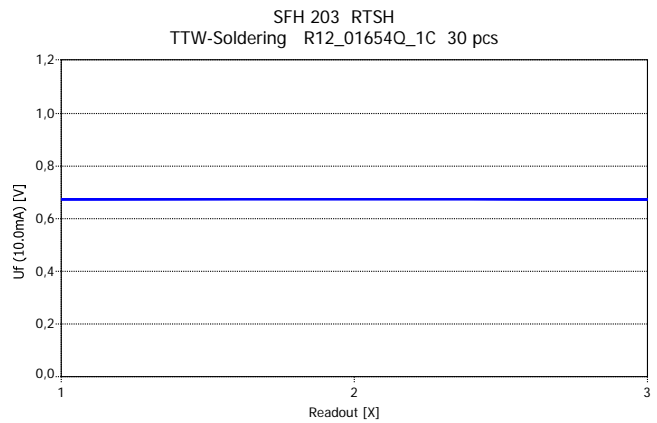
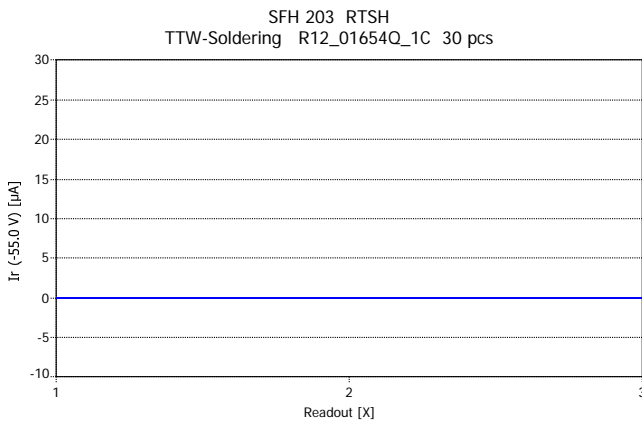
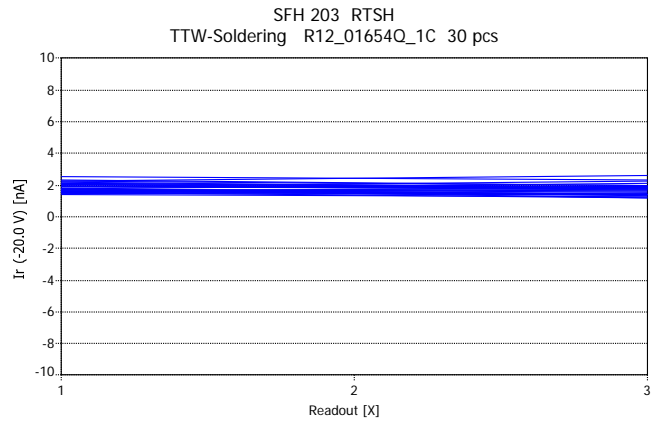
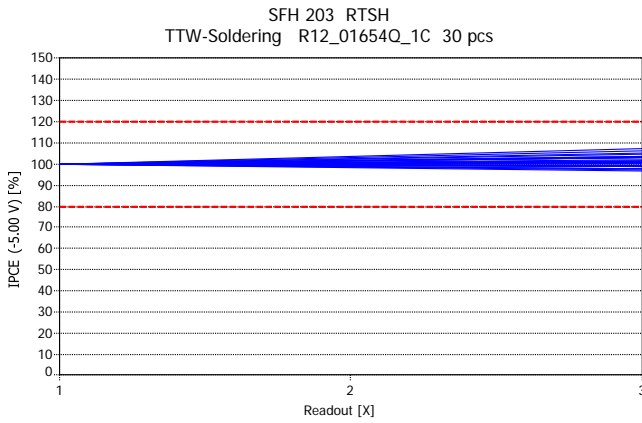
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	2 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

RTSH TTW-Soldering

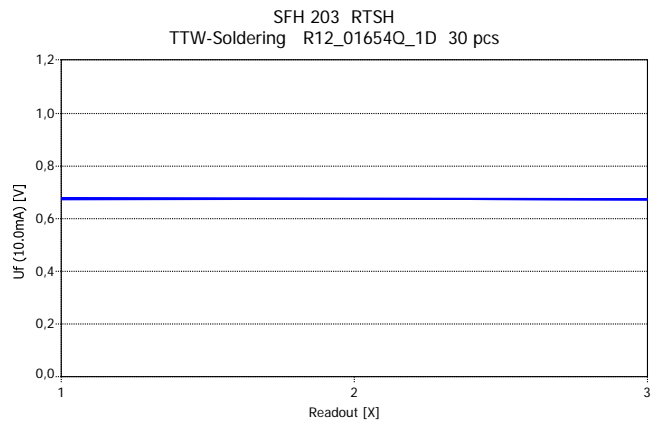
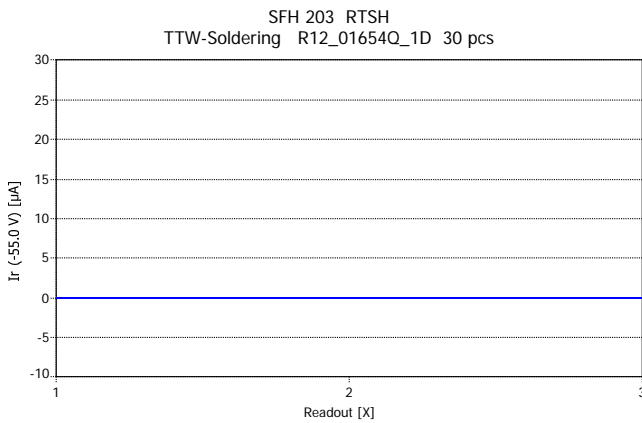
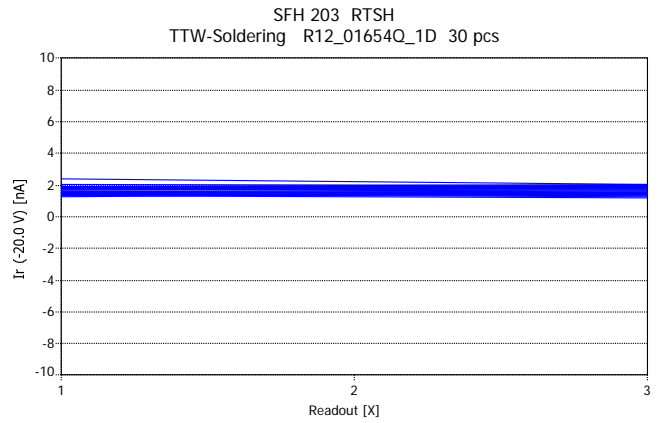
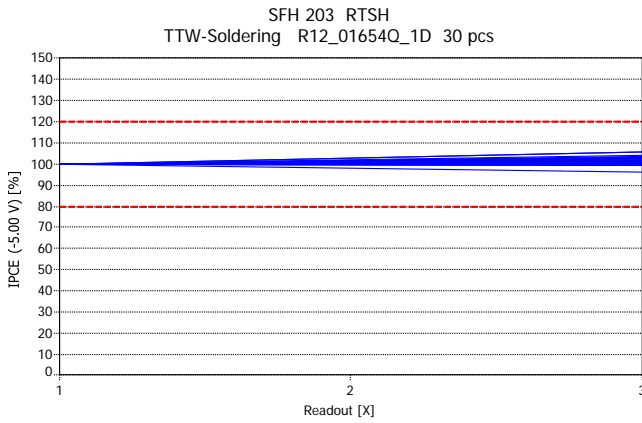
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	3 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

RTSH TTW-Soldering

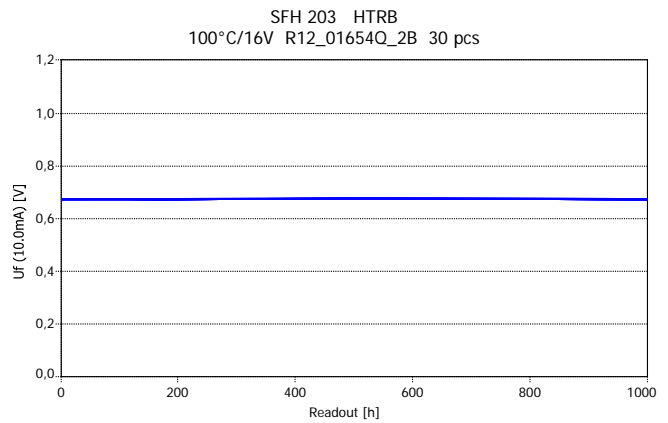
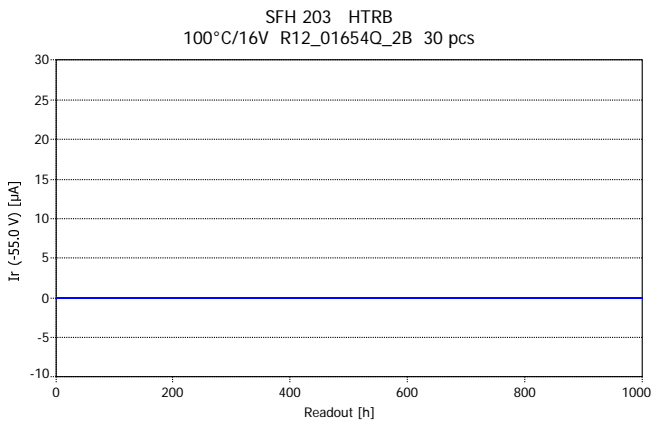
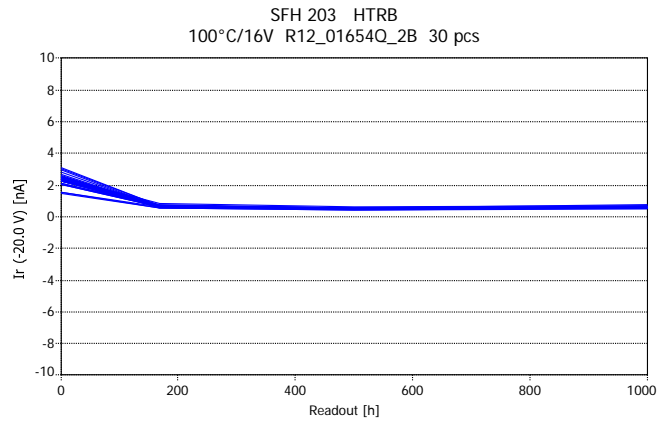
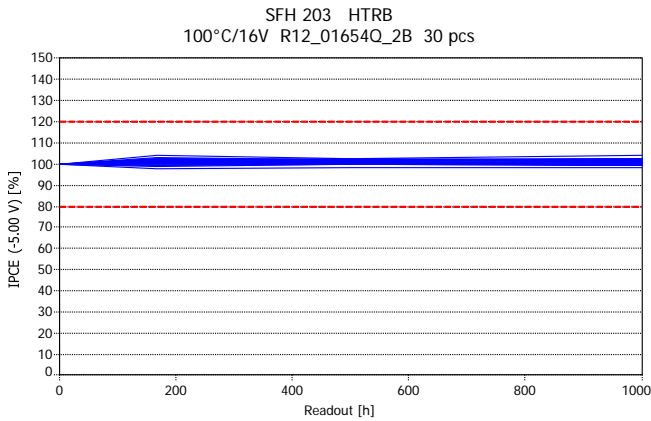
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	4 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

HTRB 100°C/16V

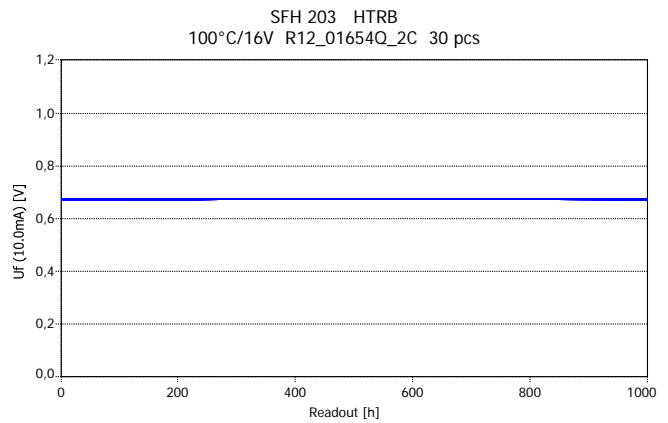
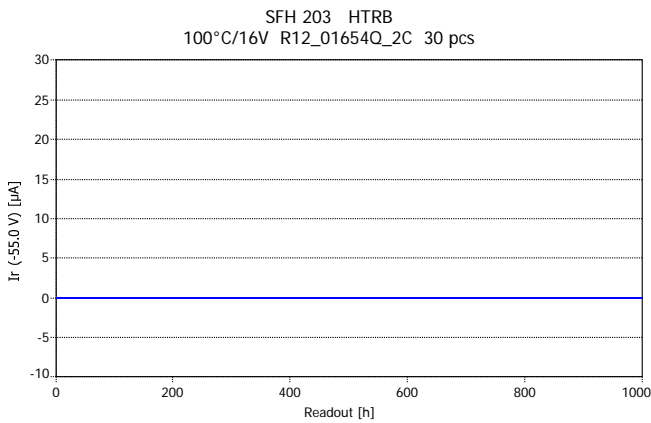
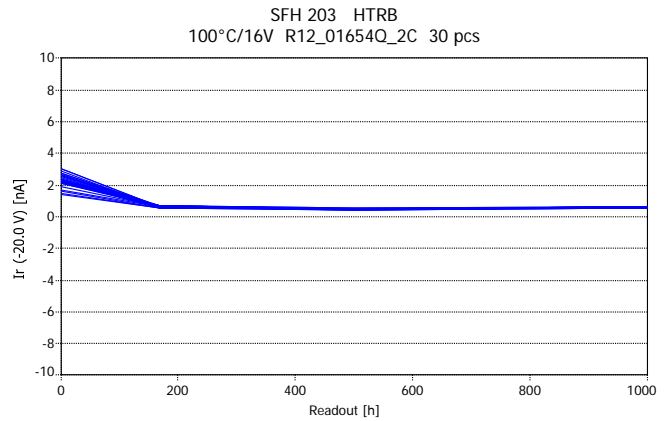
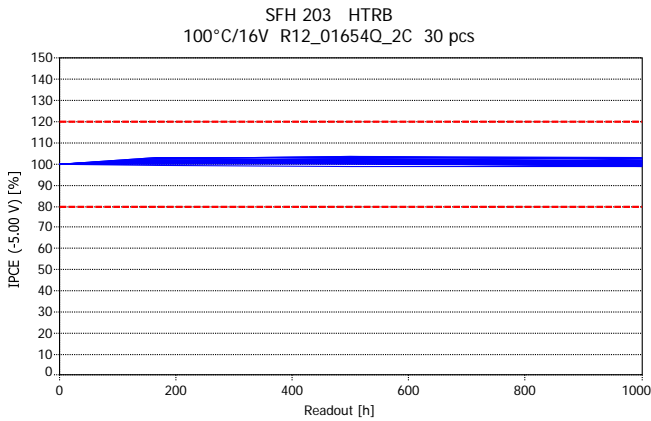
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	5 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

HTRB 100°C/16V

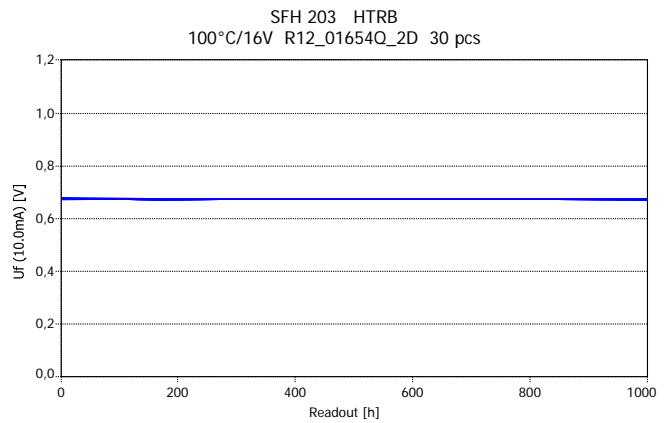
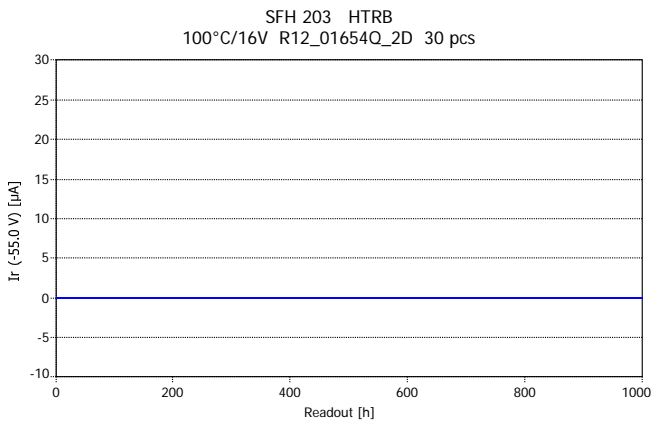
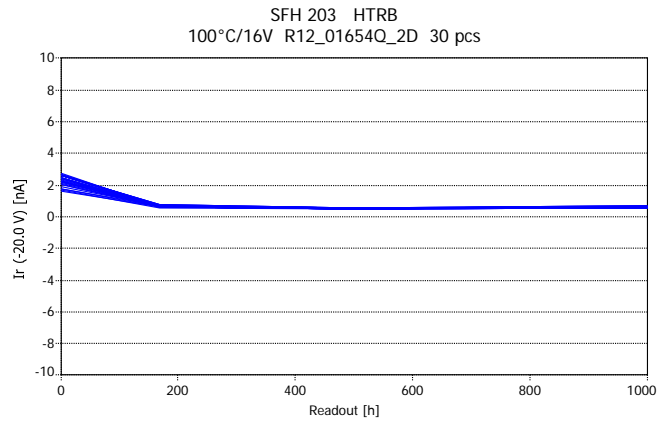
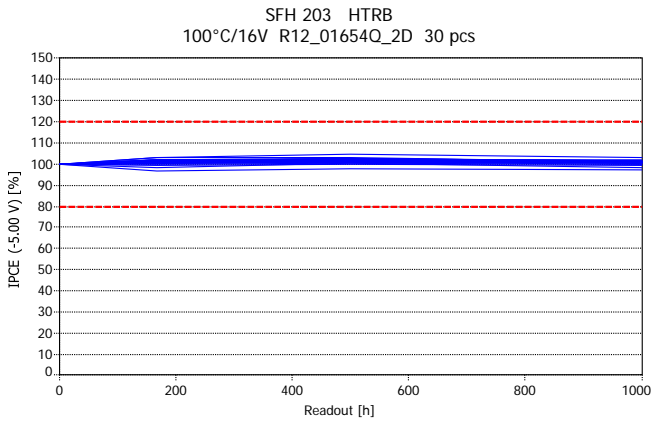
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	6 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

HTRB 100°C/16V

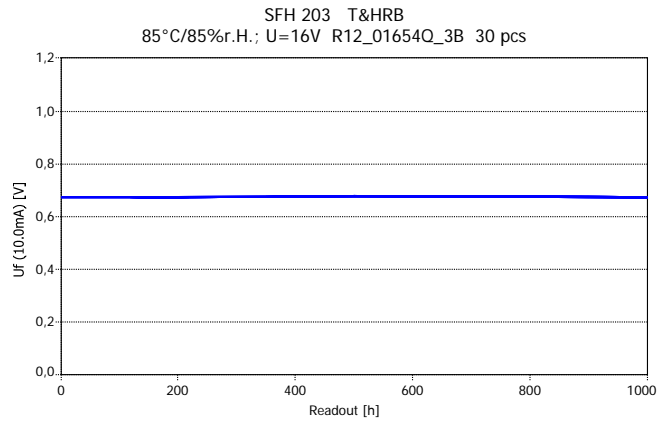
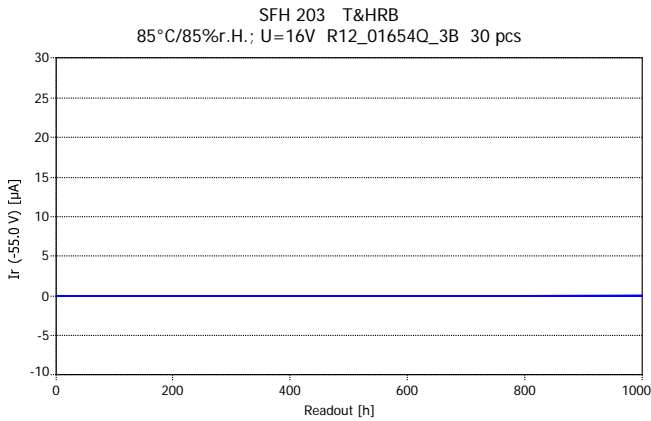
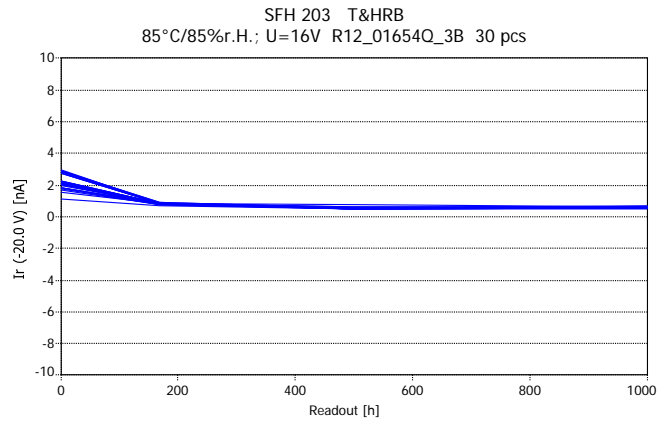
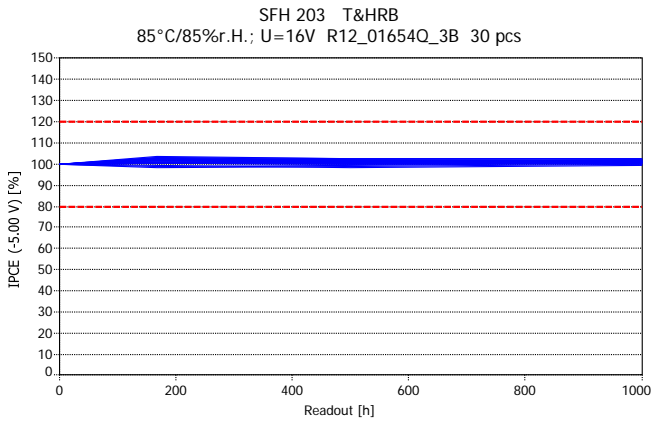
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	7 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

