Fuse Qualification Summary Report - 0AKK(250A-350A) Fuse series

Fuse Type and Rating : 0AKK 250A-350A
Production Lot Number : ENG'samples
Project Number : FPQ-134
Fuse Part Number : 0AKK-K250-XX/0AKK-K300-XX/0AKK-K350-XX

Reference	Test Description	Testing Condition	Acceptance Criteria	Result
UL248-1	Cold resistance	Ambient Temperature 23+-5℃ current ≤10% In, Measure Point: Fuse Cap	Record data	12/12 pass For each P/N
ISO8820-8 JSAE JASO D622	Temperature rise test	Ambient Temperature 23+-5℃; Current: 50% of rated current	Temperature Rise <50K	2/2 pass
JASO D622 6.3.4.1	Temperature and humidity cycle	Make 10 temperature / humidity change cycles in the constant temperature and humidity tank according to the standard	No appearance damage, Rc change <10%	2/2 pass
JASO D622 6.3.6	Thermal shock resistance test	48cycles, -30˚C-100˚C;	No appearance damage, Rc change <10%	2/2 pass
User-defined	High temperature storage test	Storage under 125degrees for 100hours;	No appearance damage, Rc change <10%	2/2 pass
MIL-STD-202 Method 204	Vibration Durability	For 5g's for 20 min, XYZ was performed in three directions, with 12 cycles each	No appearance damage, Rc change <10%	2/2 pass
JASO D622 6.3.2	Transient current intermittent cycle durability test	Ambient Temperature 23+-5℃; One cycle contain a current of 2In/0.25sec, and follow by current of 0.5In/15sec; Total 50000cycle	No appearance damage, Rc change <10%	2/2 pass
GB/T31465.1-5.4	Wipe off the Lubricant & Fuel oil	Wipe the marking with fuel oil and lubricant for 30sec each	After test, marking is clear and identifiable	12/12 pass
JASO D622 ISO8820-8	Strength of fuse links	Tighten and loosed the fuses(M8) with 12+/-1 Nm torque for 3 times	Terminals maintain integrated after test.	12/12 pass

Reported By: Hongguo Hu

Approved by: Simon Chiu

Test Complete Date: May 22 , 2021

Cold resistance

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Fuse Part Number : 0AKK-K250-XX/0AKK-K300-XX/0AKK-K350-XX

Condition : **UL248-1**

Ambient Temperature 23+-5℃ current ≤10% In, Measure Point: Fuse Cap

Type:	0AKKH 300A					
Start Date:	3/12/2021			End Date:	3/12/2021	
Room Temp.:	22.3	℃		Room Humi.:	53	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:		No Visual Damage	Upper Limit:		No Visual Damage	
Lower Limit:			Lower Limit:			
1	0.3855	pass	7	0.3810	pass	
2	0.3850	pass	8	0.3821	pass	
3	0.3846	pass	9	0.3792	pass	
4	0.3828	pass	10	0.3850	pass	
5	0.3818	pass	11	0.3846	pass	
6	0.3842	pass	12	0.3833	pass	

Type:	0AKKH 350A					
Start Date:	3/12/2021			End Date:	3/12/2021	
Room Temp.:	22.3	℃		Room Humi.:	53	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:		No Visual Damage	Upper Limit:		No Visual Damage	
Lower Limit:			Lower Limit:			
1	0.3213	pass	7	0.3189	pass	
2	0.3218	pass	8	0.3197	pass	
3	0.3209	pass	9	0.3201	pass	
4	0.3213	pass	10	0.3206	pass	
5	0.3208	pass	11	0.3195	pass	
6	0.3202	pass	12	0.3187	pass	

Temperature rise test

Fuse Type and Rating : 0AKK 250A-350A

Production Lot Number : ENG'samples

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Fuse Part Number : 0AKK-K250-XX/0AKK-K300-XX/0AKK-K350-XX

Condition : **ISO8820-8JSAE JASO D622**

Ambient Temperature 23+-5℃; Current: 50% of rated current

Type:	0AKKH 300A					
Start Date:	3/18/2021			End Date:	3/20/2021	
Room Temp.:	23.1	℃		Room Humi.:	55	%
No.\Name	Temperature rise @0.5In	Visual Check	No.\Name	Temperature rise @0.5In	Visual Check	
Unit:	K		Unit:	K		
Upper Limit:	50	No Visual Damage	Upper Limit:	50	No Visual Damage	
Lower Limit:			Lower Limit:			
1	31.9	pass	2	31.6	pass	

