

PCN

AO-PCN-2026-033-S

Introduction of additional production location for Advanced Power TOPLED

15.07.2026

Dear Customer,

please review this **PCN** and provide your feedback in the **Customer approval form** (at the end of this PCN document) to your ams OSRAM sales partner before **15.10.2026 ***).

Please take note, that this PCN is published for the introduction of **additional source(s)**.

Your prompt reply will help ams OSRAM to assure a smooth and well executed transition. If ams OSRAM does not hear from your side by the due date, we will assume your (if you are a Distributor: and your customer's) full acceptance to this proposed change and its implementation.

ams OSRAM understands the time requirements your organization needs to approve this PCN. However, if you can provide ams OSRAM an estimated date your organization will have finalized this PCN review, ams OSRAM can use this date to plan continued production to secure your order needs during the expansion with additional source(s).

Your attention and response to this matter is highly appreciated.

Please direct your inquiries to your local Sales office.

*) ams OSRAM aligns with the widely recognized JEDEC/ECIA/IPC Joint Standard No. 46, which stipulates:

- Customers should acknowledge receipt of the PCN within 30 days of delivery of the PCN.
- Lack of acknowledgement of the PCN within 30 days constitutes acceptance of the change.
- After acknowledgement, lack of additional response within the 90 day period constitutes acceptance of the change. If the customer requires additional time to perform sample testing, beyond the 90 day review period, an extension must be negotiated with the supplier.

Subject of change:	Introduction of additional production location for Advanced Power TOPLED (APT)	
Affected products:	APT.01: LA G6SP.01 LR G6SP.01 LS G6SP.01	APT.02: LA G6SP.02 LR G6SP.02 LS G6SP.02 LY G6SP.02
Reason for change:	To secure continuous supply due to increasing customer demand To secure supply against geopolitical impact factors To improve supply chain resilience	
Description of change:	<u>Current status</u>	<u>New status</u>
	Released Production Locations: - Wuxi (China)	Released Production Locations: - Wuxi (China) and - Penang (Malaysia)
	For details refer to file 2_cip_AO-PCN-2026-033-S	
Product identification:	Laser marking on device, Label on MBB (COO)	
Time schedule for PCN material: (after implementation of change):	Final qualification report:	15.07.2026
	Samples available:	15.06.2026
	Intended Start of delivery:	APT.01: 01.09.2026 ^{*)} APT.02: 01.08.2026 ^{*)} *) or earlier if released by customer and upon mutual agreement
	Customer Review Finalization:	15.10.2026 ^{**)} **) a customer reject or a later customer release might result in tight delivery situations. Released order volume is related to deliveries of material from both previous and additional source(s).
Assessment:	No change in fit, form, function and reliability No change of product data sheet	
Documentation:	Customer information package 2_cip_AO-PCN-2026-033-S Qualification report 3_cip_AO-PCN-2026-033-S_qual	

Note:

Pre-PCN material: Products of current status, means before implementation of the changes as described in the PCN.

PCN material: Products with implementation of the changes as described in the PCN.

Customer approval form AO-PCN-2026-033-S

Introduction of additional production location for Advanced Power TOPLED

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

Please check the appropriate box below:

☐ Approval: We agree with the proposed change and accept start of the shipment upon availability of PCN material	☐ Not relevant: Change is not relevant for products in use.
☐ Change cannot be accepted:	
☐ We have objections:	
☐ We request following Information:	
☐ We request following Samples:	
☐ Expected approval date:	
☐ Volume requirements for Pre-PCN material:	
☐ Remarks:	

Sender:

Company:

Address / Location:

Signature:

Date:

Please return this approval form to your Sales partner.

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Customer information package

GSS EM FQE
2026-07-15

Agenda

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Introduction of additional production location for Advanced Power TOPLED

Reason for change

Description
To secure continuous supply due to increasing customer demand
To secure supply against geopolitical impact factors
To improve supply chain resilience

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Introduction of additional production location for Advanced Power TOPLED

Description of change

Item	Current status	New status
Additional BE production location Penang/Malaysia for all Advanced Power TOPLED.01 and Advanced Power TOPLED.02 devices	Released Production Locations: - Wuxi (China)	Released Production Locations: - Wuxi (China) and - Penang (Malaysia)

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Introduction of additional production location for Advanced Power TOPLED

List of affected products: Additional BE production location Penang/Malaysia

APT.01	APT.02
LA G6SP.01	LA G6SP.02
LR G6SP.01	LR G6SP.02
LS G6SP.01	LS G6SP.02
	LY G6SP.02

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Introduction of additional production location for Advanced Power TOPLED

PCN Samples

APT.01	APT.02
LA G6SP.01	LA G6SP.02
LR G6SP.01	LR G6SP.02
LS G6SP.01	LS G6SP.02
	LY G6SP.02

Color code: available on request

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Introduction of additional production location for Advanced Power TOPLED

Qualification Plan

Test item	Test condition	Test duration
WHTOL1	$T_A = 85^{\circ}\text{C}$; r.H. = 85%; $I_F = \text{max. acc. to derating curve}$; $T_{\text{on/off}} = 30 \text{ min}$	1000 h
WHTOL2	$T_A = 85^{\circ}\text{C}$; r.H. = 85%; $I_F = \text{min. acc. to derating curve}$	1000 h
PTC	$T_A = -40/+ \text{max. } T_s$; $I_F = \text{max. acc. to derating curve at max. } T_s$	1000 c
TC	$T_A = -40/+ \text{max. } T_s$; 15 min. each extreme	1000 c
HTOL1	$T_s = \text{max. acc. to datasheet}$; $I_F = \text{corresponding max. acc. to derating curve}$	1000 h
HTOL2	$I_F = \text{max. acc. to datasheet}$; $T_s = \text{corresponding max. acc. to derating curve}$	1000 h
PLT	$T_s = 55^{\circ}\text{C}$; $I_{F,\text{PULSE}} = \text{max acc. to datasheet}$; $t_p = 0.1 \text{ ms}$; $D = 3\%$	1000 h

Note:

- Qualification results available

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Introduction of additional production location for Advanced Power TOPLED

Qualification Plan

Test item	Test condition	Test duration
DEW	$T_{A,min} = 10^{\circ}\text{C}$; $T_{A,max} = 80^{\circ}\text{C}$; r.H. = 53-100%	10 c
SD	$T_A = 250^{\circ}\text{C}$, method 2 (reflow simulation)	
H ₂ S	$T_A = 40^{\circ}\text{C}$; r.H. = 90%; 15 ppm H ₂ S	336 h
FMG	$T_A = 25^{\circ}\text{C}$; r.H. = 75%; Test method 4	500 h
BF	2 mm	
HBM	Human Body Model	2000 V
CDM	Charged Device Model	750 V

Note:

- Qualification results available

AO-PCN-2026-033-S – PCN

Introduction of additional production location for Advanced Power TOPLED

Time schedule

for PCN material (<u>after</u> implementation of change):		
Final qualification report	15.07.2026	
Samples available	15.06.2026	
Intended Start of delivery	APT.01: 01.09.2026*) APT.02: 01.08.2026*)	*) or earlier if released by customer and upon mutual agreement
Customer Review Finalization:	15.10.2026 **)	**) a customer reject or a later customer release might result in tight delivery situations. Released order volume is related to deliveries of material from both previous and additional source(s).

Note:

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PCN material: Products with implementation of the changes as described in the PCN.

Sensing is life





Qualification Report 260107C2

Subject	Qualification report for Advanced Power TOPLED product family including additional production location Penang complying with AEC-Q102
Date	04.05.2026
Tested device	LA G6SP.02, LA G6SP.01
Brand (including sub brands)	Advanced Power TOPLED
Applies to	LA G6SP.02, LY G6SP.02, LS G6SP.02, LR G6SP.02, LA G6SP.01, LR G6SP.01, LS G6SP.01

Pre-conditioning according to Jedec Level II where applicable as per AEC-Q102 AEC-Q102 #A1

Test Performed		Condition	Duration	Sample Size	Failures		
					El. AEC-Q102 #E1	Opt. AEC-Q102 #E1	Vis AEC-Q102 #E0
Wet High Temperature Operating Life WHTOL1	<i>JESD22-A101</i> AEC-Q102 #A2a Test PCB: IMS	$T_A = 85^{\circ}\text{C}$; r.H. = 85% $T_S = 95^{\circ}\text{C}$; $T_J = 100^{\circ}\text{C}$ $I_F = 200\text{ mA}$; $T_{\text{on/off}} = 30\text{ min}$	1000h	4x26	0	0	0
Wet High Temperature Operating Life WHTOL2	<i>JESD22-A101</i> AEC-Q102 #A2b Test PCB: FR4	$T_A = 85^{\circ}\text{C}$; r.H. = 85% $I_F = 5\text{ mA}$	1000h	4x26	0	0	0
Powered Temperature Cycle PTC	<i>JESD22-A105</i> AEC-Q102 #A3a Test PCB: IMS	$T_A = -40^{\circ}\text{C}/+125^{\circ}\text{C}$ $T_S = 129^{\circ}\text{C}$; $T_J = 133^{\circ}\text{C}$ $I_F = 110\text{ mA}$; $t_{\text{on/off}} = 5\text{ min}$	1000c	4x26	0	0	0
Temperature Cycling TC	<i>JESD22-A104</i> AEC-Q102 #A4a Test PCB: FR4	$T_A = -40^{\circ}\text{C}/+125^{\circ}\text{C}$ 15 min each extreme	1000c	4x26	0	0	0
High Temperature Operating Life HTOL1	<i>JESD22-A108</i> AEC-Q102 #B1a Test PCB: IMS	$T_A = 110^{\circ}\text{C}$; $T_S = 115^{\circ}\text{C}$ $T_J = 125^{\circ}\text{C}$; $I_F = 200\text{ mA}$	1000h	4x26	0	0	0
High Temperature Operating Life HTOL2	<i>JESD22-A108</i> AEC-Q102 #B1b Test PCB: IMS	$T_A = 125^{\circ}\text{C}$; $T_S = 130^{\circ}\text{C}$ $T_J = 133^{\circ}\text{C}$; $I_F = 110\text{ mA}$	1000h	4x26	0	0	0
Pulsed Operating Life PLT	<i>JESD22-A108</i> AEC-Q102 #B3 Test PCB: IMS	$T_S = 55^{\circ}\text{C}$; $I_F = 1000\text{ mA}$; $t_p = 0,1\text{ ms}$; $D = 3\%$	1000h	4x26	0	0	0
Dew DEW	<i>AEC-Q102-001</i> AEC-Q102 #C7 Test PCB: FR4	$T_{A,\text{min}} = 10^{\circ}\text{C}$; $T_{A,\text{max}} = 80^{\circ}\text{C}$ r.H. = 53%; $I_F = 5\text{ mA}$	10c	4x26	0	0	0
Solderability SD	<i>J-STD-002</i> AEC-Q102 #C10	$T_A = 250^{\circ}\text{C}$ with N2 test S1 (reflow simulation)	1x	4x10	-	-	0
Hydrogen Sulphide H ₂ S	<i>IEC 60068-2-43</i> AEC-Q102 #C12 Test PCB: FR4	15 ppm H ₂ S 40°C/90% r.H.	336h	4x26	0	0	0
Flowing Mixed Gas FMG	<i>IEC 60068-2-60</i> AEC-Q102 #C13 Test PCB: FR4	$T_A = 25^{\circ}\text{C}$ r.H. = 75% Test method 4	500h	4x26	0	0	0
Board Flex Test BF	<i>AEC-Q102-002</i> AEC-Q102 #C14 Test PCB: FR4	2mm	1x	4x10	0	-	0

Electrostatic Discharge								
HBM	ANSI/ESDA/ JEDEC JS-001 AEC-Q102 #E3 Test PCB: FR4	Human Body Model	2000V	4x10	0	0	0	
Electrostatic Discharge								
CDM	AEC-Q101-005 AEC-Q102 #E4	Charged Device Model	-	-	under evaluation for small packages			
Constant Acceleration								
CA	MIL-STD-750-2 AEC-Q102 #G1	Method 2006 2000 gf; 1 min in x/y/z (+/- direction)	1x	4x10				
Vibration Variable Frequency								
VVF	JESD22-B103 AEC-Q102 #G2	20g, 20-2000Hz; 4min / cy; 4cy/axis service condition 1	1x	sequential samples				
Mechanical Shock								
MS	JESD22-B110 AEC-Q102 #G3	1500g for 0.5ms, 5 blows, 3 orientations	1x	sequential samples				
Hermeticity								
HER	JESD22-A109 AEC-Q102 #G4	Leak Test: Fine & Gross	1x	sequential samples				

for uncasted packages only

Note:

Lot A: Production lot Wuxi (LA G6SP.02)
 Lot B-C: Production lot Penang (LA G6SP.02)
 Lot D: Production lot Penang (LA G6SP.01)

Acceptance limit:

Electrical failures:	V_f ($I_f = 140$ mA)	$\pm 10\%$ from initial value
Optical failures:	I_v ($I_f = 140$ mA)	$\pm 20\%$ from initial value
	λ_{dom} ($I_f = 140$ mA)	± 2 nm from initial value
Visual failures:	acc. JEDEC JESD22-B101 and other standards as referenced in this report	

Conclusion: The tested devices representing the product family as stated in the applies to section fulfill the reliability requirements of AEC-Q102 Rev-A.

Disclaimer

PLEASE CAREFULLY READ THE BELOW TERMS AND CONDITIONS BEFORE USING THE INFORMATION.
IF YOU DO NOT AGREE WITH ANY OF THESE TERMS AND CONDITIONS, DO NOT USE THE INFORMATION.

The Information contained in this Document does not constitute an independent warranty. The committed behavior is described in the Product data sheet and/or further, mutually agreed specifications.

Distribution of part or all of the contents of this Document to any 3rd party in any form without the prior permission of ams-OSRAM International GmbH is prohibited except in accordance with applicable mandatory law.

Further explanations:

Data: The Data used in this Document consider the reliability test results under the mentioned driving conditions only. For Product information on the maximum operating conditions and the OSRAM standard qualification profile please refer to the Product data sheet or contact your local sales partner.

Conditions: The conditions for the generation of the Data are as follows:

1. The Data and curves shown in this Document are based on experiments carried out under laboratory conditions on a random sample size of LED/IRED/Laser/Detector with readouts at discrete readout times (where applicable). Thus, the Data above represent a limited number of production lots only and may differ between different assembly lots over time (including chip or package changes). Thus, the behavior of the LED/IRED/Laser/Detector in the final application may differ from the Data. The behavior of the LED/IRED/Laser/Detector at conditions or readout times deviating from those stated above may not be deduced from the Data.

2. If applicable:

a) Extended driving conditions:

The tested driving conditions exceed the maximum limits stated in the Product data sheet. Therefore, a reduced lifetime or an accelerated degradation is expected. Failure limits noted in the Document refer to the testing condition according to the OSRAM standard Product qualification profile and not to the actual testing condition.

b) Extended testing duration:

The testing duration exceed the OSRAM standard qualification profile of the mentioned Product. Failure limits noted in the Document refer to the testing duration according to the OSRAM standard Product qualification profile and not to the actual testing duration.

c) Exceeding standard qualification conditions – (Product data sheet limits not affected):

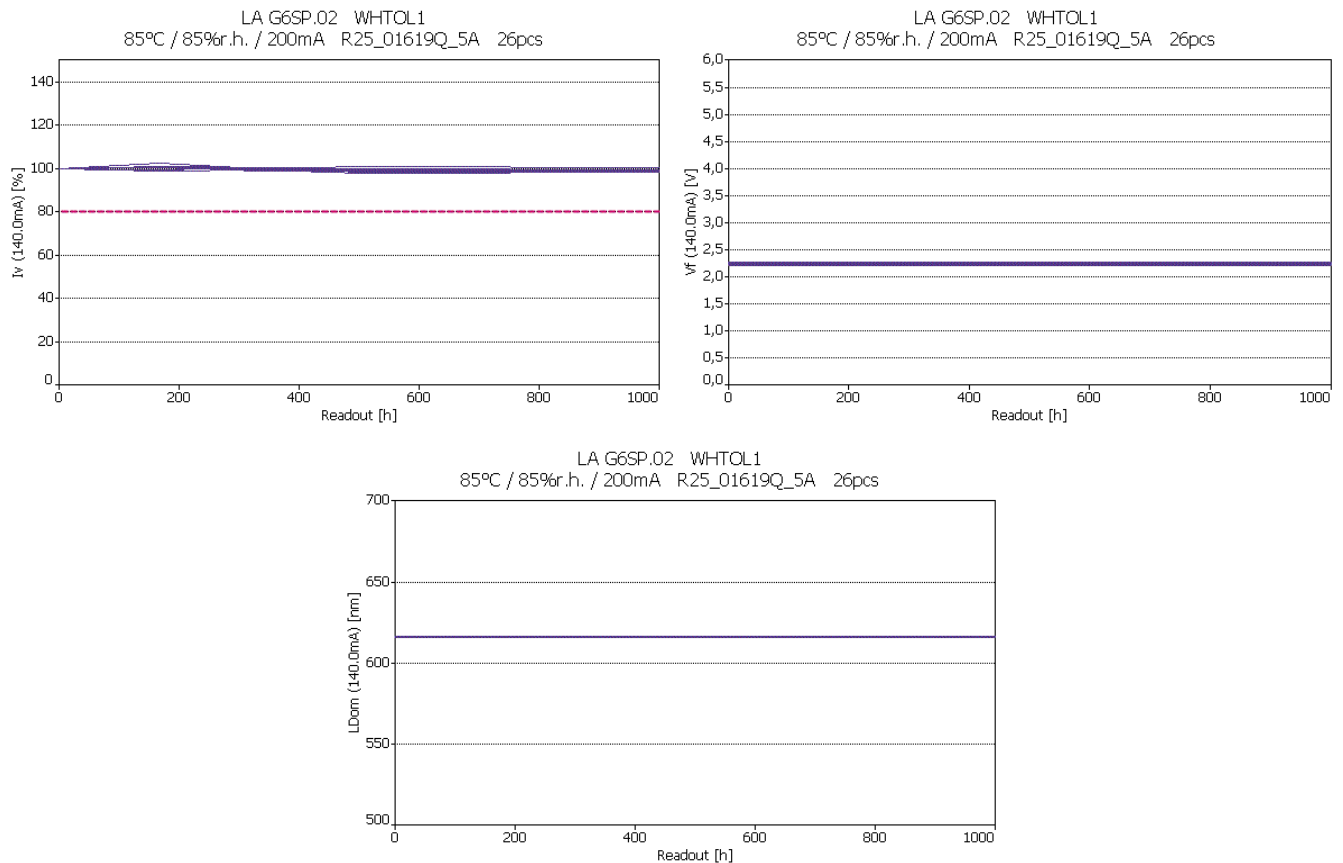
The tested driving conditions exceed the OSRAM standard qualification profile of the mentioned Product. Therefore a reduced lifetime or an accelerated degradation is expected. Failure limits noted in the Document refer to the testing condition according to the OSRAM standard Product qualification profile and not to the actual testing condition.

3. For long term operation additional failure modes of the chip or package can occur which are not shown in this Document.

4. Possible differences in the thermal management of OSRAM and customer's setup may lead to a different aging behavior.

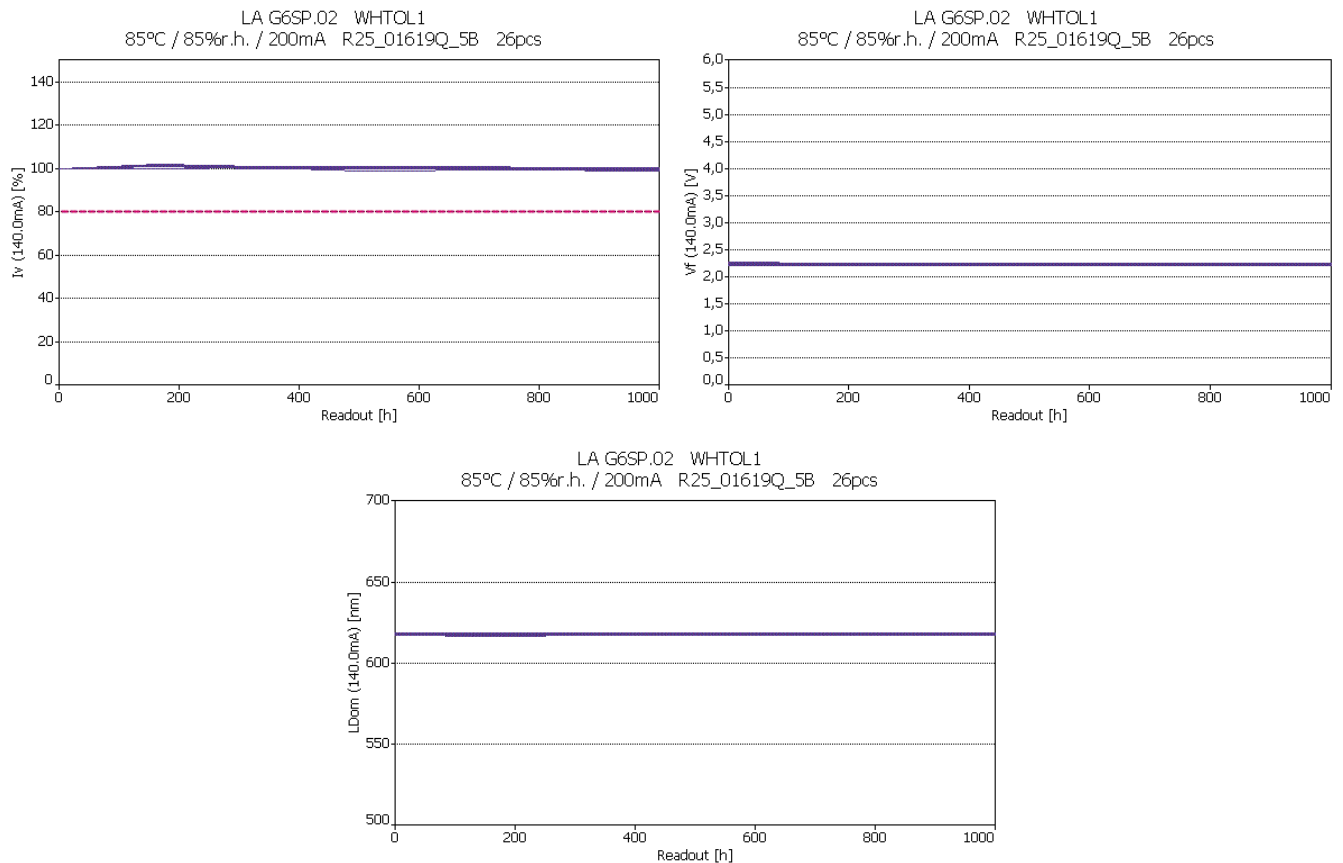
WHTOL1 $t_{on}/t_{off} = 30 \text{ min}$; $85^{\circ}\text{C}/85\% \text{ r.H.}$; 200 mA