T&HRB 85°C/85%r.H.; 16V

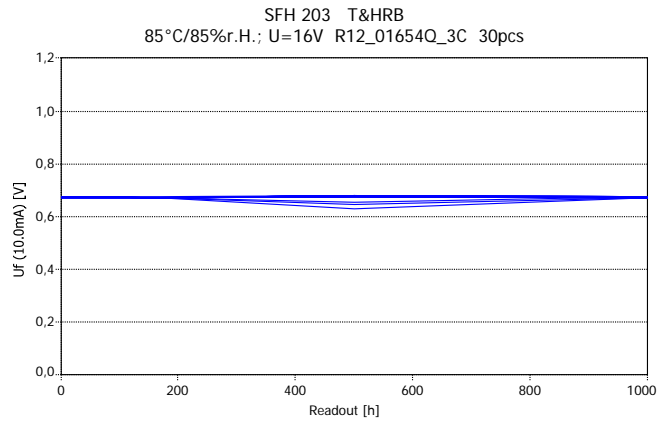
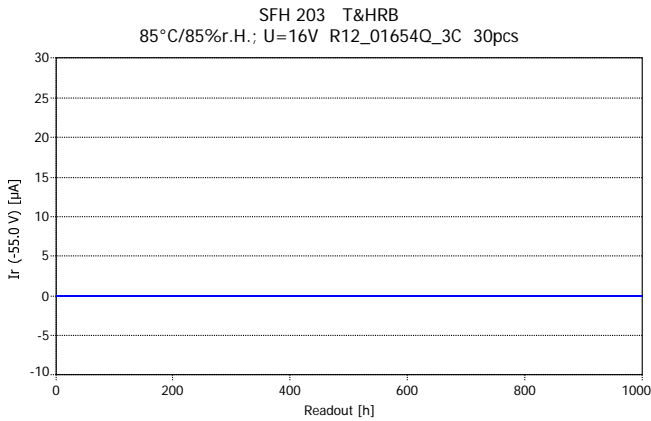
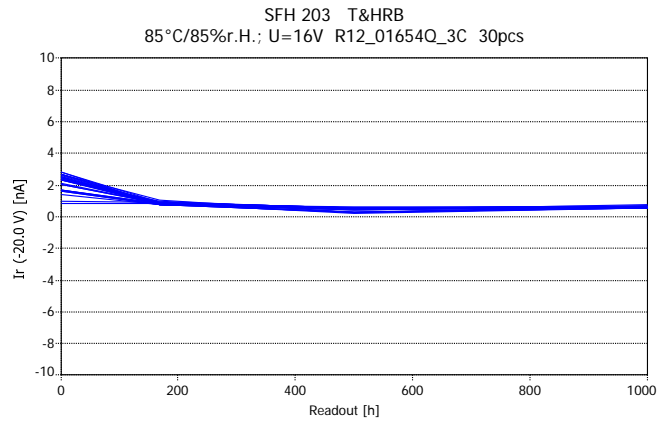
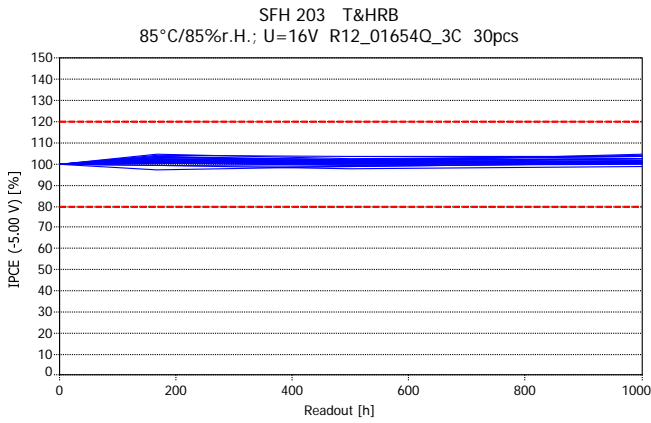
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	8 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

T&HRB 85°C/85%r.H.; 16V

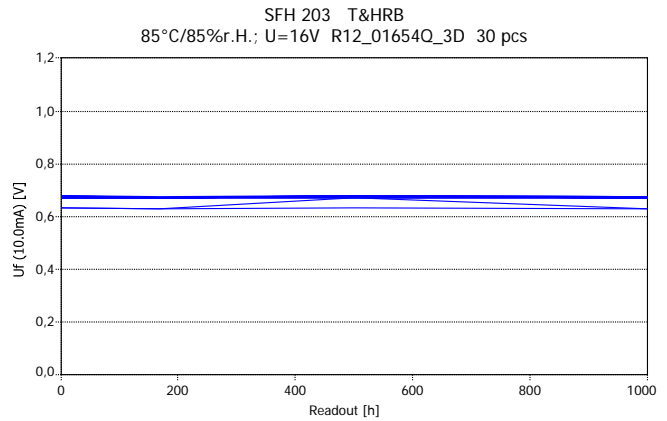
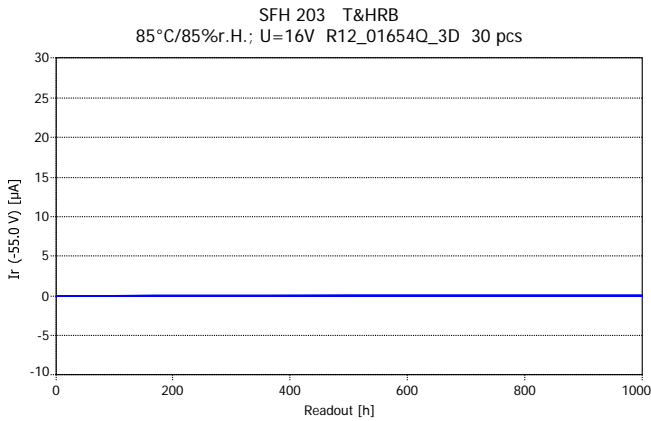
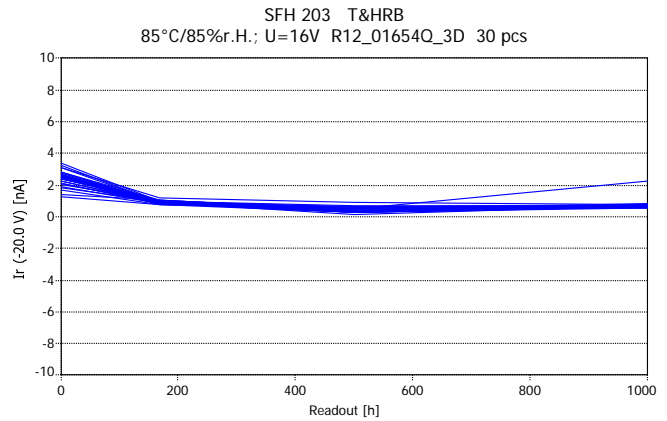
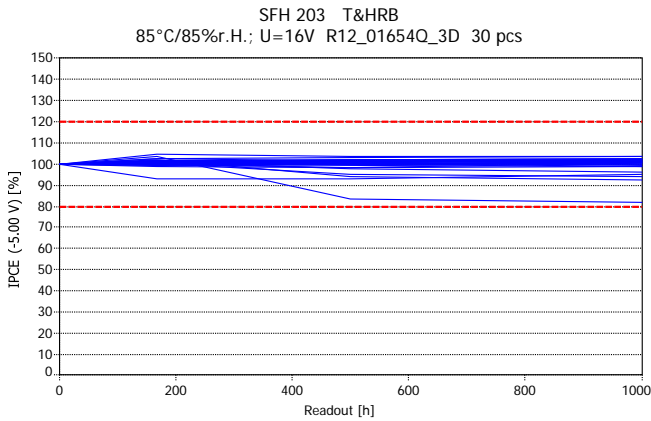
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	9 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

T&HRB 85°C/85%r.H.; 16V

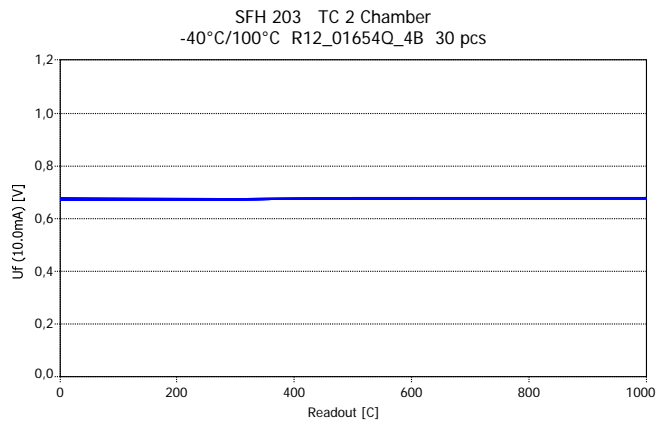
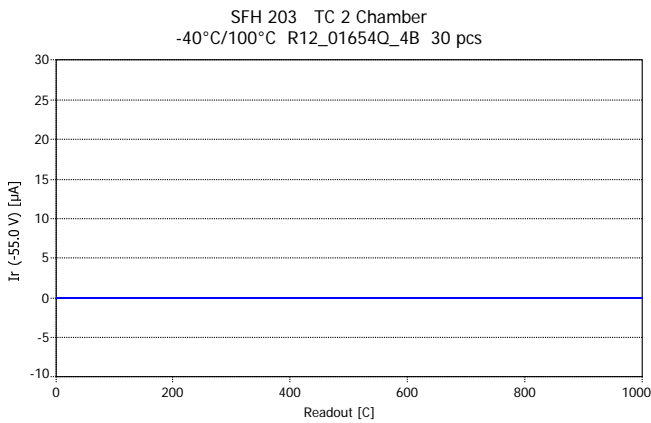
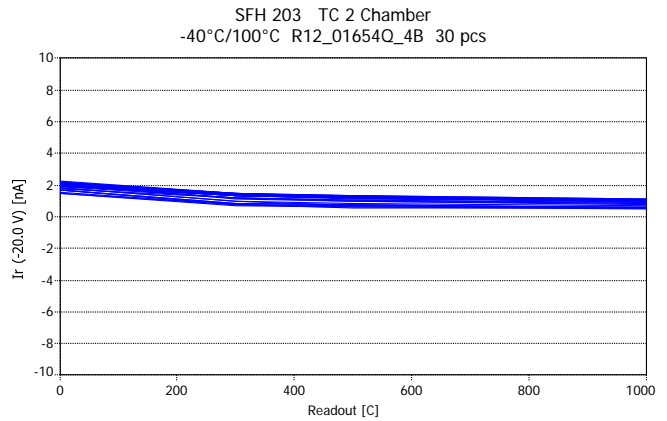
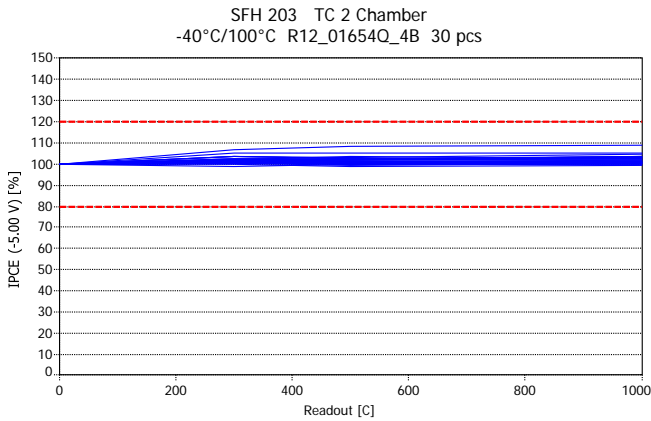
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	10 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

TC 2 Chamber -40/100°C

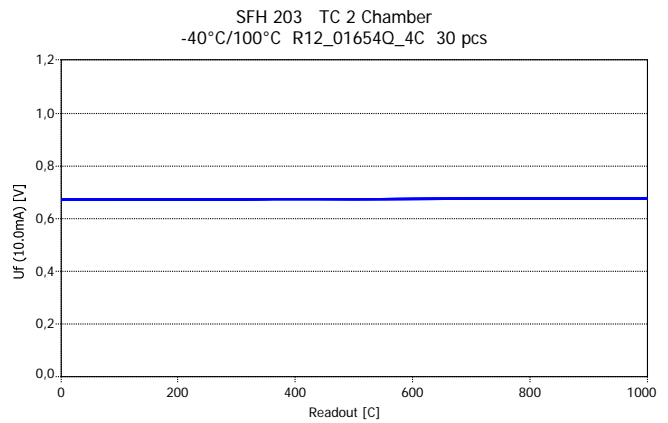
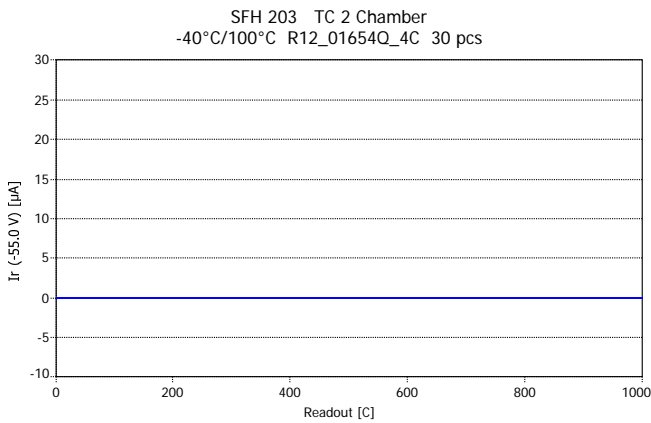
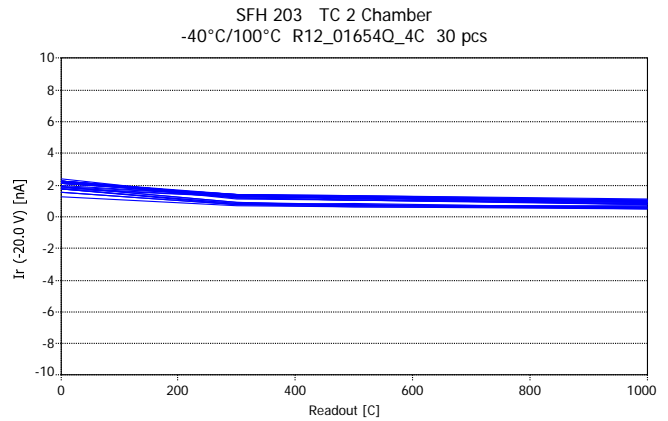
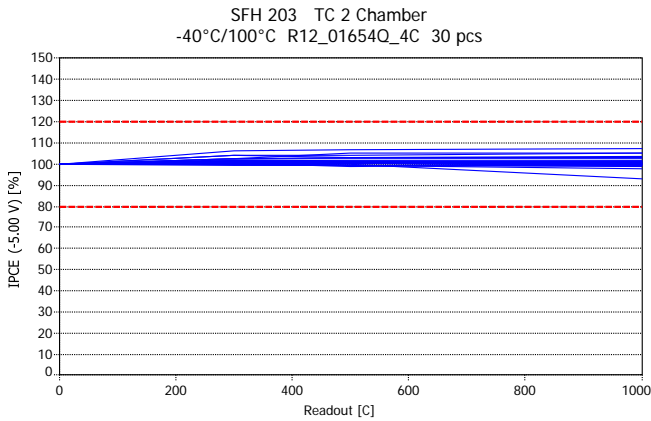
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	11 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

TC 2 Chamber -40/100°C

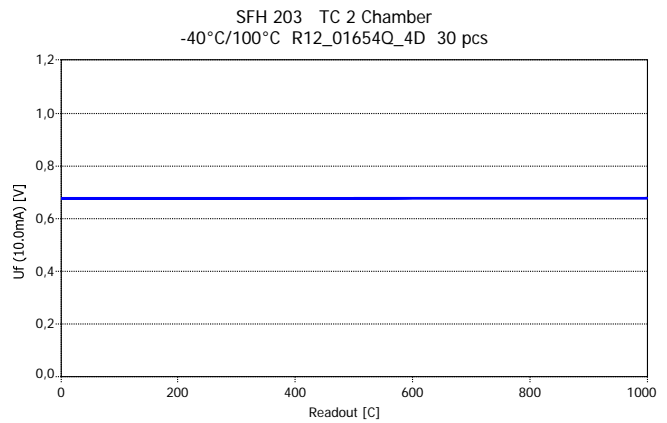
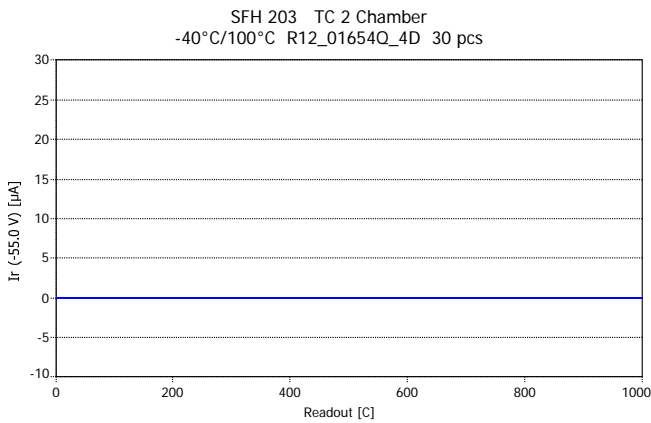
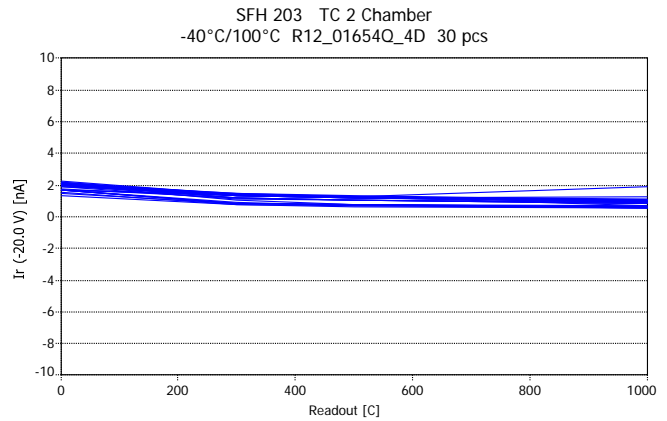
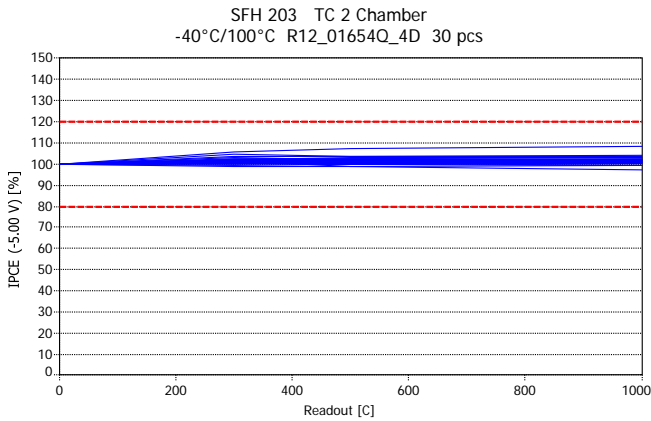
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	12 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

TC 2 Chamber -40/100°C

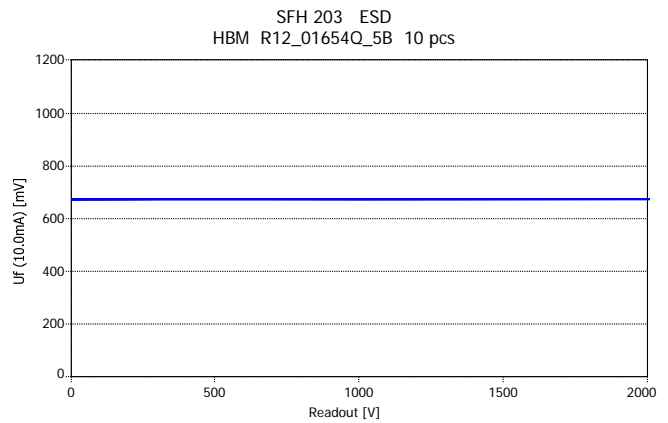
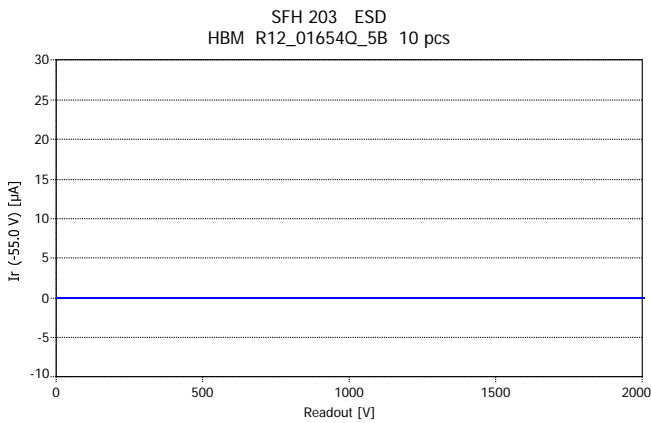
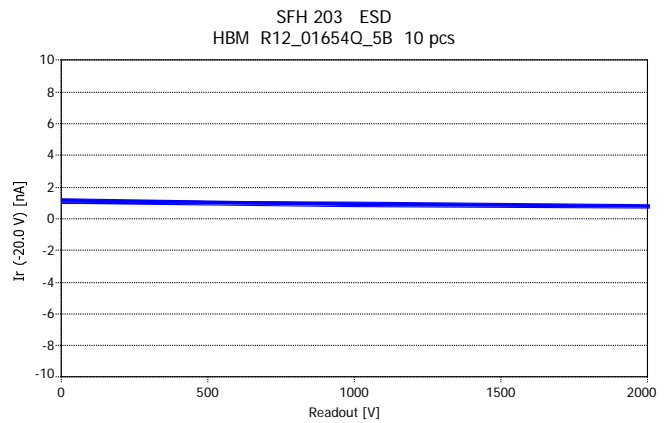
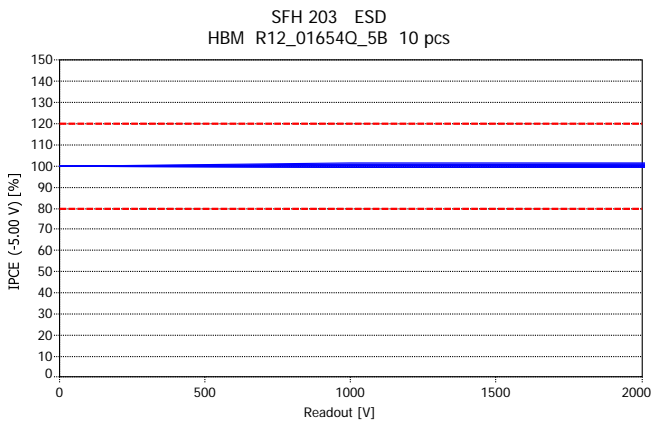
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	13 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

ESD Human body model

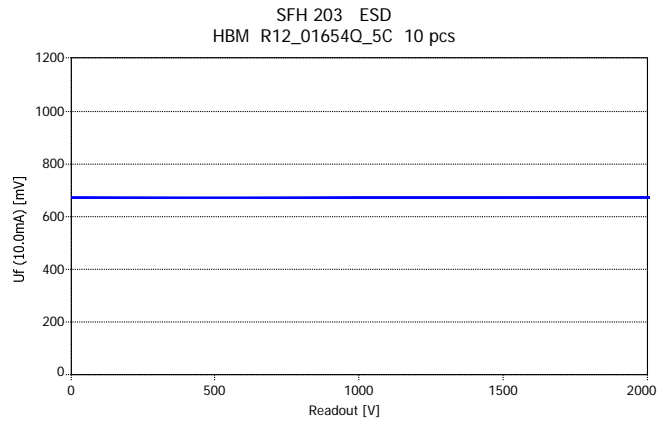
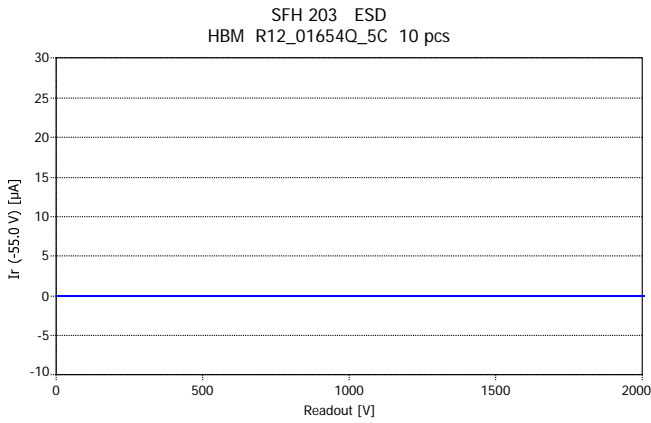
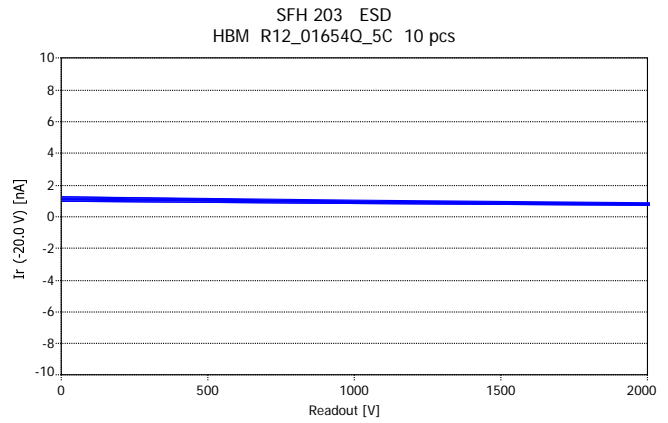
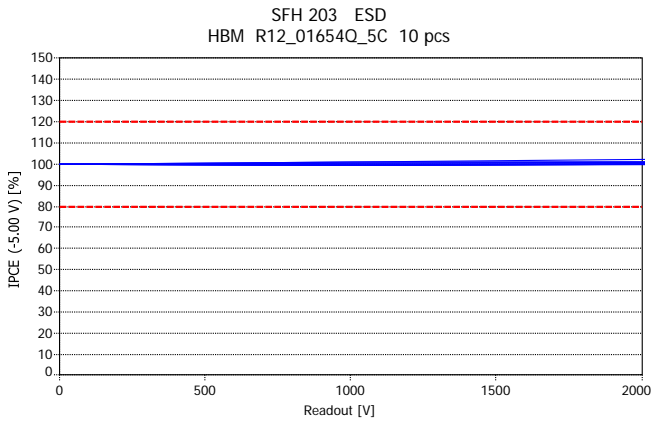
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	14 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

