立威科技股份有限公司 Attend Technology Inc.
新北市汐止區新台五路一段81號10樓之六
10F-6, No.81, Sec.1, Xintai 5th Rd., Xizhi-Dist., New Taipei City 221, Taiwan, R.O.C.
TEL 886 2 2698 7028 FAX 886 2 2698 7078 WEBSITE www.attend.com.tw

SPECIFICATION AND PERFORMANCE

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

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

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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

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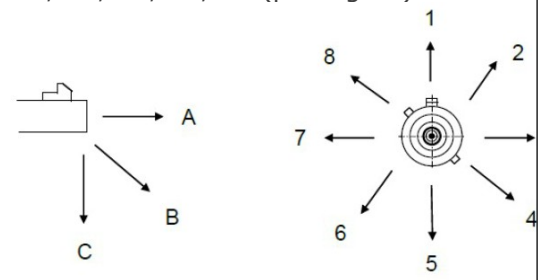
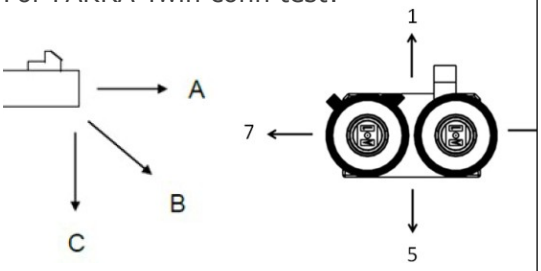
	continuity is 40N. it is known that certain key code combinations may not meet this requirement, therefore, the combinations listed below should be avoided. A. A&B B. I&G C. C&N D. F&H E. K&L F. K&M G. L&M 2. The "Z" or neutral key code may not mate with L,M, or N key code and should be used solely for developmental or prototype applications	
Mechanical Pull Test	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)  For FAKRA Twin conn test: 	USCAR17-4 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. 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.
Mechanical Shock	10 shocks, 35g, 10ms	USCAR17-4
Mechanical Pull Test 50N	50 N min.	DIN EN 60512-13-5

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<table>
<tr><th colspan="3">ENVIRONMENTAL</th></tr>
<tr><th>Item</th><th>Requirement</th><th>Test Condition</th></tr>
<tr><td>Temperature Range</td><td>-40°C ~105°C</td><td></td></tr>
<tr><td>Thermal Shock</td><td>Temperature: -40°C ~105°C
Duration: exposure time at temperature Extreme 30 minutes, 100 cycles</td><td>SAE/USCAR-2</td></tr>
<tr><td>Temperature and Humidity Cycling</td><td>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.</td><td>SAE/USCAR-2</td></tr>
<tr><td>Vibration Random</td><td>Random vibration
Frequency 5~1000Hz
Duration 8 hours in each of X,Y,Z axis
PSD
<table>
<tr><th>Frequency (Hz)</th><th>Power spectral density (g^2/Hz)</th></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></td><td>USCAR-17</td></tr>
<tr><td>Mechanical Shock</td><td>10 half-sine wave impulses (10 milliseconds duration at 35Gs force)</td><td>DIN IEC 60068-2-27</td></tr>
<tr><td>High-Temp. Exposure</td><td>Temperature: 105
Duration: 1008 hours</td><td>USCAR-17</td></tr>
</table>

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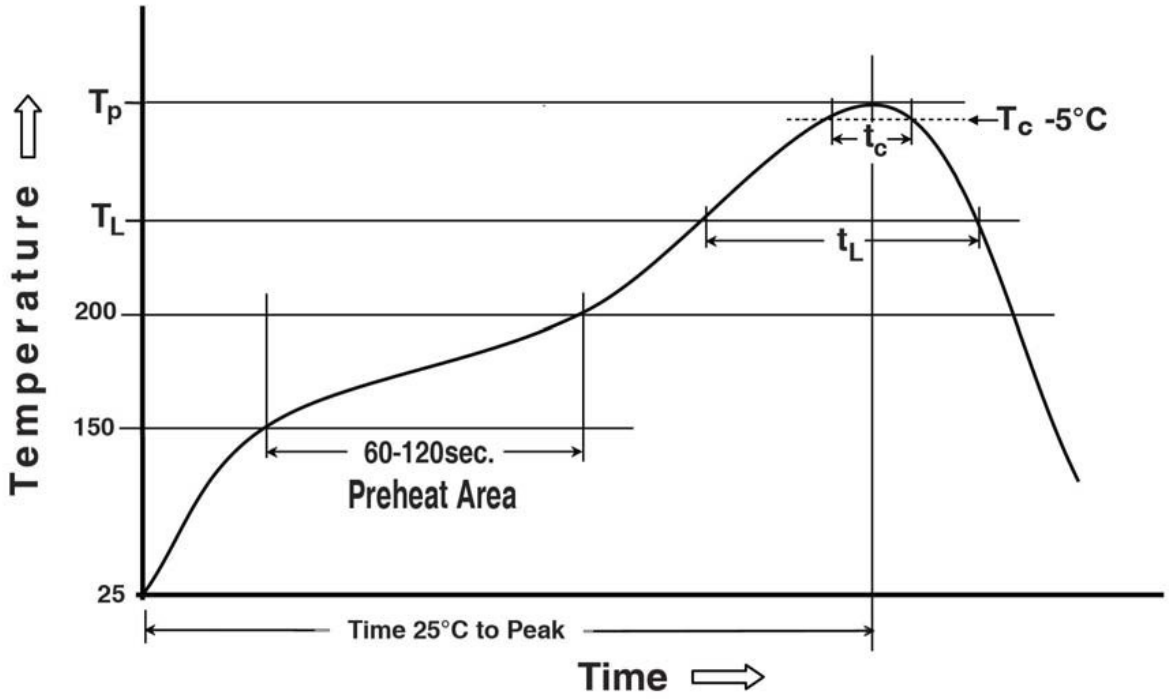
SOLDER ABILITY		
Item	**Requirement**	**Test Condition**
Solder Ability, DIP test	Solder area shall have a min. of 95% solder coverage	IEC 60068-2
Resistance to soldering heat	No melting, cracks or functional damage allowed	Preheating temperature: 150 ~ 200°C, 60~120 seconds Liquidus temperature (TL):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

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