Lot A



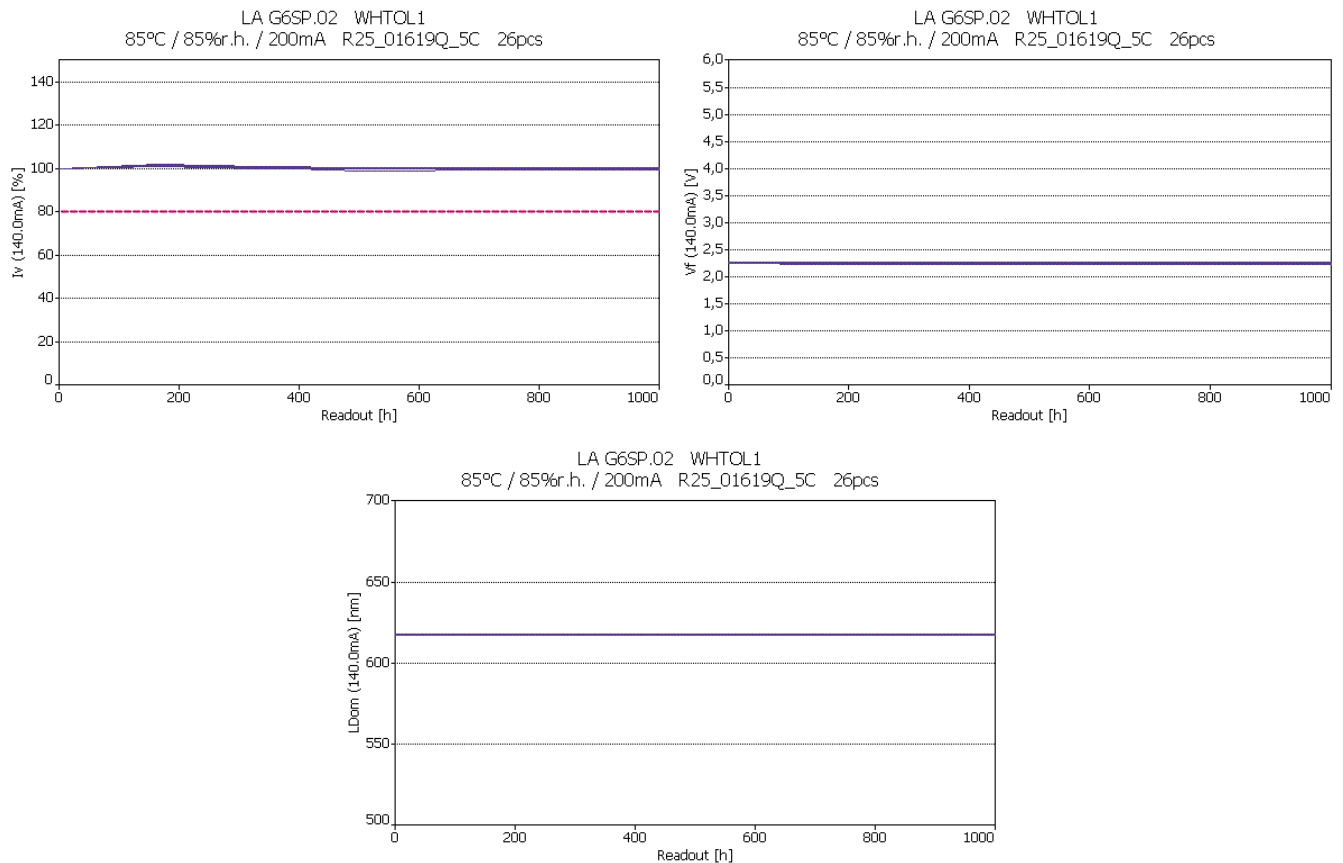
WHTOL1 $t_{on}/t_{off} = 30 \text{ min}$; $85^{\circ}\text{C}/85\% \text{ r.H.}$; 200 mA

Lot B



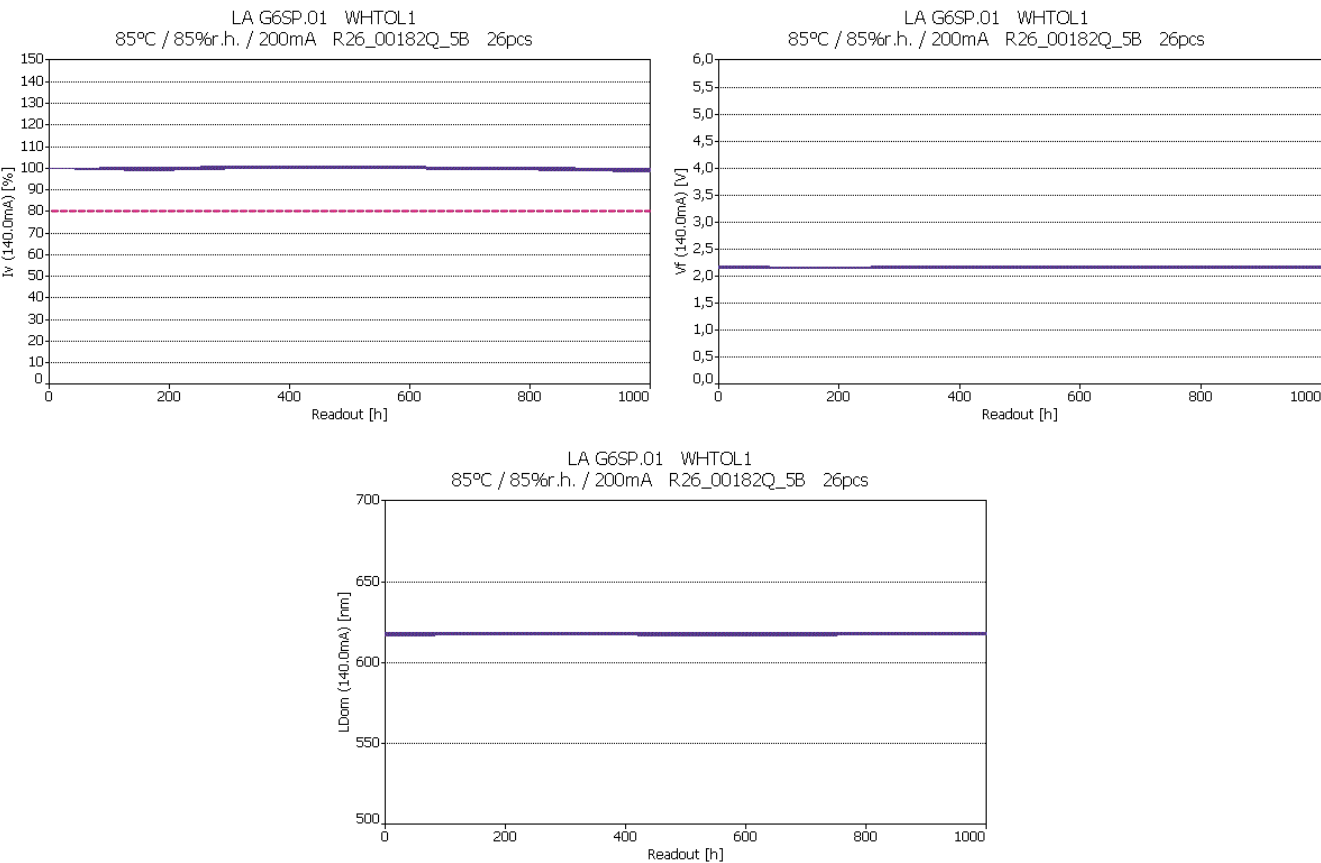
WHTOL1 $t_{on}/t_{off} = 30 \text{ min}$; $85^{\circ}\text{C}/85\% \text{ r.H.}$; 200 mA

Lot C



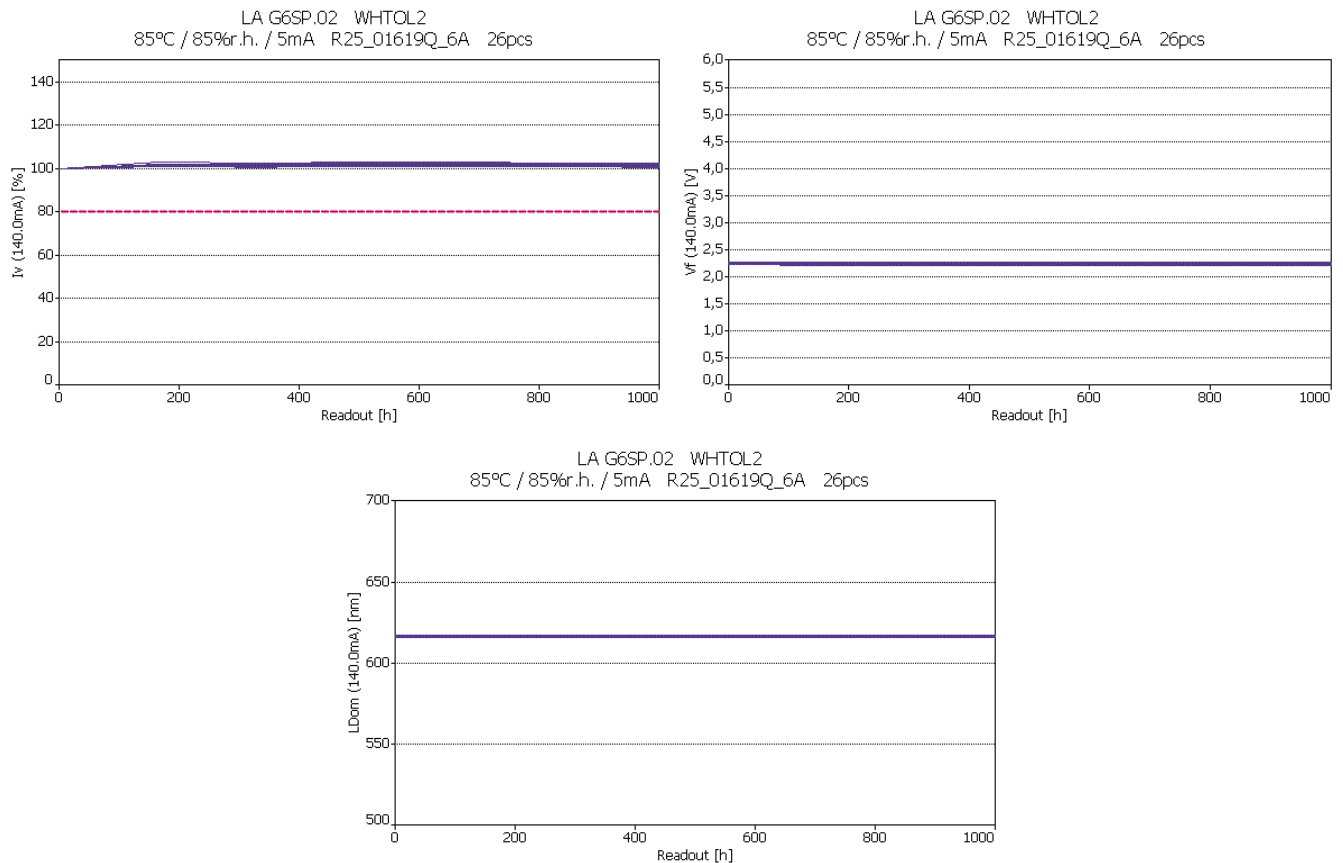
WHTOL1 $t_{on}/t_{off} = 30\text{ min}$; 85°C/85% r.H.; 200 mA