ESD Human body model

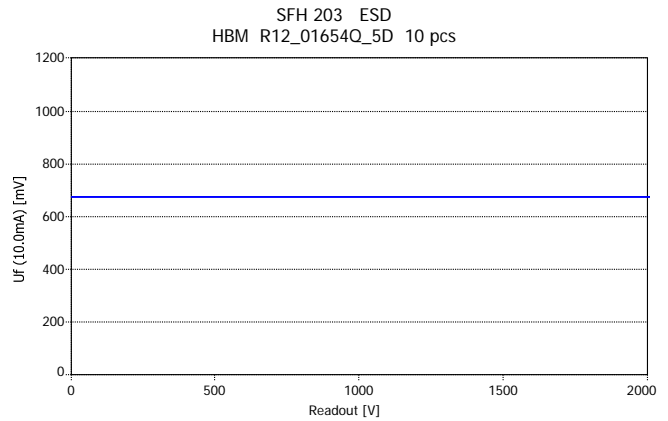
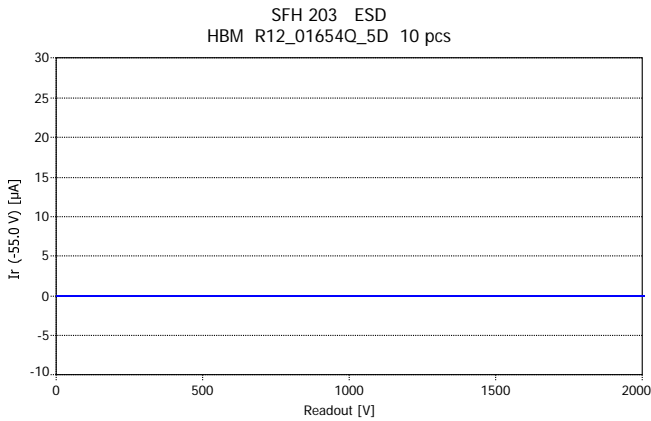
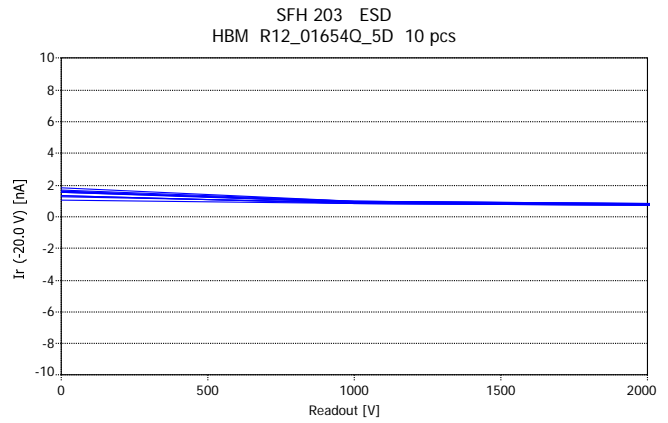
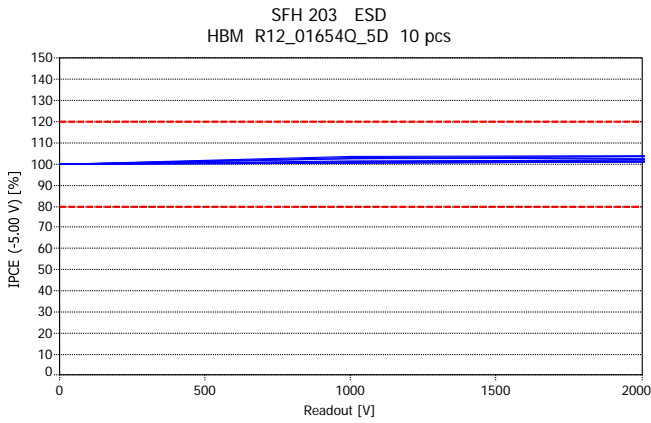
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	15 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

ESD Human body model

Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	16 / 16	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

SUBJECT: Qualification of additional chip source according to OS-PCN-2012-039-A1

DEVICE: BPW 34S
Family Package: DIL-SMT

Report No.: 130024C1
Date: 23.01.13

Preconditioning: Jedec Level IV

TEST PERFORMED	CONDITION	DURATION	SAMPLE SIZE	FAILURES		
				Elec.	Opt.	Vis.
Resistance to soldering heat (RTSH) <i>JESD22-A113</i>	Reflow soldering 260°C	3x	3x30	0	0	0
Temperature cycle (TC) <i>JESD22-A104</i>	-40°C/+100°C 15min each extreme	1000c	3x30	0	0	-
Temperature & humidity reverse bias (T&HRB) <i>JESD22A101</i>	+85°C/85%r.H. Vr = 12,8V	1000h	3x30	0	0	-

Failure criteria:

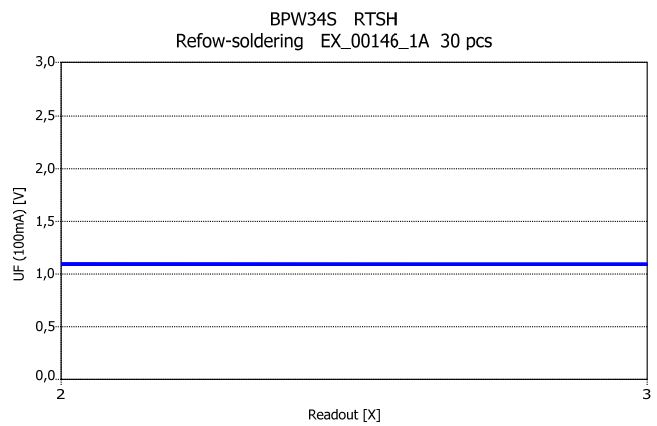
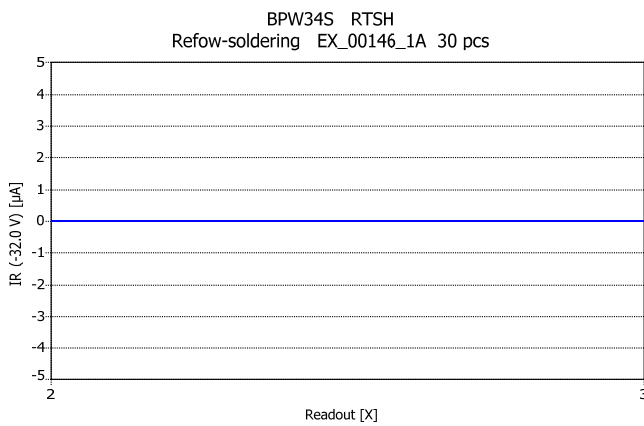
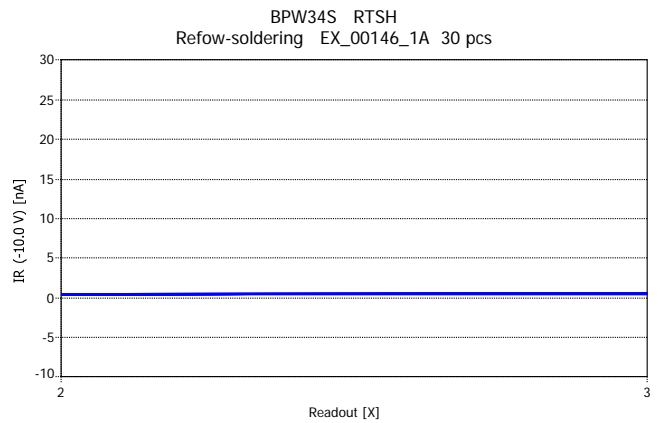
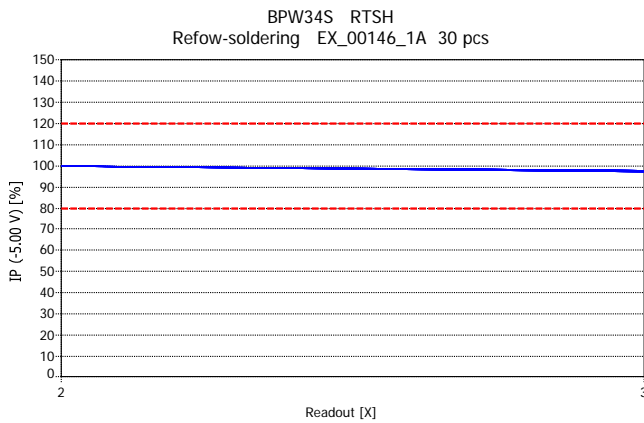
- Electrical failures: Vf (If = 100mA) > 1,5V; ± 10% from initial value
 IR (Vr = 32V E=0) > 5µA
 IR (Vr = 10V E=0) > 30nA
- Optical failures: Ip (Vr = 5V) absolute limit: ± 20% max. from initial value
- Visual failures: broken or damaged package or leads

Conclusion: Devices fulfill the reliability requirements.

Status	Page	Departement	Performed by	Reviewed by
Qualification Report	1 / 10	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

RTSH Reflow-soldering

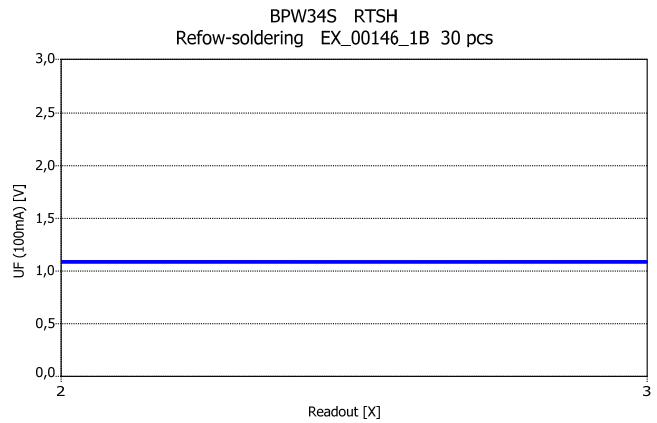
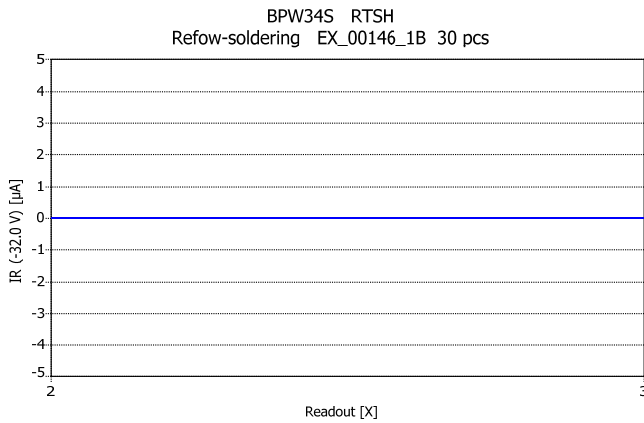
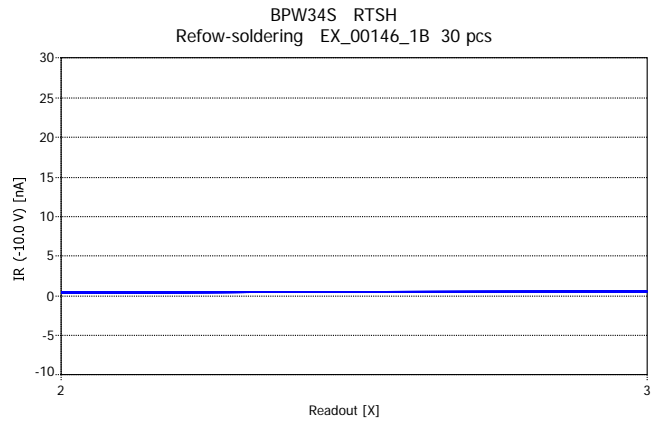
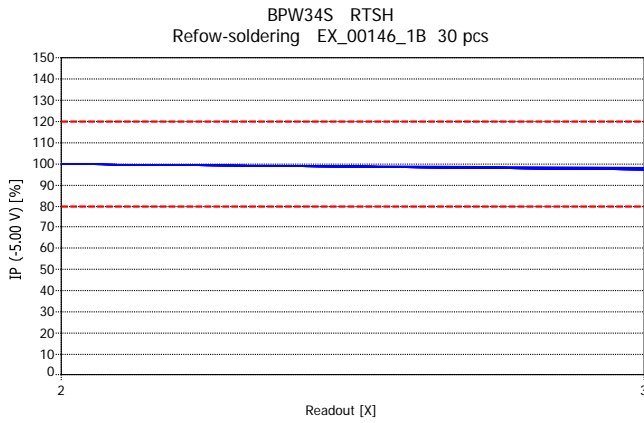
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	2 / 10	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

RTSH Reflow-soldering

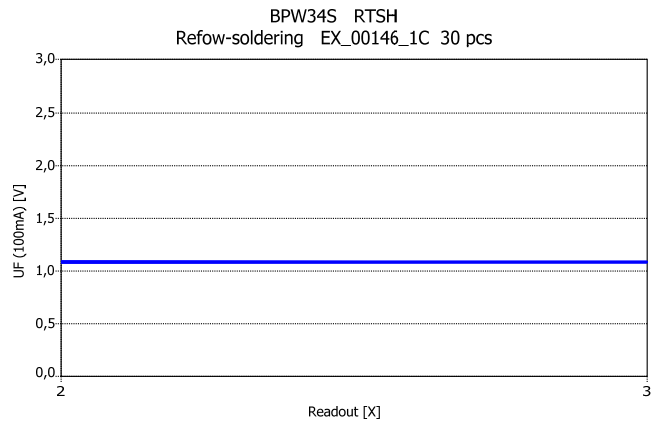
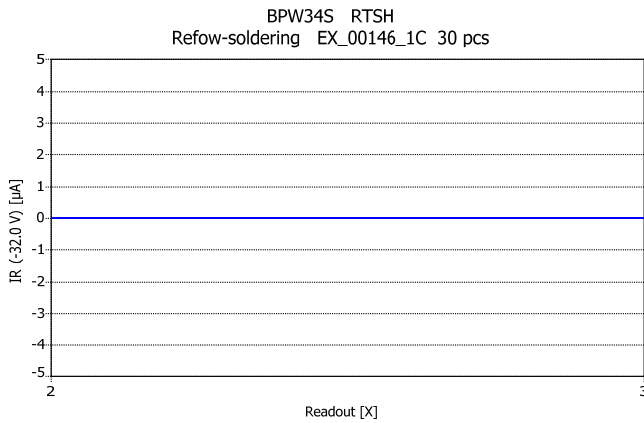
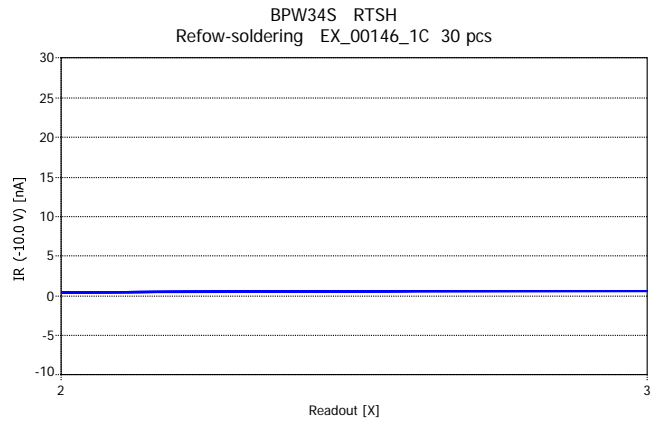
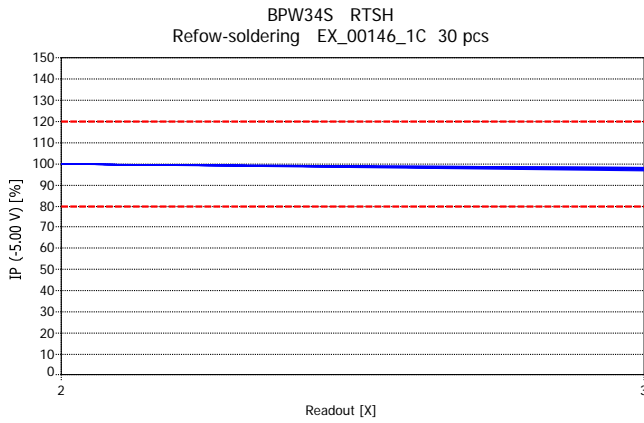
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	3 / 10	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

RTSH Reflow-soldering

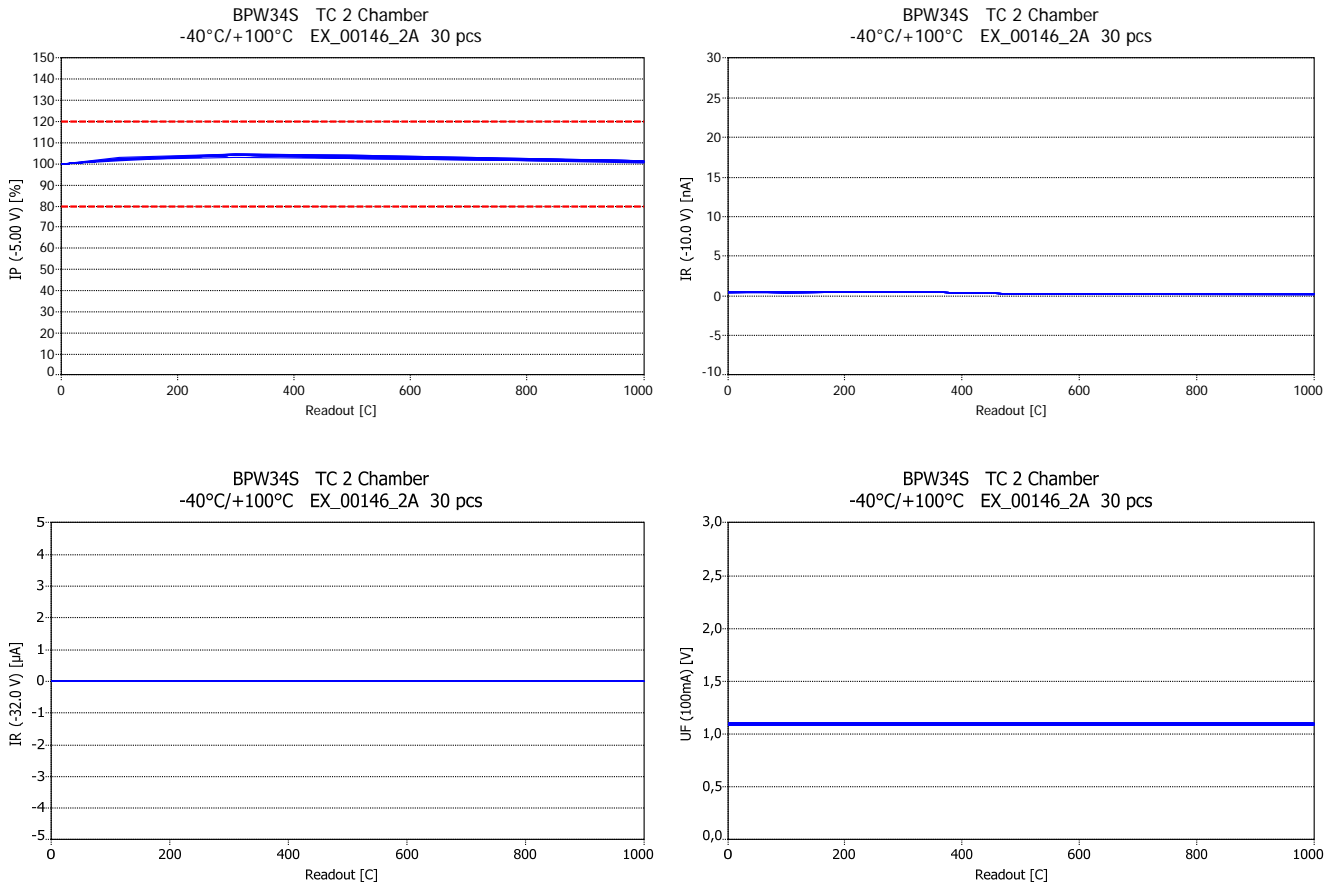
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	4 / 10	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

TC 2 Chamber -40/100°C

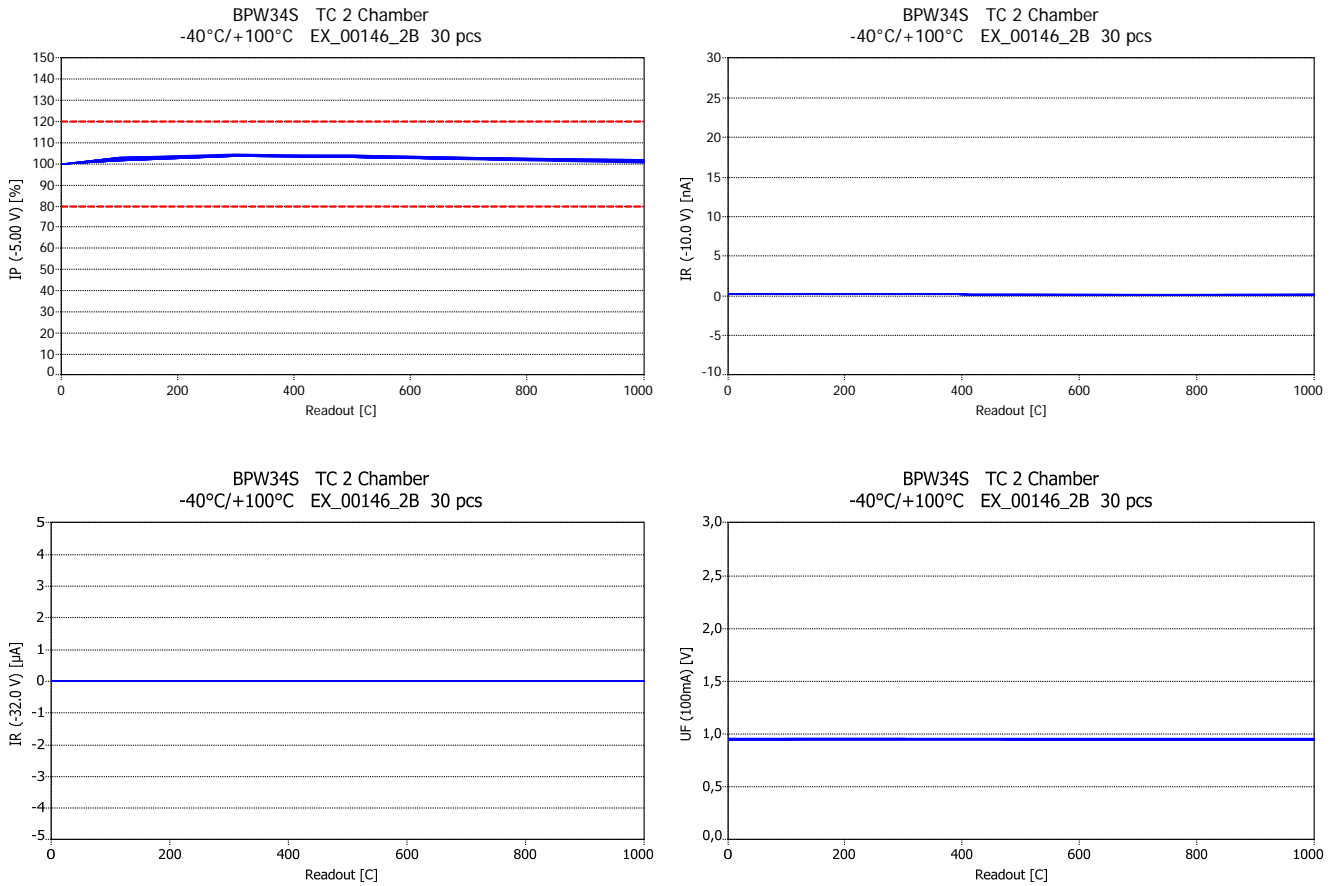
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	5 / 10	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

