

SPECIFICATION AND PERFORMANCE

Series	228 Series	File	228 Series_Spec_1	Date	2025/07/04
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Scope:

This specification covers the requirements for product performance, test methods and quality assurance provisions of below

Part Name	Description
228A-PSX00	FAKRA Plug, Vertical Type, Code X, H=15.5mm, Reel
228A-PXX00	FAKRA Plug, Right Angle, Mid Mount, XX o'clock, Code X, Reel
228B-PXX00	FAKRA Plug 1X2 Port, Right Angle, Mid Mount, XX o'clock, Code X, Reel

Performance and Descriptions:

The product is designed to meet the electrical, mechanical and environmental performance requirements specification. Unless otherwise specified, all tests are performed at ambient environmental conditions.

RoHS:

All material in according with the RoHS environment related substances list controlled.

MATERIALS

NO.	PART NAME	DESCRIPTION
1	HOUSING	Nylon, PA4T or equal
2	CONTACT	Copper alloy, 6u" gold plating on contact area, tin plating on solder area, under plating nickel.
3	OUTER SHELL	Zinc alloy, tin plating over nickel
4	INSULATOR	Thermoplastic, black
5	OUTER CONTACT	Metal, tin plating over nickel

RATING

Rated Current	1 A
Rated Voltage	60V
Operating Temperature	-40°C ~105°C
Storage Temperature	-40°C ~105°C
Durability	25 Min.

Signal Integrity

Item	Requirement	Test Condition
Impedance	50Ω	USCAR-17
Frequency	6 GHz	USCAR-17

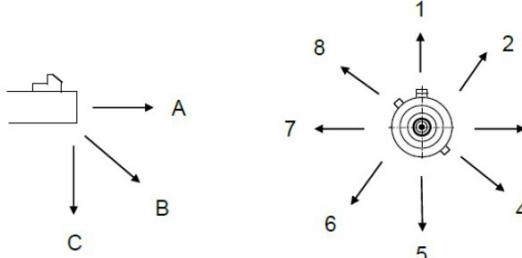
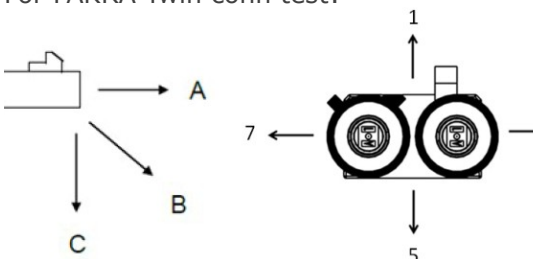


Return Loss	70-200 MHz, <-20.83 dB 200-500 MHz, <-16.54 dB 500M-2 GHz, <-15.56 dB 2-3 GHz, <-0.3 dB 3-6 GHz, <-12.74 dB	USCAR-17
Insertion Loss	70-200 MHz, >-0.15 dB 200-500 MHz, >-0.25 dB 2-3 GHz, >-0.3 dB 3-6 GHz, >-0.45 dB	USCAR-17

ELECTRICAL		
Item	Requirement	Test Condition
Insulation Resistance	1000 MΩ Min. at 500VDC	USCAR-17, SAE/USCAR-2
Signal Contact Resistance	10 mΩ Initial Max. 40 mΩ after Mating Max.	USCAR-17, SAE/USCAR-2
Outer Contact Resistance	10 mΩ Initial Max. 40 mΩ after Mating Max.	USCAR-17, SAE/USCAR-2
Test Voltage	800 VAC	USCAR-17, SAE/USCAR-2
Working Voltage	335 VAC	USCAR-17, SAE/USCAR-2
Current Rating	1A/20V Max.	USCAR-17, SAE/USCAR-2

