Cylindrical High-Intensity LED (5 mm)

OVLLx8C7



Features:

- Wide viewing angle
- High-brightness indicator
- Industry standard lead spacing
- Unique lens shape for flexible applications

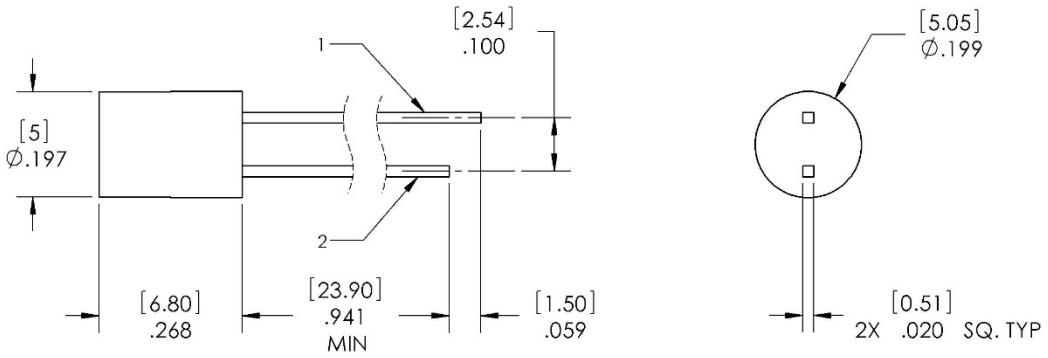
Description:

The OVLLx8C7 series is designed for superior performance in signage and lighting applications that require wide-angle uniform light output. These devices combine a high-intensity LED with a unique flat-topped T-1¾ package to provide both high brightness and a wide spatial radiation pattern.

Applications:

- Channel letter and other signage backlighting
- Decorative architectural indoor and outdoor lighting accents
- Industrial and consumer indicators

Part Number	Material	Emitted Color	Intensity Typ. mcd	Lens Color
OVLLB8C7	InGaN	Blue	440	Clear
OVLLG8C7	InGaN	Green	2400	Clear
OVLLR8C7	AlInGaP	Red	900	Clear
OVLLY8C7	AlInGaP	Yellow	980	Clear



1 ANODE 2 CATHODE DIMENSIONS ARE IN INCHES AND [MILLIMETERS].

TOLERANCES ARE ±.005 [.12] UNLESS OTHERWISE SPECIFIED.

RoHS

ATTENTION
OBSERVE PRECAUTIONS
ELECTROSTATIC
SENSITIVE DEVICES

DO NOT LOOK DIRECTLY AT LED WITH UNSHIELDED EYES OR DAMAGE TO RETINA MAY OCCUR.

General Note
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Electrical Specifications

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Storage Temperature Range		-40 ~ +100° C
Operating Temperature Range		-40 ~ +100° C
Reverse Voltage		5 V
Continuous Forward Current	Blue, Green	25 mA
Continuous Forward Current	Red, Yellow	50 mA
Peak Forward Current (10% Duty Cycle, 1 KHz)		100 mA
Power Dissipation	Blue, Green	100 mW
Power Dissipation	Red, Yellow	120 mW
Lead Soldering Temperature (4 mm from the base of the epoxy bulb)[1]		260° C / 5 seconds
LED Junction Temperature		125° C
Electrostatic Discharge Classification (JEDEC-JESD22-A114F)		Class 1C
Current Linearity vs. Ambient Temperature	Blue, Green	-0.29 mA/° C
Current Linearity vs. Ambient Temperature	Red, Yellow	-0.72 mA/° C

Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	COLOR	MIN	TYP	MAX	UNITS	TEST CONDITIONS
I_v	Luminous Intensity	Blue	295	440	----	mcd	I_F = 20 mA
		Green	1135	2400	----		
		Red	580	900	----		
		Yellow	580	980	----		
V_F	Forward Voltage	Blue, Green	----	3.2	4.0	V	I_F = 20 mA
		Red, Yellow	----	2.0	2.4		
I_R	Reverse Current	Blue, Green	----	----	10	µA	V_R = 5 V
		Red, Yellow					
λ_D	Dominant Wavelength	Blue	460	470	475	nm	I_F = 20 mA
		Green	519	525	531		
		Red	620	623	630		
		Yellow	585	589	595		
2Θ½H-H	50% Power Angle	Blue, Green	----	85	----	deg	I_F = 20 mA
		Red, Yellow	----	100	----		

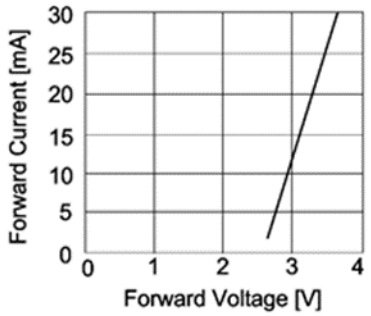
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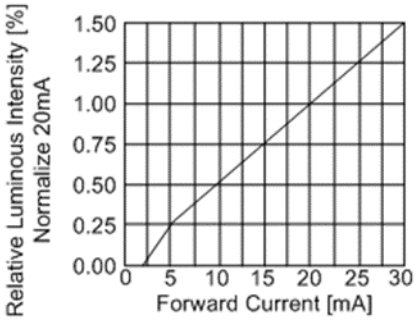
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Performance

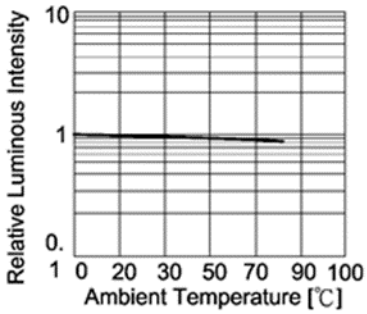
Optical Characteristics Curves (BLUE)



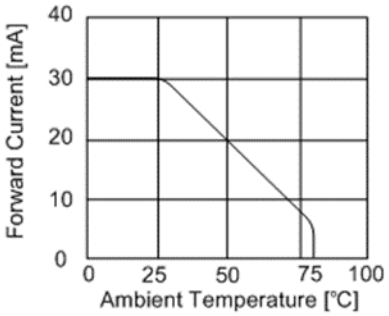
Forward Current Vs. Forward Voltage



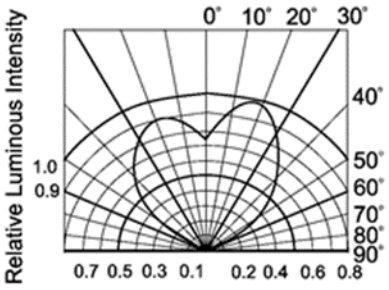
Luminous Intensity Vs. Forward Current



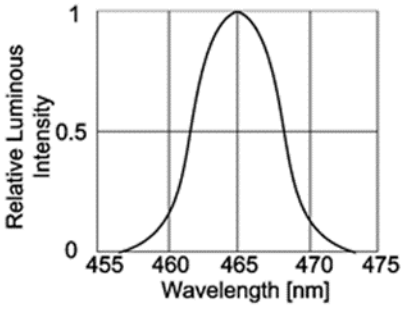
Luminous Intensity Vs. Ambient Temperature