Lot D



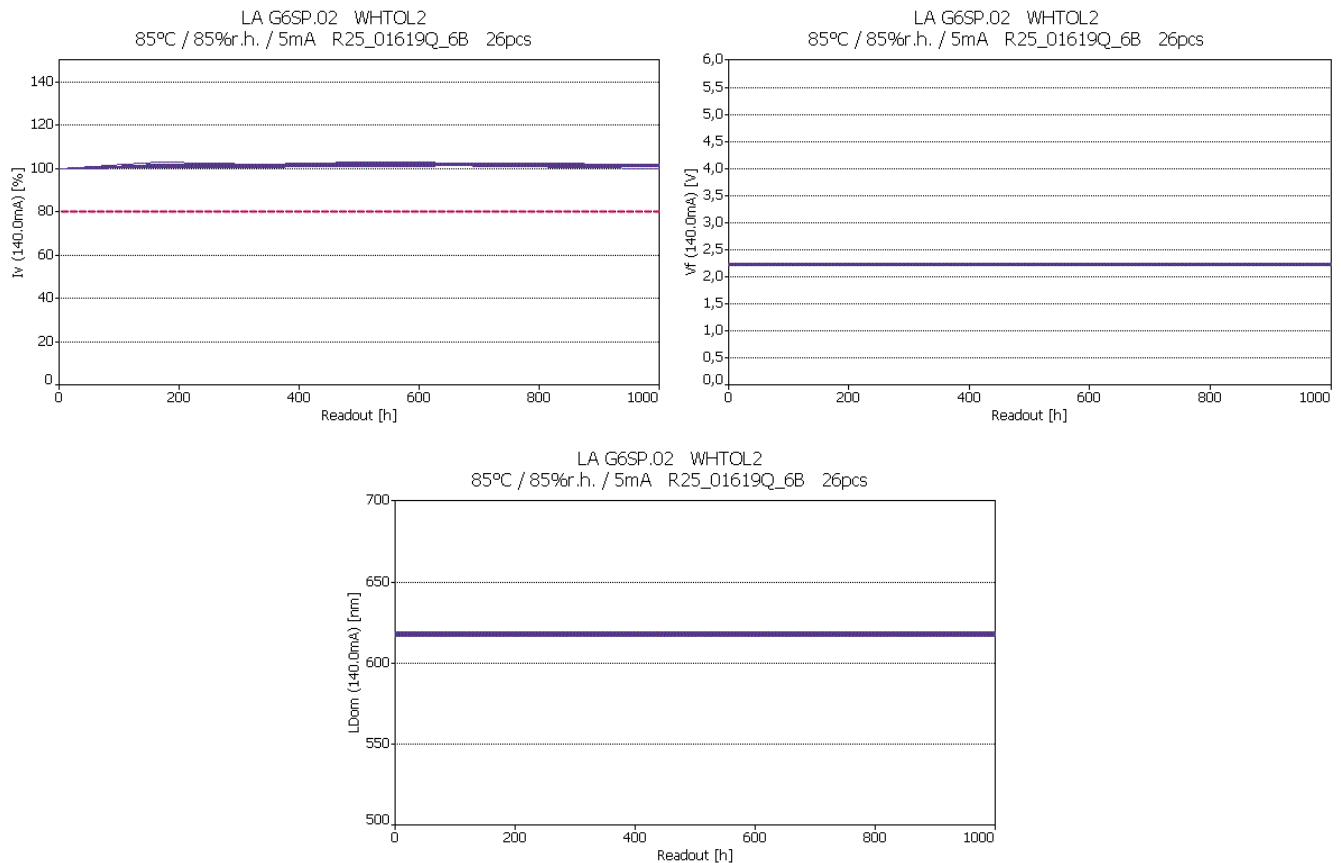
WHTOL2 85°C/85% r.H.; 5 mA

Lot A



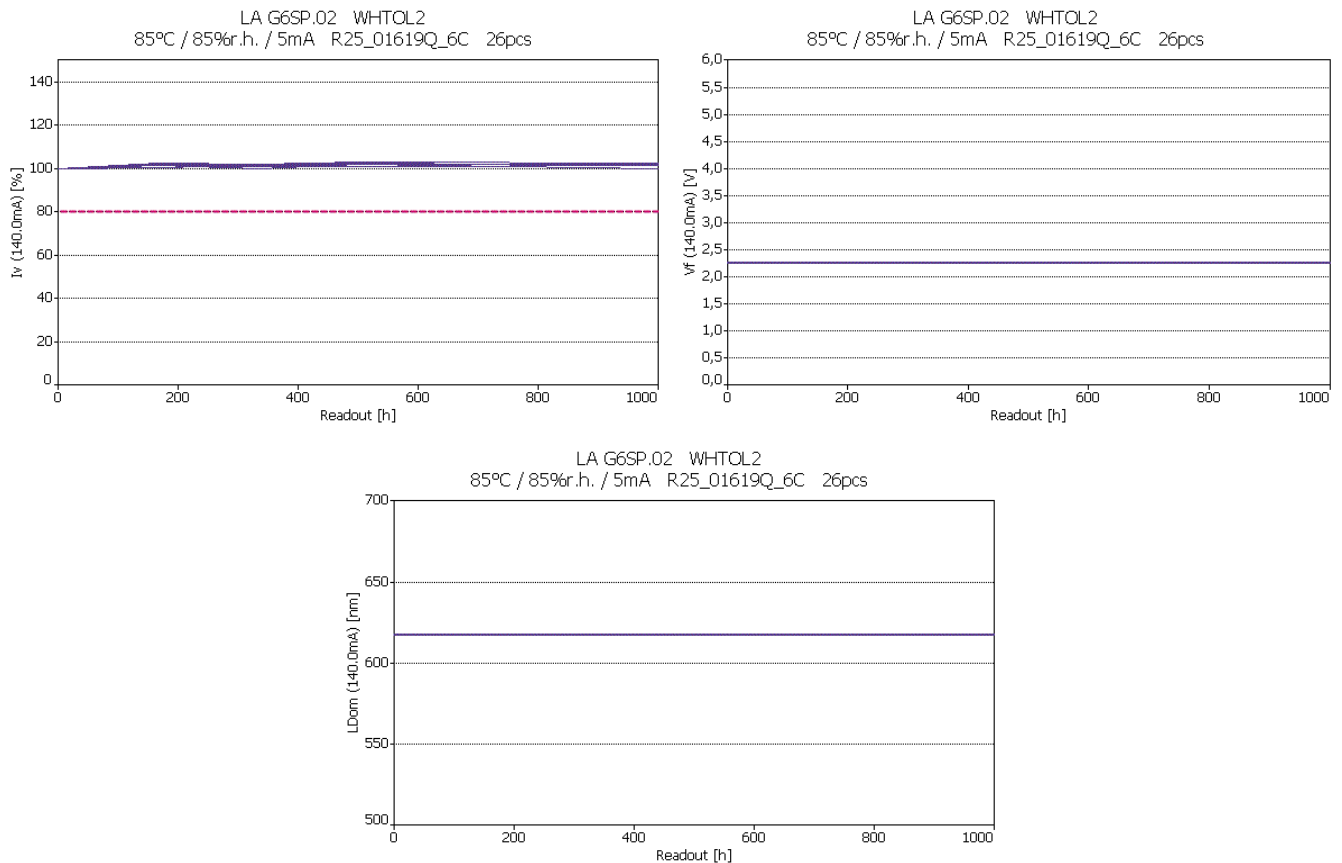
WHTOL2 85°C/85% r.H.; 5 mA

Lot B



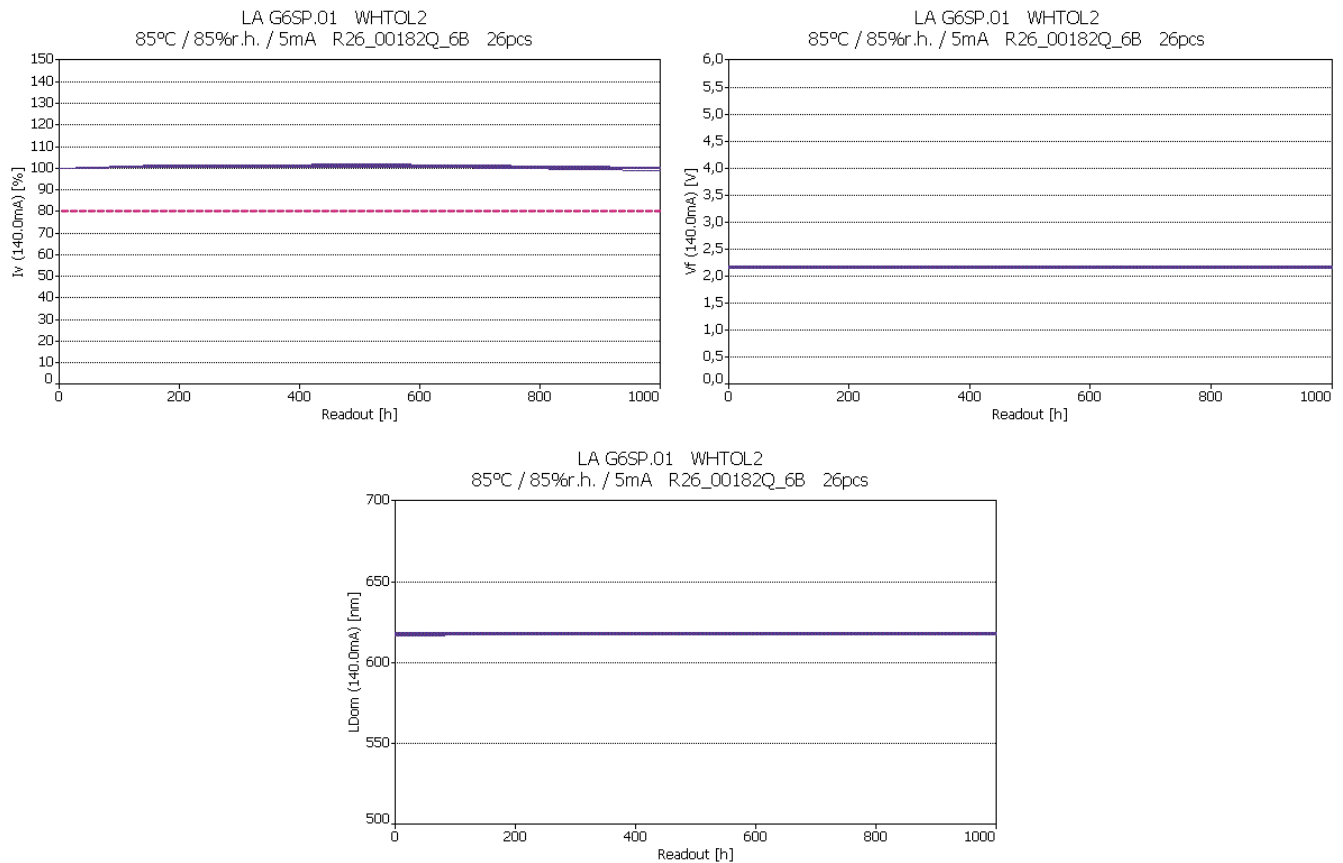
WHTOL2 85°C/85% r.H.; 5 mA

Lot C



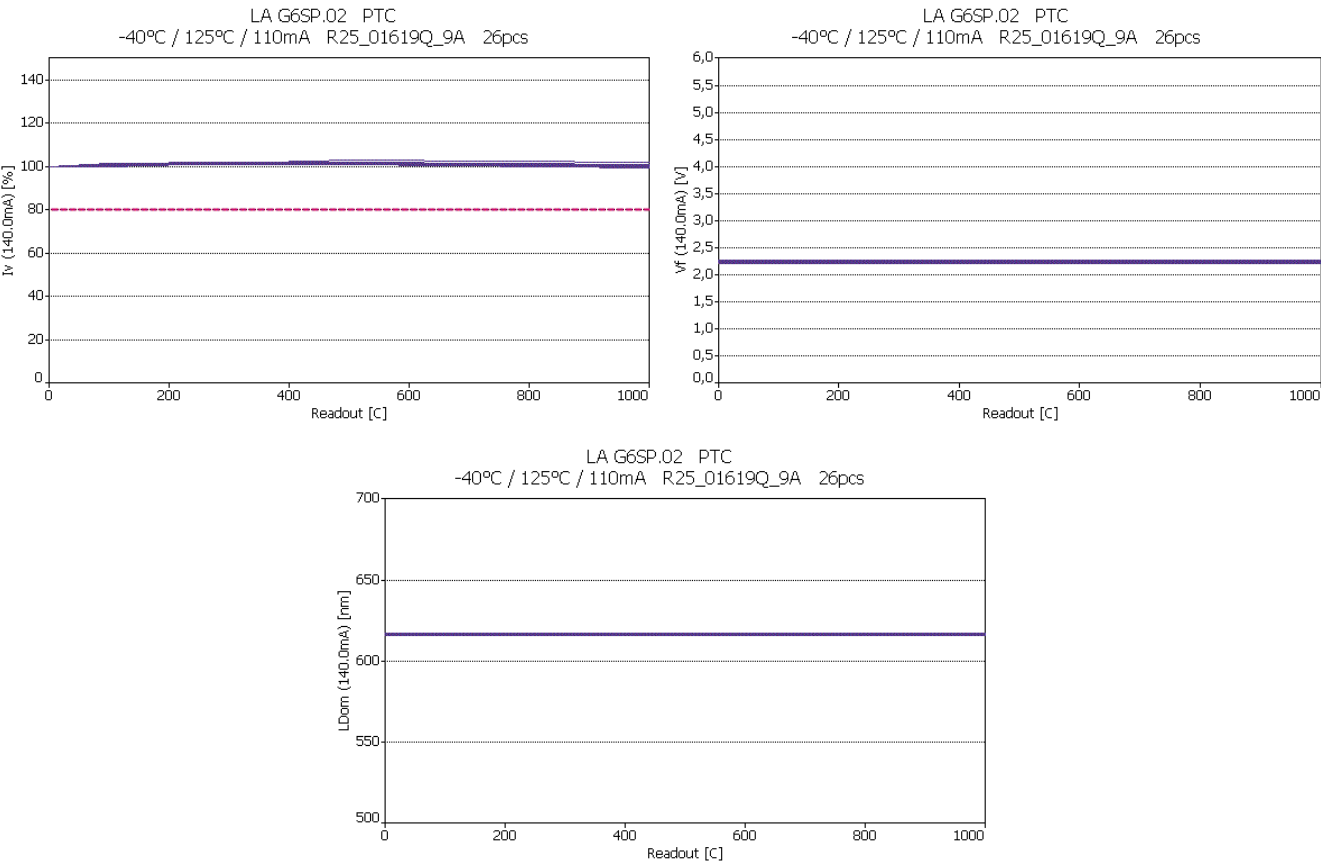
WHTOL2 85°C/85% r.H.; 5 mA

Lot D



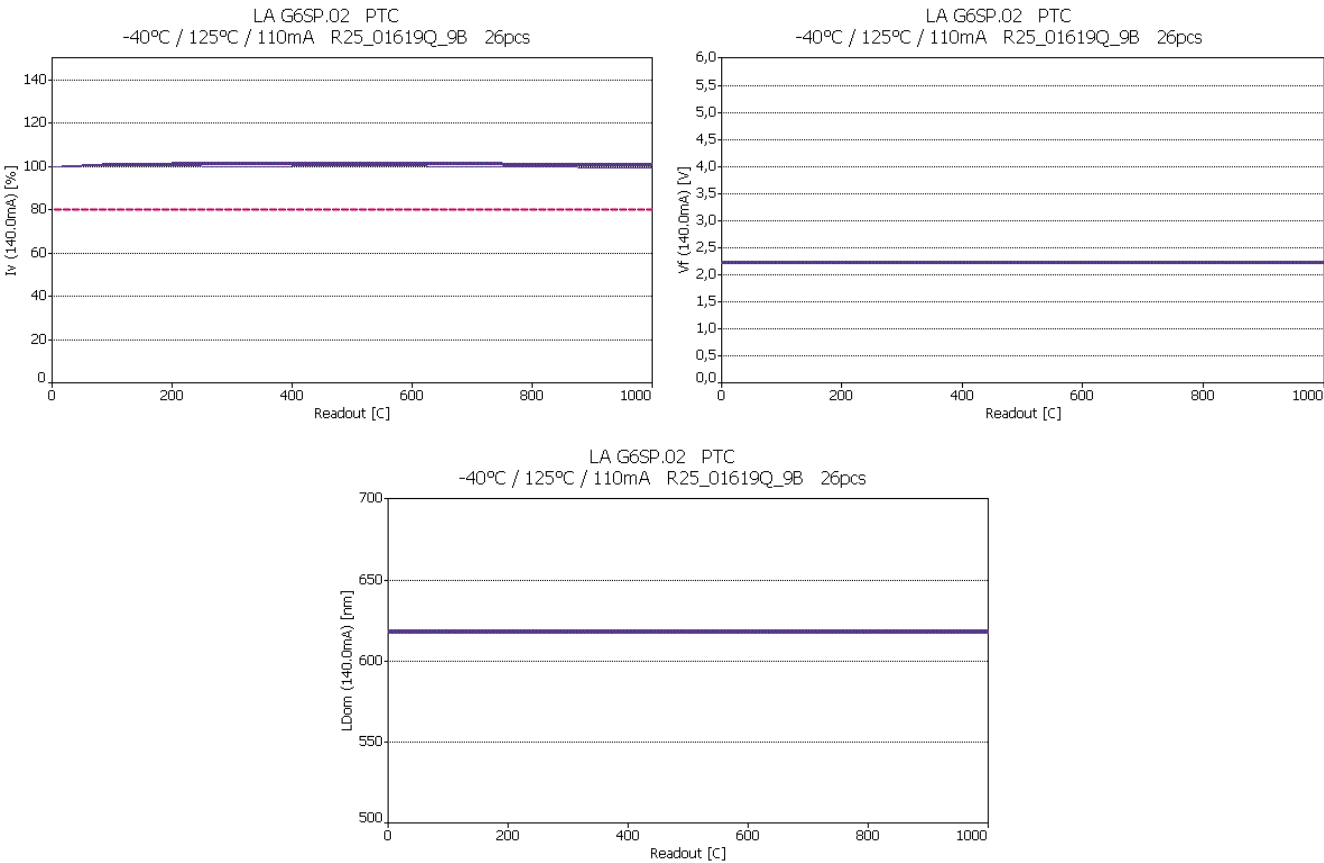
PTC t_{on}/t_{off} = 5 min; -40°C/125°C; 110 mA

Lot A



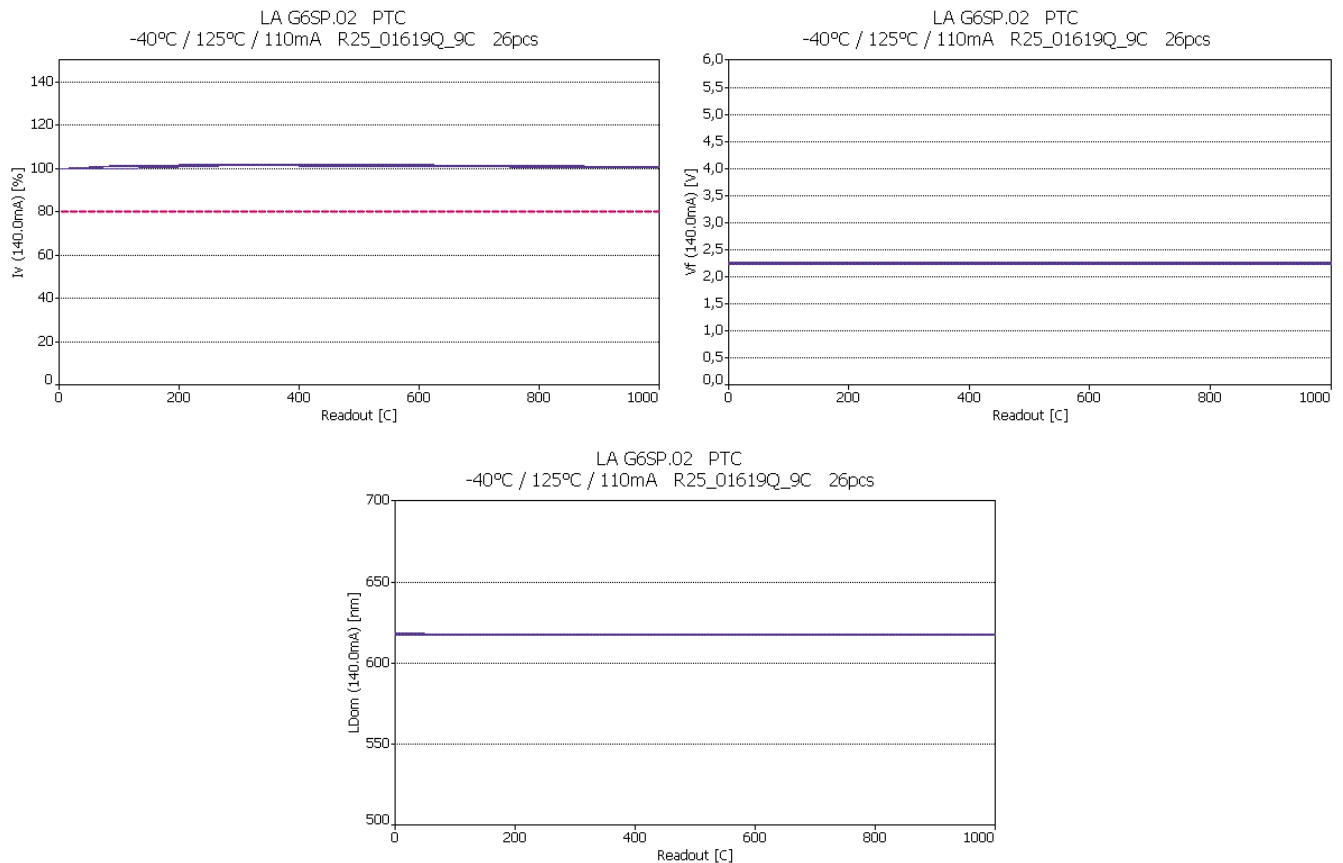
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Lot B



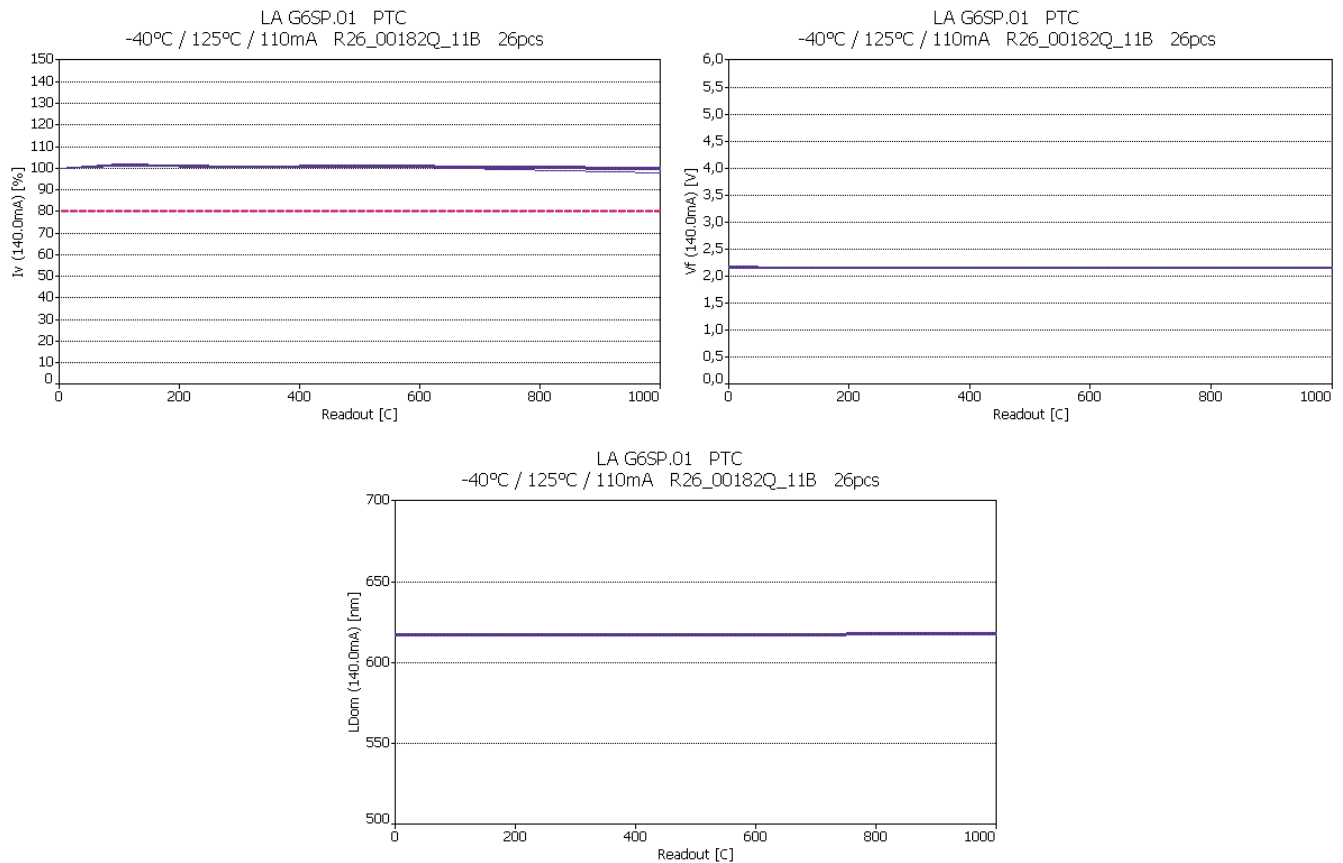
PTC $t_{on}/t_{off} = 5 \text{ min}; -40^{\circ}\text{C}/125^{\circ}\text{C}; 110 \text{ mA}$

Lot C



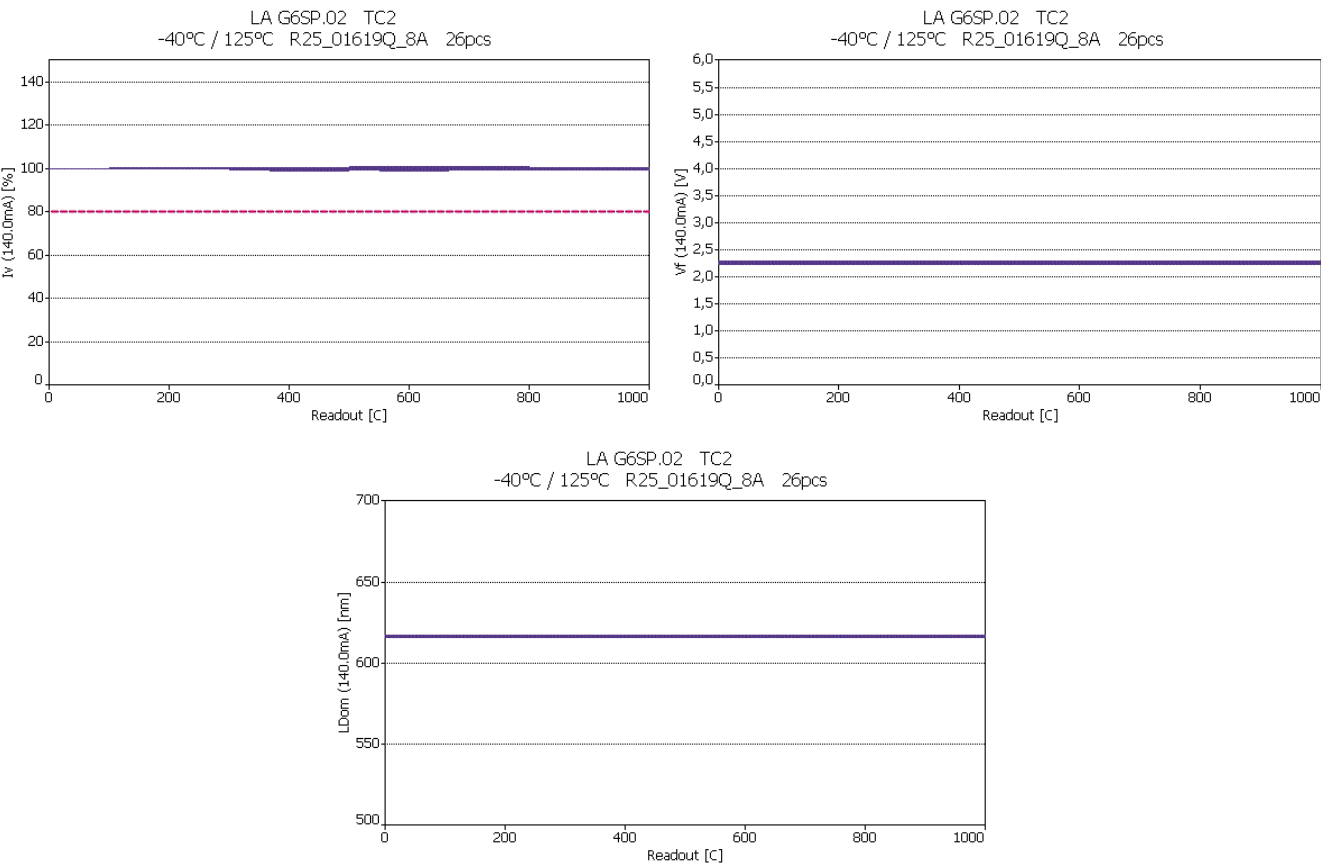
PTC $t_{on}/t_{off} = 5 \text{ min}; -40^{\circ}\text{C}/125^{\circ}\text{C}; 110 \text{ mA}$