MECHANICAL		
Item	Requirement	Test Condition
Visual Inspection	Noting in detail any obvious manufacturing	SAE/USCAR-2, 5.1.8.3
Connector Cycling	25 cycles Min.	ISO 20860-1, ISO 20860-2 USCAR-17 Class 2
Header Pin Retention Force	10N Min.	ISO 20860-1, ISO 20860-2 USCAR-17 Class 2
Coding Retention Force	110N Min.	ISO 20860-1, ISO 20860-2 USCAR-17 Class 2
Connector Engagement Force	Single contact: 25N Max. Two way contact: 65N Max.	ISO 20860-1, ISO 20860-2 USCAR-17 Class 2
Connector Disengagement Force with Lock (disabled)	2N Min.	ISO 20860-1, ISO 20860-2 USCAR-17 Class 2
Connector Disengagement Force with Lock (enabled)	110 Min.	ISO 20860-1, ISO 20860-2 USCAR-17 Class 2
Connector to Connector Audible Click	Measure and record the dB level of the ambient sound within the test environment. The ambient noise level must be between 30 and 50 dB . locate the sound measuring device or microphone 600 from the connector	ISO 20860-1, ISO 20860-2 USCAR-17 Class 2
Coding Efficiency	40N Min. 1. for single contact SMB connection systems, the min. mis-mating force to achieve enter contact electrical	ISO 20860-1, ISO 20860-2 USCAR-17 Class 2



	<p>continuity is 40N. it is known that certain key code combinations may not meet this requirement, therefore, the combinations listed below should be avoided.</p> <p>A. A&B B. I&G C. C&N D. F&H E. K&L F. K&M G. L&M</p> <p>2. The "Z" or neutral key code may not mate with L,M, or N key code and should be used solely for developmental or prototype applications</p>	
Mechanical Pull Test	<p>Again by gripping on the cable side SMA connector, subject the board mount connection system to bat least the following directional forces, all at 75N: 1C , 3C, 5B, 7B, 8C (per Figure)</p>  <p>For FAKRA Twin conn test:</p> 	<p>USCAR17-4</p> <p>Axial loads are less practical when applied to right angel cabled connectors therefore a side load shall be applied to the extreme end of the ferrule.</p> <p>The load of 75N shall be applied for 5 seconds while monitoring continuity. SWR measurements and visual inspection for damage shall be done before and after the side load test.</p>
Mechanical Shock	10 shocks, 35g, 10ms	USCAR17-4
Mechanical Pull Test 50N	50 N min.	DIN EN 60512-13-5