Forward Current Vs. Ambient Temperature



Radiation Pattern



Relative Luminous Intensity Vs. Wavelength

General Note

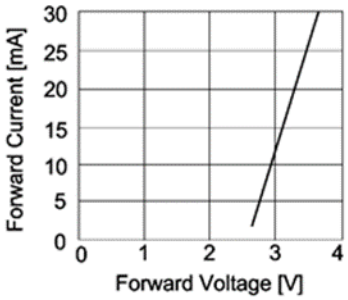
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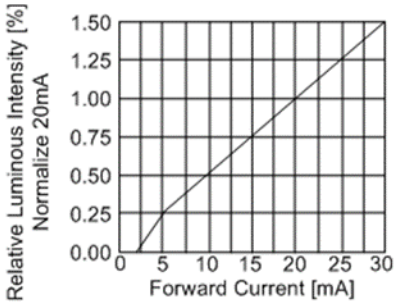
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Performance

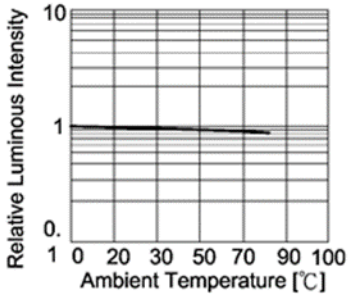
Optical Characteristics Curves (GREEN)



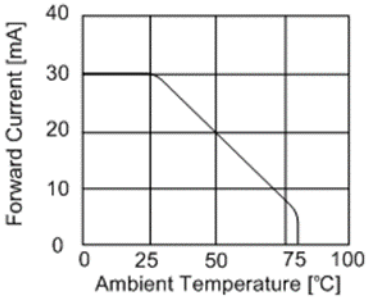
Forward Current
Vs. Forward Voltage



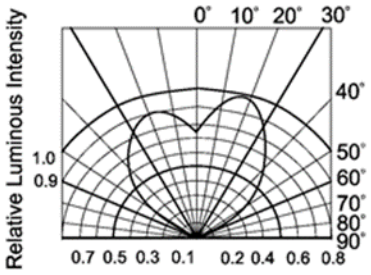
Luminous Intensity
Vs. Forward Current



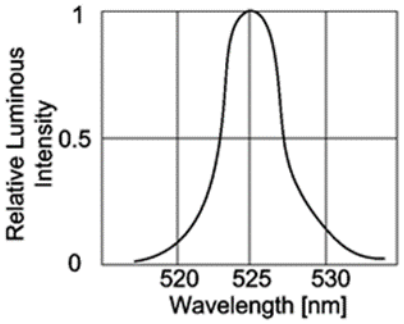
Luminous Intensity
Vs. Ambient Temperature



Forward Current
Vs. Ambient Temperature



Radiation Pattern



Relative Luminous Intensity
Vs. Wavelength

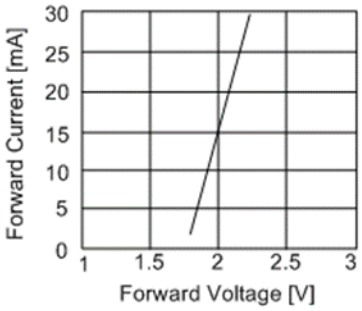
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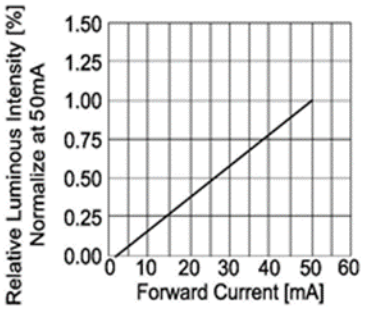
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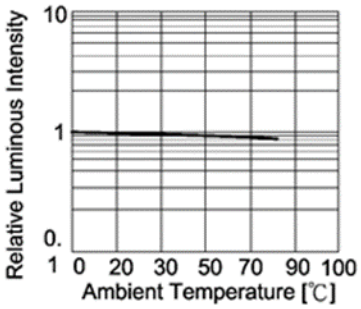
Optical Characteristics Curves (RED)



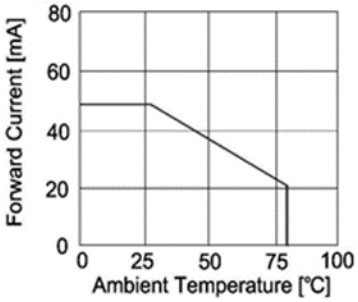
Forward Current Vs. Forward Voltage



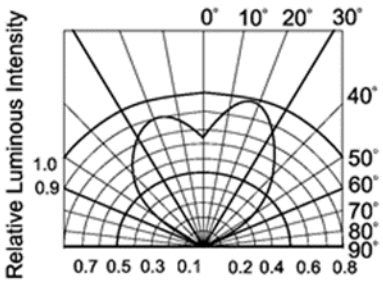
Luminous Intensity Vs. Forward Current



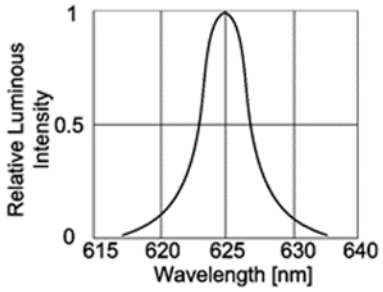
Luminous Intensity Vs. Ambient Temperature



Forward Current Vs. Ambient Temperature



Radiation Pattern



Relative Luminous Intensity Vs. Wavelength

General Note

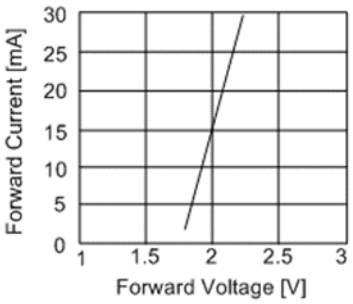
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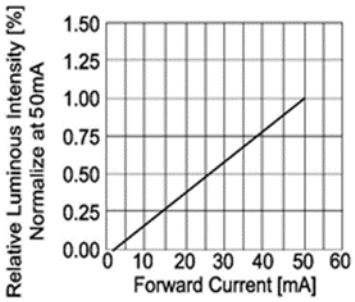
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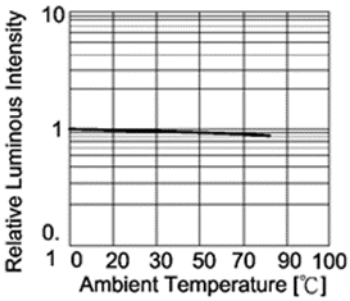
Optical Characteristics Curves (YELLOW)