Lot D



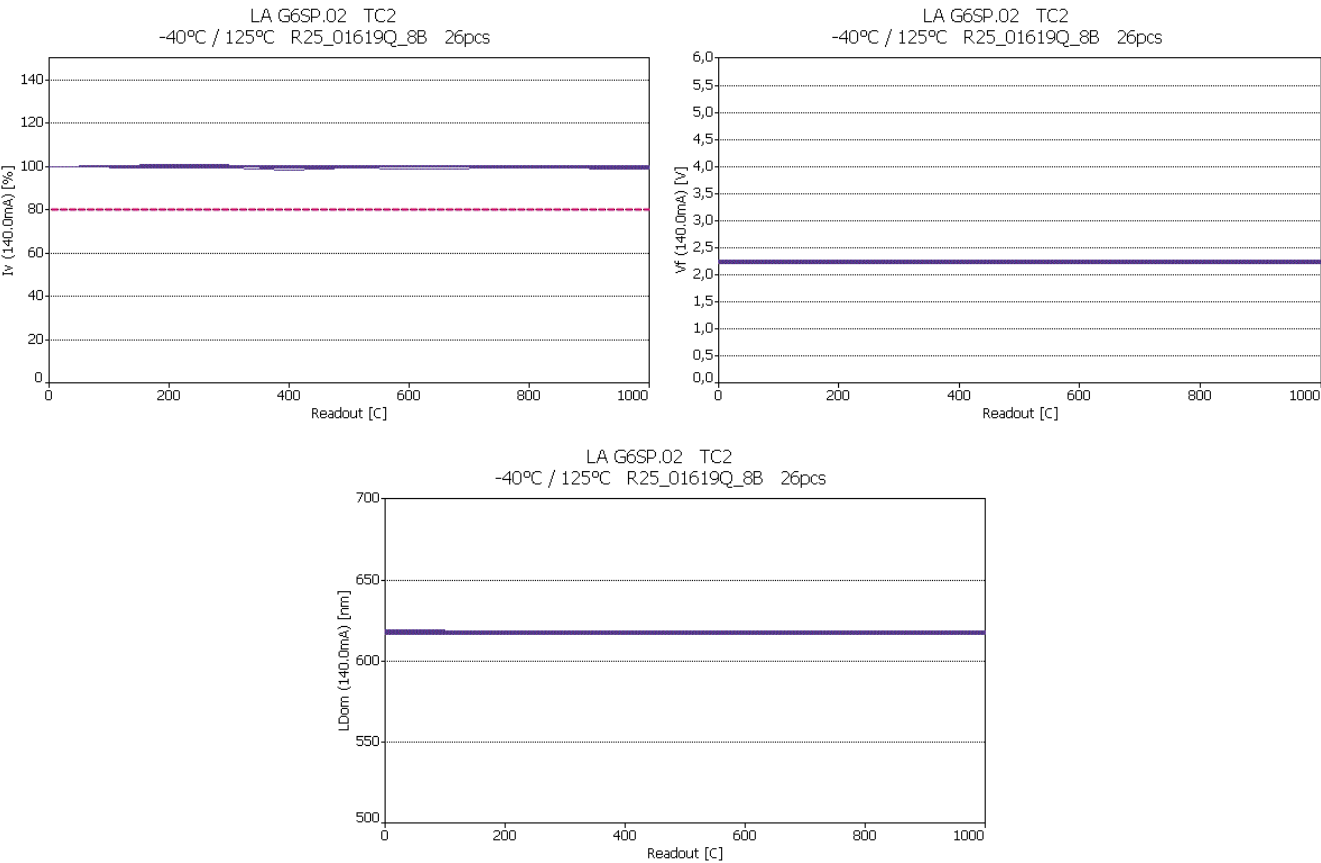
TC -40°C/125°C

Lot A



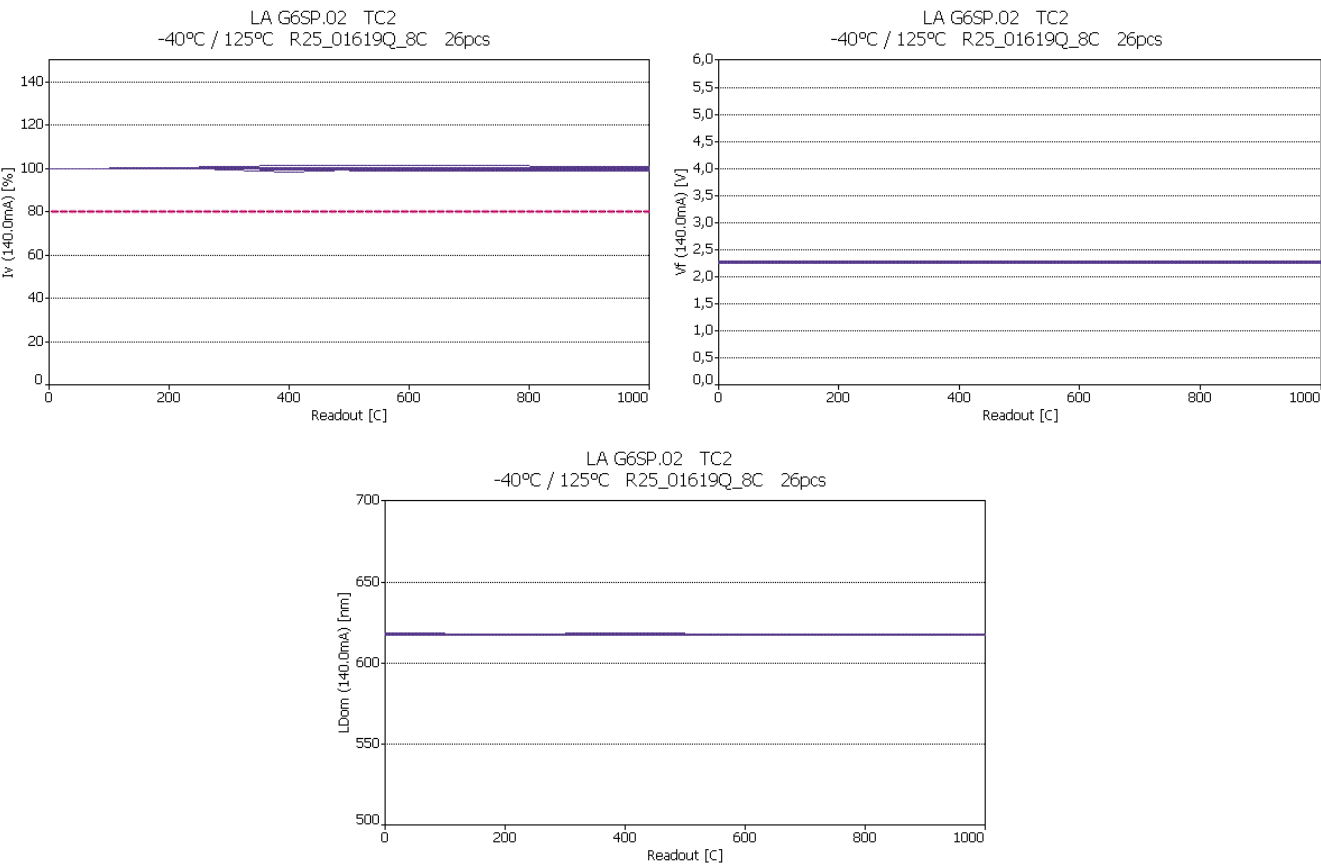
TC -40°C/125°C

Lot B



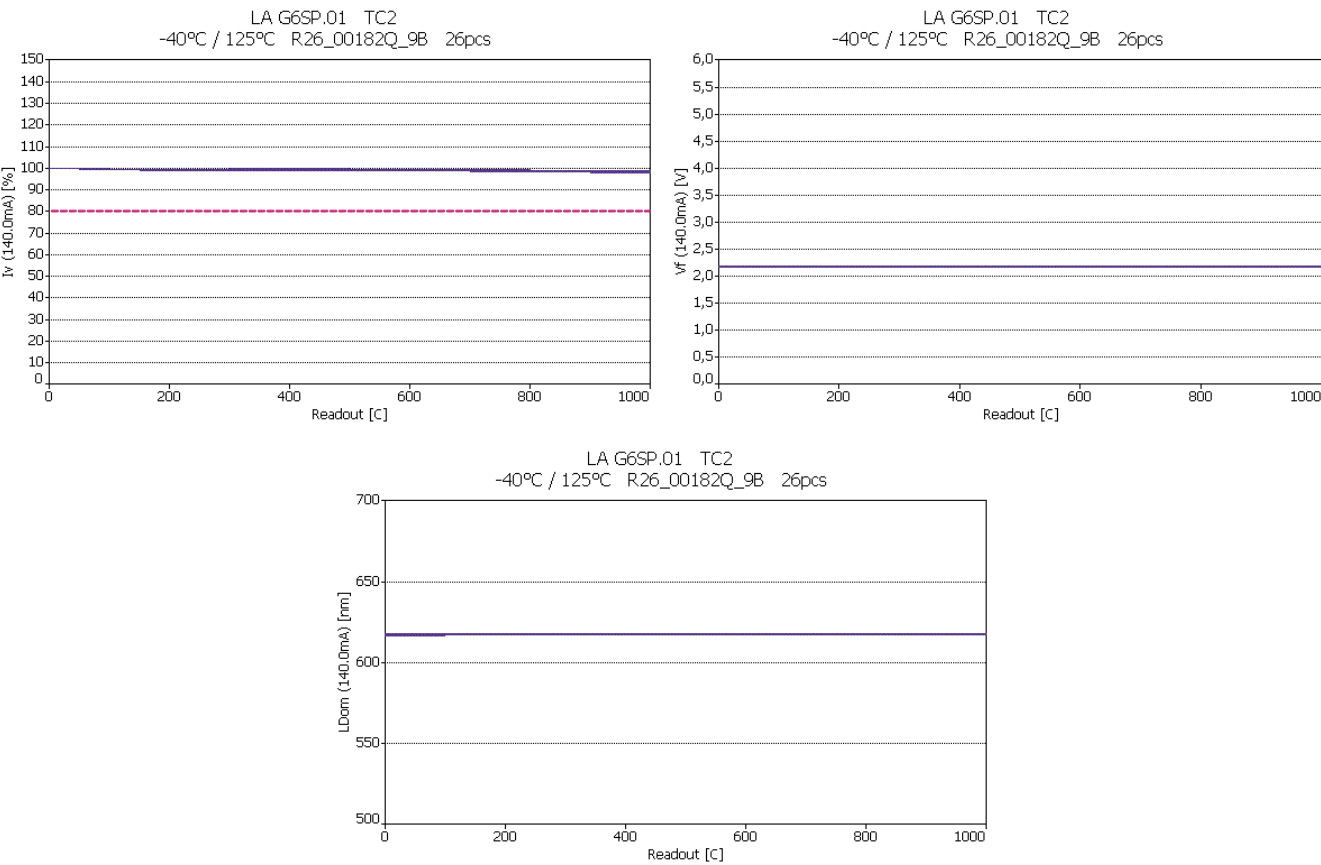
TC -40°C/125°C

Lot C



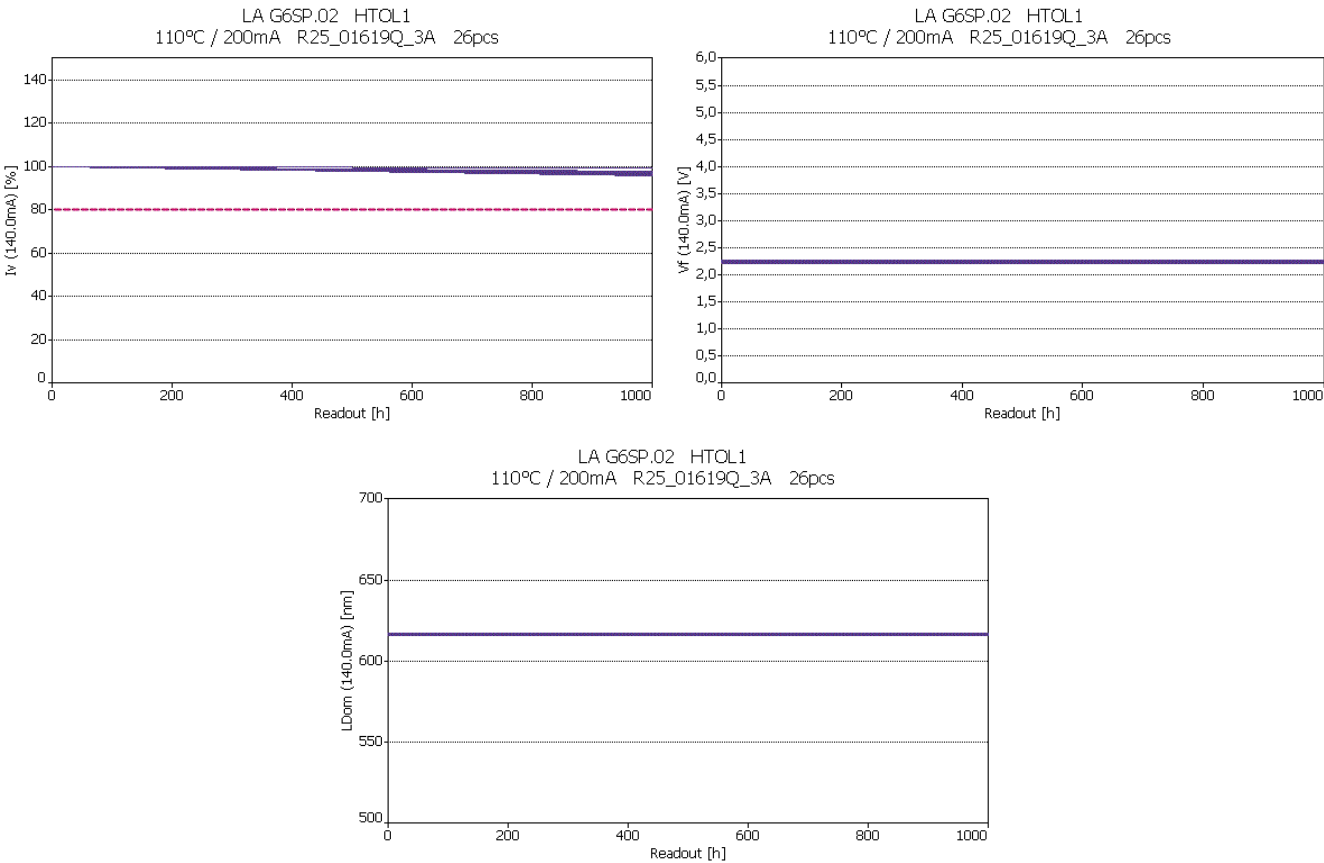
TC -40°C/125°C

Lot D



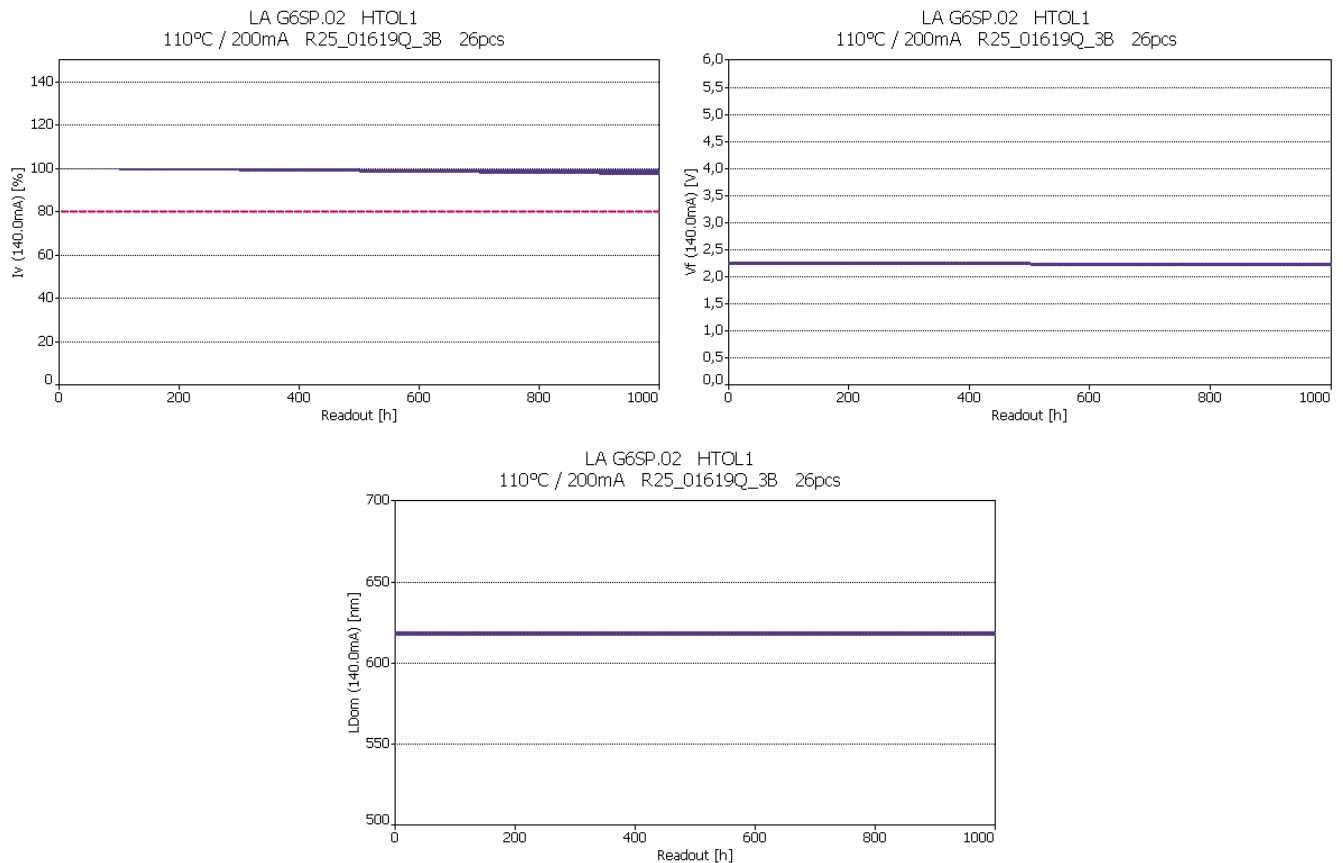
HTOL1 110°C/200 mA

Lot A



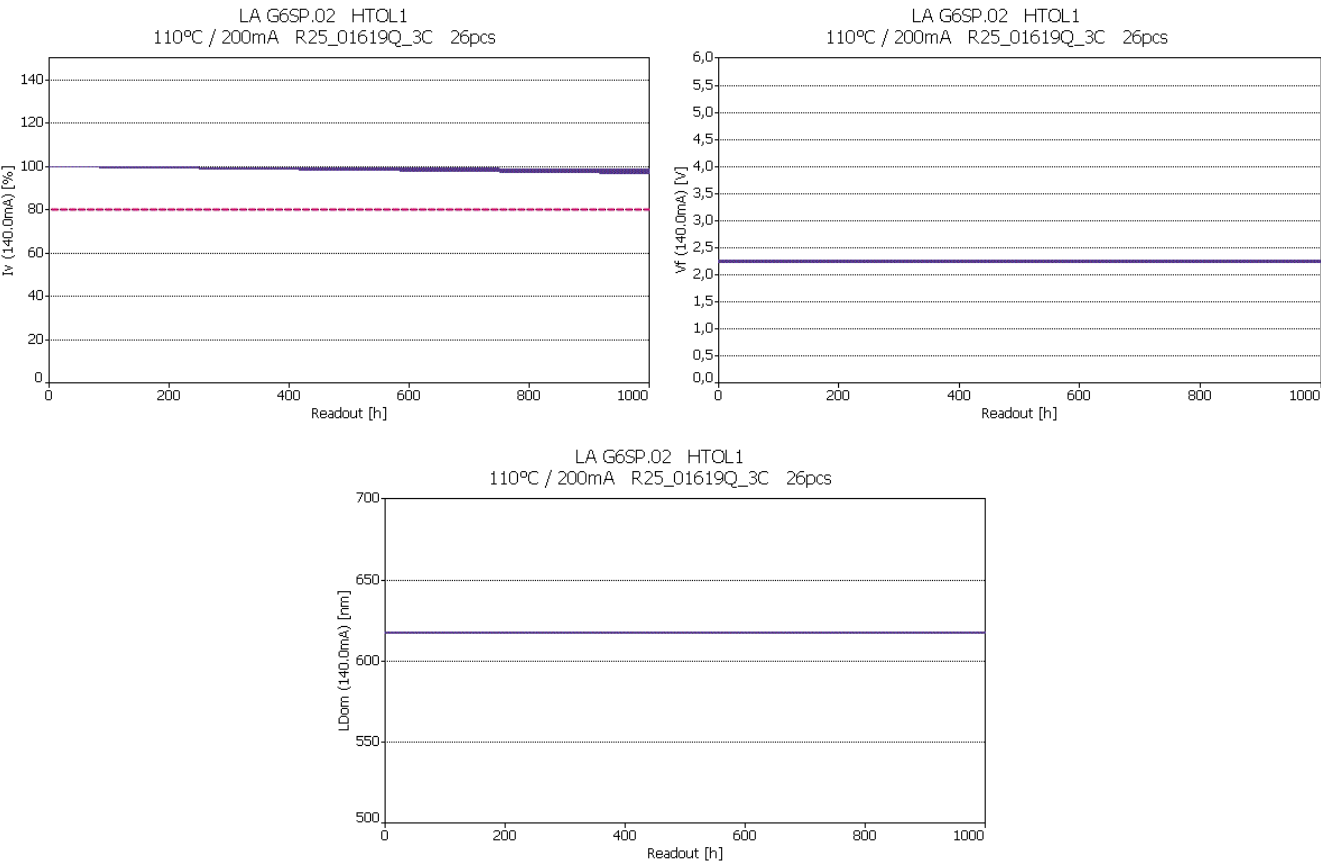
HTOL1 110°C/200 mA

Lot B



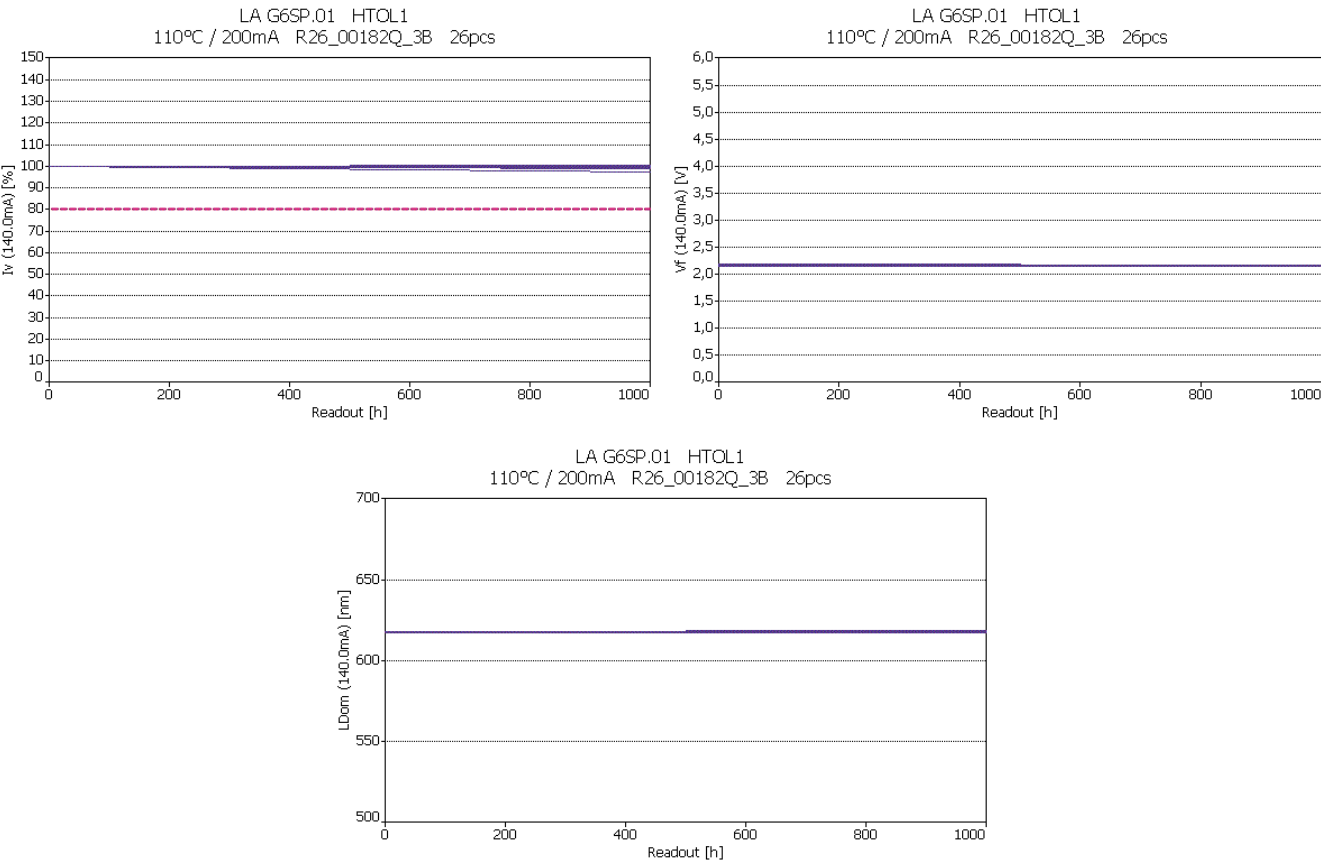
HTOL1 110°C/200 mA

Lot C



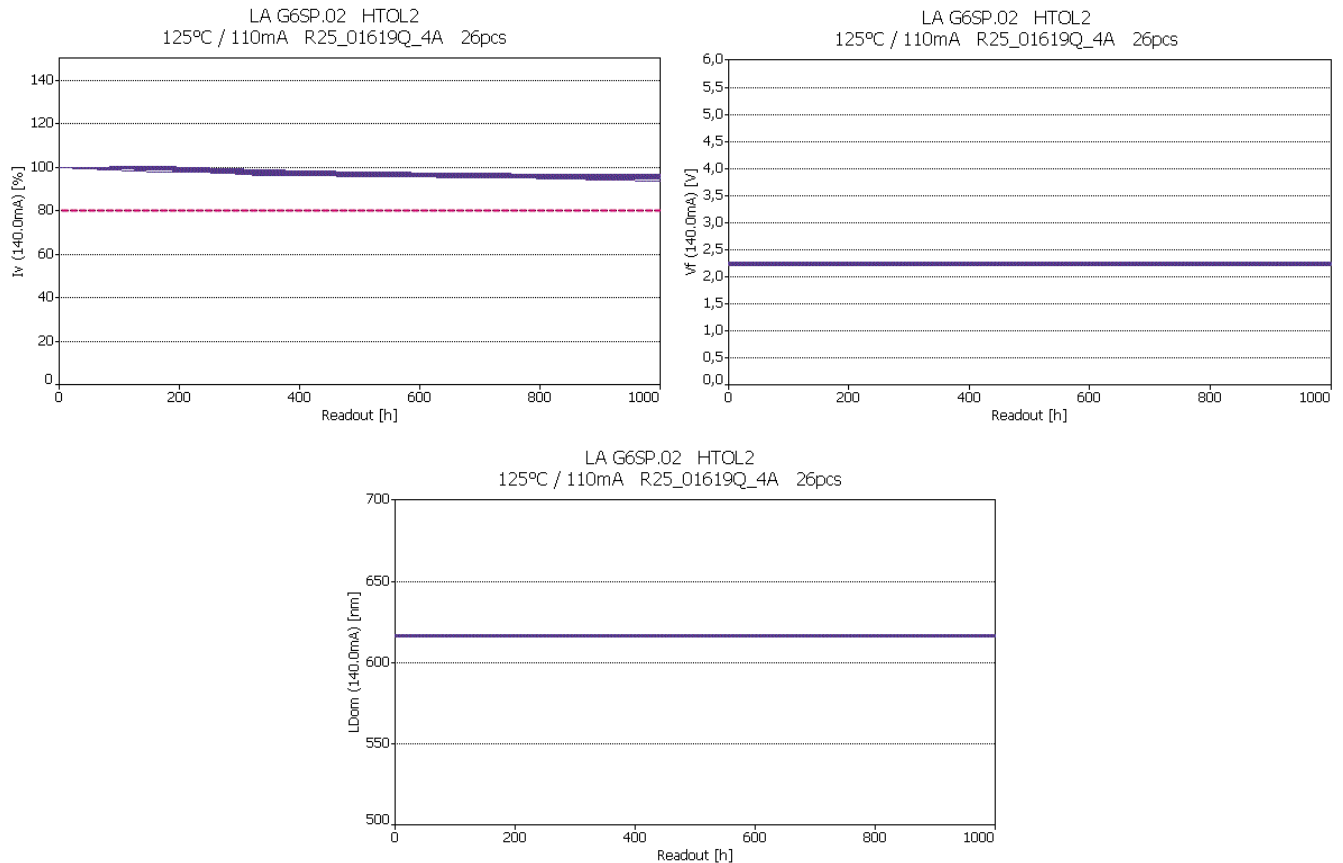