Type:	0AKKH 350A					
Start Date:	3/18/2021			End Date:	3/20/2021	
Room Temp.:	23.1	℃		Room Humi.:	55	%
No.\Name	Temperature rise @0.5In	Visual Check	No.\Name	Temperature rise @0.5In	Visual Check	
Unit:	K		Unit:	K		
Upper Limit:	50	No Visual Damage	Upper Limit:	50	No Visual Damage	
Lower Limit:			Lower Limit:			
1	32.3	pass	2	32.5	pass	

Temperature and humidity cycle

Fuse Type and Rating : 0AKK 250A-350A

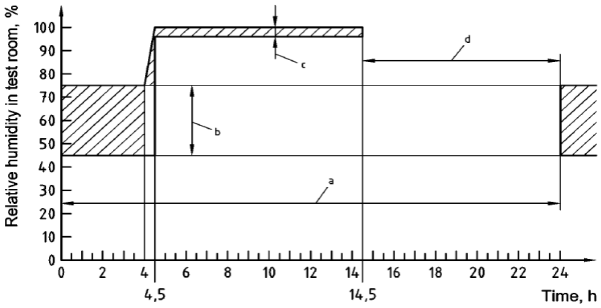
Production Lot Number : ENG'samples

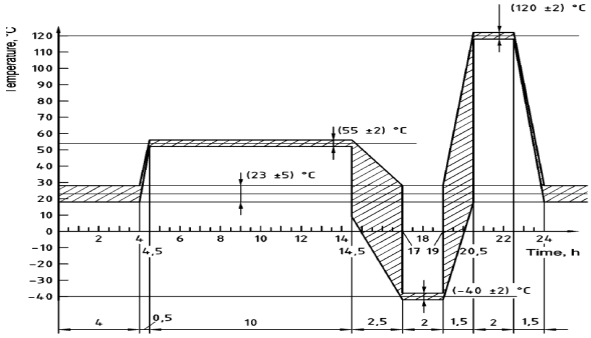
Project Number : FPQ-134

Fuse Part Number : 0AKK-K250-XX/0AKK-K300-XX/0AKK-K350-XX

Condition : **JASO D622 6.3.4.1**

Make 10 temperature / humidity change cycles in the constant temperature and humidity tank according to the standard





Type:	0AKKH 300A					
Start Date:	3/15/2021			End Date:	3/27/2021	
Room Temp.:	24.2	℃		Room Humi.:	48	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:	0.4241	No Visual Damage	Upper Limit:	0.4241	No Visual Damage	
Lower Limit:	0.3413		Lower Limit:	0.3413		
3	0.3839	pass	4	0.3805	pass	

Type:	0AKKH 350A					
Start Date:	3/15/2021			End Date:	3/27/2021	
Room Temp.:	24.2	℃		Room Humi.:	48	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:	0.3540	No Visual Damage	Upper Limit:	0.3540	No Visual Damage	
Lower Limit:	0.2868		Lower Limit:	0.2868		
3	0.3201	pass	4	0.3199	pass	

Thermal shock resistance test

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Fuse Part Number : 0AKK-K250-XX/0AKK-K300-XX/0AKK-K350-XX

Condition : **JASO D622 6.3.6**

48cycles, -30° C-100° C;

The condition of a single cycle:

-Leave the test pieces inside the room at (-30±2)℃ for 30 minutes.

-Move then to another room at (100±2)℃ within 15 seconds and leave them for 30 minutes.

-Move them back to the original room at (-30±2)℃ within 15 seconds.

Type:	0AKKH 300A					
Start Date:	3/23/2021			End Date:	3/26/2021	
Room Temp.:	25.1	℃		Room Humi.:	59	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:	0.4241	No Visual Damage	Upper Limit:	0.4241	No Visual Damage	
Lower Limit:	0.3413		Lower Limit:	0.3413		
5	0.3810	pass	6	0.3822	pass	

Type:	0AKKH 350A					
Start Date:	3/23/2021			End Date:	3/26/2021	
Room Temp.:	25.1	℃		Room Humi.:	59	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:	0.3540	No Visual Damage	Upper Limit:	0.3540	No Visual Damage	
Lower Limit:	0.2868		Lower Limit:	0.2868		
5	0.3198	pass	6	0.3187	pass	

High temperature storage test

Fuse Type and Rating : 0AKK 250A-350A

Production Lot Number : ENG'samples

Project Number : FPQ-134

Fuse Part Number : 0AKK-K250-XX/0AKK-K300-XX/0AKK-K350-XX

Condition : **User-defined**

Storage under 125degrees for 100hours;