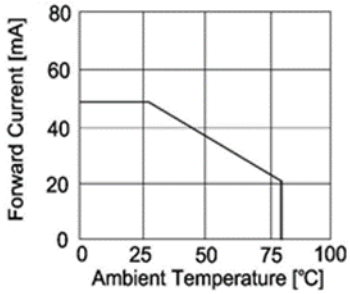
Forward Current Vs. Forward Voltage



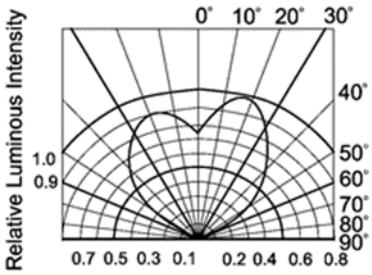
Luminous Intensity Vs. Forward Current



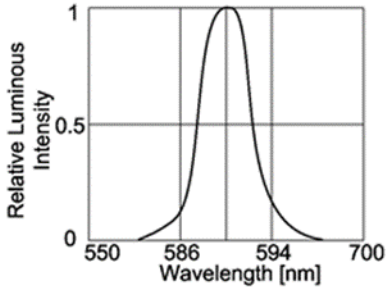
Luminous Intensity Vs. Ambient Temperature



Forward Current Vs. Ambient Temperature



Radiation Pattern

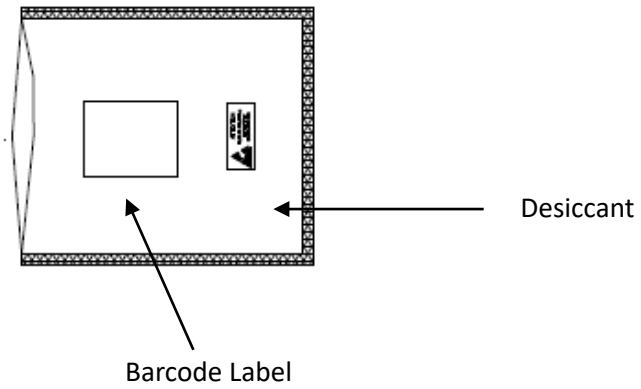


Relative Luminous Intensity Vs. Wavelength

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Packaging: 1000 pcs per bulk bag with desiccant



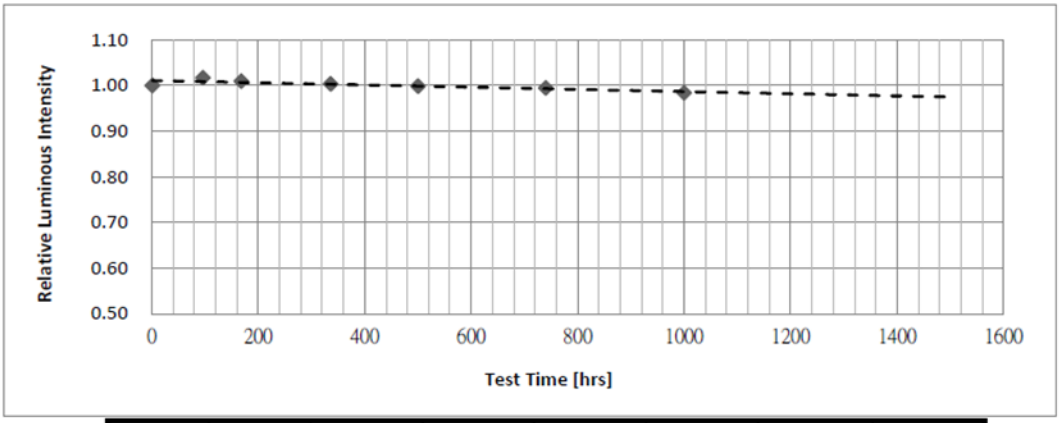
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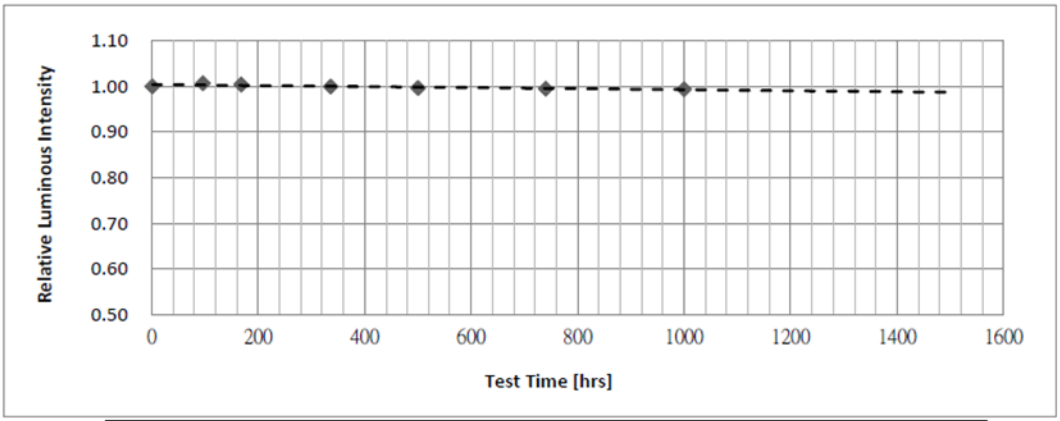
Reliability Testing (BLUE)

Test Item ：Operating Life Test
Test Condition ：Operating at Ta=25℃ , If=20mA for 1000hrs



	Initial	96 hrs	168 hrs	336 hrs	500 hrs	740 hrs	1000 hrs
Iv %	100%	101.7%	100.9%	100.3%	99.8%	99.4%	98.4%

Test Item ：Thermal & Humidity storage
Test Condition ：Storage at Ta=85℃/85% for 1000hrs



	Initial	96 hrs	168 hrs	336 hrs	500 hrs	740 hrs	1000 hrs
Iv %	100%	100.7%	100.4%	100.0%	99.6%	99.5%	99.4%