TC 2 Chamber -40/100°C

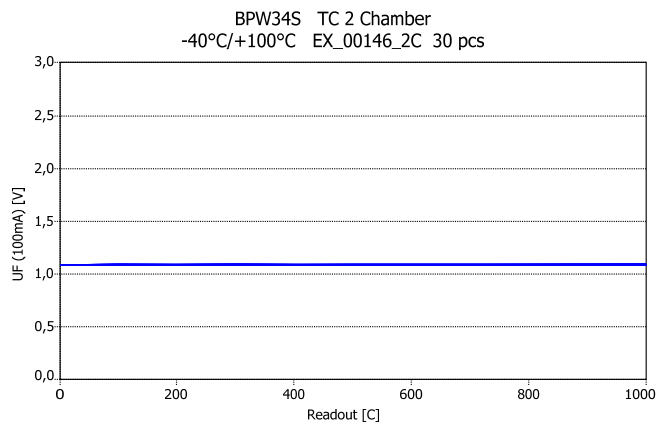
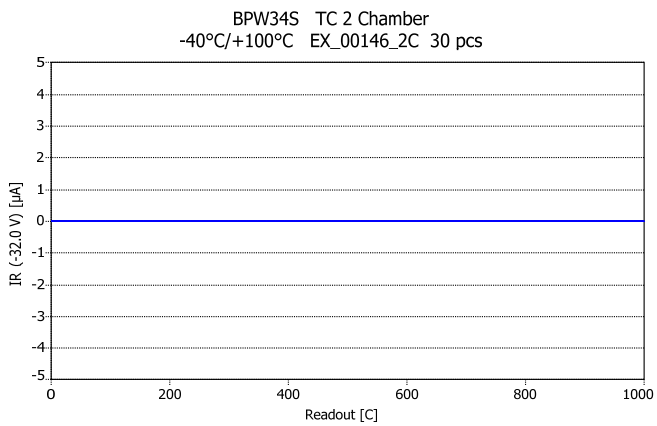
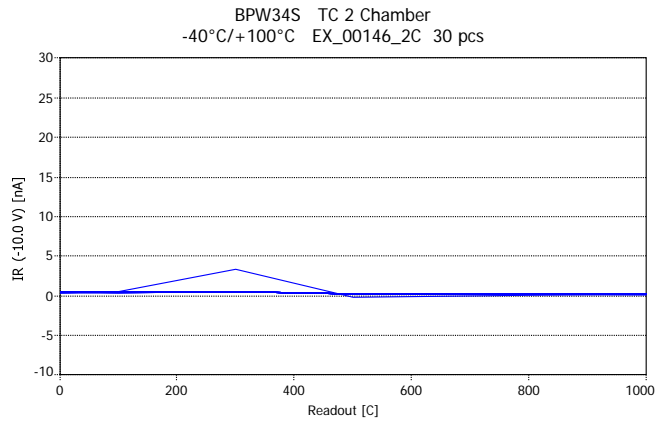
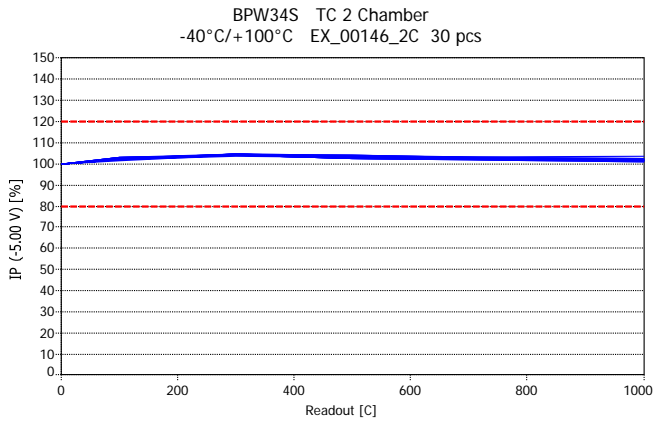
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	6 / 10	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

TC 2 Chamber -40/100°C

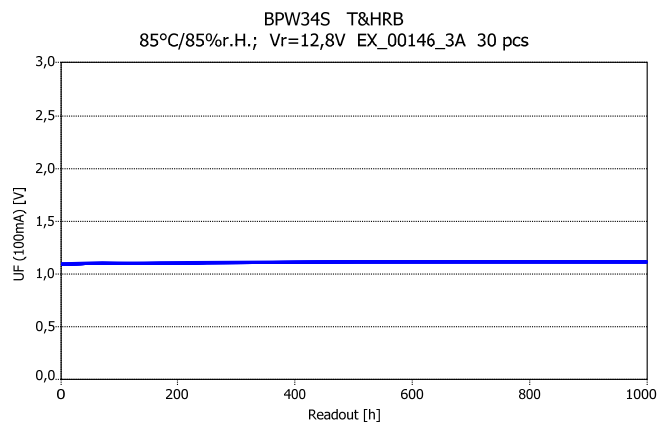
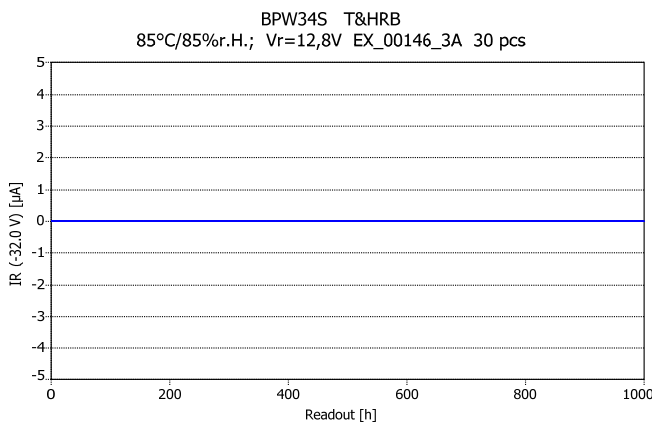
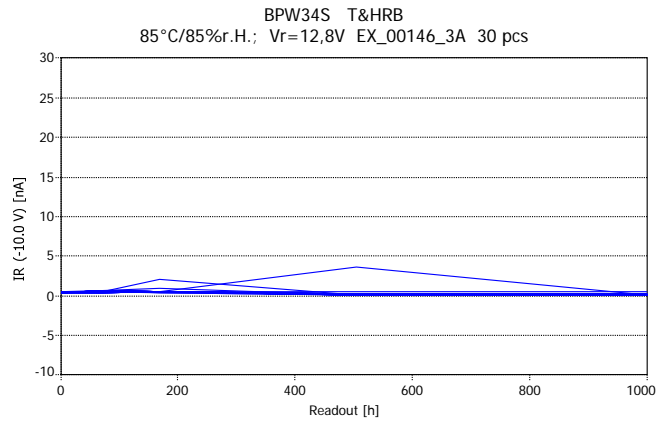
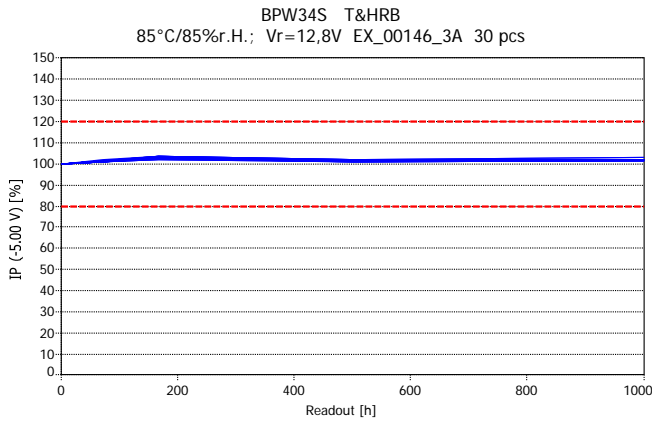
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	7 / 10	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

T&HRB 85°C/85%r.H.; 12,8V

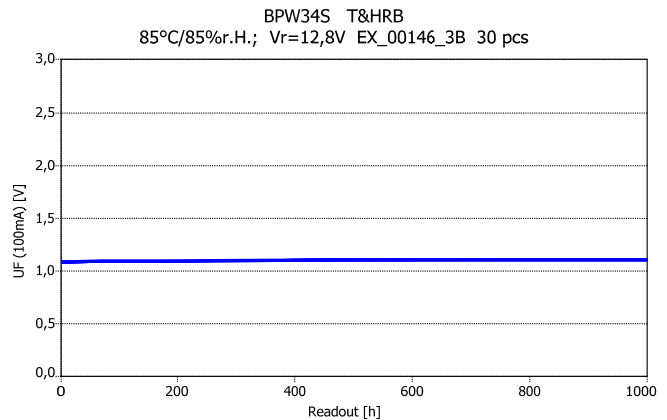
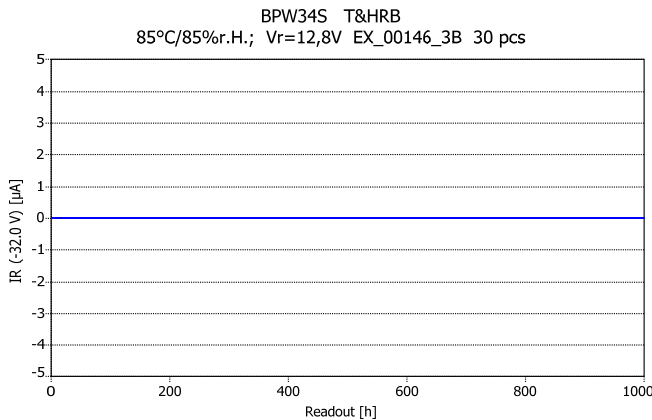
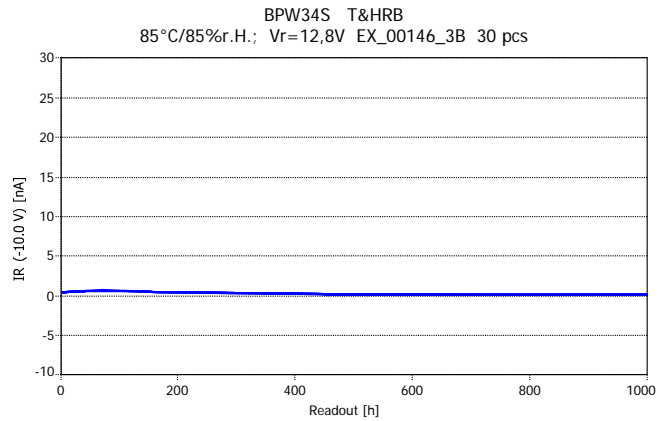
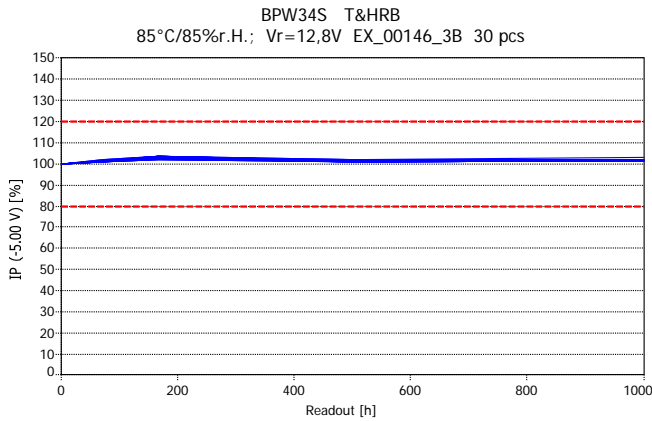
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	8 / 10	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

T&HRB 85°C/85%r.H.; 12,8V

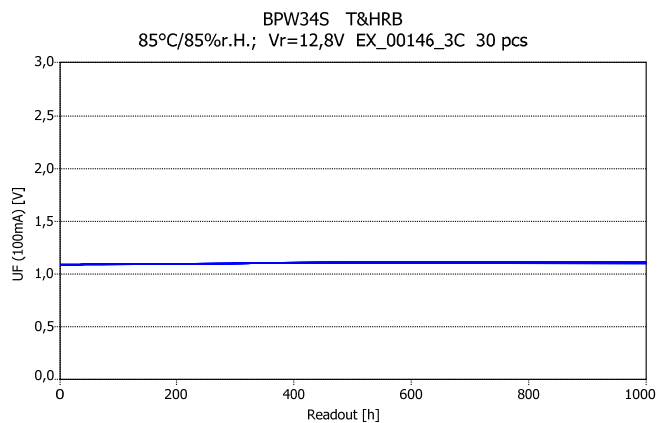
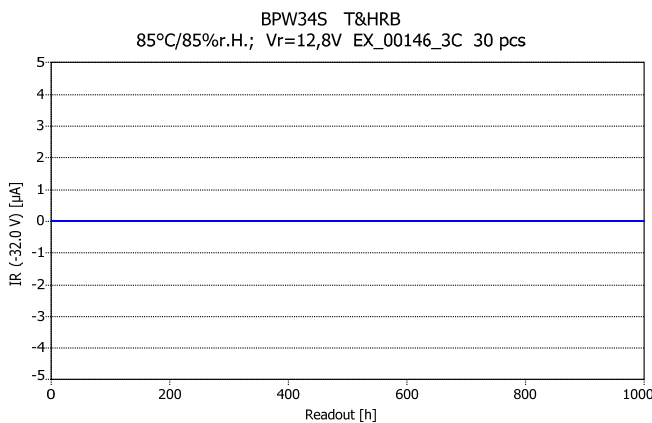
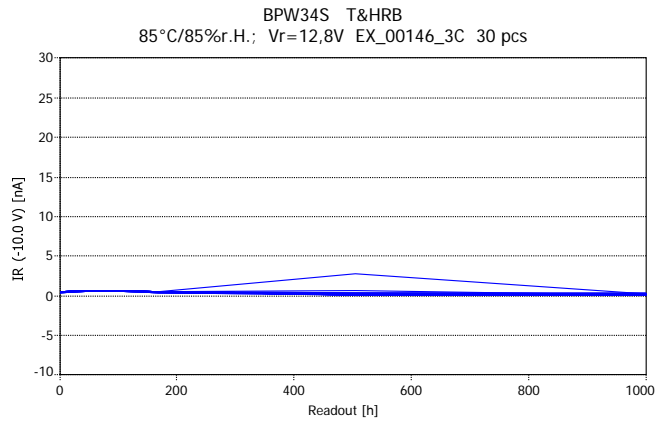
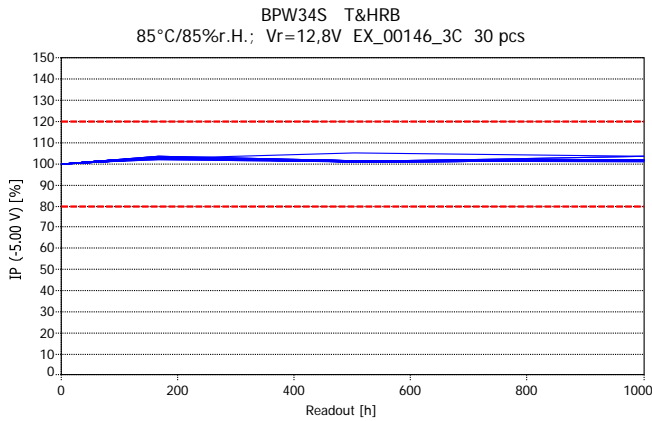
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	9 / 10	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

T&HRB 85°C/85%r.H.; 12,8V

Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	10 / 10	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

SUBJECT: Qualification of additional chip source according to OS-PCN-2012-039-A1

DEVICE: BPW 34FAS
Family Package: DIL-SMT

Report No.: 130030C1
Date: 25.01.13

Preconditioning: Jedec Level IV

TEST PERFORMED	CONDITION	DURATION	SAMPLE SIZE	FAILURES		
				Elec.	Opt.	Vis.
Resistance to soldering heat (RTSH) <i>JESD22-A113</i>	Reflow soldering 260°C	3x	3x30	0	0	0
High temperature reverse bias (HTRB) <i>JESD22-A108</i>	T _A = 100°C V _r = 12,8V	1000h	3x30	0	0	-
Temperature & humidity reverse bias (T&HRB) <i>JESD22A101</i>	+85°C/85%r.H. V _r = 12,8V	1000h	3x30	0	0	-
Temperature cycle (TC) <i>JESD22-A104</i>	-40°C/+100°C 15min each extreme	1000c	3x30	0	0	-

Failure criteria:

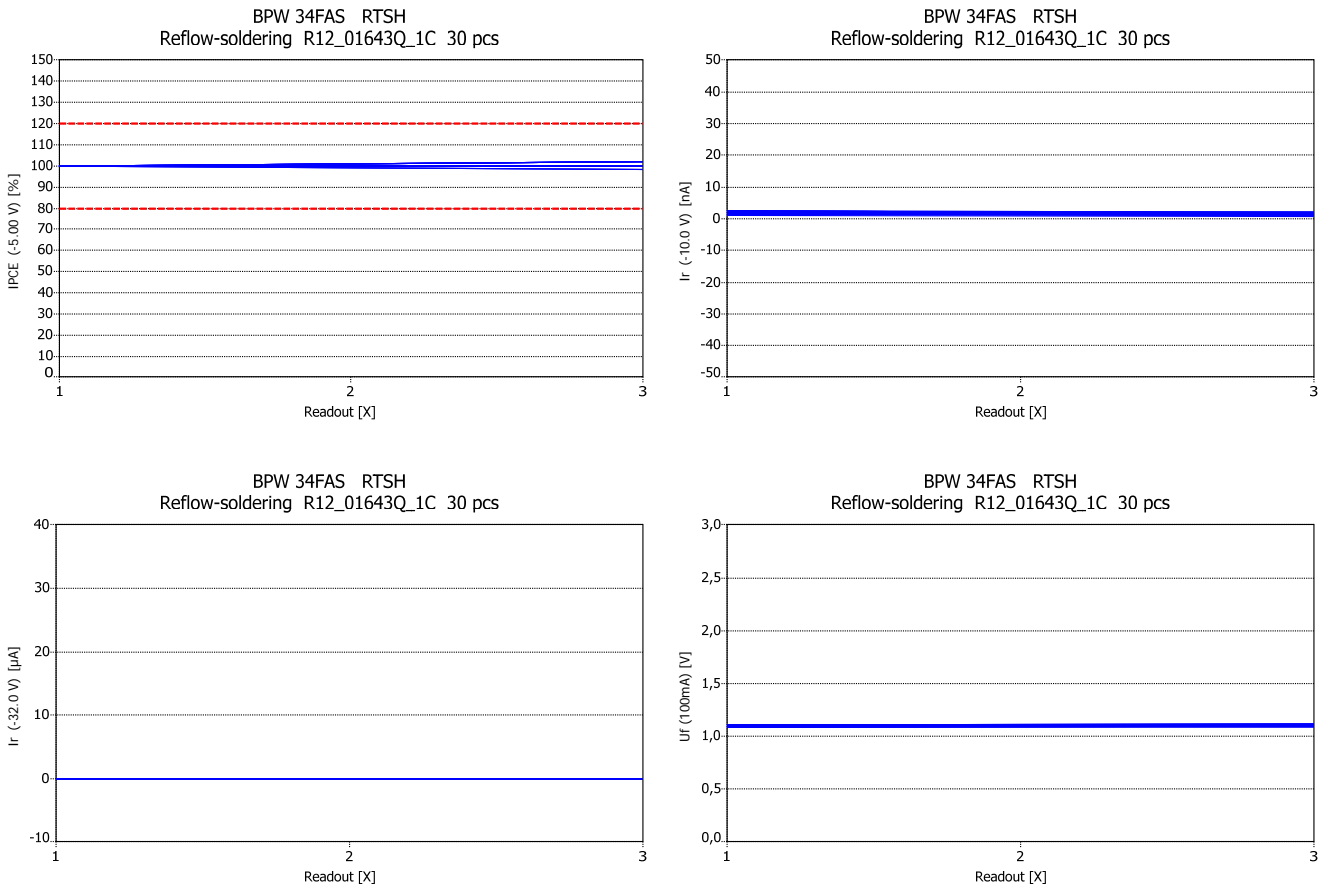
- Electrical failures:
 - V_f (I_f = 100mA) > 1,5V; ± 10% from initial value
 - I_R (V_r = 32V E=0) > 5µA
 - I_R (V_r = 10V E=0) > 30nA
- Optical failures:
 - I_p (V_r = 5V) absolute limit: ± 20% max. from initial value
- Visual failures:
 - broken or damaged package or leads

Conclusion: Devices fulfill the reliability requirements.

Status	Page	Departement	Performed by	Reviewed by
Qualification Report	1 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

RTSH Reflow-Soldering

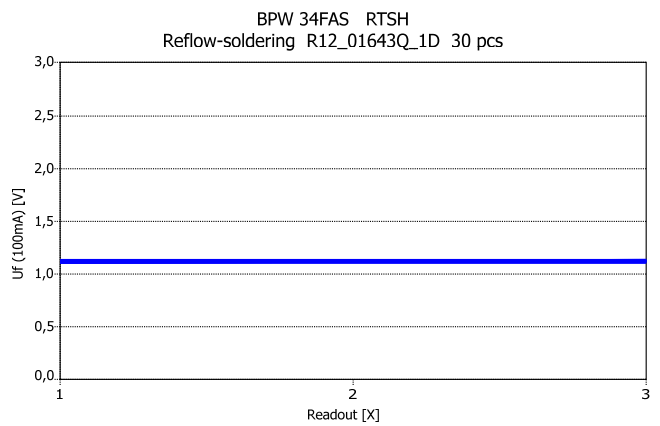
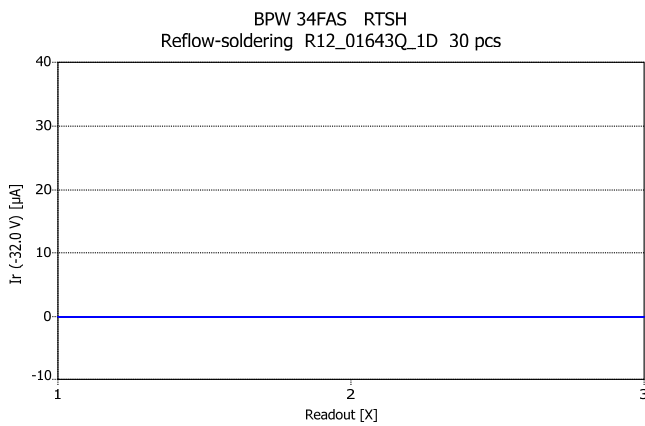
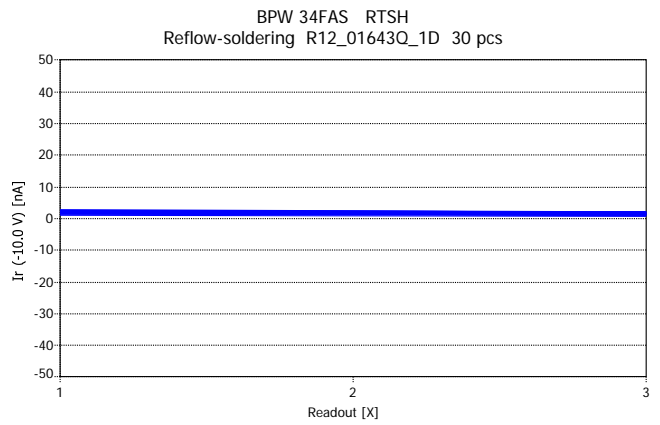
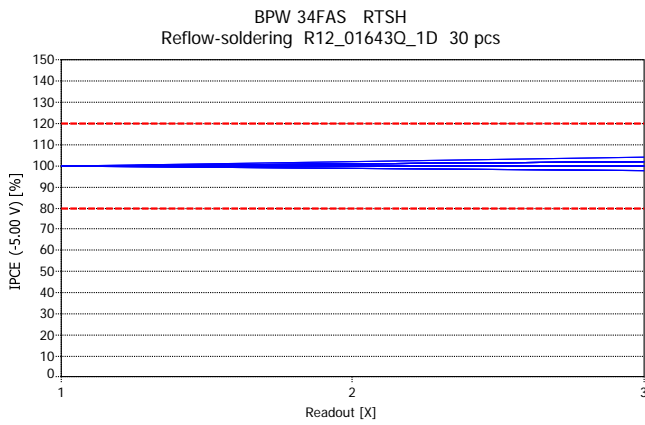
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	2 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