HTOL1 110°C/200 mA

Lot D



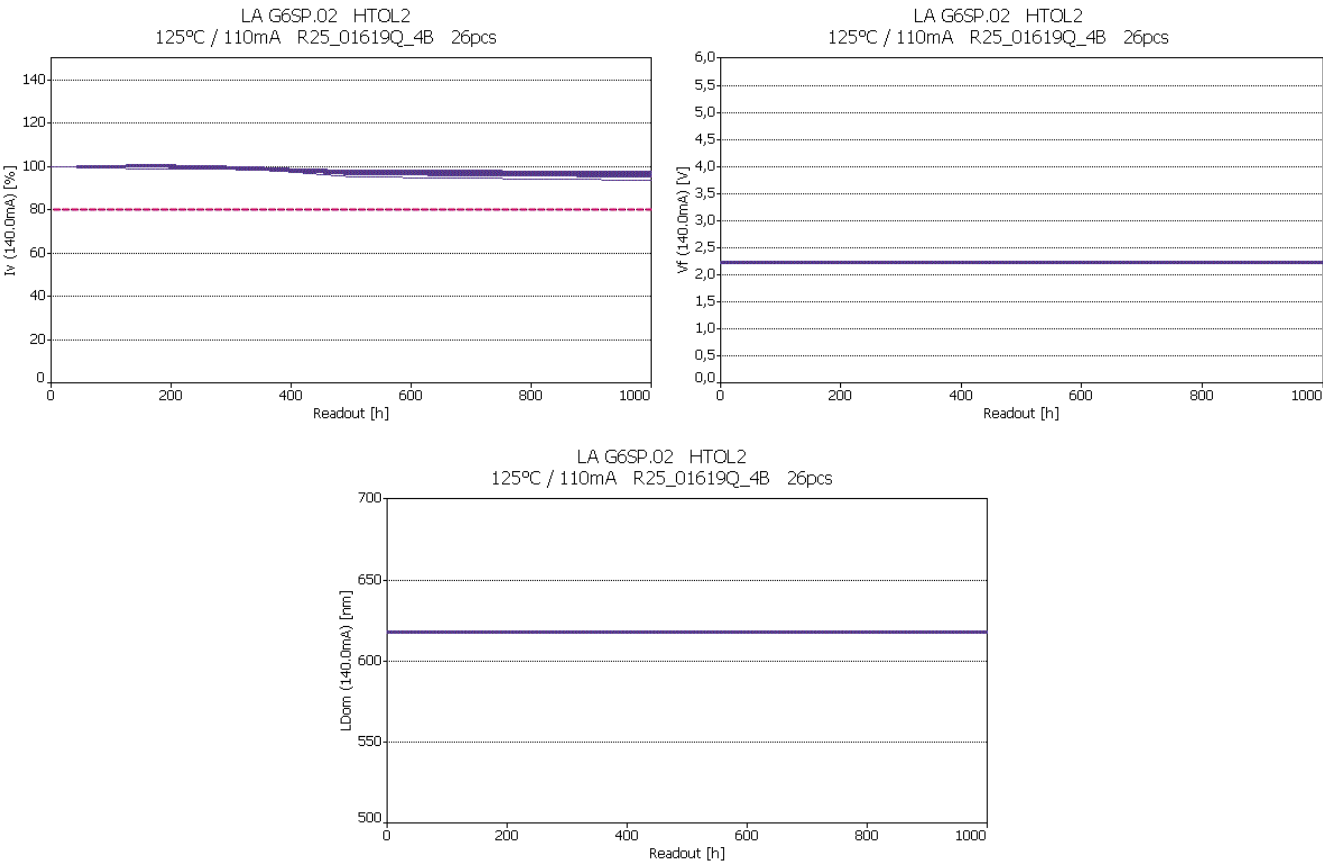
HTOL2 125°C/110 mA

Lot A



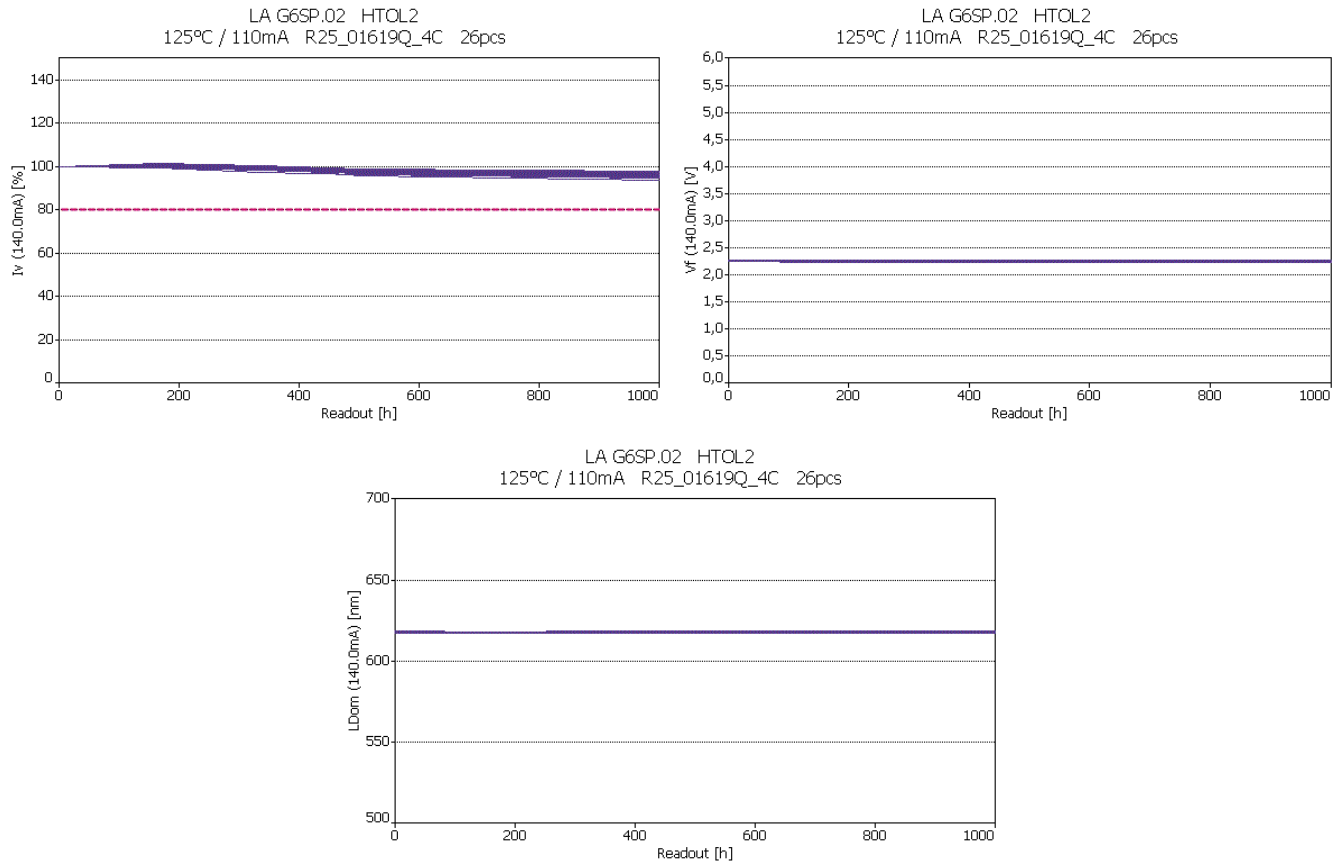
HTOL2 125°C/110 mA

Lot B



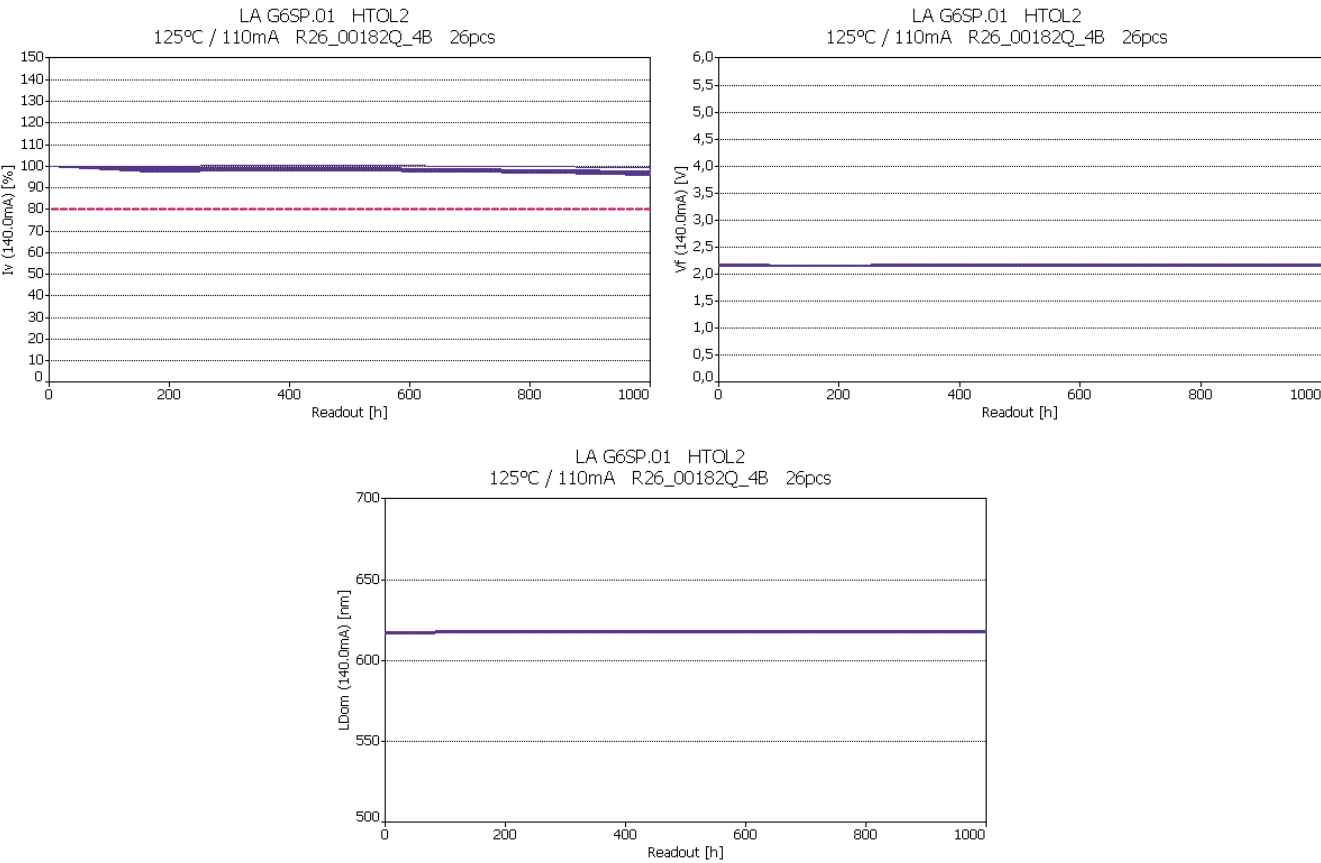
HTOL2 125°C/110 mA

Lot C



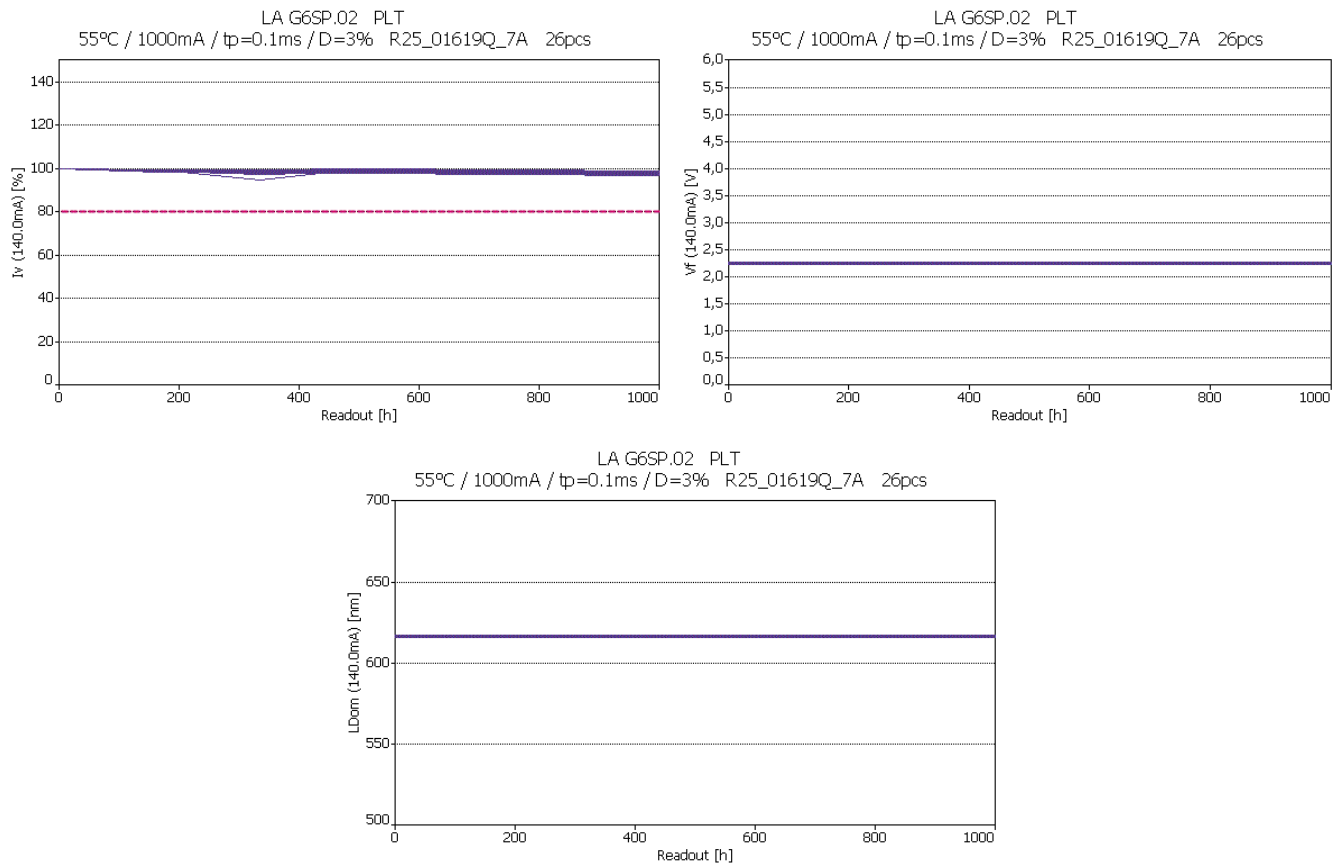
HTOL2 125°C/110 mA

Lot D



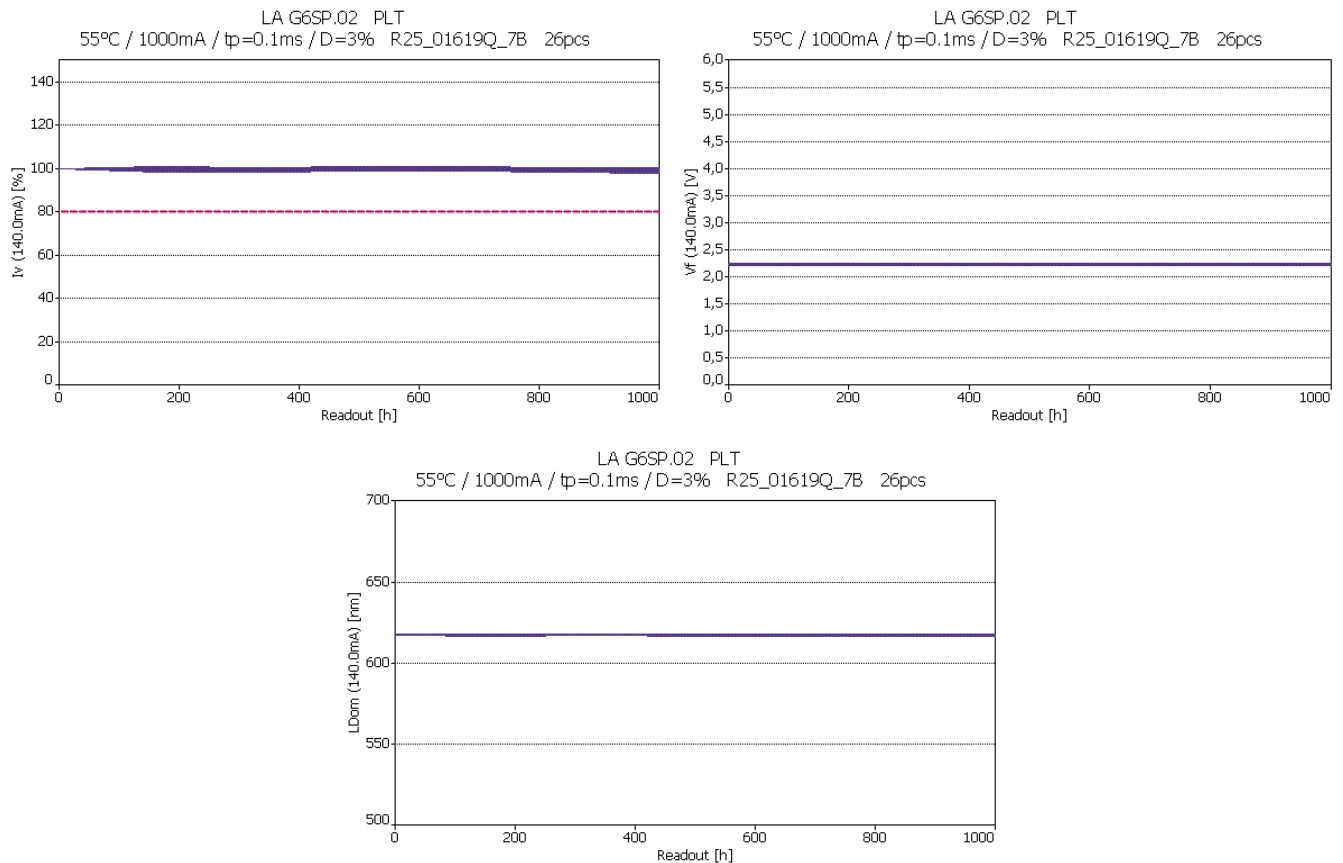
PLT 55°C/1000 mA; $t_p=0,1$ ms; D = 3%

Lot A



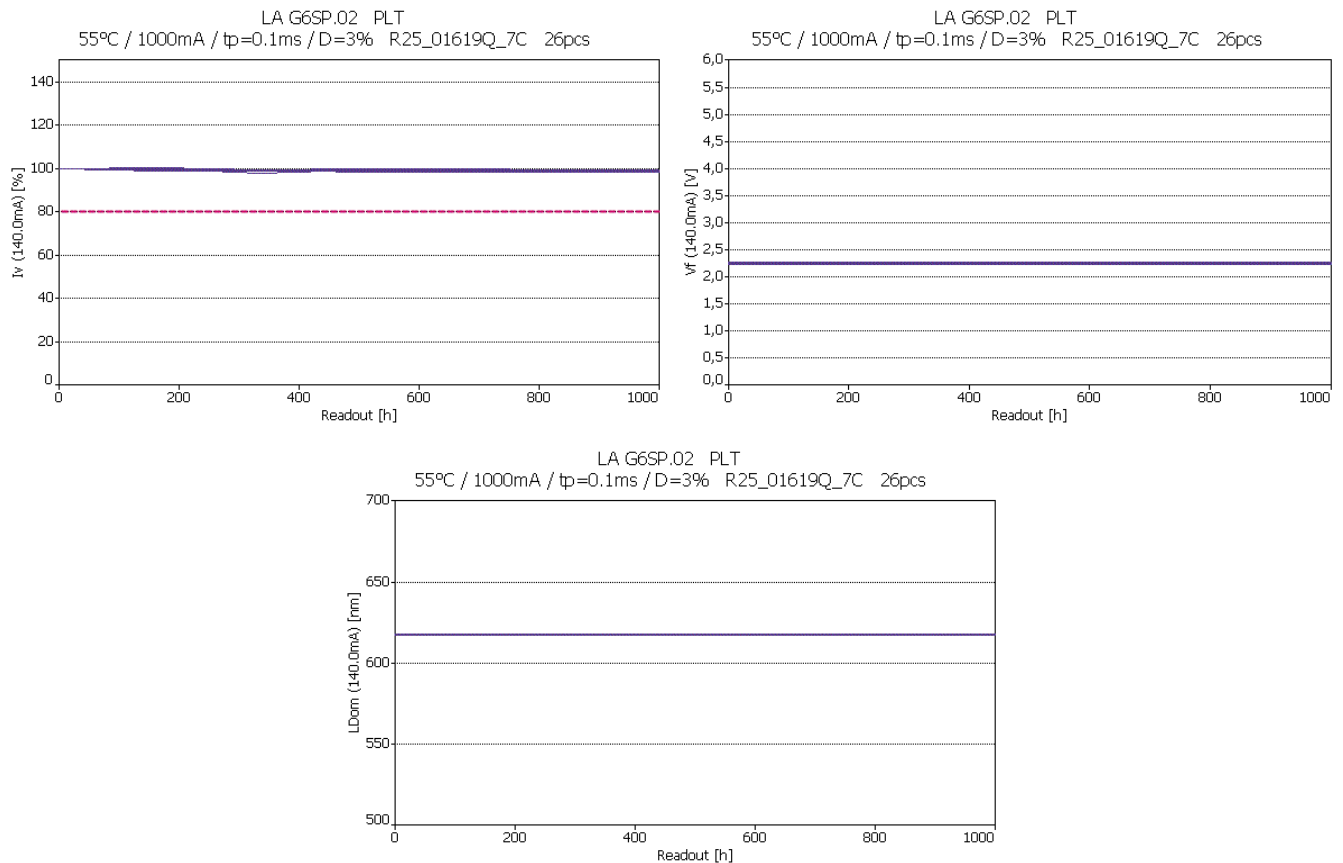
PLT 55°C/1000 mA; $t_p=0,1$ ms; D = 3%

Lot B



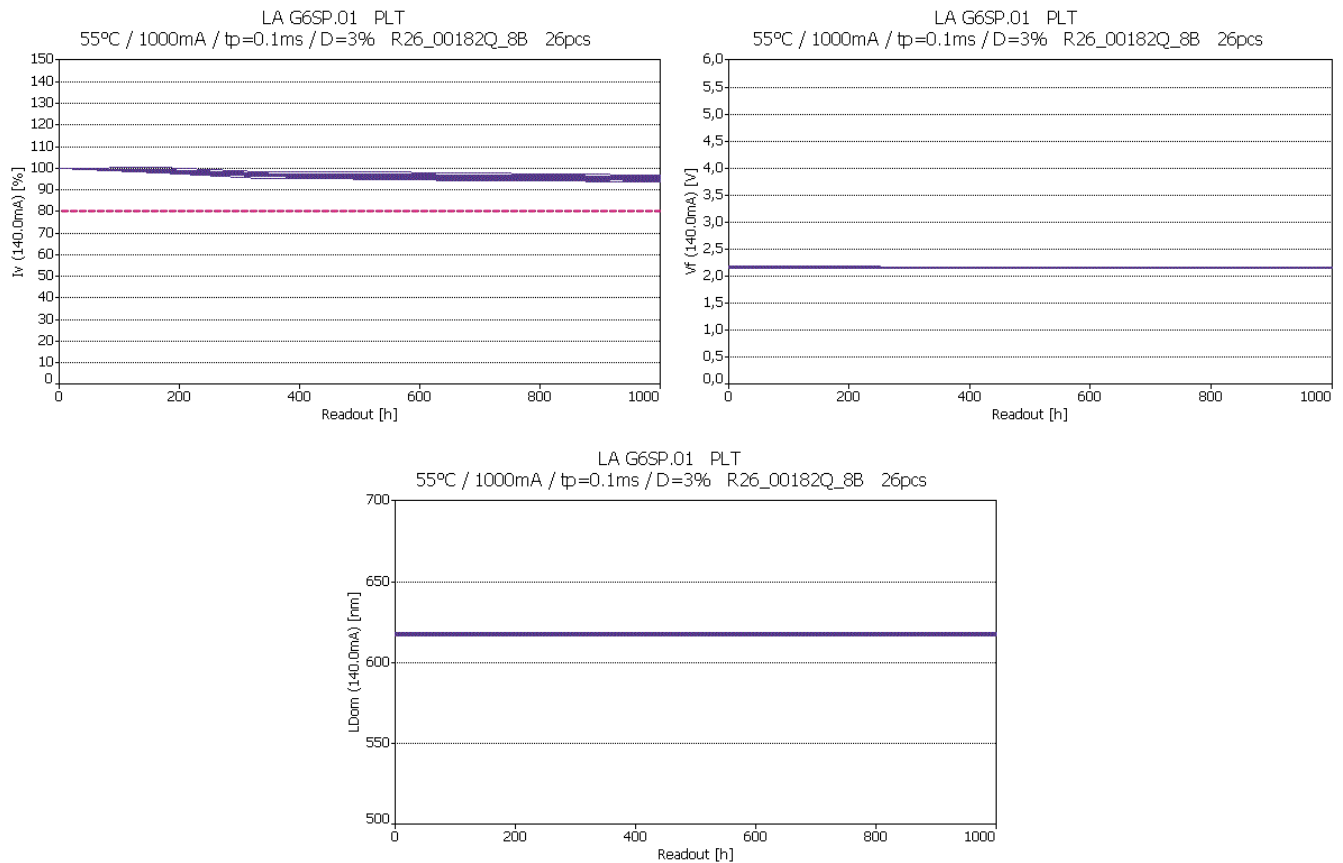