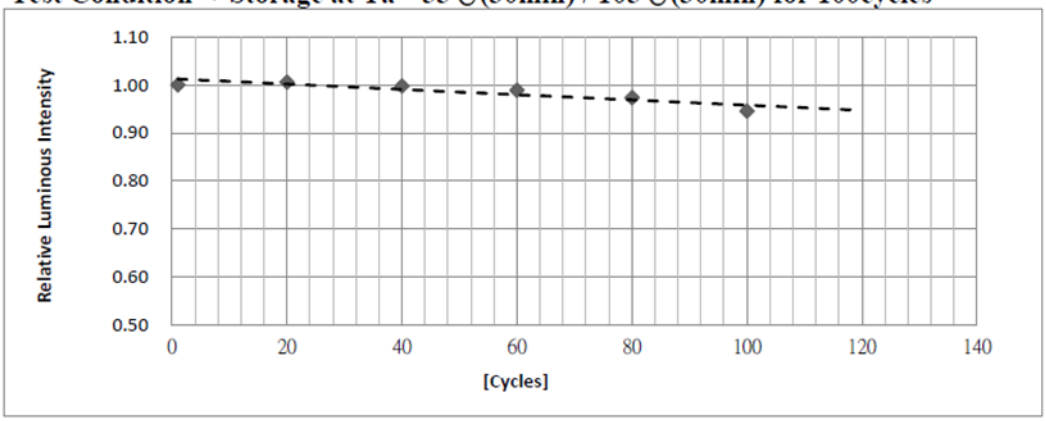
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Test Item ：Thermal Cycle

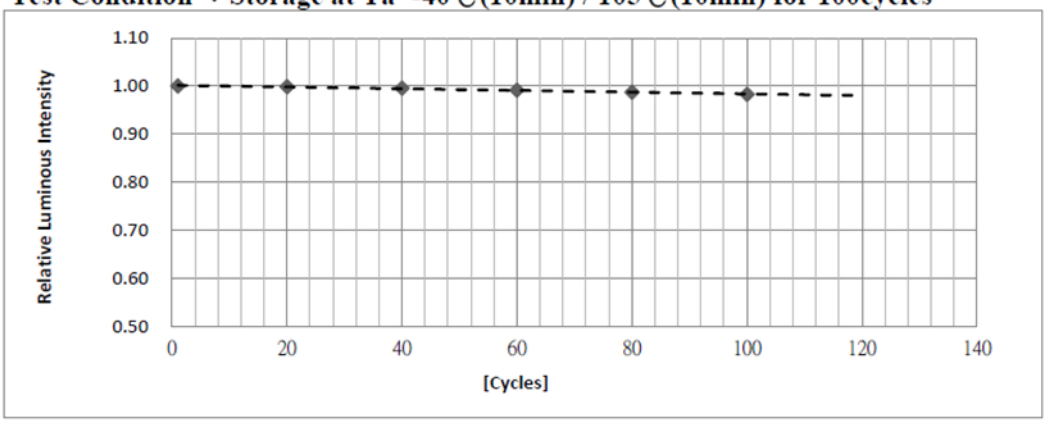
Test Condition ：Storage at Ta=-55℃(30min) / 105℃(30min) for 100cycles



	Initial	20 cycles	40 cycles	60 cycles	80 cycles	100 cycles
Iv %	100%	100.6%	99.7%	98.9%	97.3%	94.5%

Test Item ：Thermal Shock

Test Condition ：Storage at Ta=-40℃(10min) / 105℃(10min) for 100cycles



	Initial	20 cycles	40 cycles	60 cycles	80 cycles	100 cycles
Iv %	100%	99.9%	99.5%	99.2%	98.7%	98.3%

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Test Item ： Solderability Test

Test Condition ： T.Sol 230 ± 5℃, Dwll Time ： 5 ± 1 sec

	Initial Test Data			Final Test Data			Difference		Remark
	Iv (mcd)	Vf (V)	Ir (μA)	Iv (mcd)	Vf (V)	Ir (μA)	△ Iv (%)	△ Vf (%)	
# 1	456.2	3.324	0.010	456.6	3.334	0.011	0.09%	0.29%	
# 2	445.9	3.354	0.011	444.1	3.354	0.011	-0.40%	0.00%	
# 3	448.1	3.323	0.011	447.8	3.333	0.011	-0.07%	0.31%	
# 4	446.8	3.250	0.009	446.8	3.250	0.010	0.00%	0.00%	
# 5	450.7	3.245	0.010	449.1	3.246	0.011	-0.36%	0.04%	
Avg.	449.5	3.299	0.010	448.9	3.303	0.011	-0.15%	0.13%	

Test Item ： Solder Resistance Test

Test Condition ： T.Sol 260 ± 5℃, Dwll Time ： 10 ± 1 sec

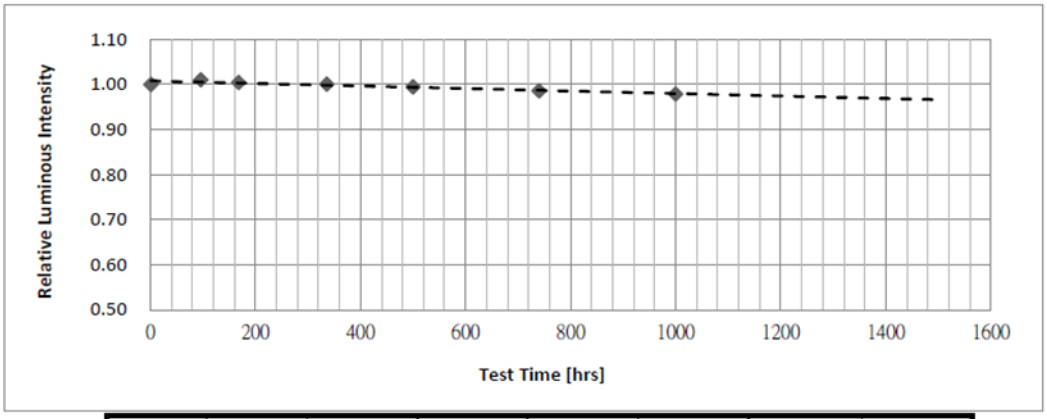
	Initial Test Data			Final Test Data			Difference		Remark
	Iv (mcd)	Vf (V)	Ir (μA)	Iv (mcd)	Vf (V)	Ir (μA)	△ Iv (%)	△ Vf (%)	
# 1	453.6	3.343	0.011	453.8	3.361	0.011	0.04%	0.55%	
# 2	444.9	3.254	0.008	444.1	3.258	0.009	-0.18%	0.11%	
# 3	452.5	3.362	0.010	452.2	3.357	0.011	-0.07%	-0.15%	
# 4	461.7	3.255	0.013	460.4	3.269	0.014	-0.28%	0.43%	
# 5	463.4	3.239	0.009	463.8	3.255	0.010	0.09%	0.50%	
Avg.	455.2	3.291	0.010	454.9	3.300	0.011	-0.08%	0.29%	