RTSH Reflow-Soldering

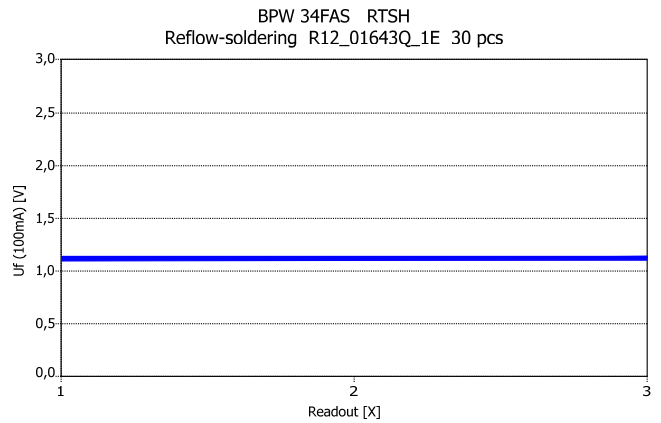
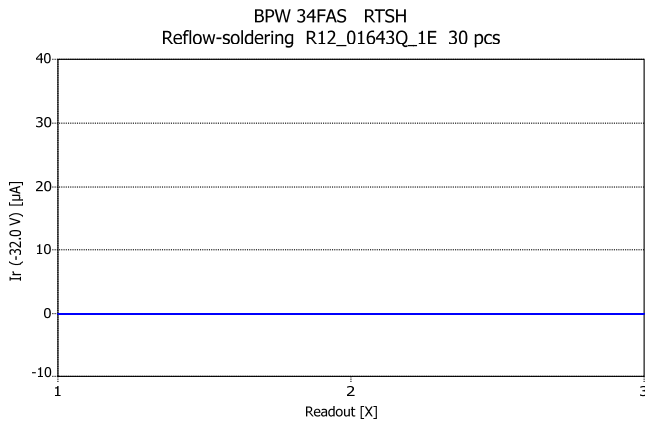
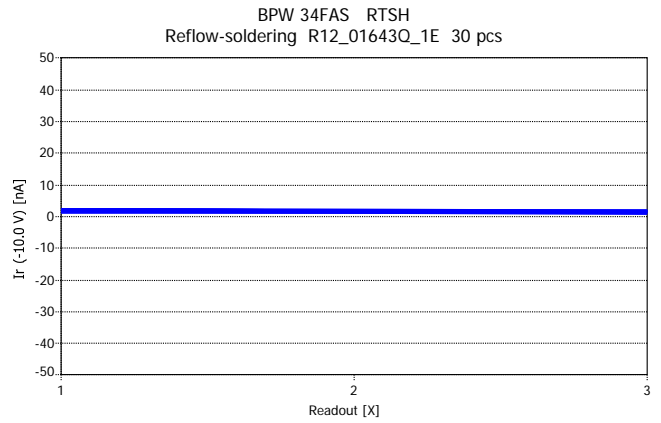
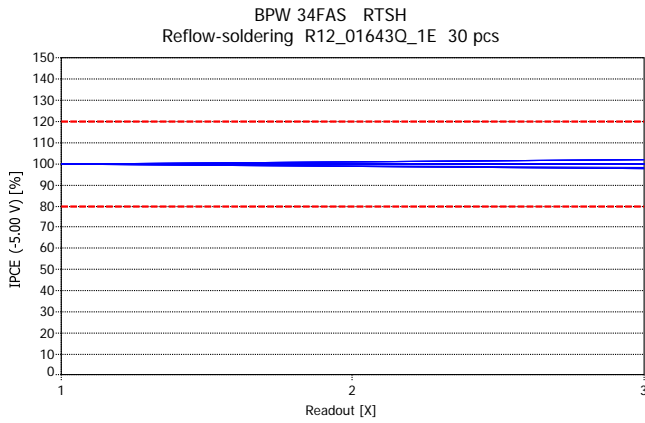
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	3 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

RTSH Reflow-Soldering

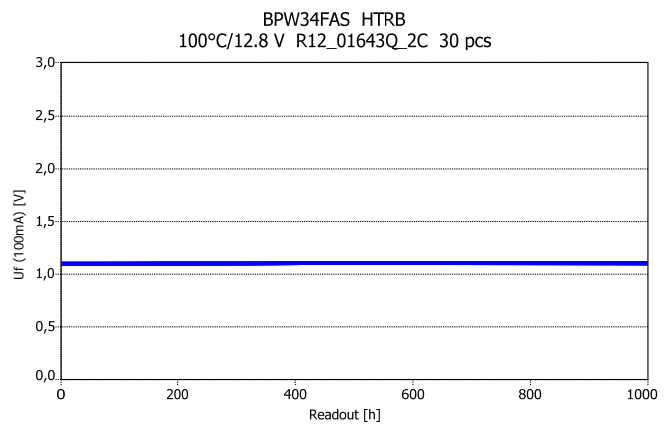
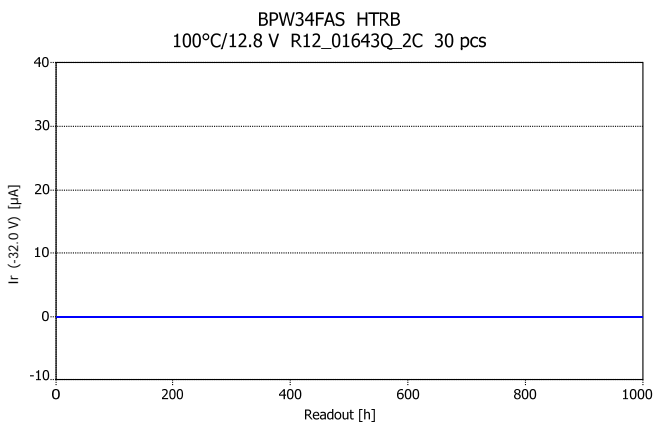
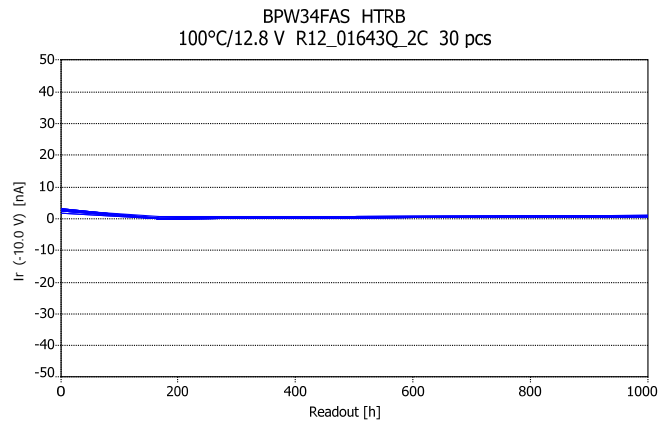
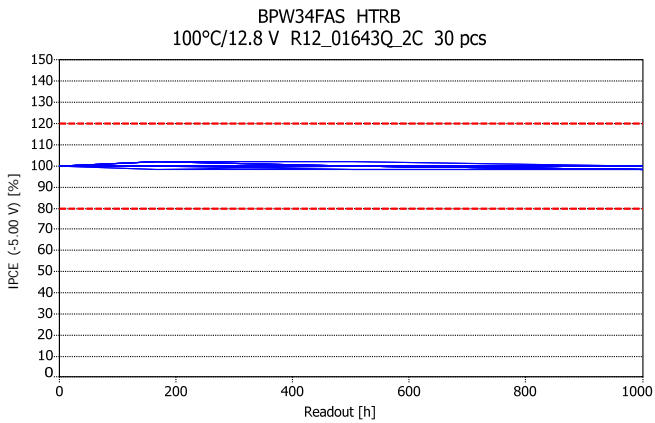
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	4 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

HTRB 100°C/12,8V

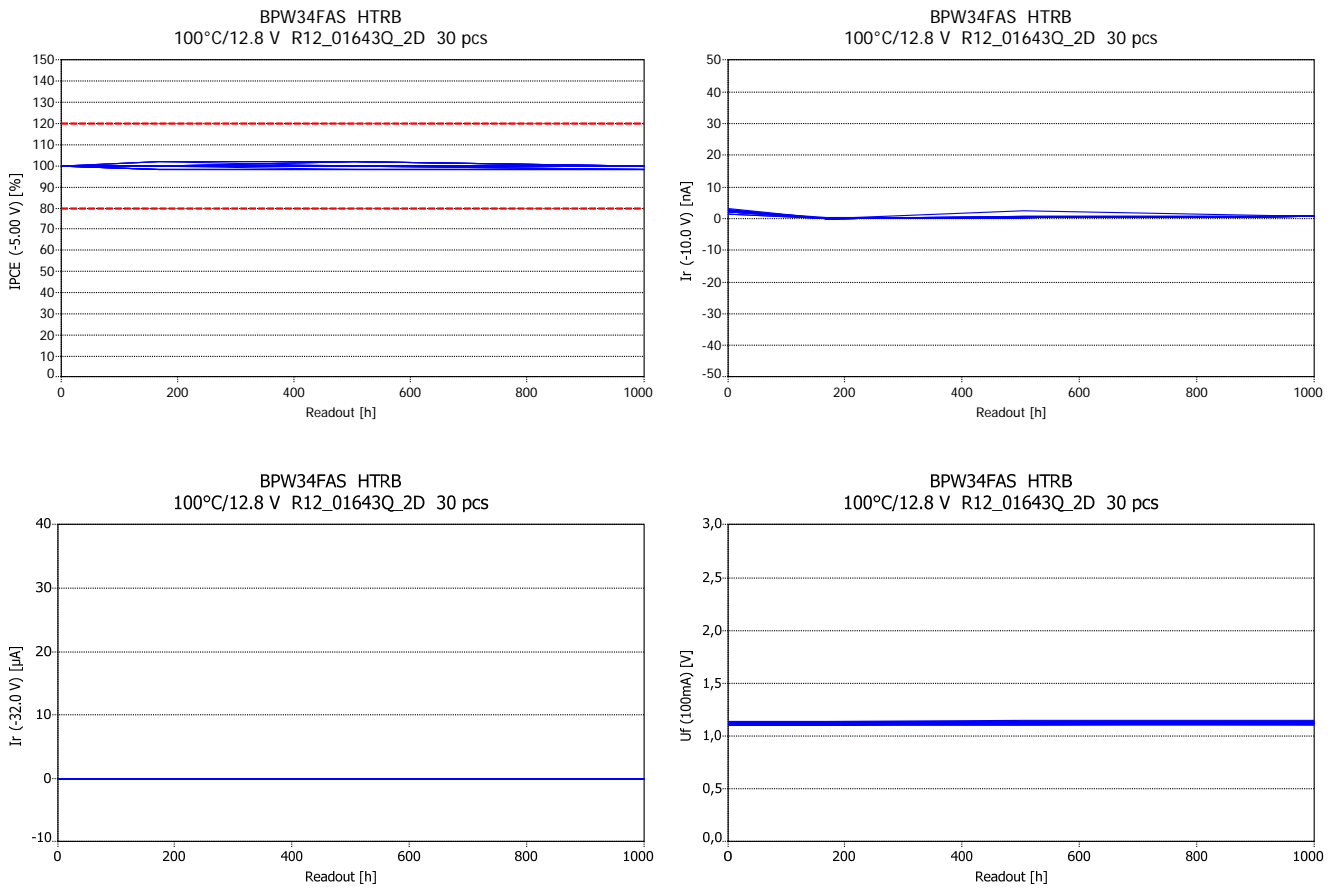
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	5 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

HTRB 100°C/12,8V

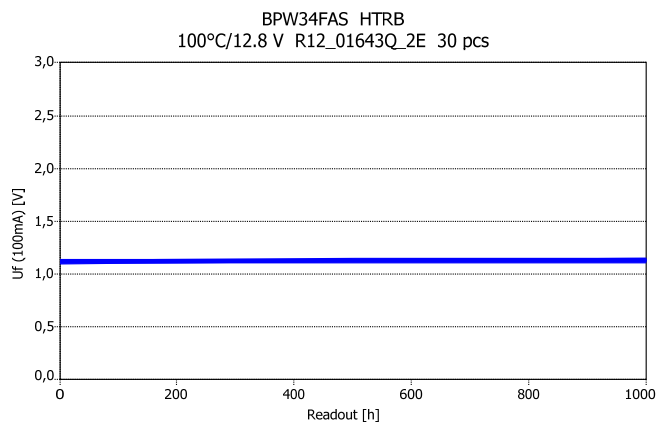
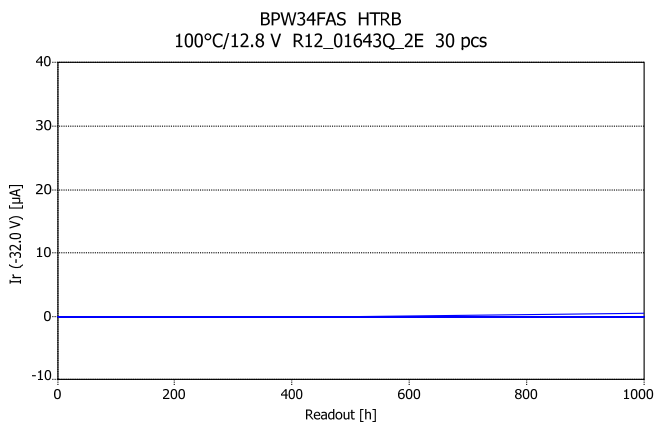
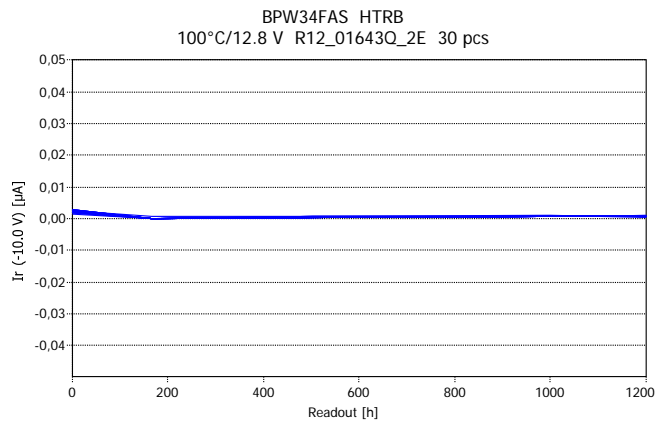
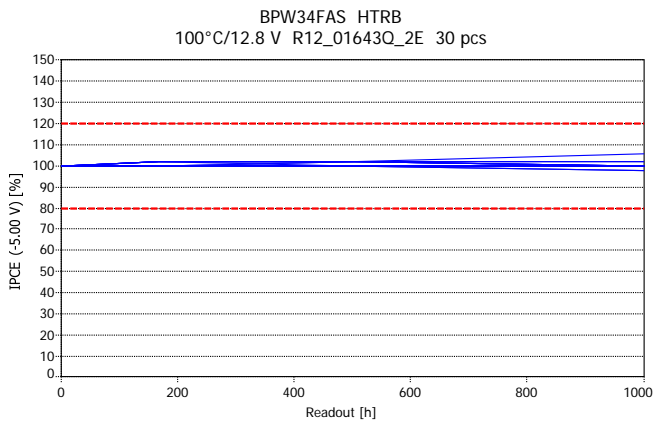
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	6 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

HTRB 100°C/12,8V

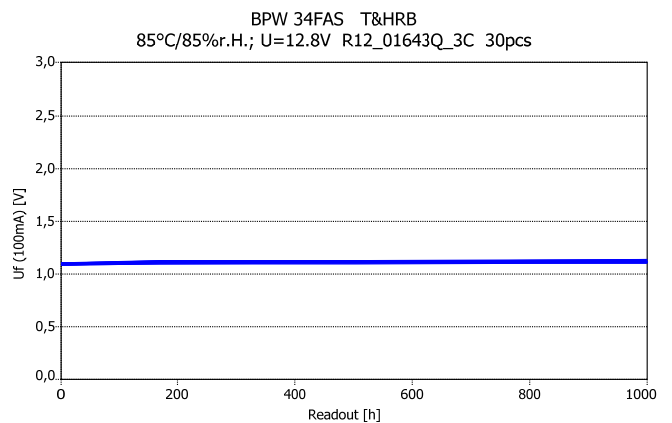
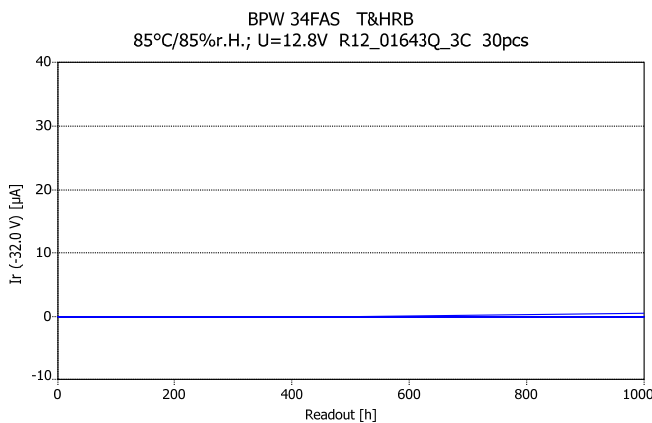
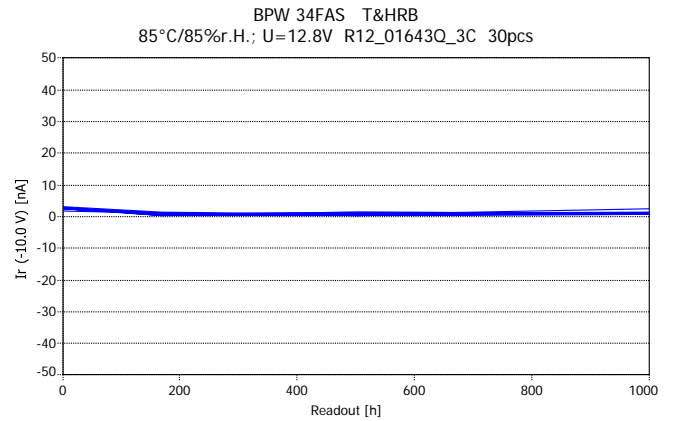
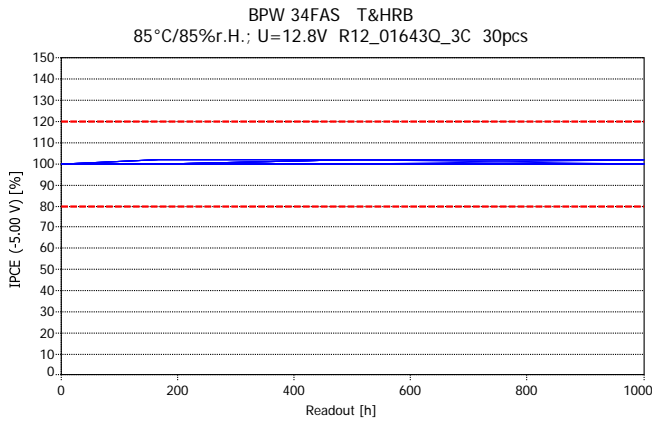
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	7 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

T&HRB 85°C/85%r.H.; 12,8V

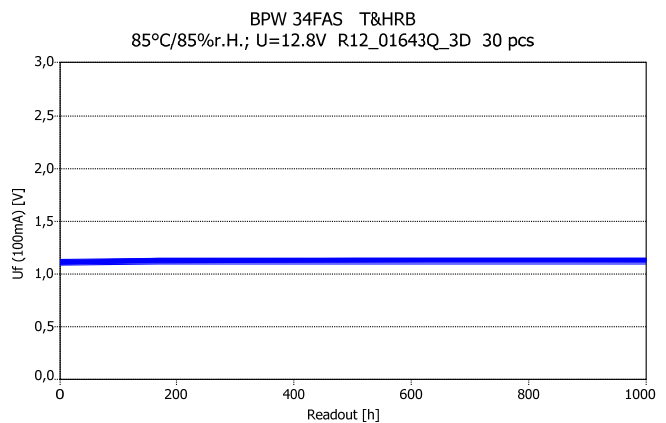
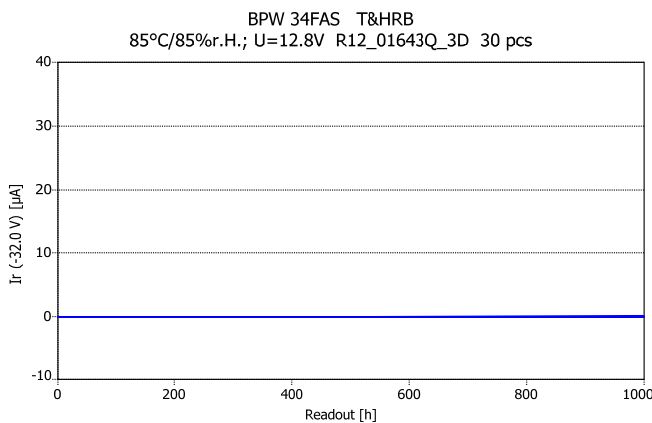
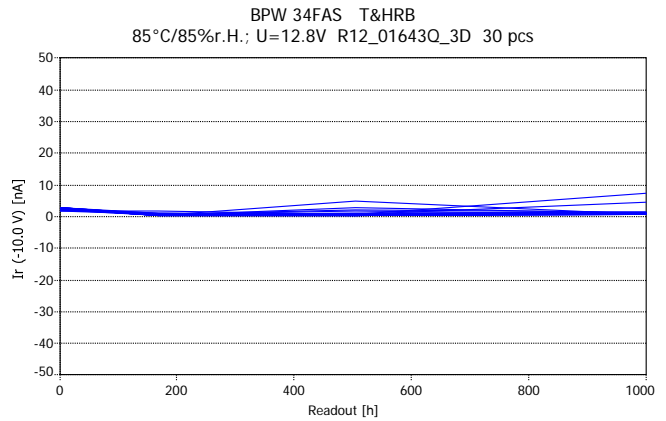
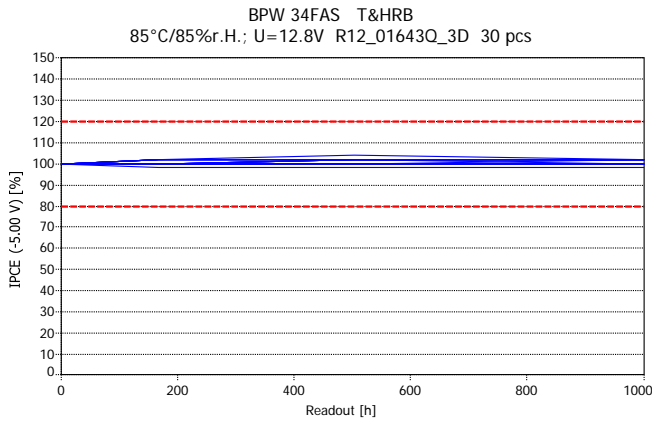
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	8 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