PLT 55°C/1000 mA; $t_p=0,1$ ms; D = 3%

Lot C



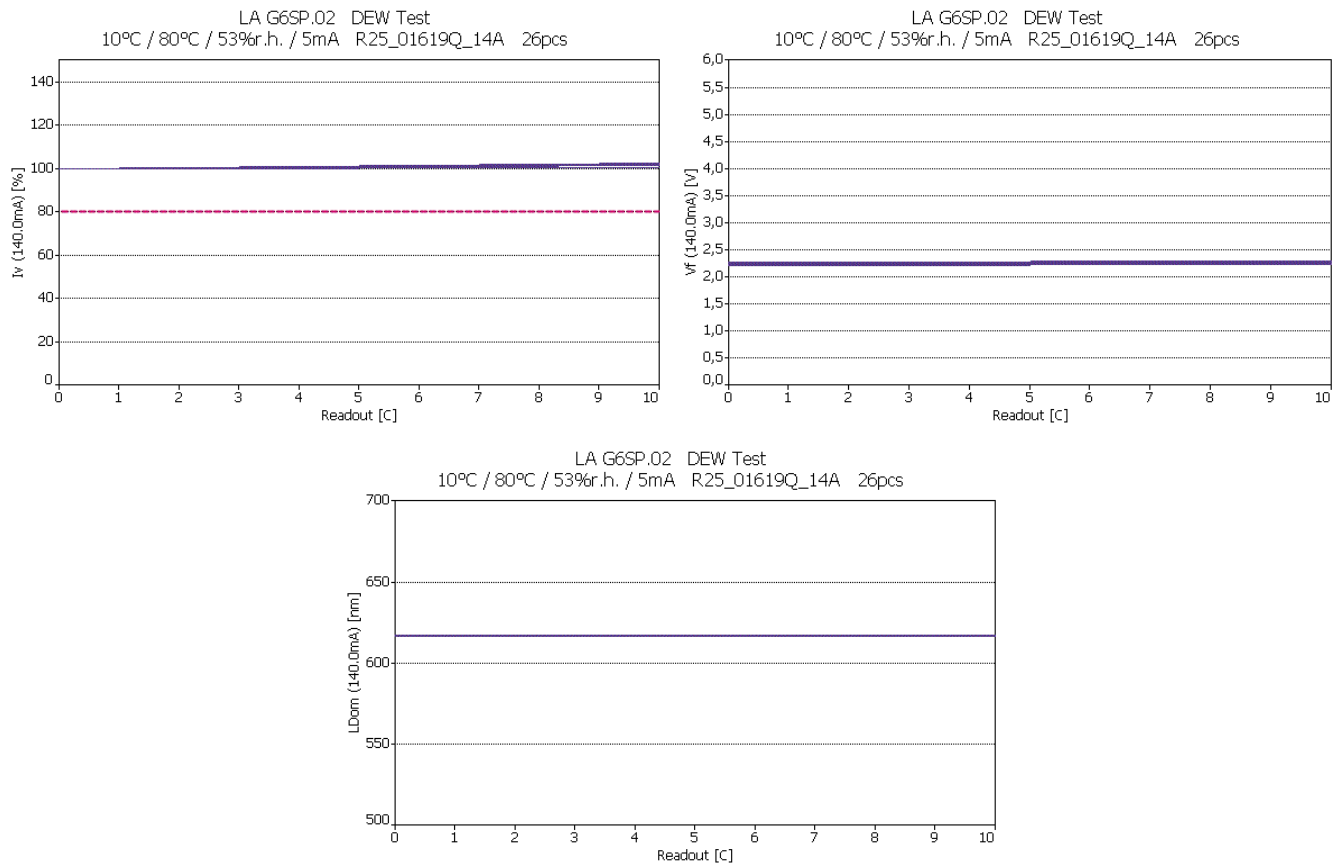
PLT 55°C/1000 mA; $t_p=0,1$ ms; D = 3%

Lot D



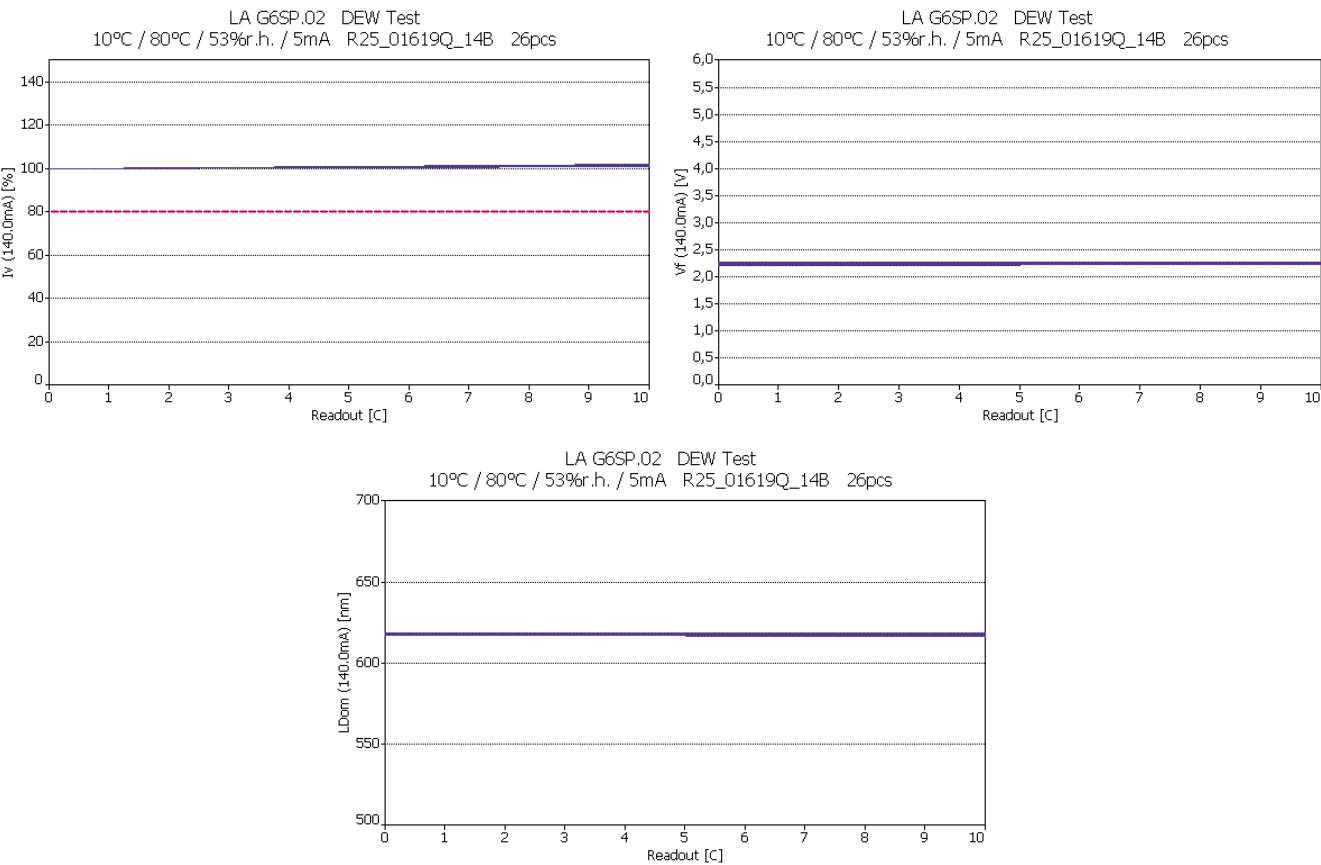
Dew 10-80°C/53% r.H.; 5 mA

Lot A



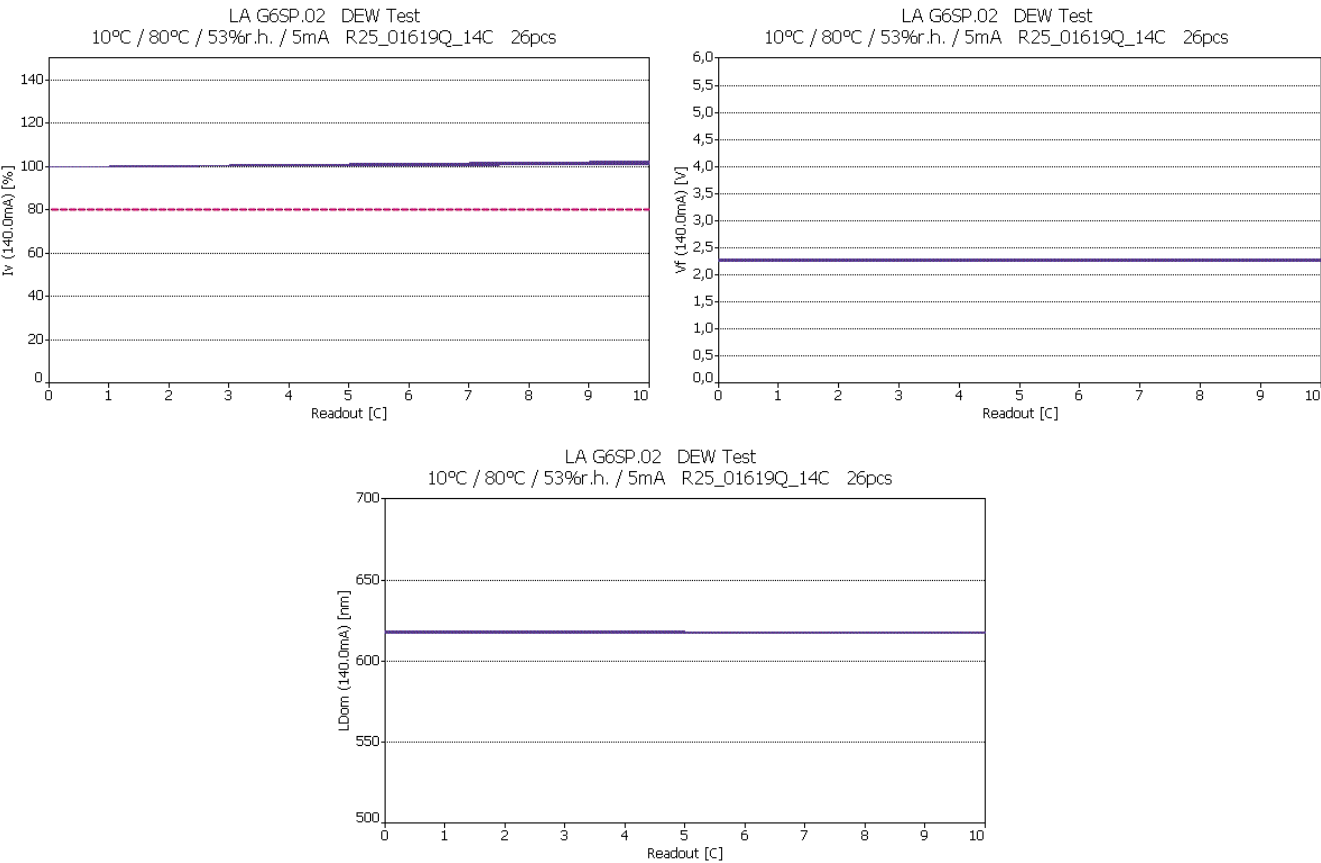
Dew 10-80°C/53% r.H.; 5 mA

Lot B



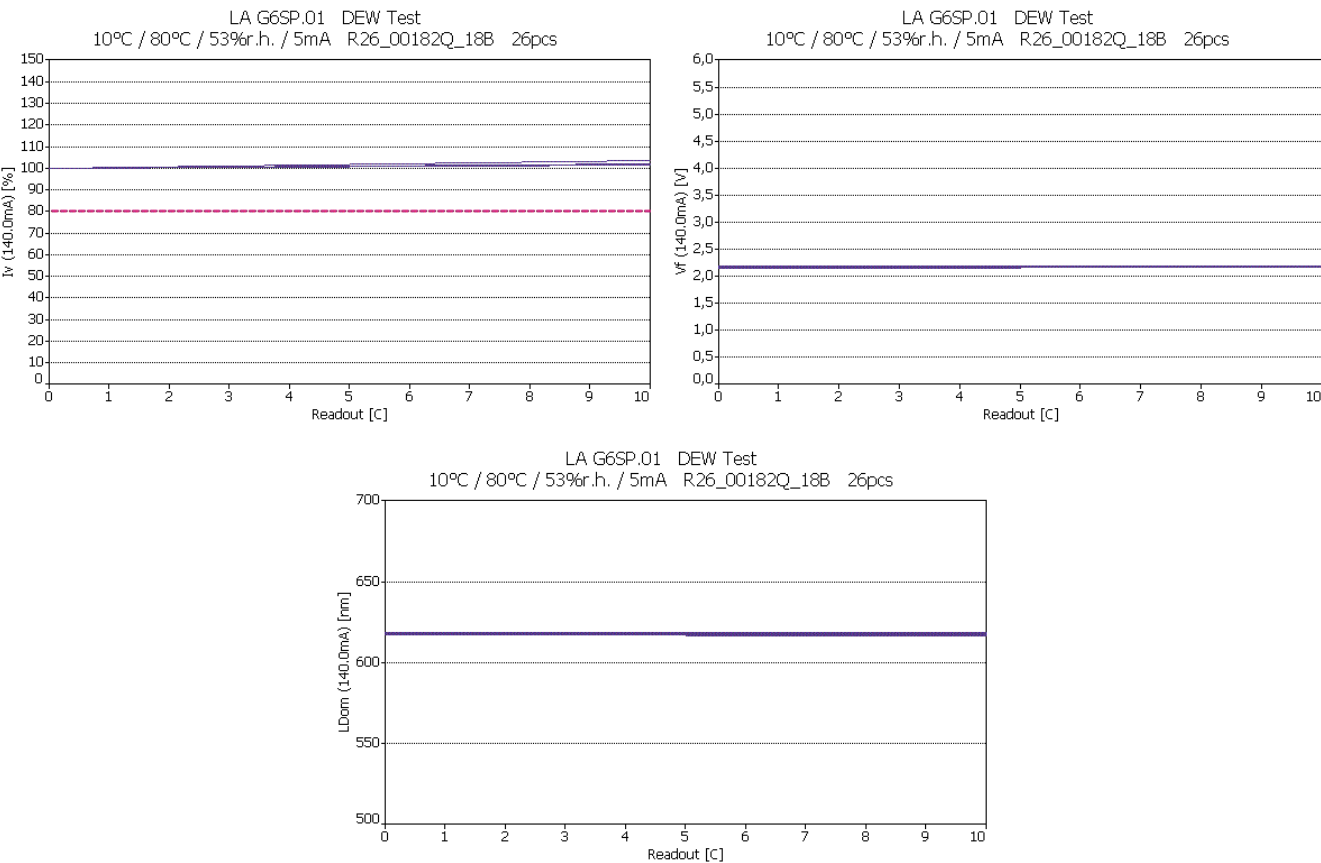
Dew 10-80°C/53% r.H.; 5 mA

Lot C



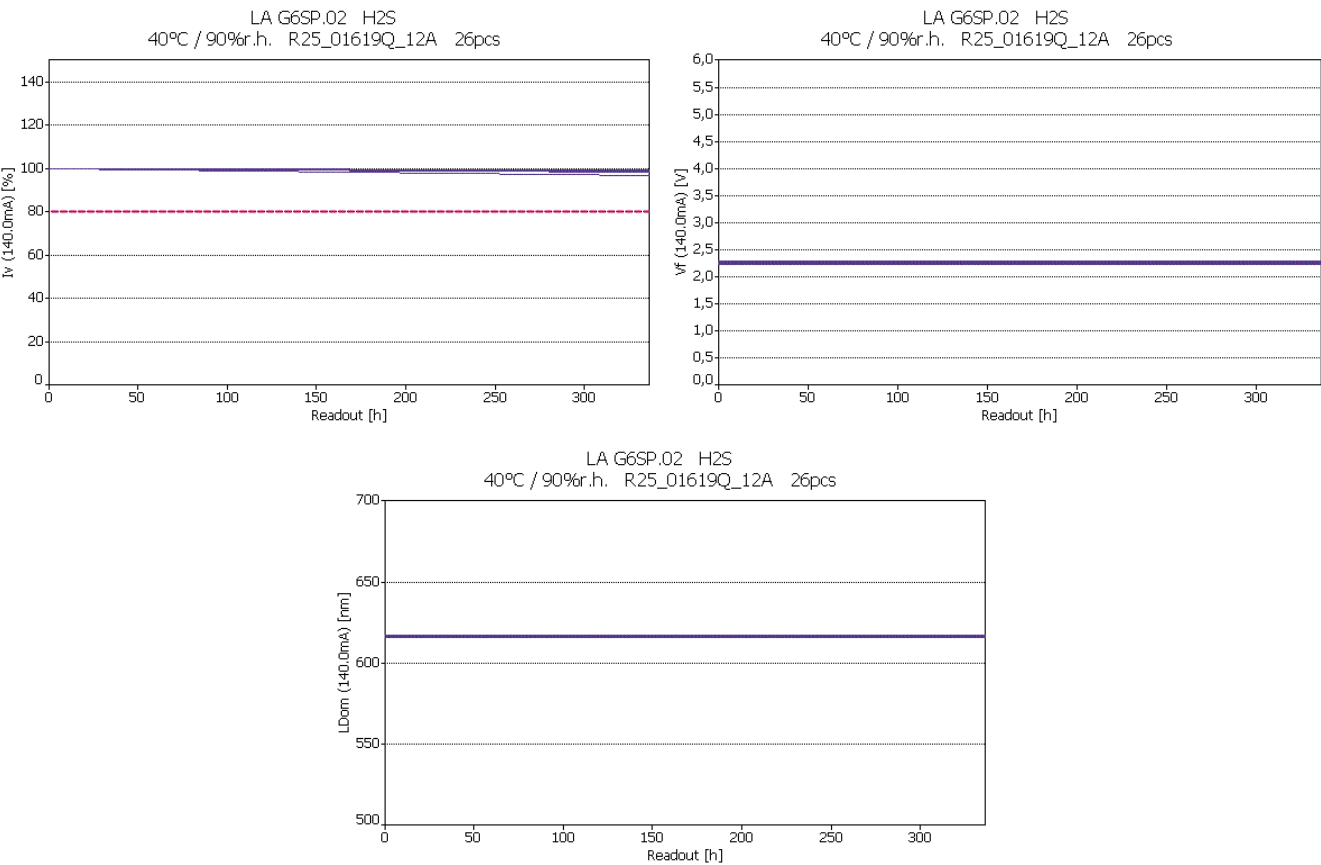
Dew 10-80°C/53% r.H.; 5 mA

Lot D



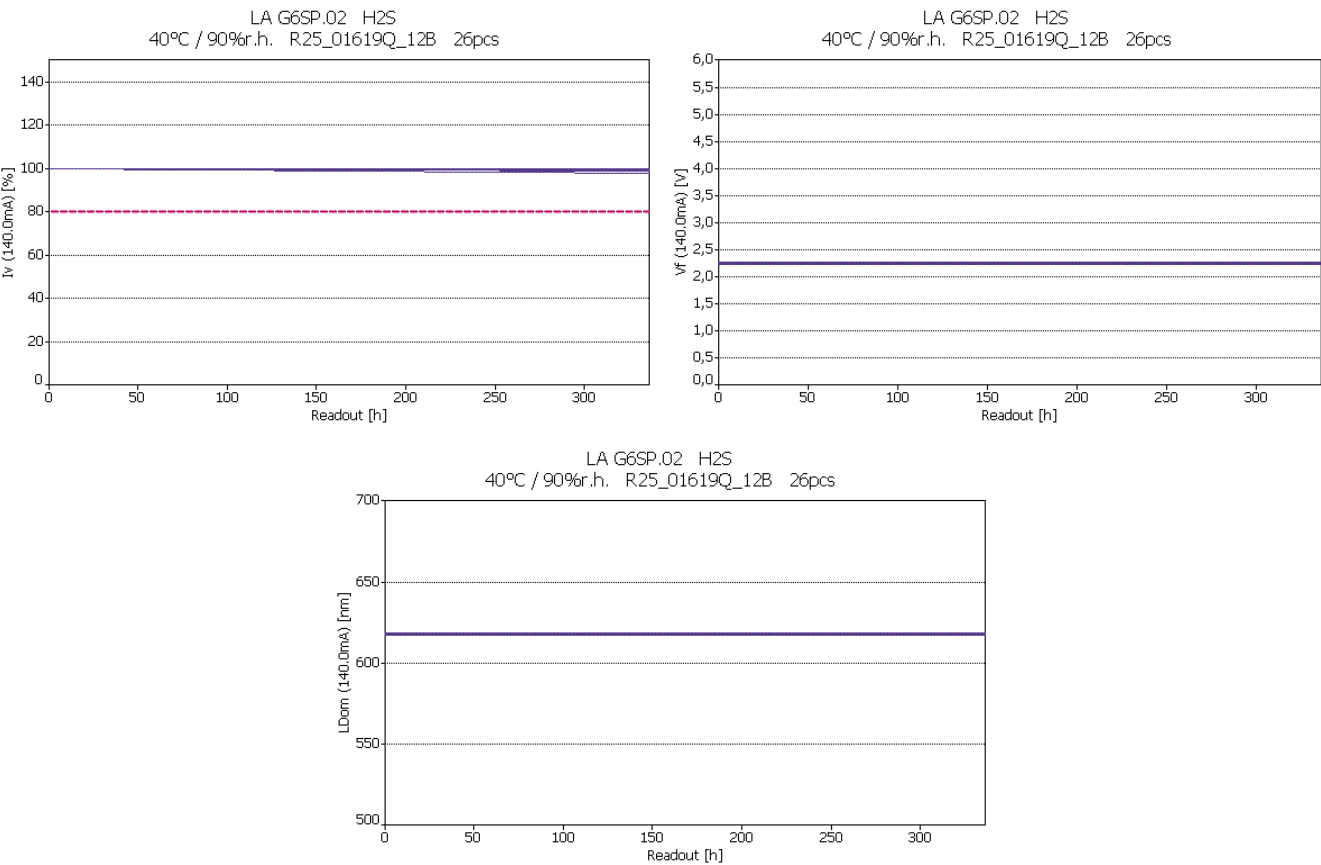
H₂S Hydrogen Sulphide 40°C/90% r.H.