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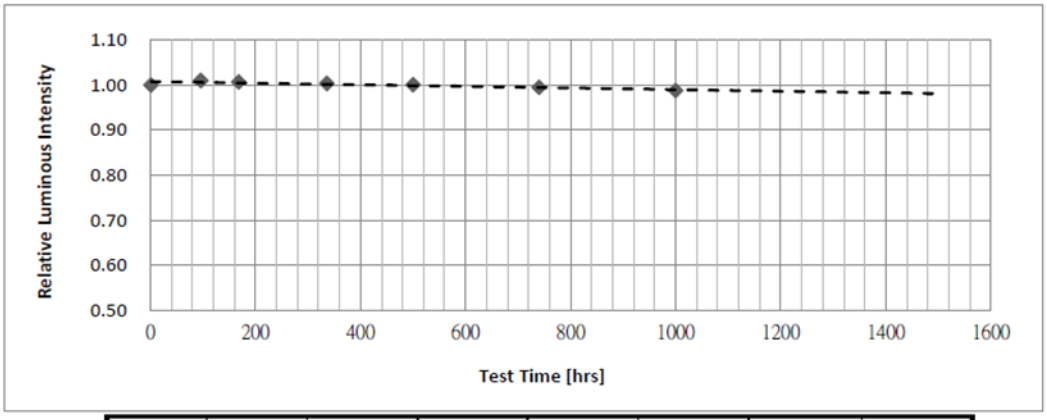
Reliability Testing (GREEN)

Test Item ：Operating Life Test
Test Condition ：Operating at Ta=25℃ , If=20mA for 1000hrs



	Initial	96 hrs	168 hrs	336 hrs	500 hrs	740 hrs	1000 hrs
Iv %	100%	101.1%	100.4%	100.0%	99.4%	98.6%	97.9%

Test Item ：Thermal & Humidity storage
Test Condition ：Storage at Ta=85℃/85% for 1000hrs



	Initial	96 hrs	168 hrs	336 hrs	500 hrs	740 hrs	1000 hrs
Iv %	100%	101.0%	100.6%	100.3%	100.0%	99.4%	98.7%

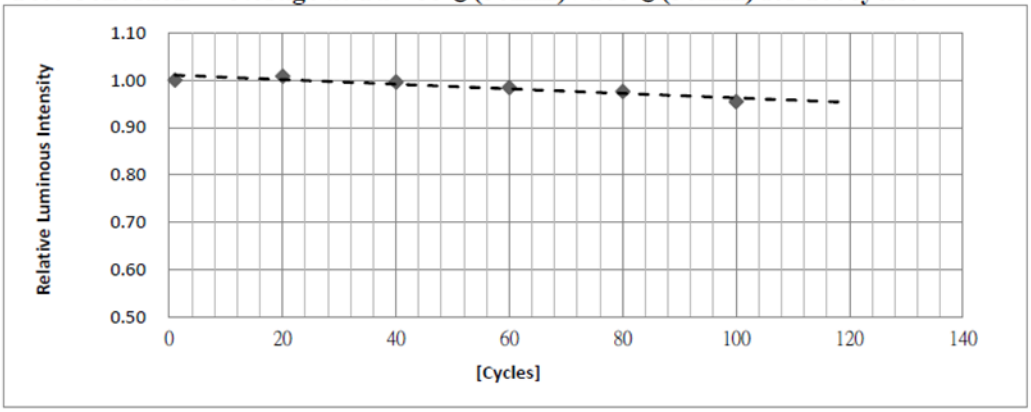
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Test Item ：Thermal Cycle

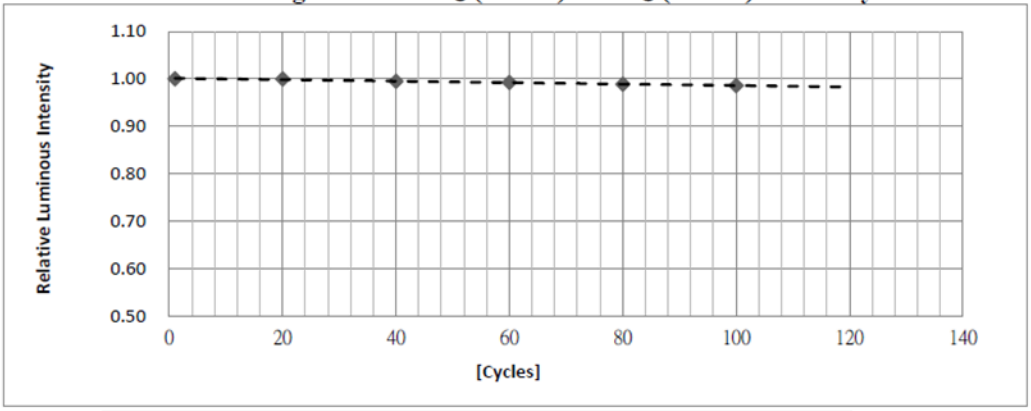
Test Condition ：Storage at Ta=-55℃(30min) / 105℃(30min) for 100cycles



	Initial	20 cycles	40 cycles	60 cycles	80 cycles	100 cycles
Iv %	100%	100.8%	99.6%	98.4%	97.6%	95.4%

Test Item ：Thermal Shock

Test Condition ：Storage at Ta=-40℃(10min) / 105℃(10min) for 100cycles



	Initial	20 cycles	40 cycles	60 cycles	80 cycles	100 cycles
Iv %	100%	100.0%	99.5%	99.3%	98.9%	98.6%

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Test Item ：Solderability Test

Test Condition ：T.Sol 230 ± 5℃, Dwll Time：5 ± 1 sec

	Initial Test Data			Final Test Data			Difference		Remark
	Iv (mcd)	Vf (V)	**Ir (μA)**	Iv (mcd)	Vf (V)	**Ir (μA)**	**△ Iv (%)**	△ Vf (%)	
# 1	2543	3.344	0.010	2546	3.350	0.011	0.12%	0.19%	
# 2	2504	3.270	0.008	2498	3.279	0.009	-0.24%	0.29%	
# 3	2552	3.279	0.010	2556	3.268	0.012	0.16%	-0.35%	
# 4	2497	3.400	0.008	2504	3.408	0.009	0.26%	0.22%	
# 5	2570	3.367	0.011	2563	3.380	0.013	-0.28%	0.38%	
Avg.	2533	3.332	0.009	2533	3.337	0.011	0.00%	0.15%	