Type:	0AKKH 300A					
Start Date:	3/25/2021			End Date:	4/2/2021	
Room Temp.:	24.1	℃		Room Humi.:	53	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:	0.4241	No Visual Damage	Upper Limit:	0.4241	No Visual Damage	
Lower Limit:	0.3413		Lower Limit:	0.3413		
7	0.3794	pass	8	0.3806	pass	

Type:	0AKKH 350A					
Start Date:	3/25/2021			End Date:	4/2/2021	
Room Temp.:	24.1	℃		Room Humi.:	53	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:	0.3540	No Visual Damage	Upper Limit:	0.3540	No Visual Damage	
Lower Limit:	0.2868		Lower Limit:	0.2868		
7	0.3182	pass	8	0.3199	pass	

Vibration Durability

Fuse Type and Rating : 0AKK 250A-350A

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Project Number : FPQ-134

Fuse Part Number : 0AKK-K250-XX/0AKK-K300-XX/0AKK-K350-XX

Condition : **MIL-STD-202 Method 204**

For 5g's for 20 min, XYZ was performed in three directions, with 12 cycles each

Type:	0AKKH 300A					
Start Date:	4/12/2021			End Date:	4/14/2021	
Room Temp.:	23.6	℃		Room Humi.:	62	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:	0.4241	No Visual Damage	Upper Limit:	0.4241	No Visual Damage	
Lower Limit:	0.3413		Lower Limit:	0.3413		
9	0.3771	pass	10	0.3832	pass	

Type:	0AKKH 350A					
Start Date:	4/12/2021			End Date:	4/14/2021	
Room Temp.:	23.6	℃		Room Humi.:	62	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:	0.3540	No Visual Damage	Upper Limit:	0.3540	No Visual Damage	
Lower Limit:	0.2868		Lower Limit:	0.2868		
9	0.3183	pass	10	0.3176	pass	

Transient current intermittent cycle durability test

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Fuse Part Number : 0AKK-K250-XX/0AKK-K300-XX/0AKK-K350-XX

Condition : **JASO D622 6.3.2**

Ambient Temperature 23+-5℃; One cycle contain a current of 2In/0.25sec, and follow by current of 0.5In/15sec;
Total 50000cycle

Type:	0AKKH 300A					
Start Date:	4/23/2021			End Date:	5/5/2021	
Room Temp.:	25.6	℃		Room Humi.:	64	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:	0.4241	No Visual Damage	Upper Limit:	0.4241	No Visual Damage	
Lower Limit:	0.3413		Lower Limit:	0.3413		
11	0.3826	pass	12	0.3819	pass	

Type:	0AKKH 350A					
Start Date:	4/23/2021			End Date:	5/5/2021	
Room Temp.:	25.6	℃		Room Humi.:	64	%
No.\Name	Cold Resistance	Visual Check	No.\Name	Cold Resistance	Visual Check	
Unit:	mΩ		Unit:	mΩ		
Upper Limit:	0.3540	No Visual Damage	Upper Limit:	0.3540	No Visual Damage	
Lower Limit:	0.2868		Lower Limit:	0.2868		
11	0.3188	pass	12	0.3185	pass	

Wipe off the Lubricant & Fuel oil

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Fuse Part Number : 0AKK-K250-XX/0AKK-K300-XX/0AKK-K350-XX

Condition : **GB/T31465.1-5.4**

Wipe the marking with fuel oil and lubricant for 30sec each

Type:	0AKKH 300A					
Start Date:	5/21/2021			End Date:	5/21/2021	
Room Temp.:	25.3	℃		Room Humi.:	66	%
No.\Name	Marking still legible		No.\Name	Marking still legible		
1	pass		7	pass		
2	pass		8	pass		
3	pass		9	pass		
4	pass		10	pass		
5	pass		11	pass		
6	pass		12	pass		

Strength of fuse links

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Fuse Part Number : 0AKK-K250-XX/0AKK-K300-XX/0AKK-K350-XX

Condition : **JASO D622ISO8820-8**

Tighten and loosed the fuses(M8) with 12+/-1 Nm torque for 3 times

Type:	0AKKH 300A					
Start Date:	5/21/2021			End Date:	5/21/2021	
Room Temp.:	25.3	℃		Room Humi.:	66	%
No.\Name	The frequency of Tighten and loosed	Visual Check	No.\Name	The frequency of Tighten and loosed	Visual Check	
Unit:			Unit:			
Upper Limit:		No Visual Damage	Upper Limit:		No Visual Damage	
Lower Limit:	3		Lower Limit:	3		
1	>3	pass	7	>3	pass	
2	>3	pass	8	>3	pass	
3	>3	pass	9	>3	pass	
4	>3	pass	10	>3	pass	
5	>3	pass	11	>3	pass	
6	>3	pass	12	>3	pass	