T&HRB 85°C/85%r.H.; 12,8V

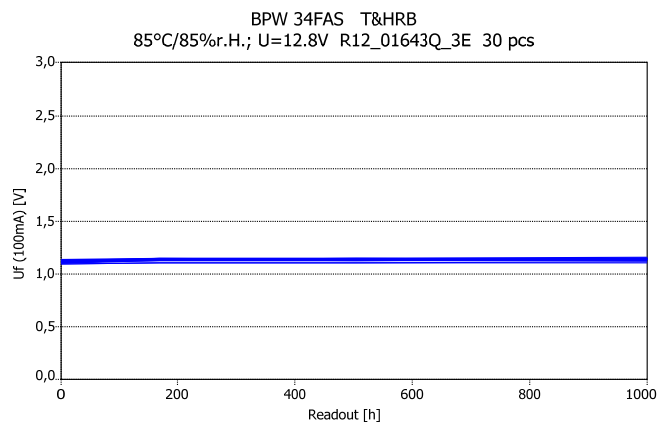
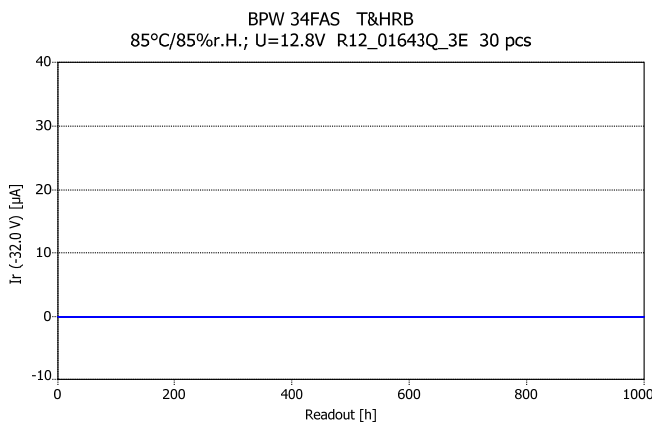
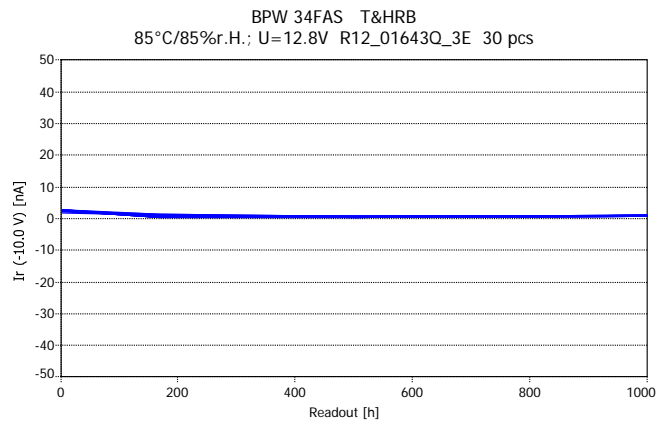
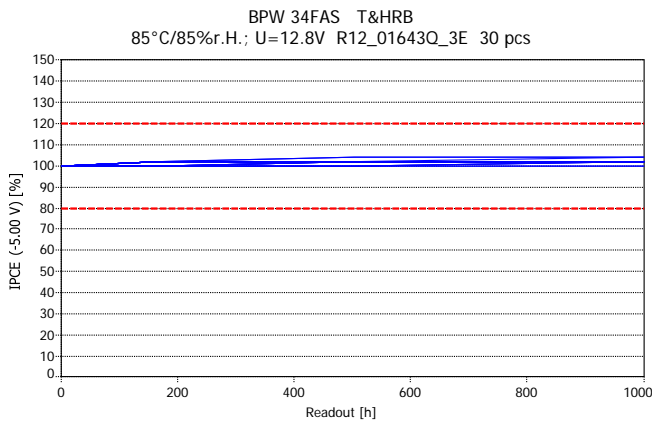
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	9 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

T&HRB 85°C/85%r.H.; 12,8V

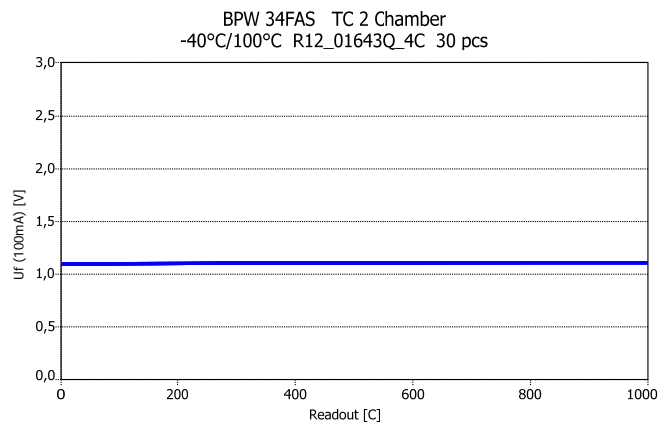
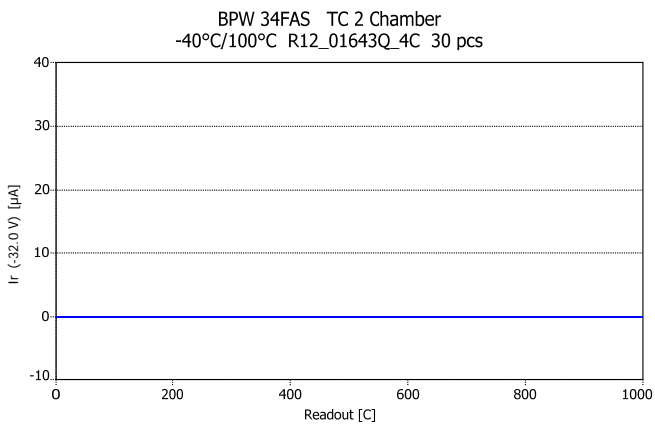
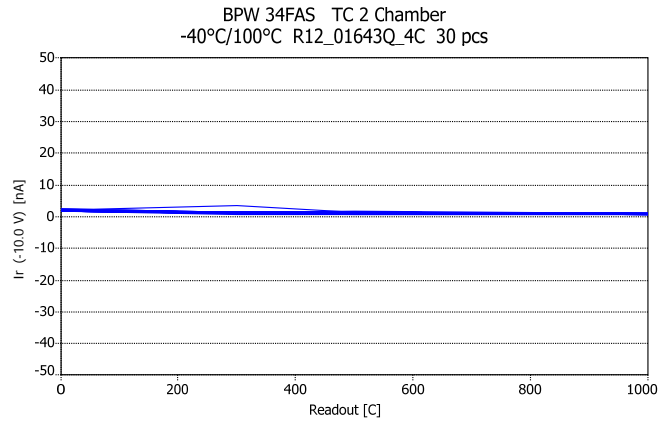
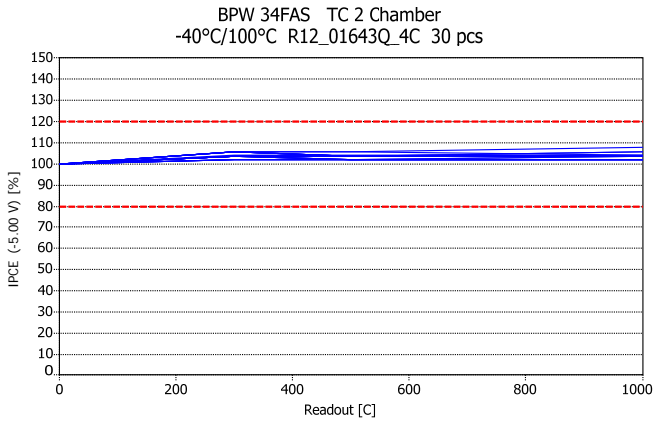
Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	10 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

TC 2 Chamber -40/100°C

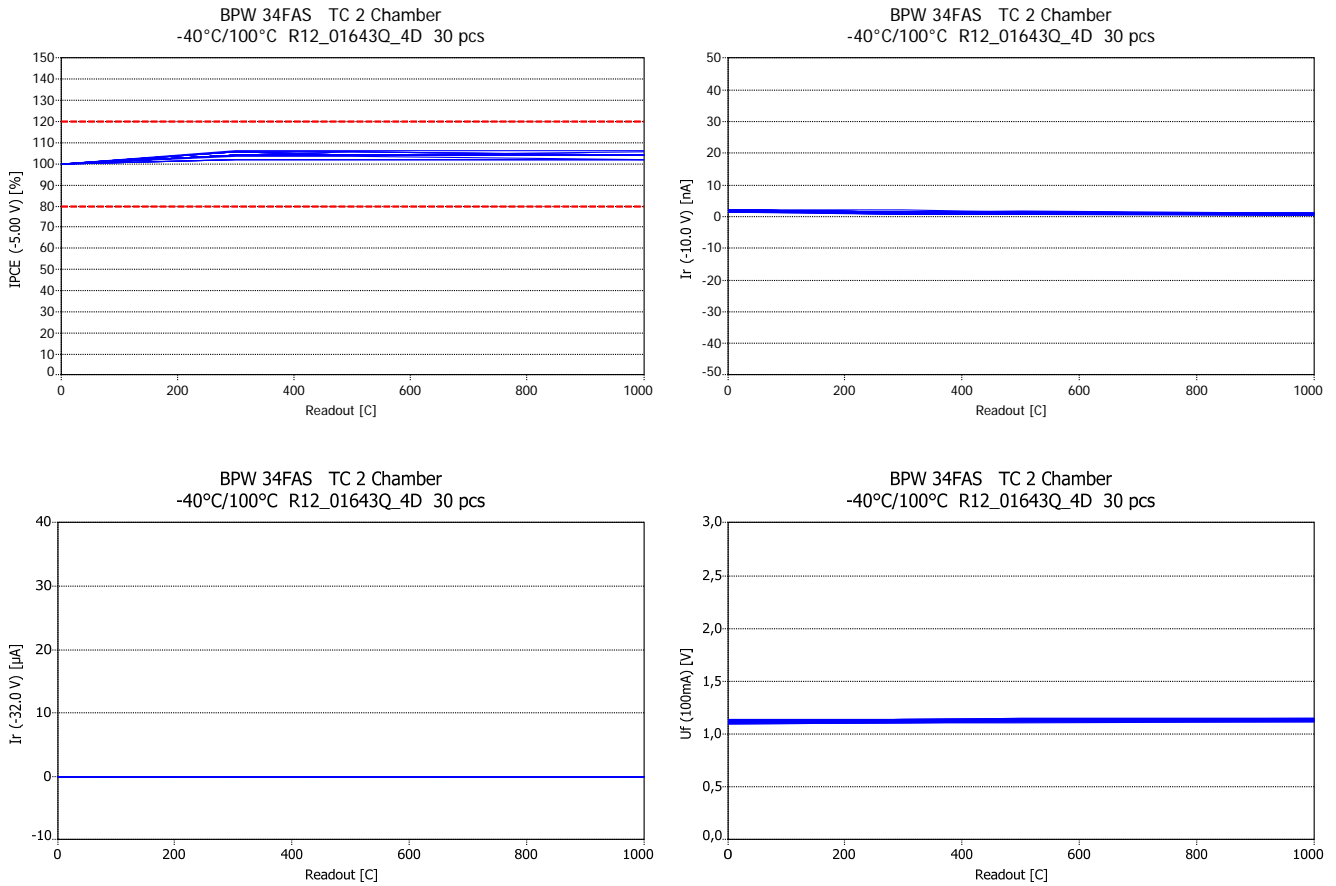
Lot A



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	11 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

TC 2 Chamber -40/100°C

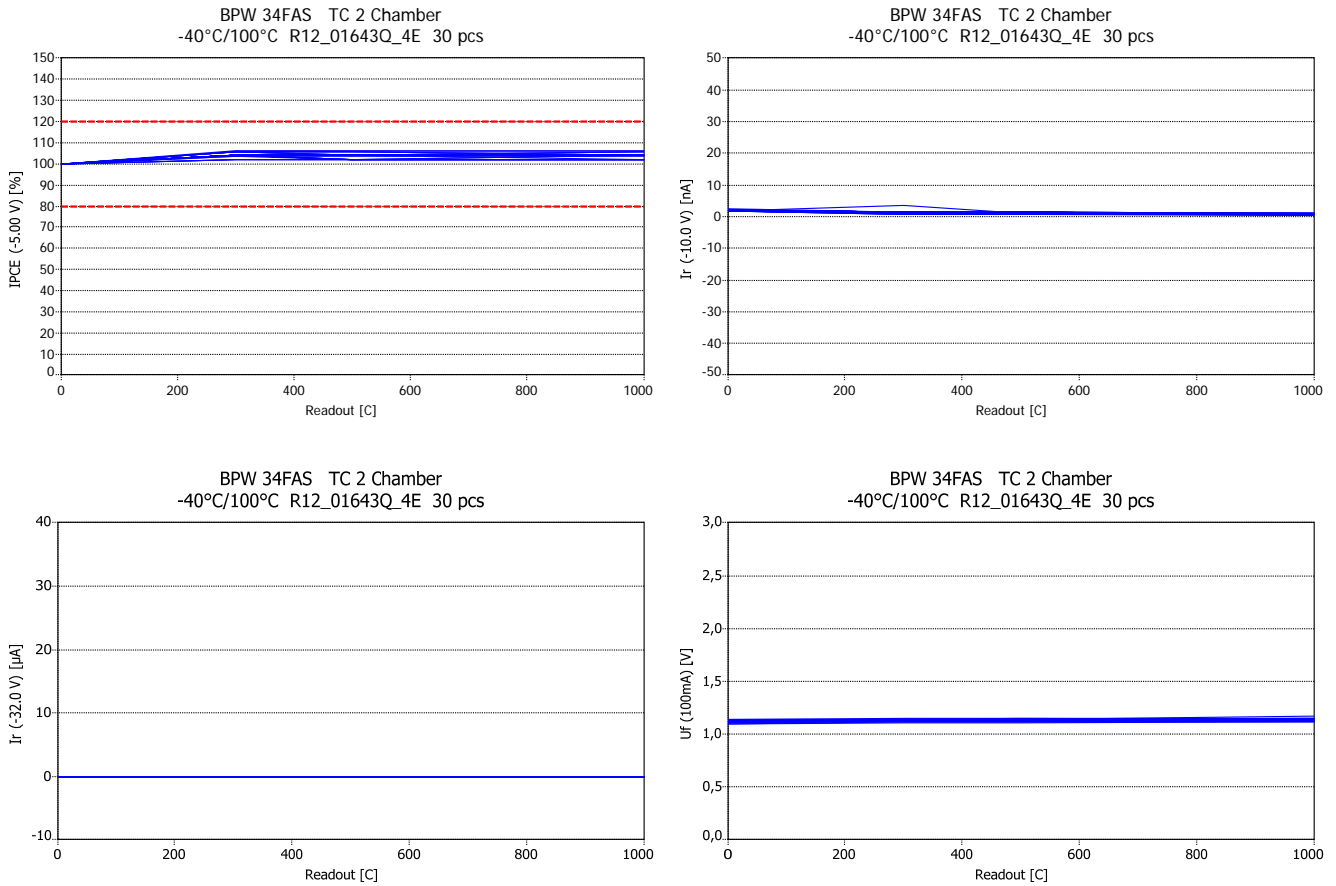
Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	12 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

TC 2 Chamber -40/100°C

Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	13 / 13	OS QM CQM1	M. Bittner (signed)	K. Brückner (signed)

SUBJECT: Qualification of additional chip source according to OS-PCN-2012-039-A1

DEVICE: SFH 206K
Family Package: 5mm Radial

Report No.: 130025C1
Date: 23.01.13

Preconditioning: 1x TTW-Soldering

TEST PERFORMED	CONDITION	DURATION	SAMPLE SIZE	FAILURES		
				Elec.	Opt.	Vis.
Resistance to soldering heat (RTSH) <i>JESD22-B106</i>	TTW soldering 260°C	3x	3x30	0	0	0
Temperature & humidity reverse bias (T&HRB) <i>JESD22A101</i>	+85°C/85%r.H. Vr = 26V	1000h	3x30	0	0	-
Temperature cycle (TC) <i>JESD22-A104</i>	-40°C/+100°C 15min each extreme	1000c	3x30	0	0	-
High temperature reverse bias (HTRB) <i>JESD22-A108</i>	T _A = 85°C Vr = 26V	1000h	3x30	0	0	-
ESD (HBM) <i>JESD22-A114</i>	Human body model	2000V	3x10	0	0	-

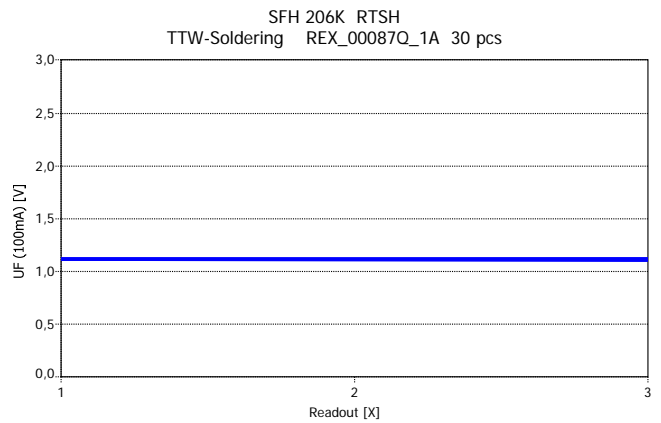
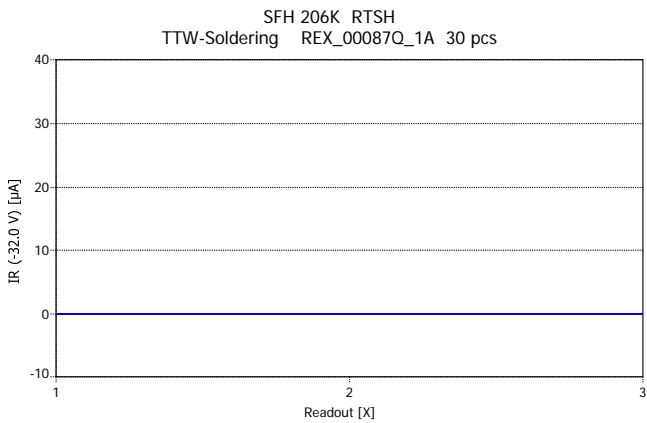
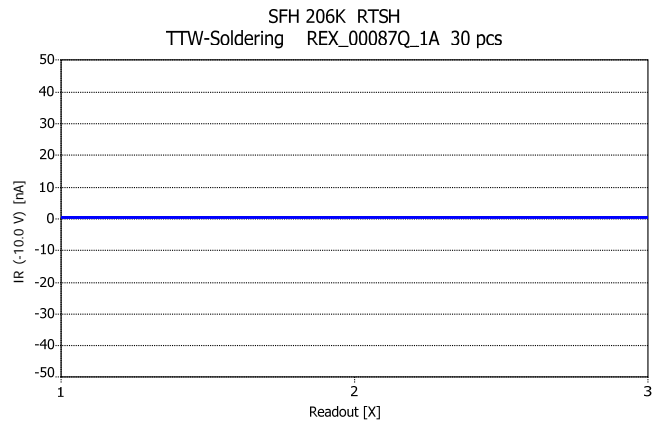
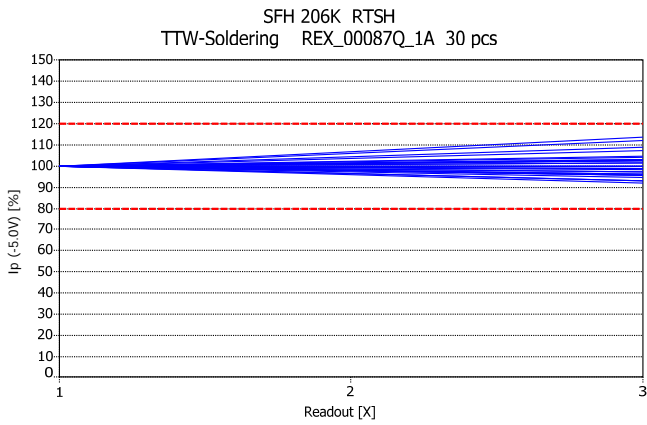
Failure criteria:

- Electrical failures: Vf (If =100mA E=0) > 1,5V V; ± 10% from initial value
 IR (Vr = 32V E=0) > 5µA
 IR (Vr = 10V E=0) > 30nA
- Optical failures: Ip (Vr =5V) absolute limit: ± 20% max from initial value
- Visual failures: broken or damaged package or leads

Conclusion: Devices fulfill the reliability requirements.

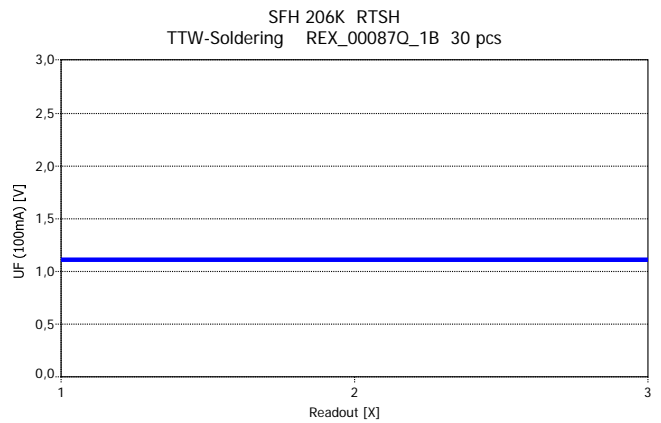
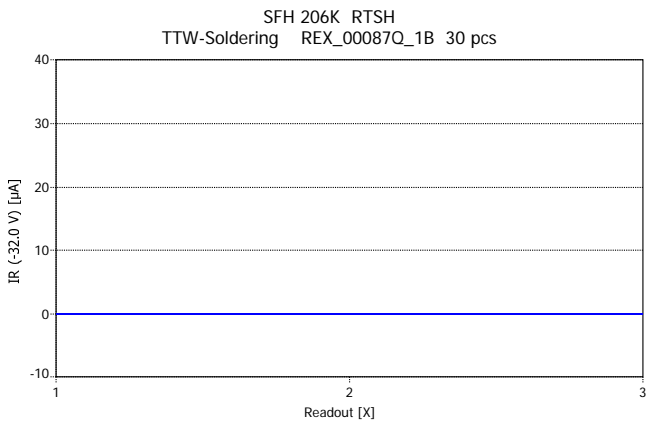
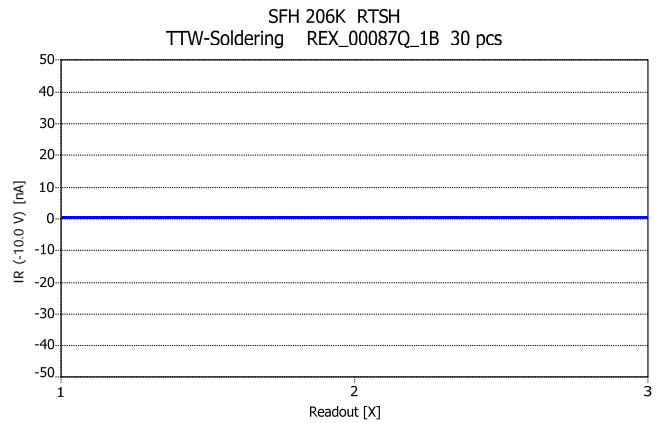
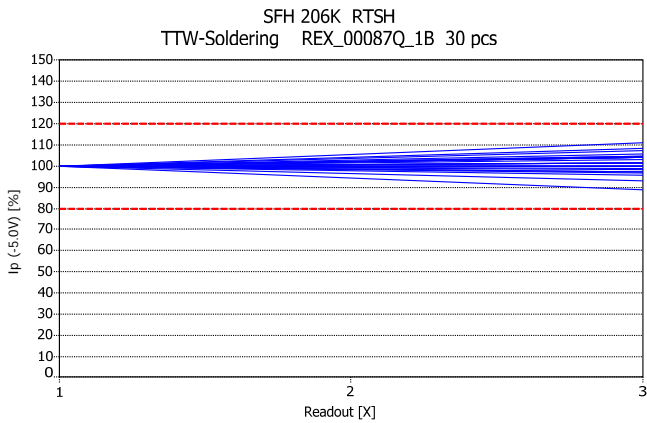
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	1 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