Test Item ：Solder Resistance Test

Test Condition ：T.Sol 260 ± 5℃, Dwll Time：10 ± 1 sec

	Initial Test Data			Final Test Data			Difference		Remark
	Iv (mcd)	Vf (V)	**Ir (μA)**	Iv (mcd)	Vf (V)	**Ir (μA)**	**△ Iv (%)**	△ Vf (%)	
# 1	2512	3.410	0.011	2509	3.407	0.013	-0.10%	-0.08%	
# 2	2577	3.304	0.009	2579	3.312	0.010	0.06%	0.25%	
# 3	2503	3.355	0.010	2500	3.372	0.010	-0.10%	0.51%	
# 4	2569	3.263	0.009	2567	3.262	0.011	-0.05%	-0.02%	
# 5	2555	3.408	0.008	2558	3.405	0.008	0.15%	-0.09%	
Avg.	2543	3.348	0.009	2543	3.352	0.010	-0.01%	0.11%	

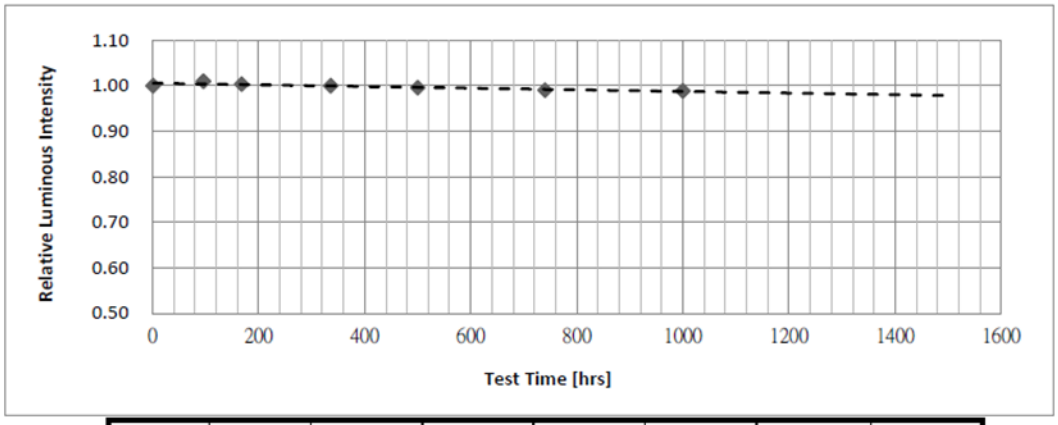
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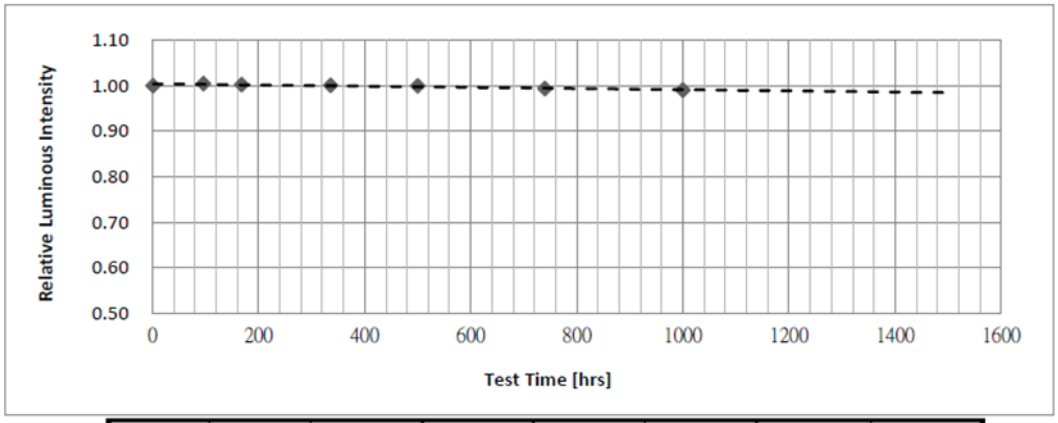
Reliability Testing (RED)

Test Item ：Operating Life Test
Test Condition ：Operating at Ta=25℃ , If=20mA for 1000hrs



	Initial	96 hrs	168 hrs	336 hrs	500 hrs	740 hrs	1000 hrs
Iv %	100%	101.0%	100.3%	100.0%	99.5%	99.0%	98.8%

Test Item ：Thermal & Humidity storage
Test Condition ：Storage at Ta=85℃/85% for 1000hrs



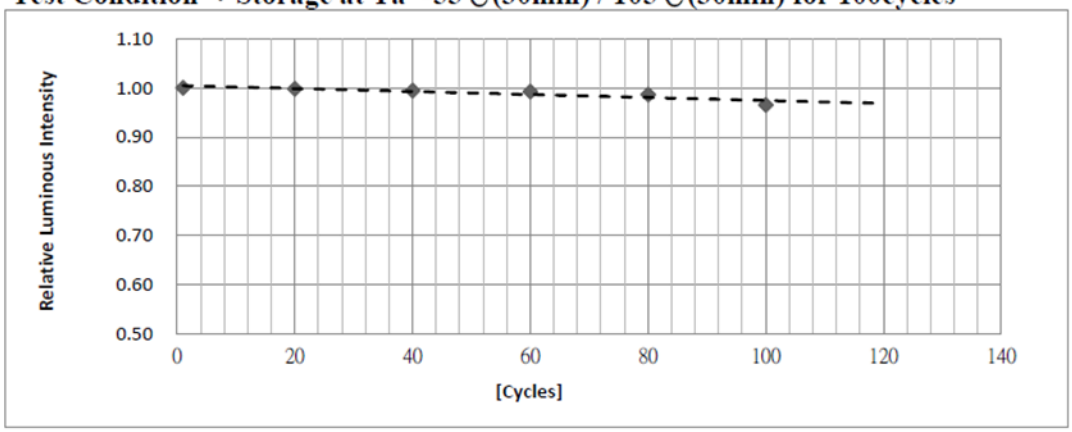
	Initial	96 hrs	168 hrs	336 hrs	500 hrs	740 hrs	1000 hrs
Iv %	100%	100.5%	100.2%	100.1%	99.9%	99.3%	99.0%