Lot A



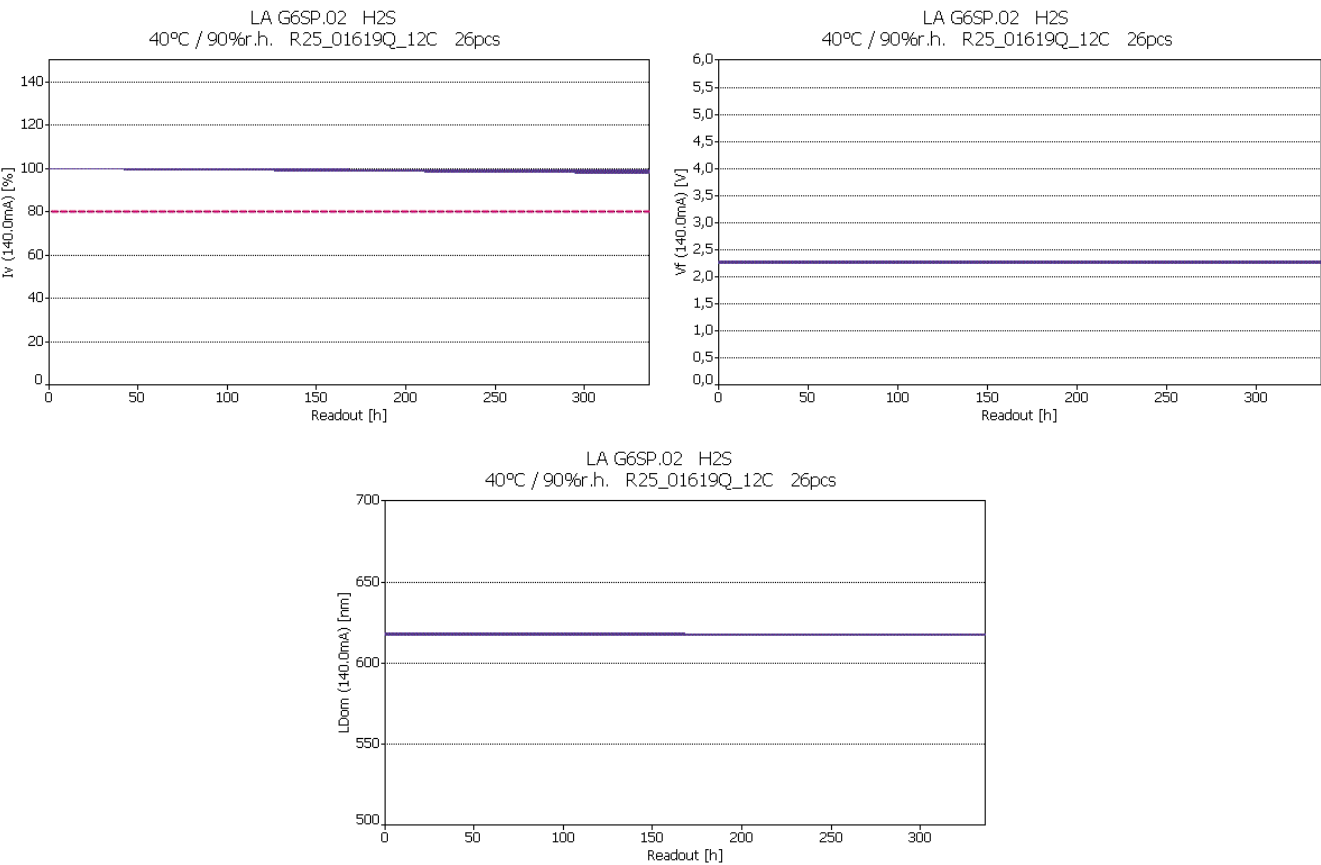
H₂S Hydrogen Sulphide 40°C/90% r.H.

Lot B



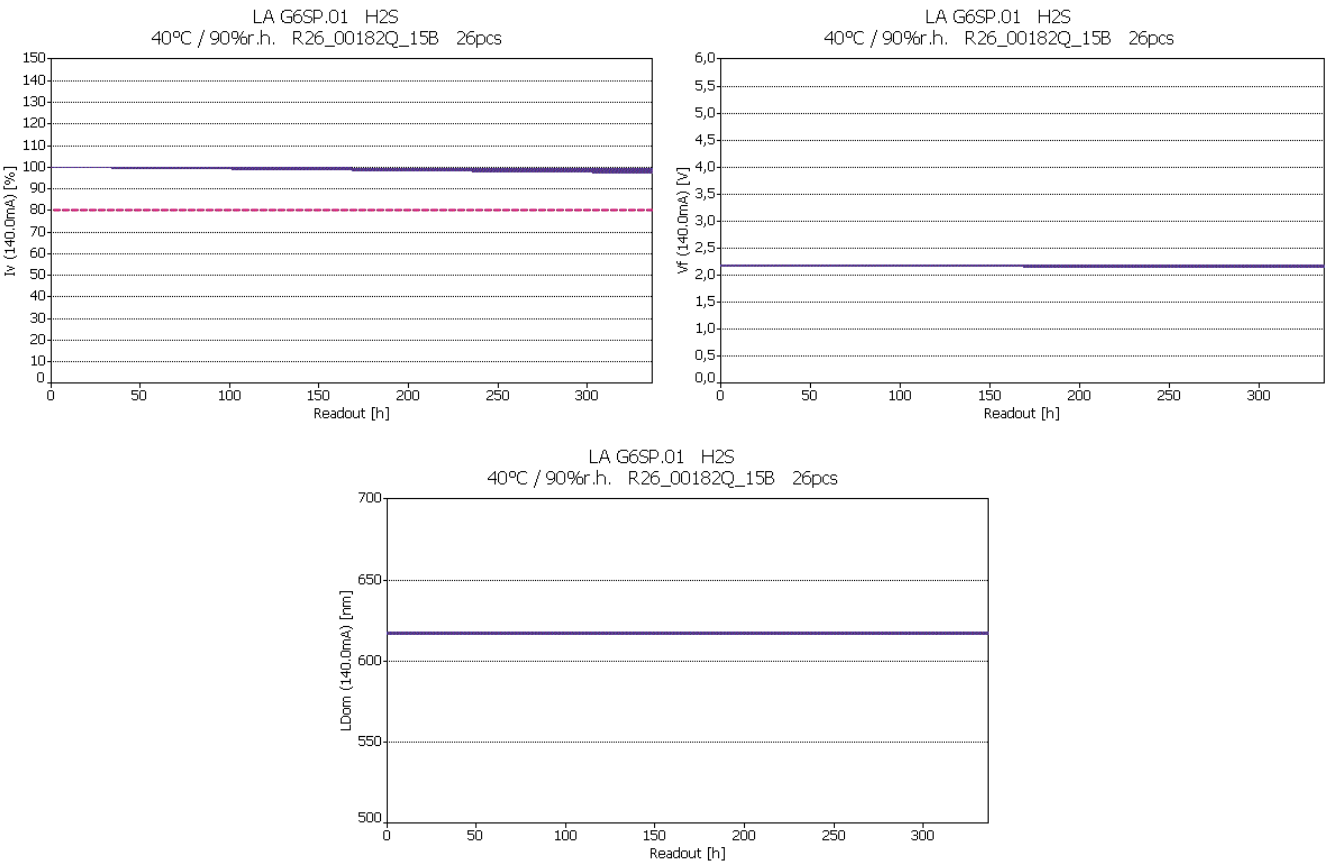
H₂S Hydrogen Sulphide 40°C/90% r.H.

Lot C



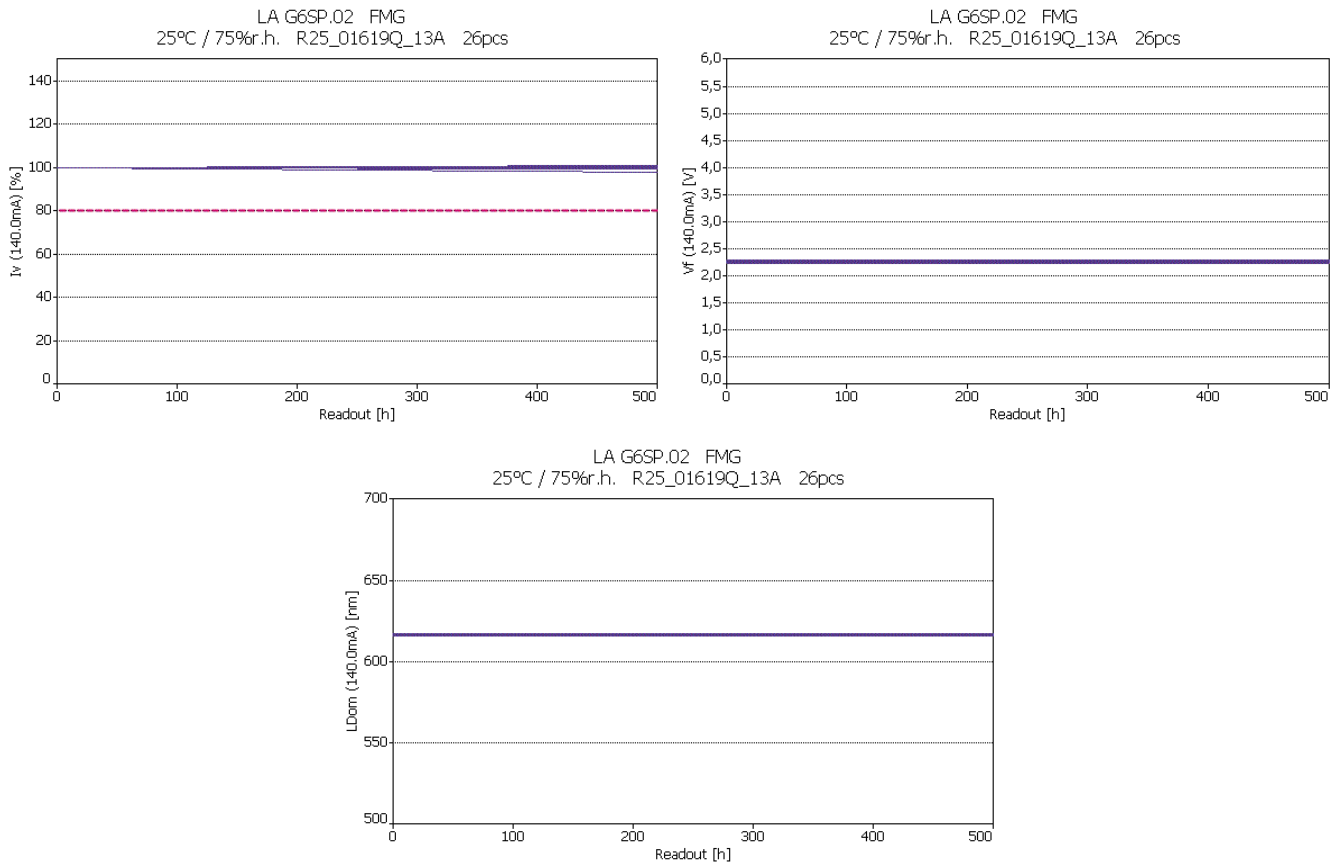
H₂S Hydrogen Sulphide 40°C/90% r.H.

Lot D



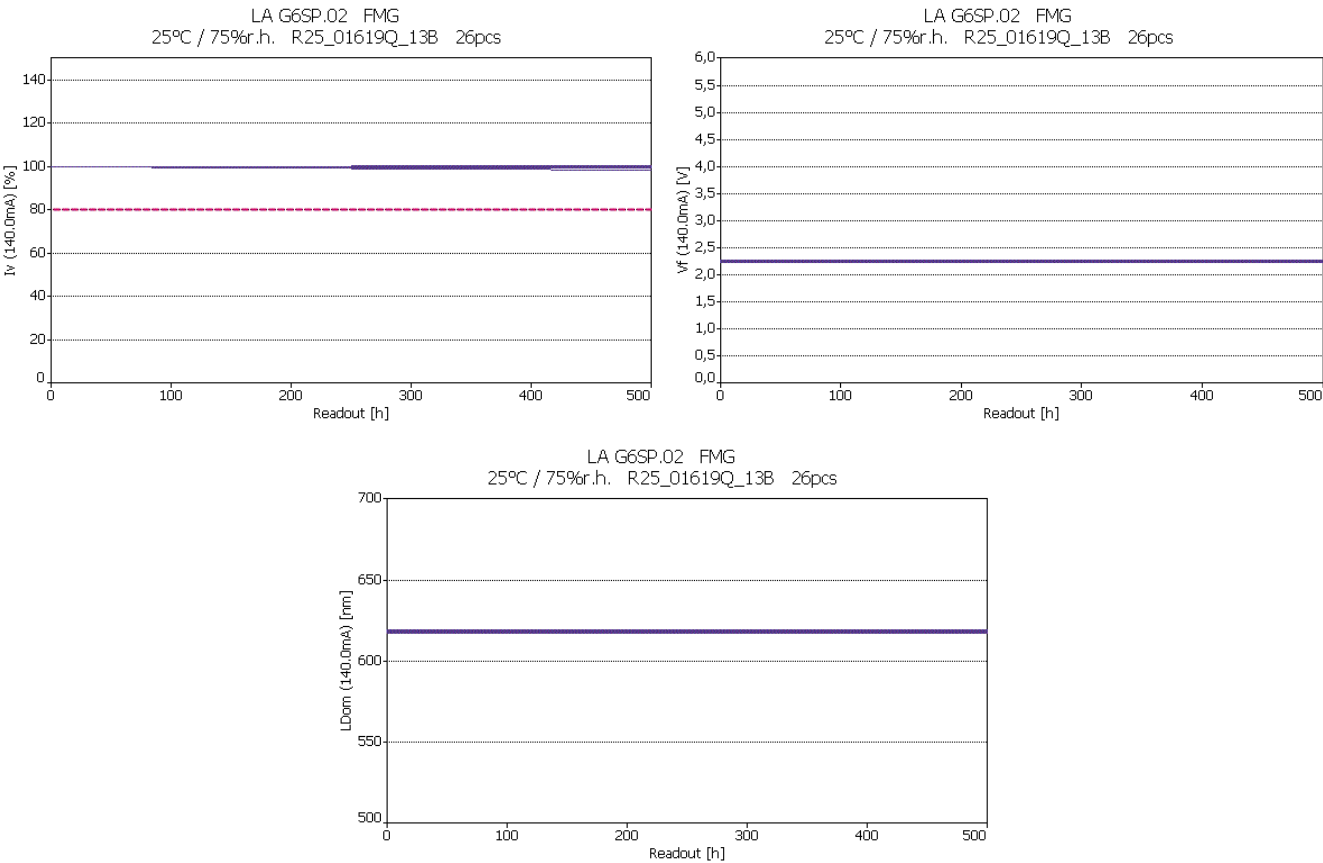
Flowing Mixed Gas 25°C/75% r.H.

Lot A



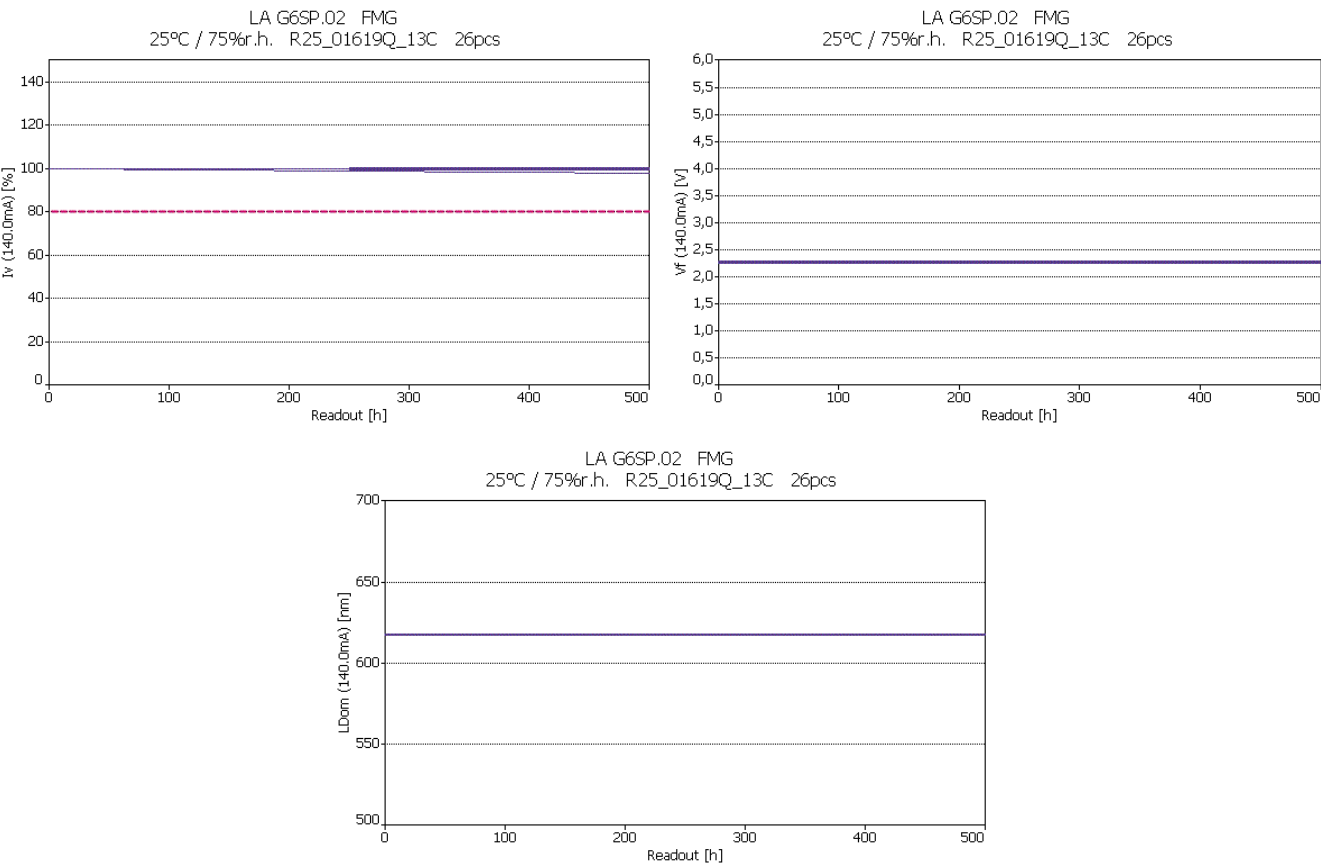
Flowing Mixed Gas 25°C/75% r.H.

Lot B



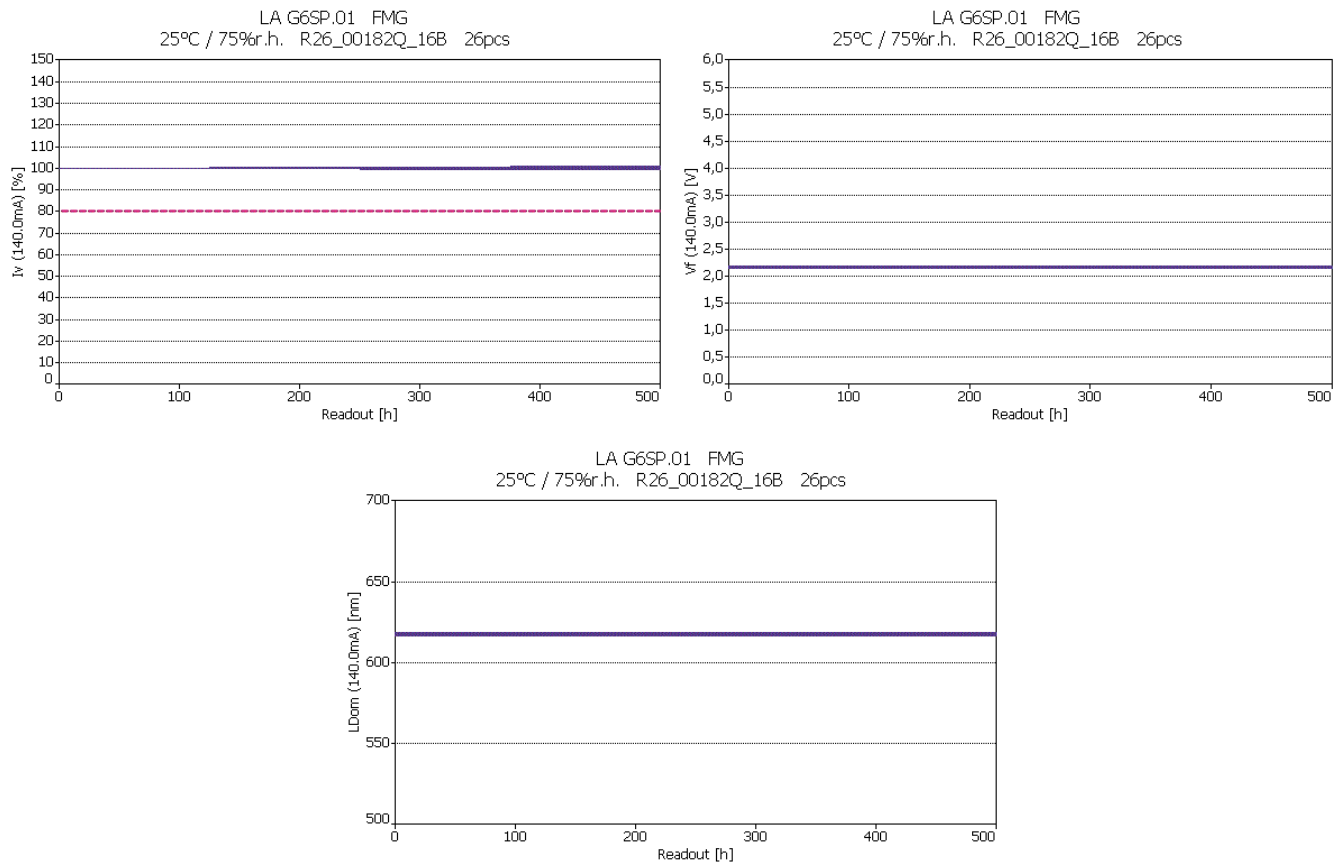
Flowing Mixed Gas 25°C/75% r.H.

Lot C



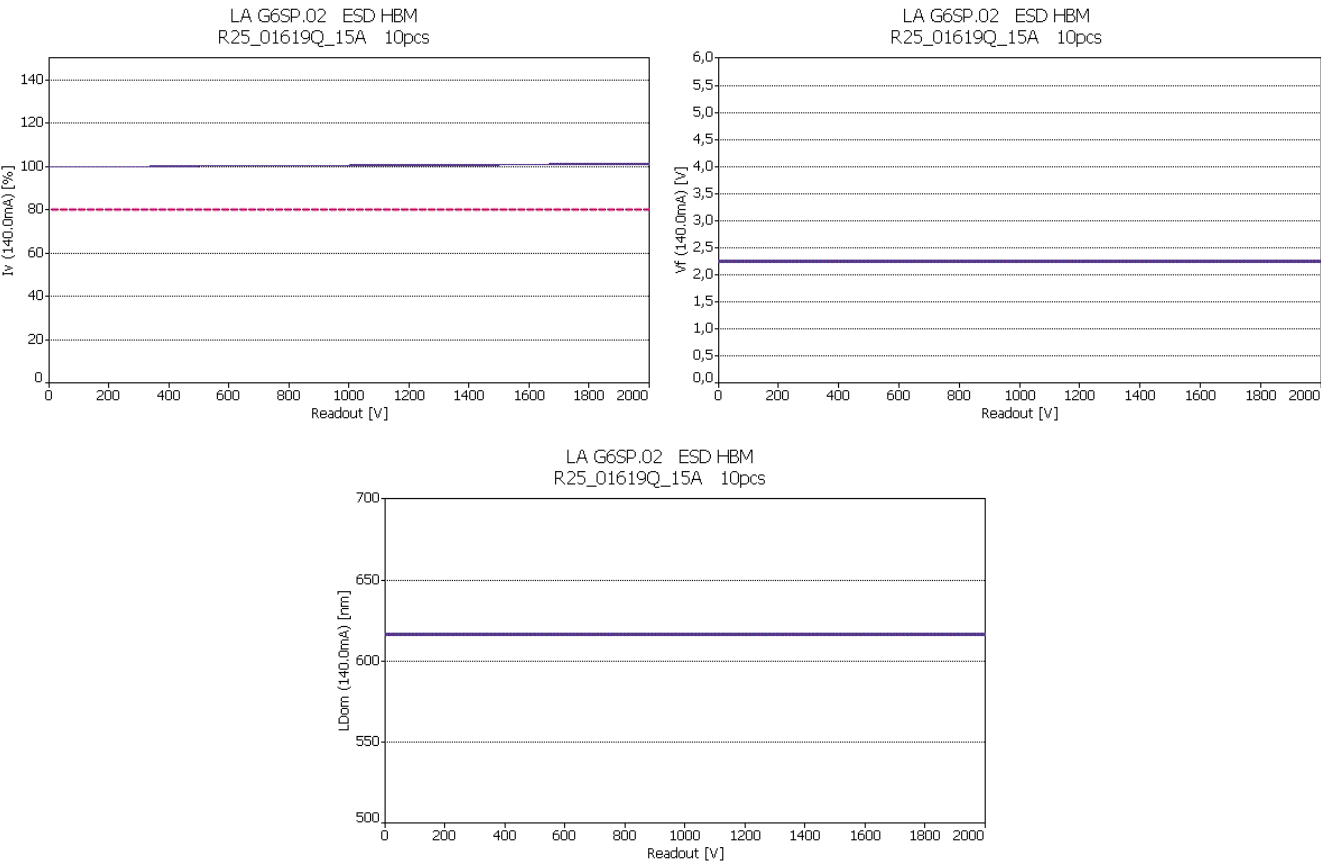
Flowing Mixed Gas 25°C/75% r.H.