RTSH TTW-soldering Lot A



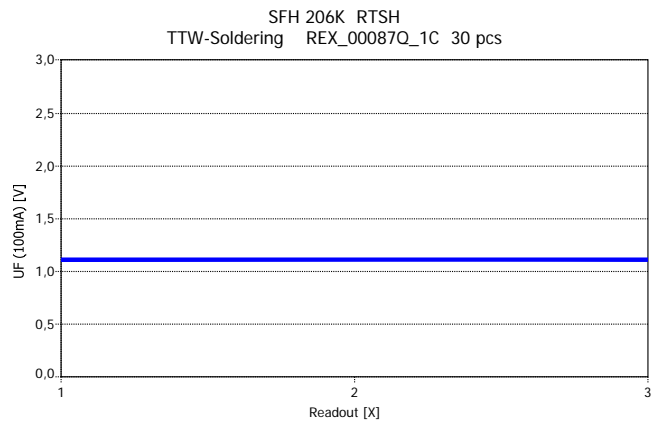
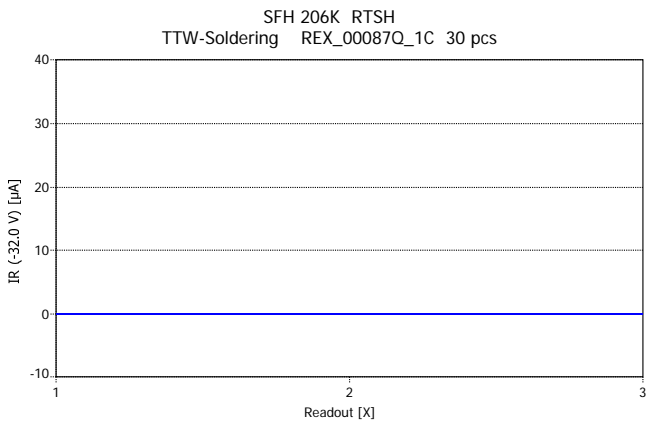
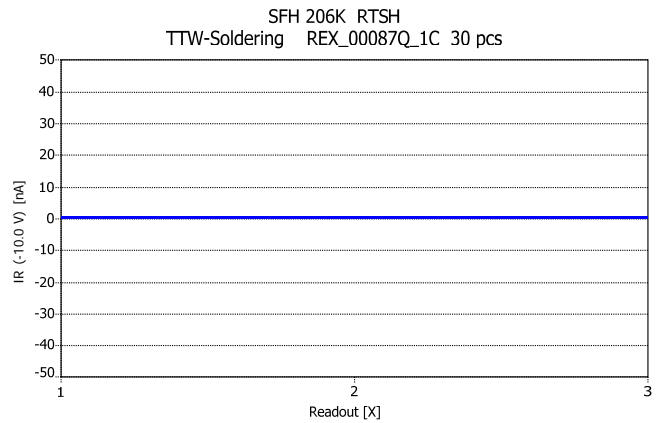
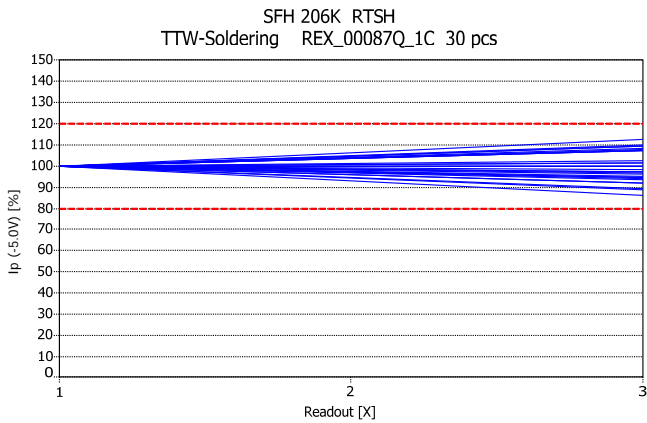
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	2 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

RTSH TTW-soldering Lot B



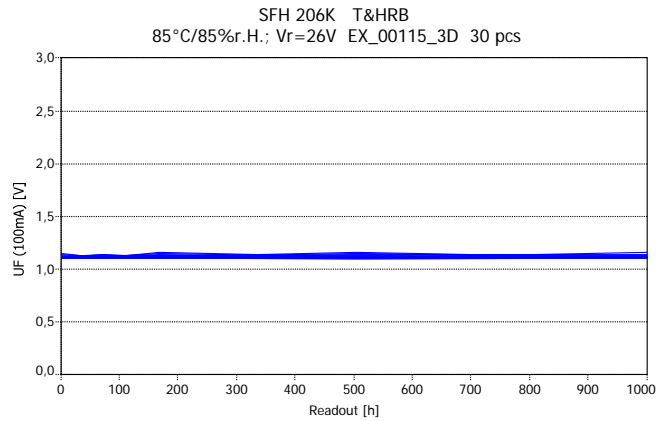
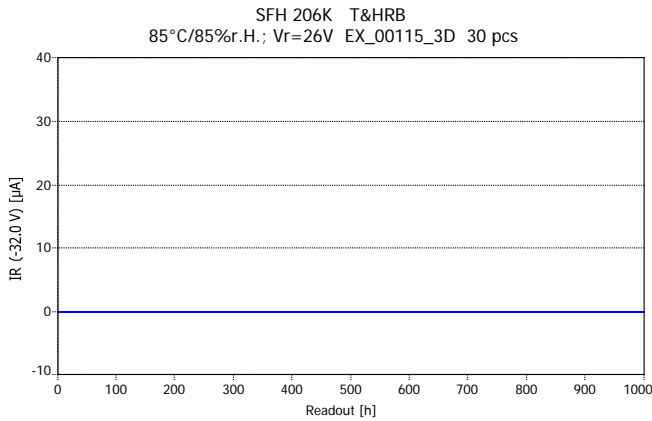
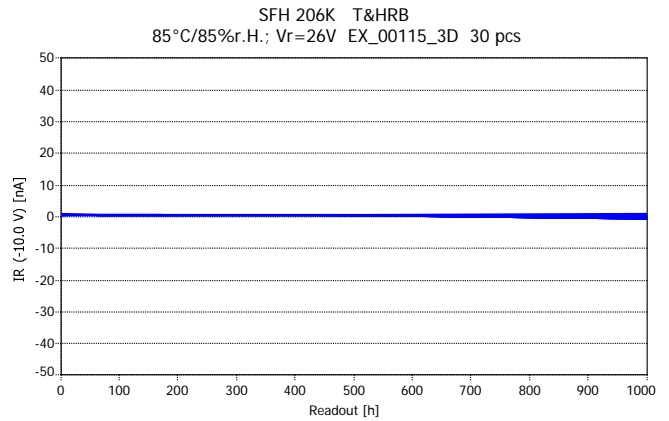
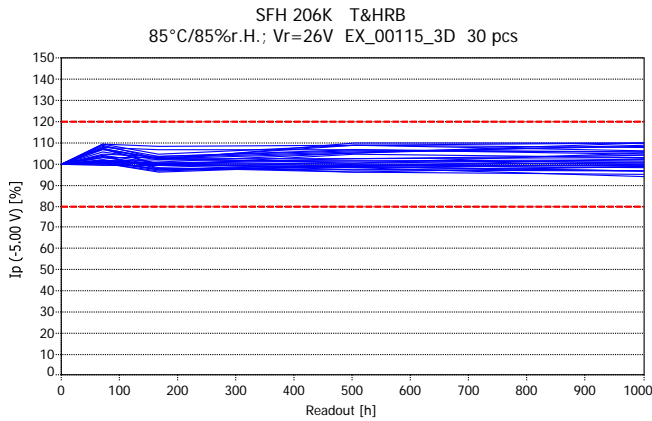
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	3 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

RTSH TTW-soldering Lot C



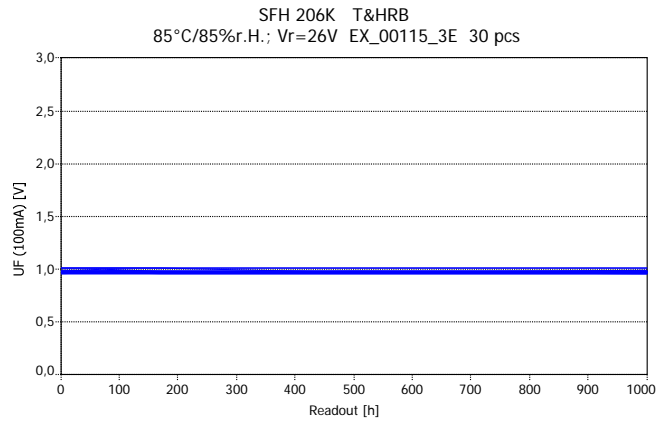
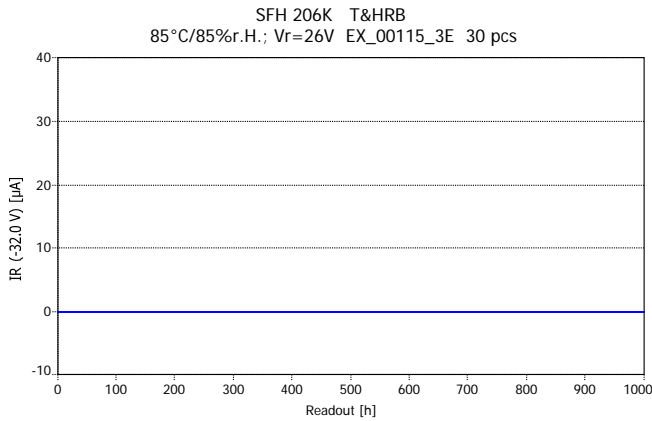
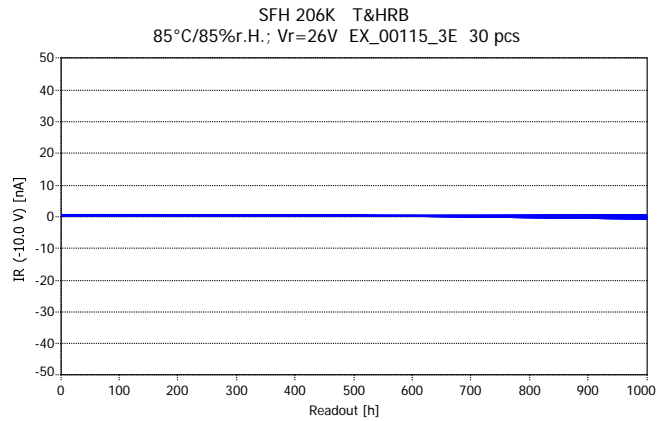
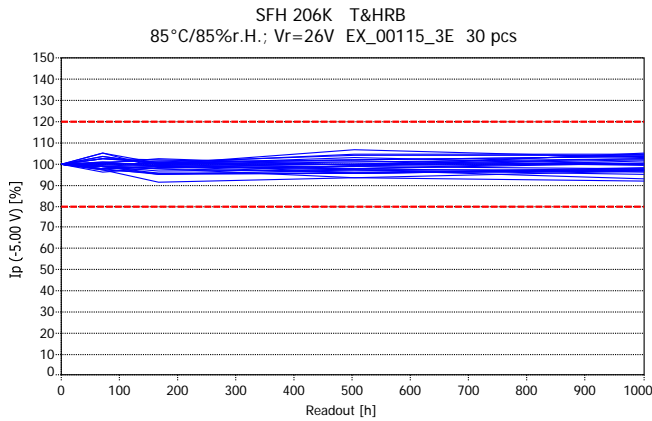
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	4 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

T&HRB 85°C/85%r.H.; 26V Lot A



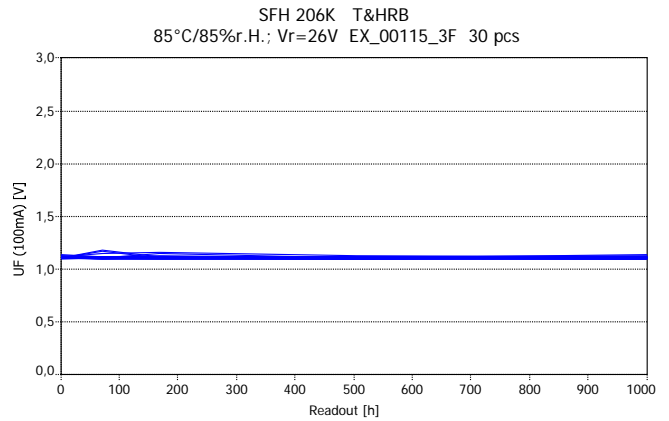
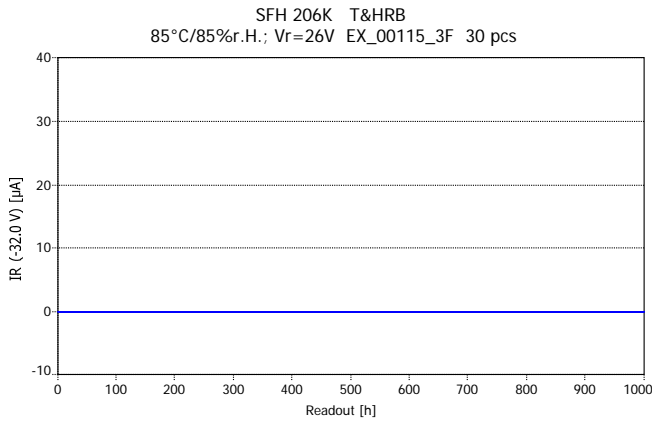
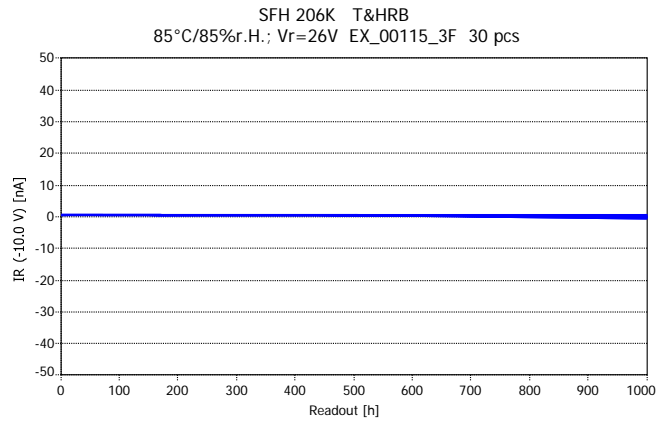
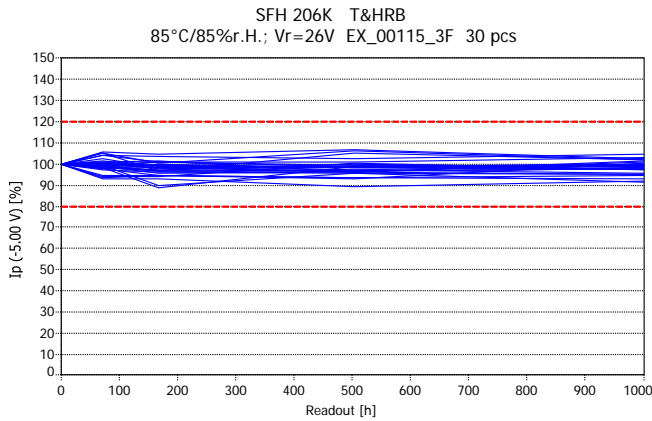
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	5 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

T&HRB 85°C/85%r.H.; 26V Lot B



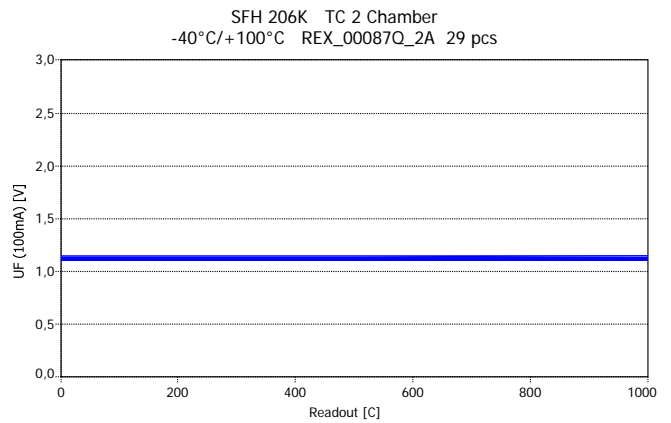
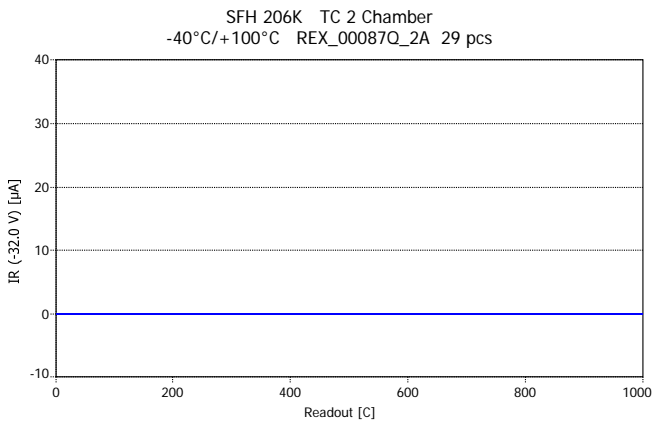
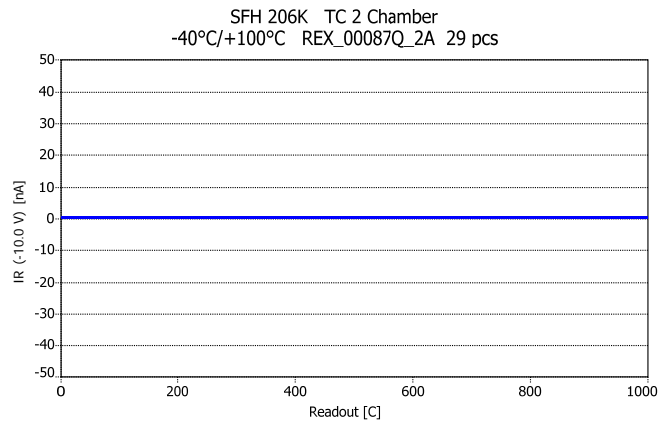
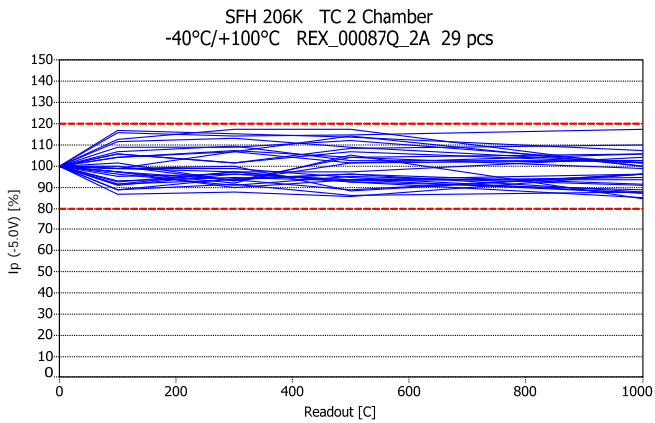
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	6 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

T&HRB 85°C/85%r.H.; 26V Lot C



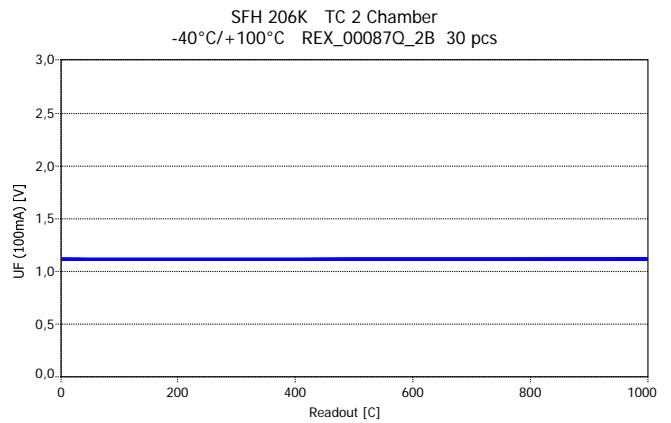
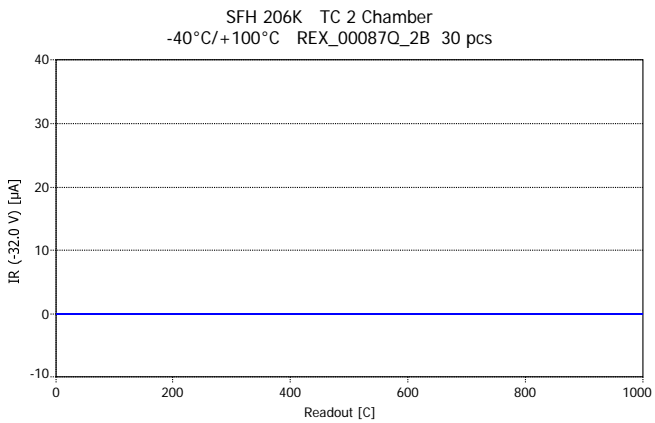
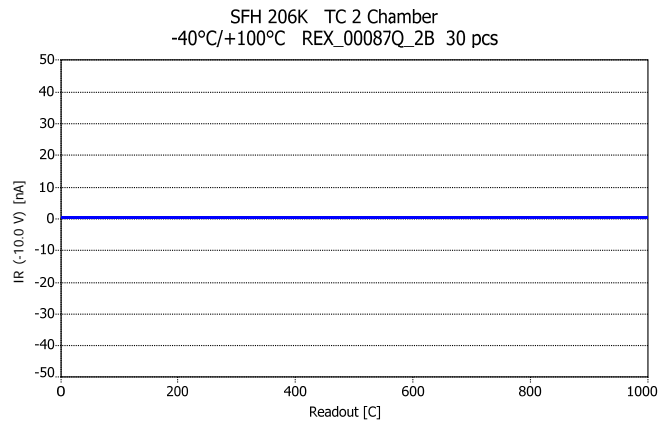
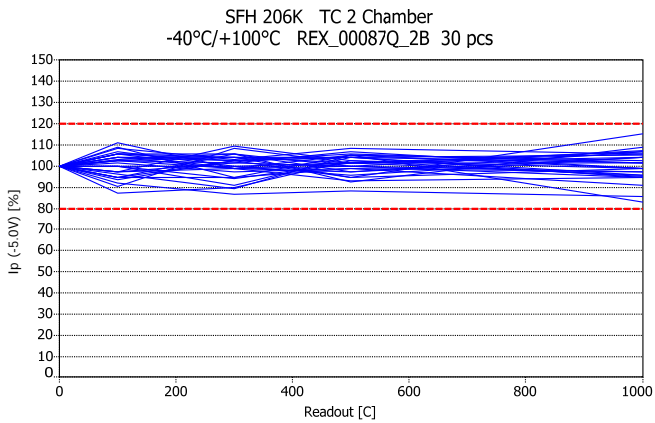
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	7 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

TC 2 Chamber -40/100°C Lot A



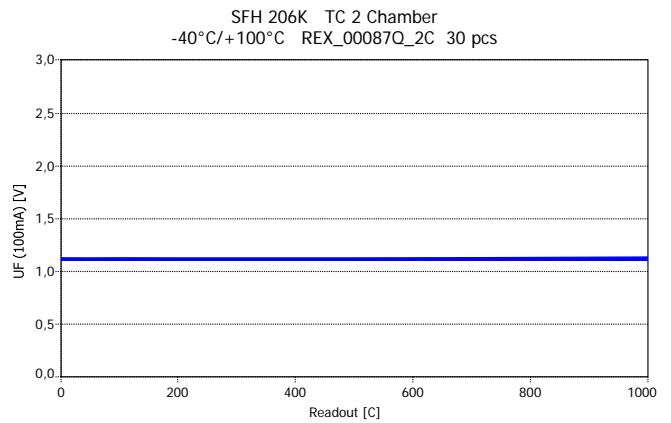
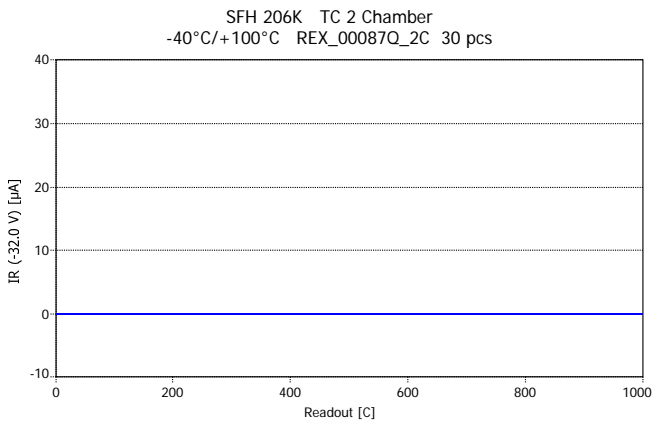
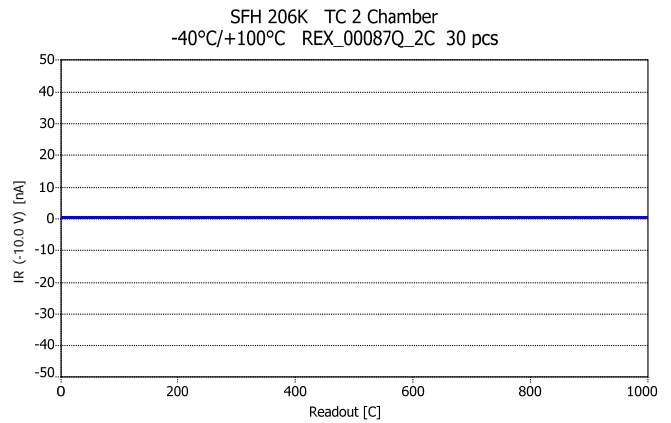
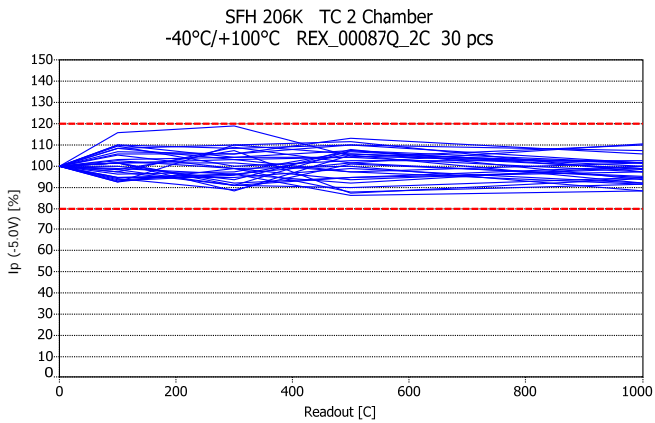
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	8 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