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Test Item ：Thermal Cycle

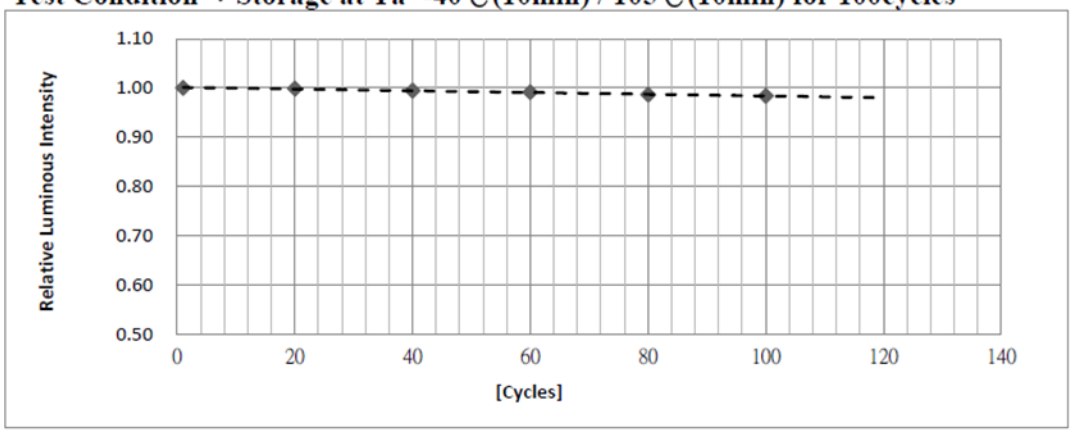
Test Condition ：Storage at Ta=-55℃(30min) / 105℃(30min) for 100cycles



	Initial	20 cycles	40 cycles	60 cycles	80 cycles	100 cycles
Iv %	100%	99.8%	99.5%	99.3%	98.6%	96.6%

Test Item ：Thermal Shock

Test Condition ：Storage at Ta=-40℃(10min) / 105℃(10min) for 100cycles



	Initial	20 cycles	40 cycles	60 cycles	80 cycles	100 cycles
Iv %	100%	99.9%	99.4%	99.1%	98.6%	98.4%

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Test Item ：Solderability Test

Test Condition ：T.Sol 230 ± 5℃, Dwll Time：5 ± 1 sec

	Initial Test Data			Final Test Data			Difference		Remark
	Iv (mcd)	Vf (V)	**Ir (μA)**	Iv (mcd)	Vf (V)	**Ir (μA)**	**△ Iv (%)**	△ Vf (%)	
# 1	921.3	2.146	0.008	919.9	2.155	0.008	-0.15%	0.42%	
# 2	909.1	2.086	0.008	909.1	2.089	0.009	0.00%	0.16%	
# 3	924.9	2.083	0.007	921.5	2.091	0.008	-0.37%	0.36%	
# 4	934.7	2.125	0.008	936.6	2.119	0.010	0.20%	-0.28%	
# 5	915.0	2.110	0.007	912.7	2.106	0.008	-0.25%	-0.18%	
Avg.	921.0	2.110	0.008	920.0	2.112	0.009	-0.11%	0.10%	

Test Item ：Solder Resistance Test

Test Condition ：T.Sol 260 ± 5℃, Dwll Time：10 ± 1 sec

	Initial Test Data			Final Test Data			Difference		Remark
	Iv (mcd)	Vf (V)	**Ir (μA)**	Iv (mcd)	Vf (V)	**Ir (μA)**	**△ Iv (%)**	△ Vf (%)	
# 1	895.4	2.128	0.006	893.8	2.120	0.007	-0.18%	-0.36%	
# 2	928.6	2.140	0.007	926.1	2.145	0.008	-0.27%	0.22%	
# 3	938.5	2.087	0.010	938.1	2.085	0.010	-0.04%	-0.12%	
# 4	915.1	2.082	0.007	916.9	2.091	0.008	0.20%	0.41%	
# 5	937.9	2.137	0.011	938.0	2.147	0.012	0.01%	0.45%	
Avg.	923.1	2.115	0.008	922.6	2.117	0.009	-0.06%	0.12%	

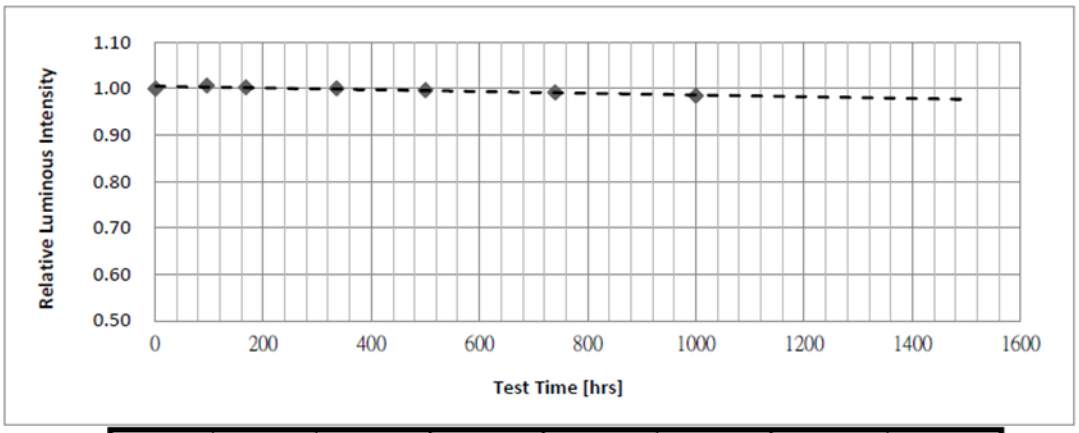
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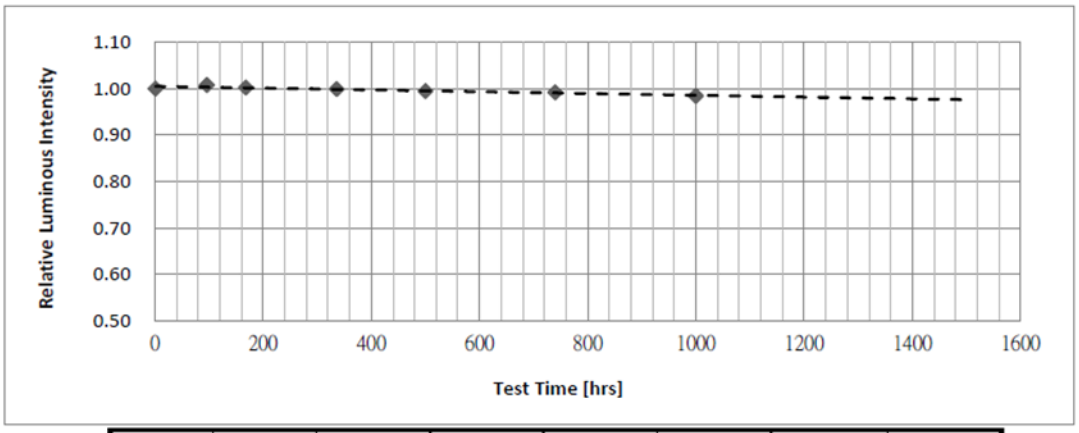
Reliability Testing (YELLOW)