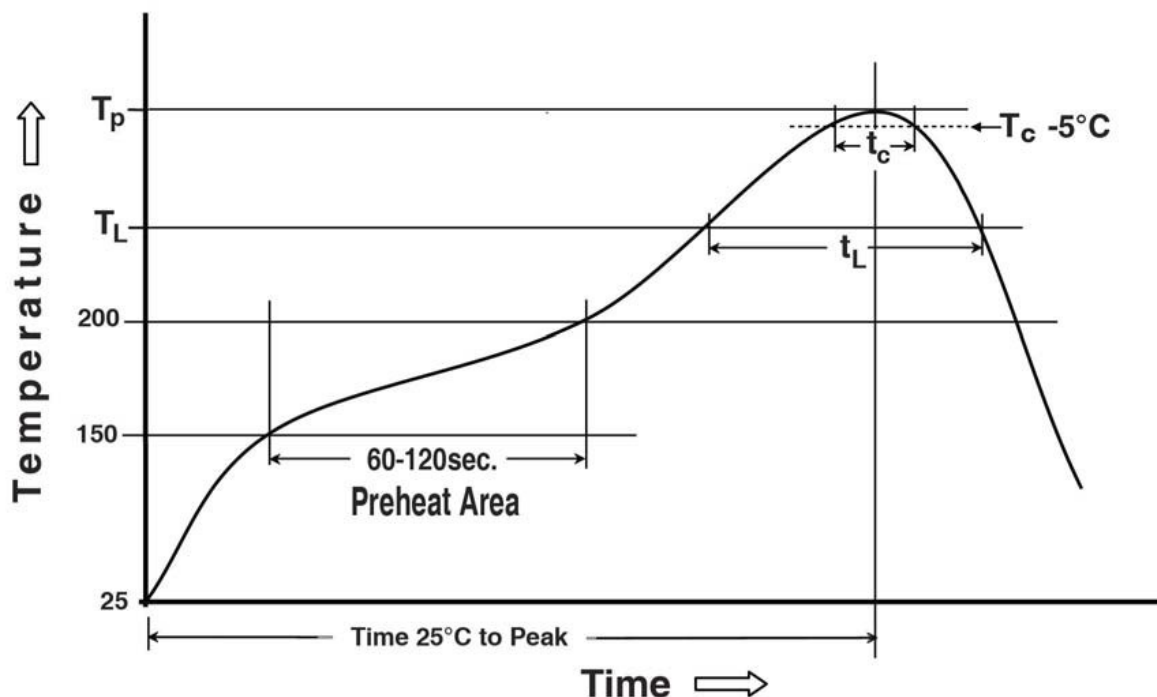


ENVIRONMENTAL																				
Item	Requirement	Test Condition																		
Temperature Range	-40°C ~105°C																			
Thermal Shock	Temperature: -40°C ~105°C Duration: exposure time at temperature Extreme 30 minutes, 100 cycles	SAE/USCAR-2																		
Temperature and Humidity Cycling	a. 0.5 hours @ -40°C b. 4.5 hours @ 80-100 percent relative humidity at +80 to 90°C This is the only step where humidity is controlled. c. 2 hours @ +85°C d. 1 hours @+23°C e. This constitutes one complete temperature/humidity cycles 8 hours f. Max. transfer time of samples from one environment to the next during the define temperature/humidity cycles is 1 hour g. All time periods listed in the defined cycles have a tolerance of ± 5 minutes h. 40 cycles of the environmental exposure described above constitutes a complete temperature/ humidity cycling test.	SAE/USCAR-2																		
Vibration Random	Random vibration Frequency 5~1000Hz Duration 8 hours in each of X,Y,Z axis PSD <table><tr><td>Frequency (Hz)</td><td>Power spectral density (g²/Hz)</td></tr><tr><td>5.0</td><td>0.00200</td></tr><tr><td>12.5</td><td>0.24800</td></tr><tr><td>77.5</td><td>0.00320</td></tr><tr><td>145.0</td><td>0.00200</td></tr><tr><td>200.0</td><td>0.01180</td></tr><tr><td>230.0</td><td>0.00032</td></tr><tr><td>1000.0</td><td>0.00002</td></tr><tr><td colspan="2">Grms=1.81</td></tr></table>	Frequency (Hz)	Power spectral density (g²/Hz)	5.0	0.00200	12.5	0.24800	77.5	0.00320	145.0	0.00200	200.0	0.01180	230.0	0.00032	1000.0	0.00002	Grms=1.81		USCAR-17
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Grms=1.81																				
Mechanical Shock	10 half-sine wave impulses (10 milliseconds duration at 35Gs force)	DIN IEC 60068-2-27																		
High-Temp. Exposure	Temperature: 105 Duration: 1008 hours	USCAR-17																		



SOLDER ABILITY		
Item	Requirement	Test Condition
Solder Ability, DIP test	Solder area shall have a min. of 95% solder coverage	IEC 60068-2
Resistance to soldering heat	No melting, cracks or functional damage allowed	Preheating temperature: 150 ~ 200°C, 60~120 seconds Liquidus temperature (TL): 217°C, 60~150 seconds Peak temperature: 260°C Time within 5 °C of peak temperature (Tc): 255°C, 30seconds

Reflow Profile



Preheating temperature: 150 ~ 200°C, 60~120 seconds
Liquidus temperature (TL): 217°C, 60~150 seconds
Peak temperature: 260°C
Time within 5 °C of peak temperature (Tc): 255°C, 30seconds