Lot D



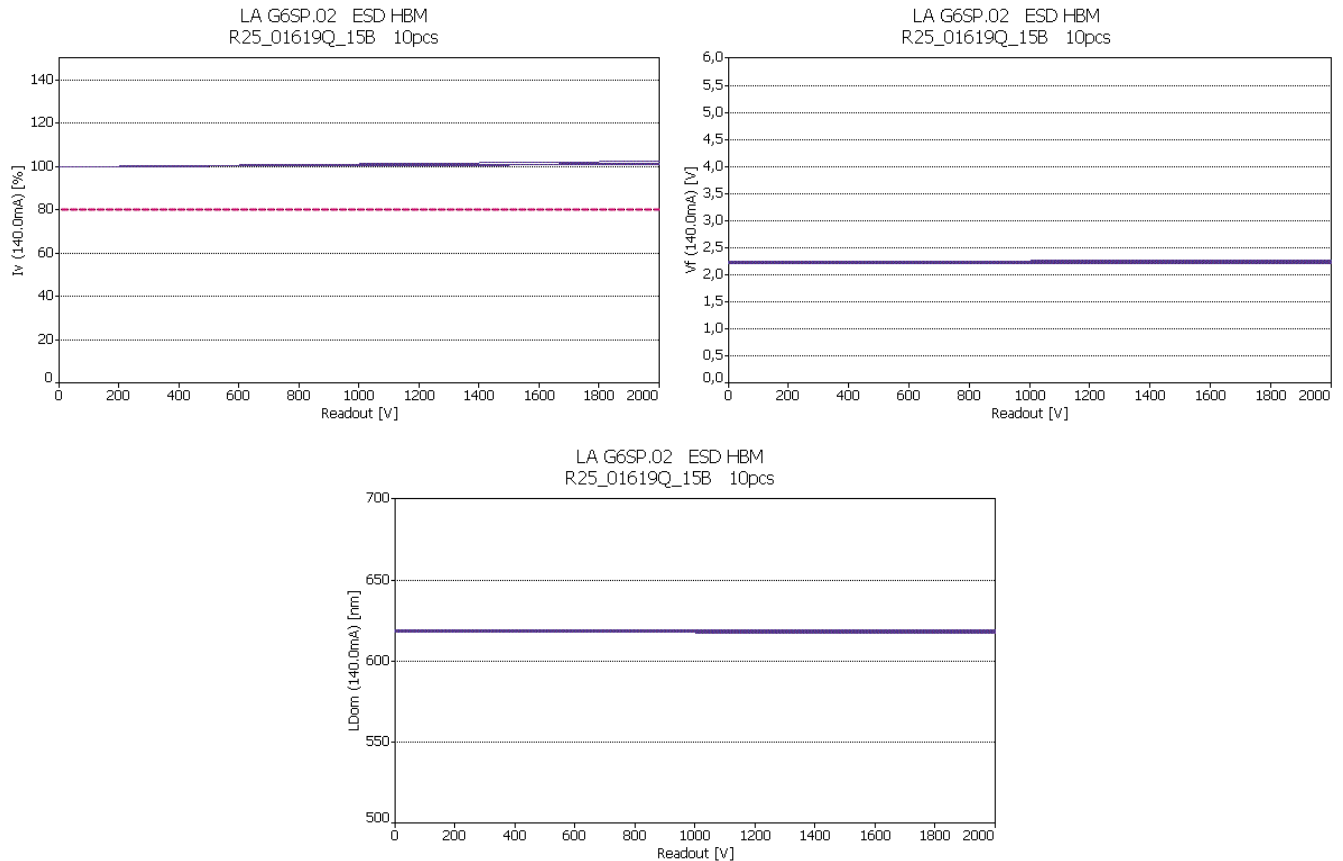
ESD HBM Human Body Model

Lot A



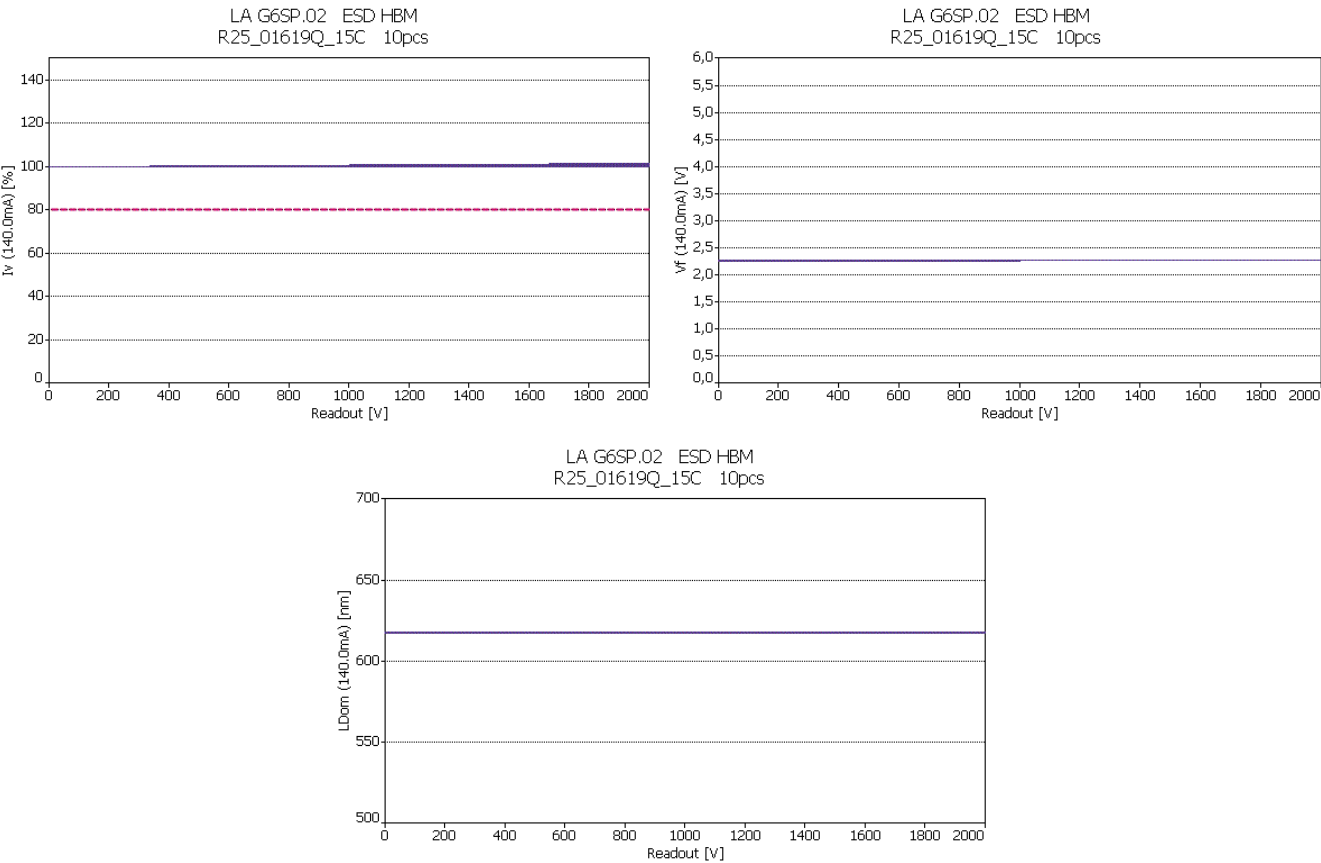
ESD HBM Human Body Model

Lot B



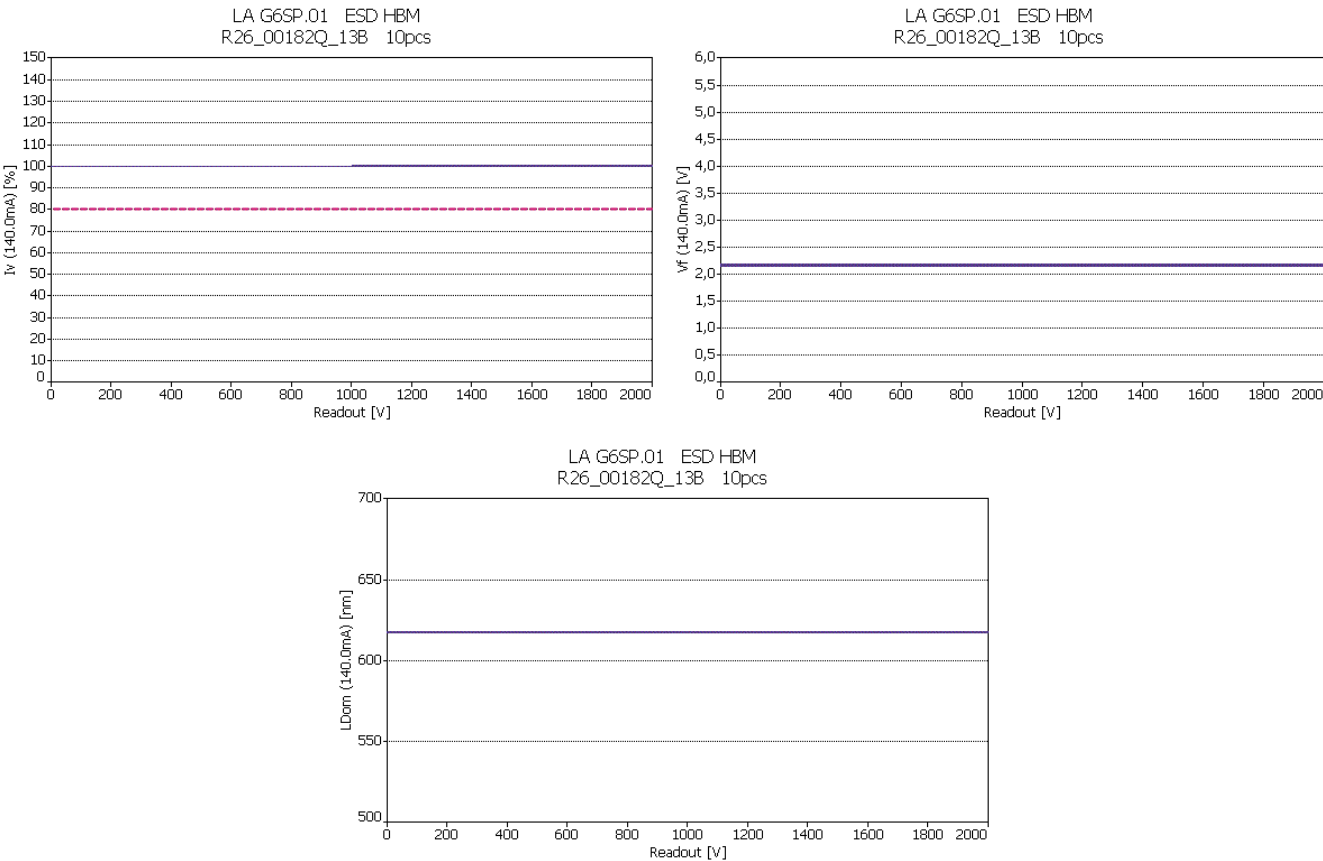
ESD HBM Human Body Model

Lot C



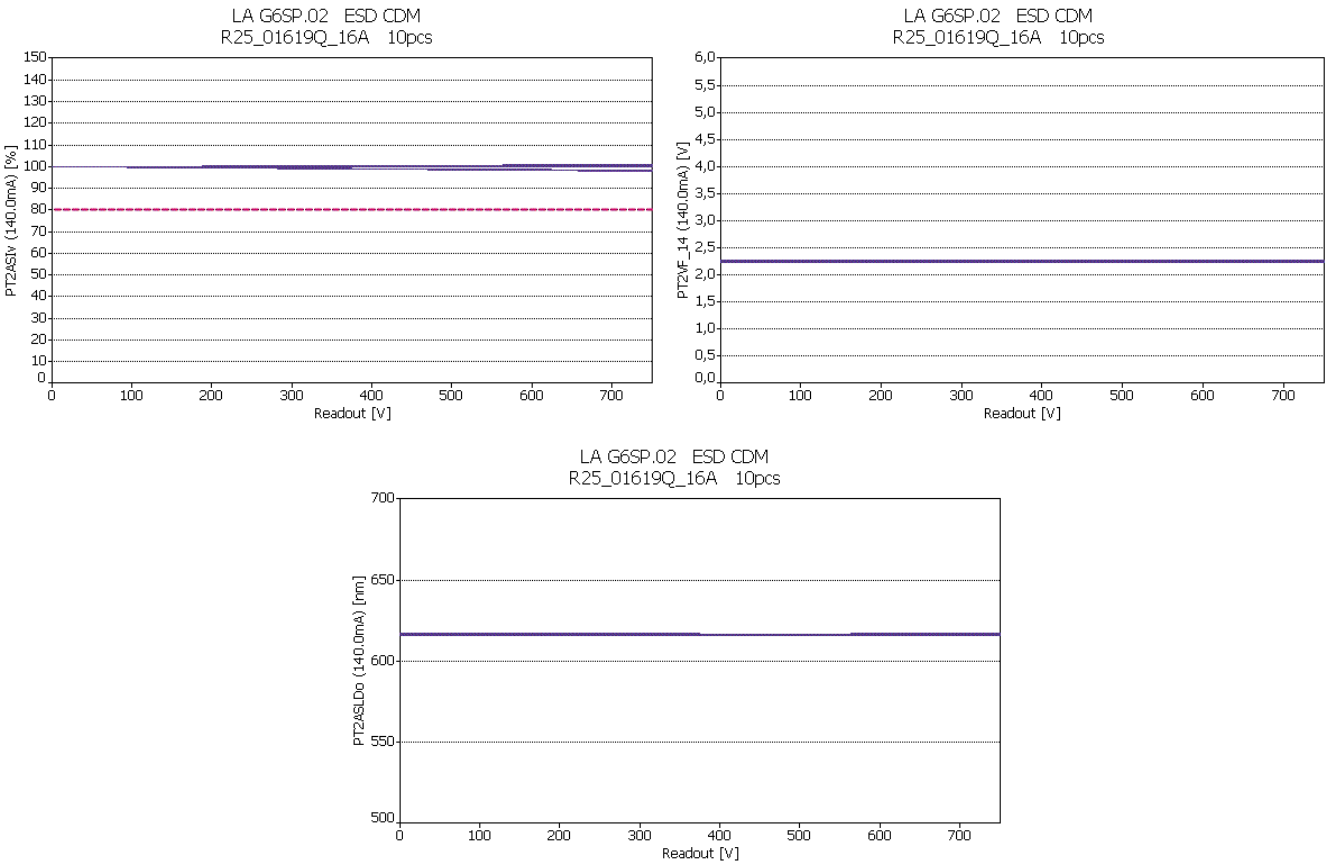
ESD HBM Human Body Model

Lot D



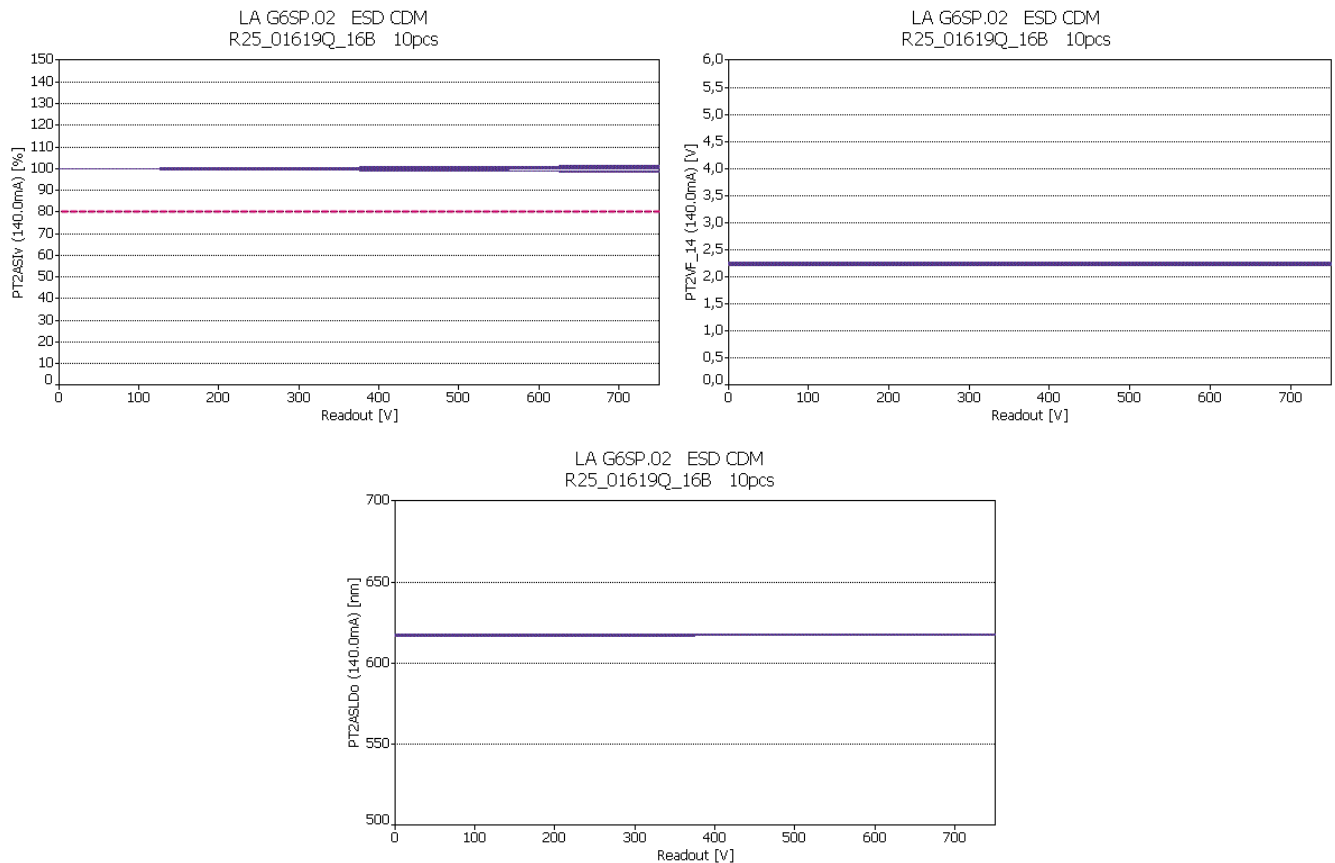
ESD CDM Charged Device Model

Lot A



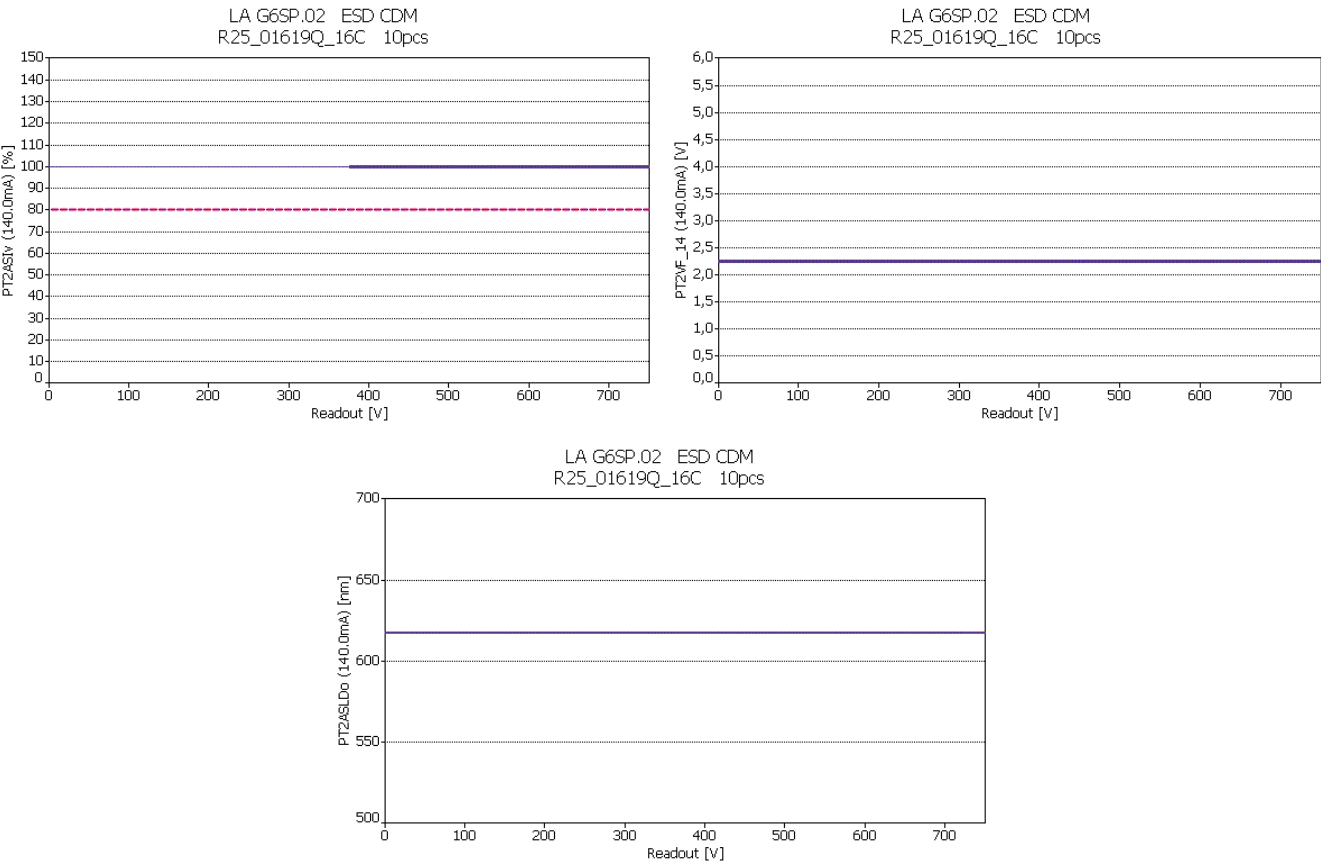
ESD CDM Charged Device Model

Lot B



ESD CDM Charged Device Model

Lot C



END OF DOCUMENT