Test Item ：Operating Life Test
Test Condition ：Operating at Ta=25℃ , If=20mA for 1000hrs



	Initial	96 hrs	168 hrs	336 hrs	500 hrs	740 hrs	1000 hrs
Iv %	100%	100.6%	100.3%	100.0%	99.6%	99.2%	98.5%

Test Item ：Thermal & Humidity storage
Test Condition ：Storage at Ta=85℃/85% for 1000hrs



	Initial	96 hrs	168 hrs	336 hrs	500 hrs	740 hrs	1000 hrs
Iv %	100%	100.7%	100.2%	99.9%	99.5%	99.2%	98.4%

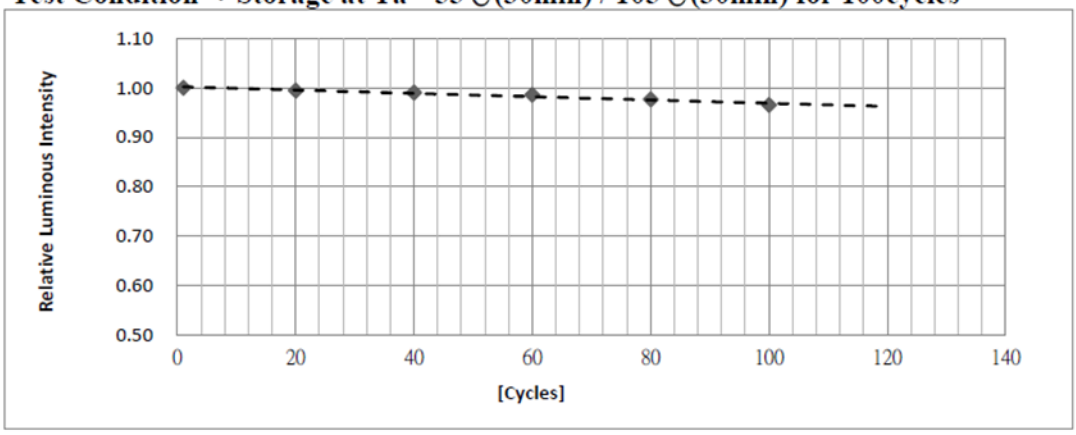
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Test Item ：Thermal Cycle

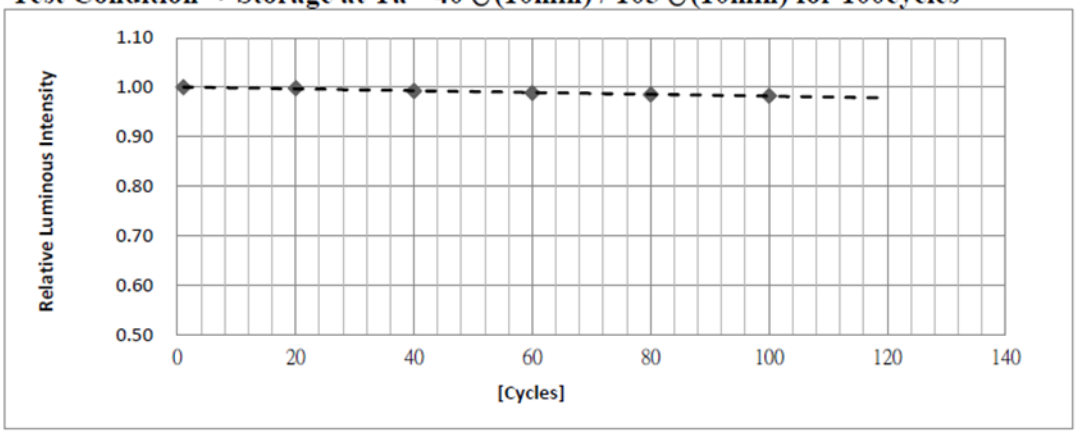
Test Condition ：Storage at Ta=-55℃(30min) / 105℃(30min) for 100cycles



	Initial	20 cycles	40 cycles	60 cycles	80 cycles	100 cycles
Iv %	100%	99.5%	99.0%	98.6%	97.7%	96.5%

Test Item ：Thermal Shock

Test Condition ：Storage at Ta=-40℃(10min) / 105℃(10min) for 100cycles



	Initial	20 cycles	40 cycles	60 cycles	80 cycles	100 cycles
Iv %	100%	99.8%	99.3%	98.8%	98.5%	98.3%

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Test Item ： Solderability Test

Test Condition ： T.Sol 230 ± 5℃, Dwll Time ： 5 ± 1 sec

	Initial Test Data			Final Test Data			Difference		Remark
	Iv (mcd)	Vf (V)	Ir (μA)	Iv (mcd)	Vf (V)	Ir (μA)	△ Iv (%)	△ Vf (%)	
# 1	991.3	2.224	0.009	991.1	2.229	0.009	-0.02%	0.25%	
# 2	997.7	2.181	0.009	998.4	2.181	0.010	0.07%	-0.02%	
# 3	983.3	2.183	0.007	984.9	2.183	0.007	0.16%	-0.01%	
# 4	1007.5	2.231	0.007	1007.5	2.237	0.007	0.00%	0.27%	
# 5	973.6	2.241	0.008	973.1	2.250	0.009	-0.05%	0.40%	
Avg.	990.7	2.212	0.008	991.0	2.216	0.008	0.03%	0.18%	

Test Item ： Solder Resistance Test

Test Condition ： T.Sol 260 ± 5℃, Dwll Time ： 10 ± 1 sec

	Initial Test Data			Final Test Data			Difference		Remark
	Iv (mcd)	Vf (V)	Ir (μA)	Iv (mcd)	Vf (V)	Ir (μA)	△ Iv (%)	△ Vf (%)	
# 1	978.4	2.199	0.009	977.8	2.209	0.010	-0.06%	0.43%	
# 2	978.7	2.198	0.011	977.1	2.190	0.012	-0.16%	-0.35%	
# 3	983.6	2.247	0.007	983.0	2.244	0.008	-0.06%	-0.14%	
# 4	980.0	2.268	0.011	980.6	2.276	0.012	0.06%	0.35%	
# 5	966.5	2.241	0.010	968.2	2.235	0.010	0.18%	-0.27%	
Avg.	977.4	2.231	0.010	977.3	2.231	0.010	-0.01%	0.00%	

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