TC 2 Chamber -40/100°C Lot B



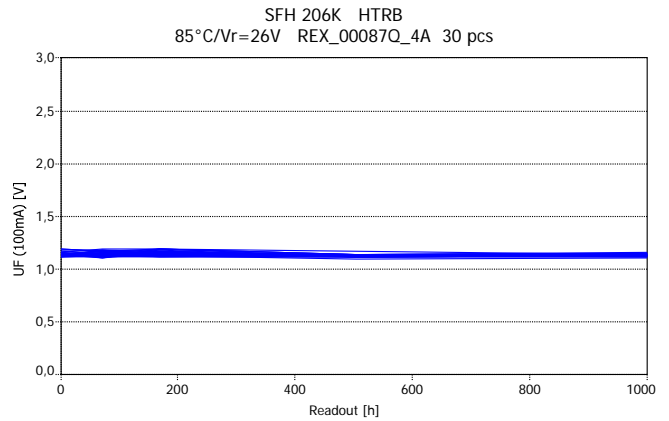
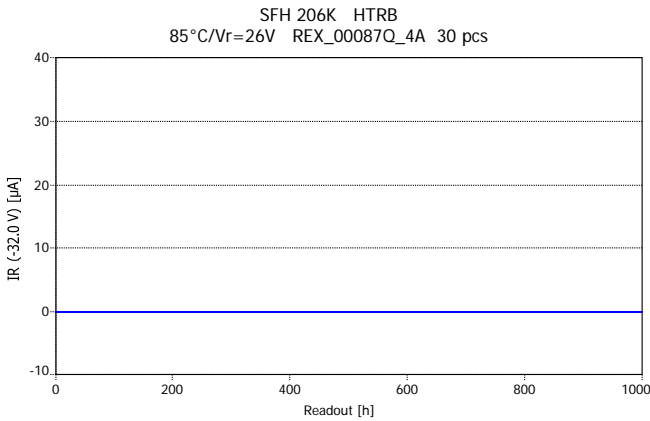
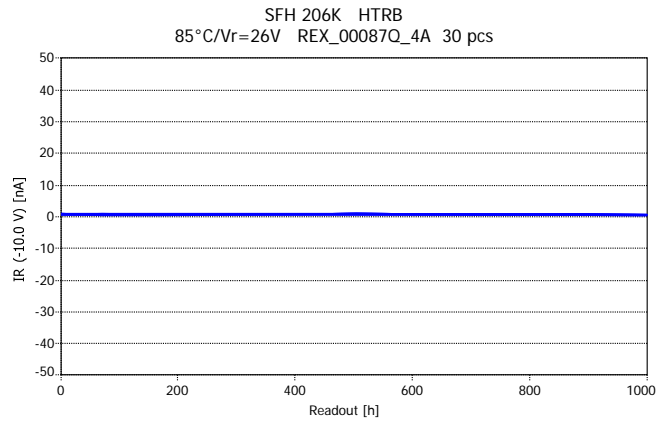
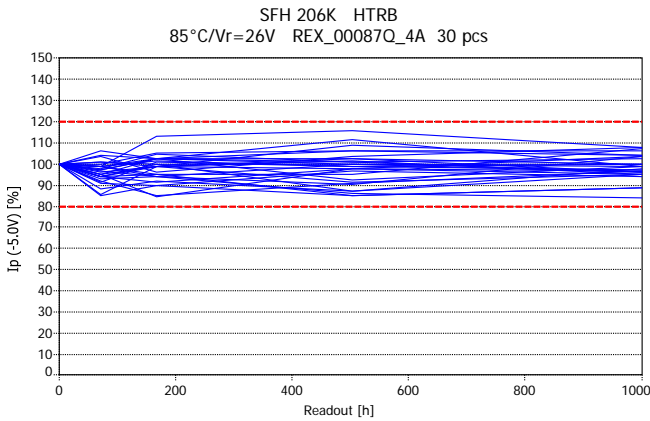
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	9 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

TC 2 Chamber -40/100°C Lot C



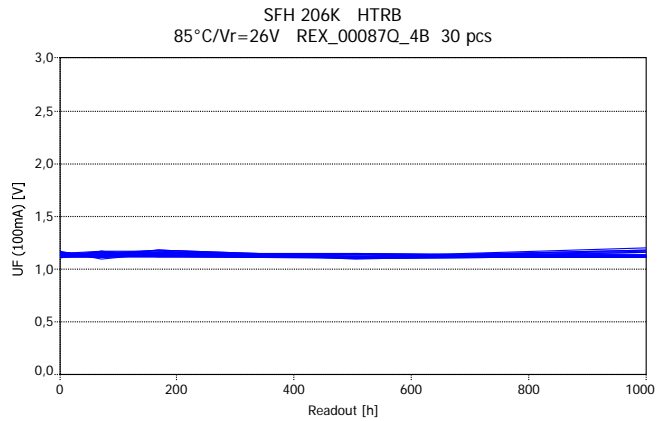
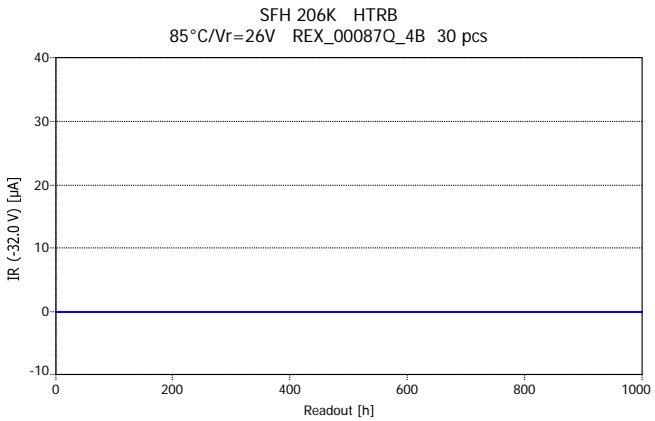
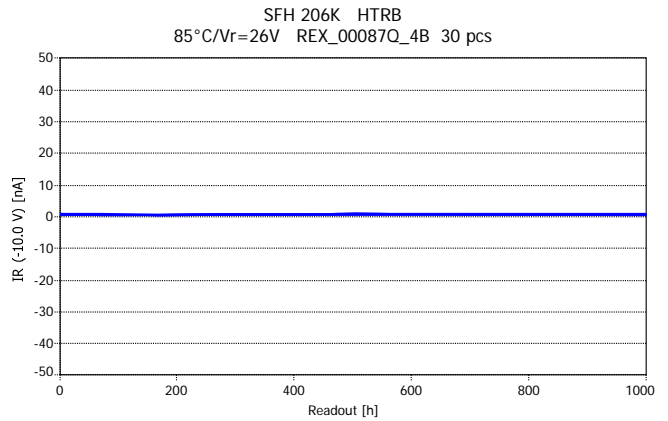
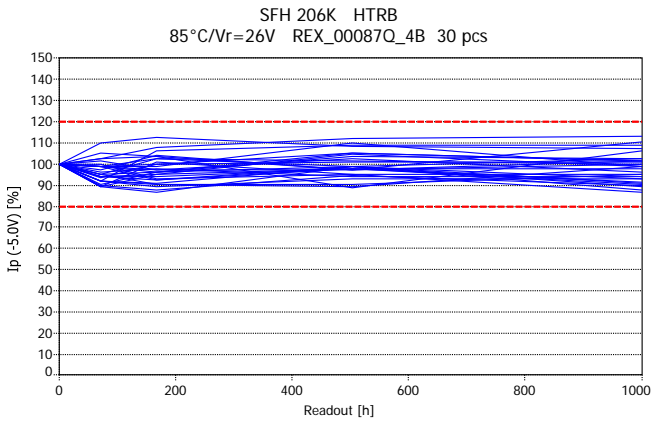
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	10 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

HTRB 85°C/26V Lot A



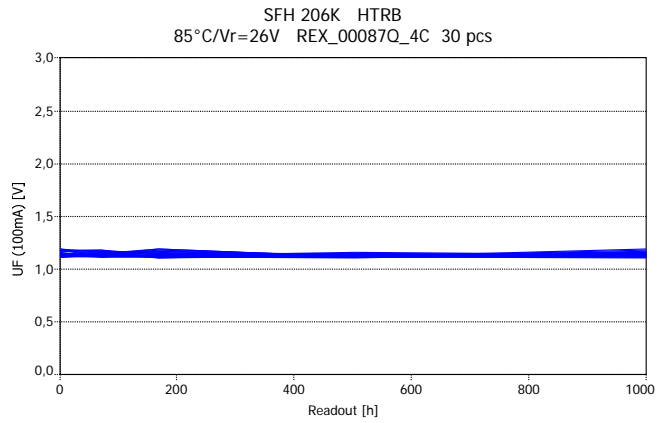
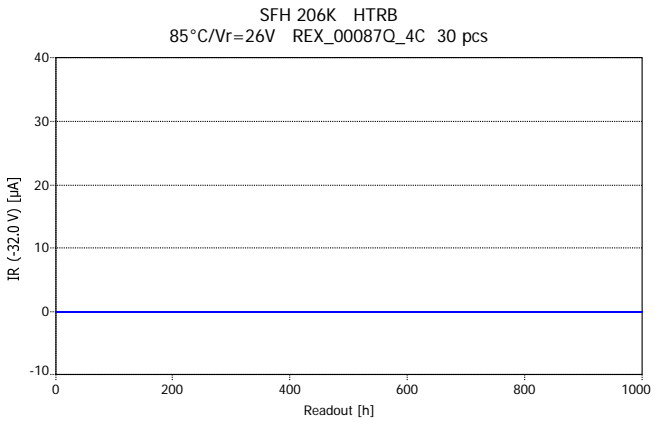
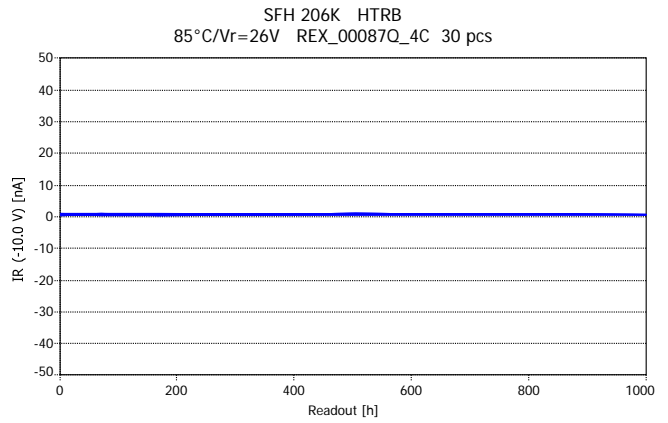
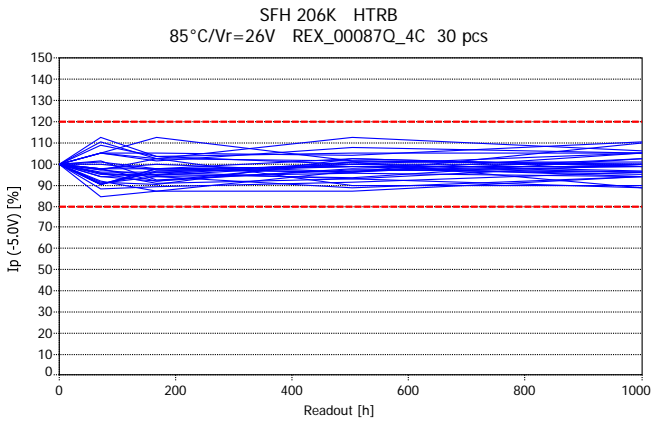
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	11 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

HTRB 85°C/26V Lot B



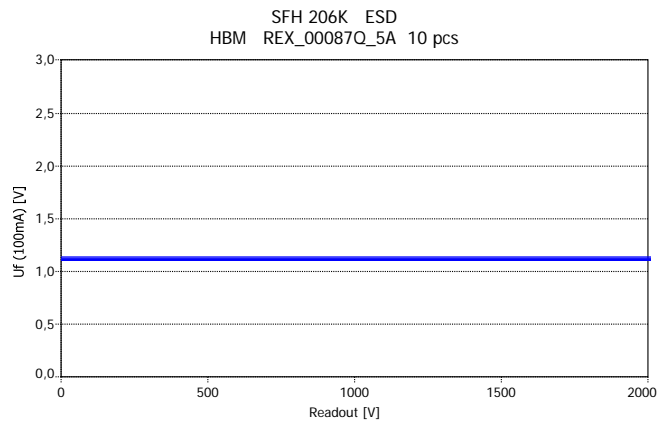
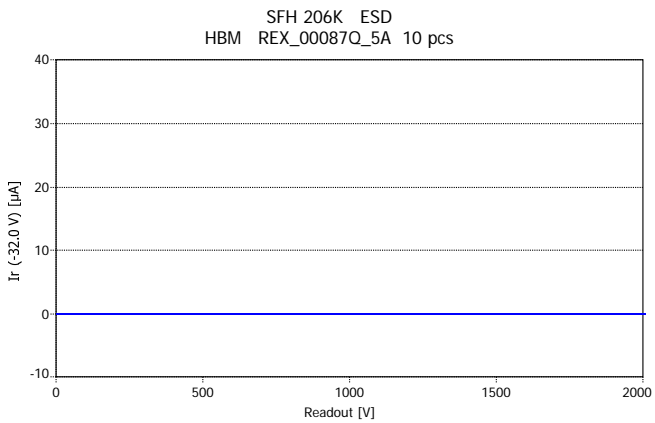
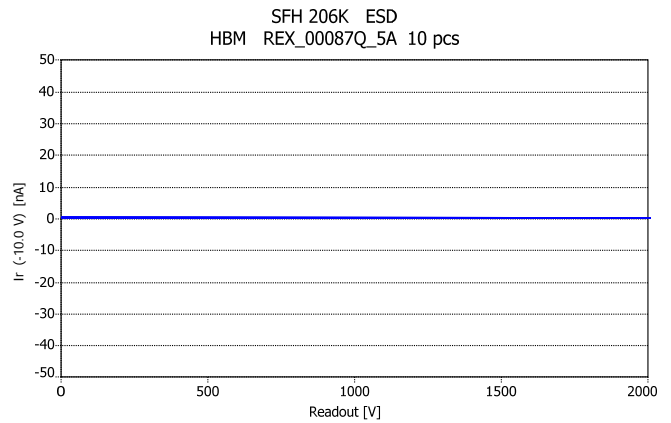
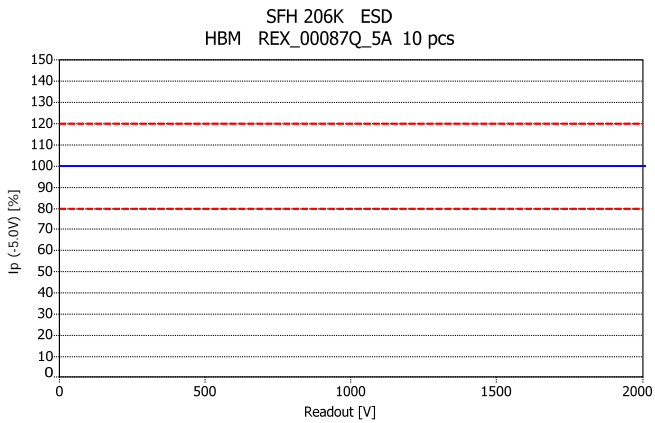
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	12 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

HTRB 85°C/26V Lot C



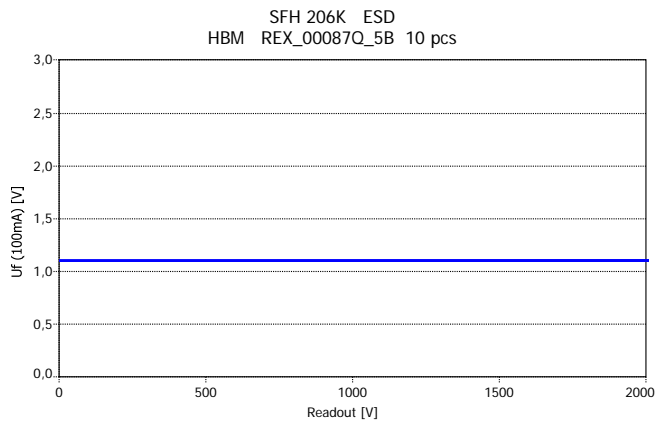
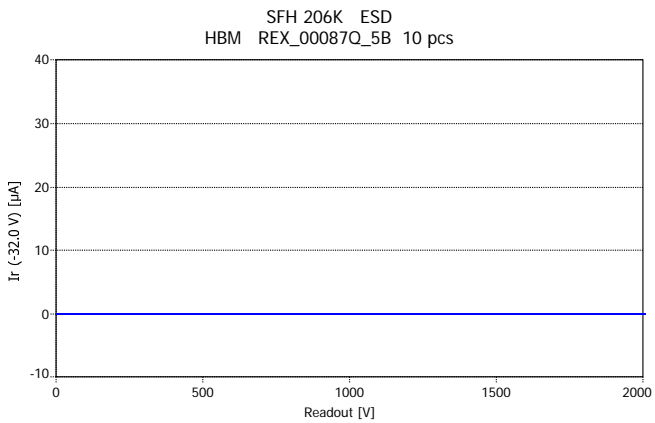
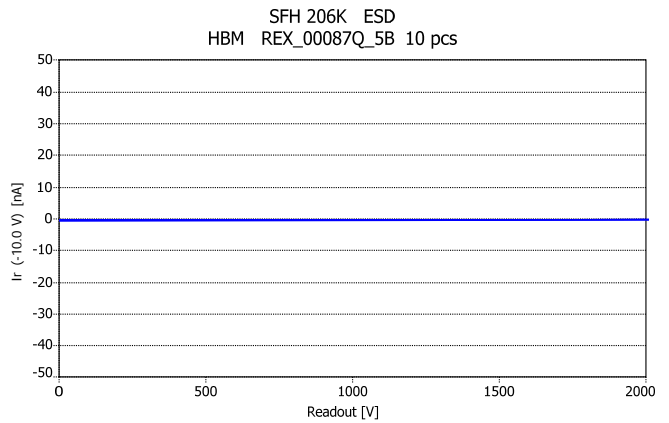
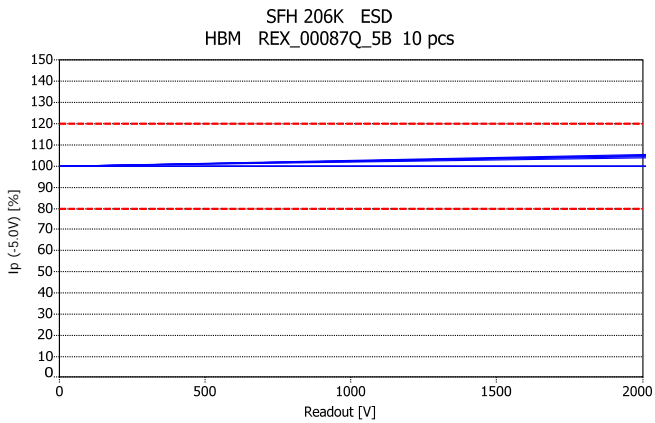
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	13 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

ESD Human body model Lot A



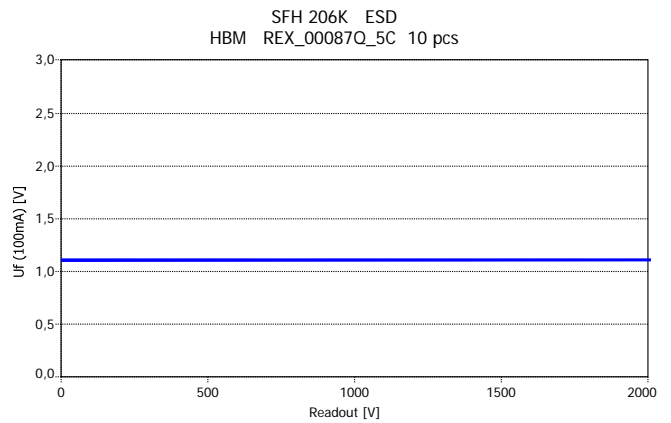
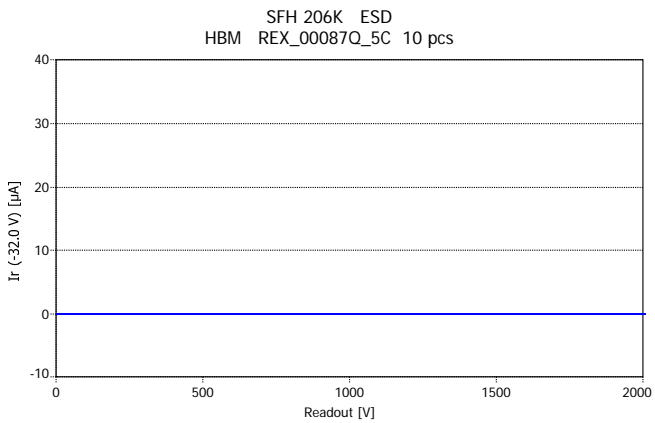
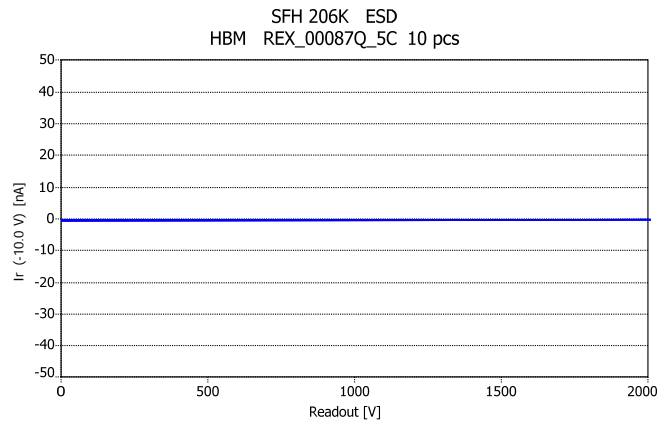
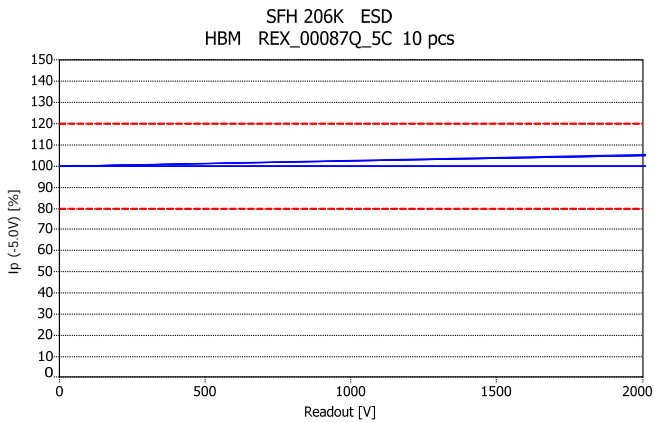
Status	Page	Departement	Performed by	Reviewed by
Qualification Report	14 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

ESD Human body model Lot B



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	15 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)

ESD Human body model Lot C



Status	Page	Departement	Performed by	Reviewed by
Qualification Report	16 / 16	OS QM CQM1	M. Bittner (Signed)	K. Brückner (Signed)