

SPECIFICATION AND PERFORMANCE

Series	232 Series	File	232 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
232A-P0X00	HS-MTP Plug, 1x1 Port, Right Angle
232A-PSX00	HS-MTP Plug, 1x1 Port, Straight
232B-P0X00	HS-MTP Plug, 1x2 Port, Right Angle
232C-P0X00	HS-MTP Plug, 2x2 Port, Right Angle
232C-PSX00	HS-MTP Plug, 2x2 Port, Straight, IP67
232D-P0X00	HS-MTP Plug, 2x3 Port, Right Angle

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	PA9T, UL94-V0, black
2	INNER HOUSING	Thermoplastic, black
3	CONTACT	Copper alloy, 6u" gold on contact area, 80~160u" tin plating on solder tails, under plating 80~160u" nickel over all
4	OUTER CONTACT	Zinc alloy, 120~240u" tin plating over 120~240u" nickel
5	GROUND PIN	Copper alloy, 80~160u" tin plating over 80~160u" nickel

RATING	
Rated Current	1.5 A
Rated Voltage	60VDC
Operating Temperature	-40°C ~105°C
Storage Temperature	-40°C ~105°C
Durability	25 Min.



Signal Integrity		
Item	Requirement	Test Condition
Impedance	100±5Ω	Compliant with future standards including open alliance TC9, IEEE 802.3cy
Frequency	20 GHz	
Return Loss	≥ 30dB, 0.01 GHz to 3 GHz ≥ 25dB, 3 GHz to 6 GHz ≥ 20dB, 6 GHz to 10 GHz ≥ 15dB, 10 GHz to 15 GHz ≥ 12dB, 15 GHz to 20 GHz	
Near End Cross Talk	≥ 60dB 0.01 GHz to 7.5 GHz ≥ 45dB 7.5 GHz to 20 GHz	
Far End Cross Talk	≥ 60dB 0.01 GHz to 7.5 GHz ≥ 45dB 7.5 GHz to 20 GHz	

ELECTRICAL		
Item	Requirement	Test Condition
Contact Resistance	Before exposure Max. 15mΩ for signal Max. 7.5mΩ for outer contact After exposure Max. 40mΩ for signal and ground contacts	SAE/USCAR-2
Insulation Resistance	1000 MΩ Min.	
Current Rating	2.0A Max	
Voltage Rating	60 VDC	



MECHANICAL						
Item	Requirement					Test Condition
Visual Inspection	Noting in detail any obvious manufacturing					SAE/USCAR
Mating Cycles	25 cycles					
Header Pin Retention Force	15N Min.					
Coding Housing Retention Force	110N Min.					DIN EN 60512
Connector Engagement Force	HS-MTP	1x1	1x2	2x2	2x3	
	Load Max.(N)	30	75	75	90	
Connector Disengagement Force with Lock Disabled	75N Max. 5N Min.					
Connector Disengagement Force with Lock Enabled	110N Min.					
Connector Lock Manipulation Force	3N Min. 15N Max.					
Polarization Effectiveness	1 position 80N Min. multi-position 110N Min.					
Mechanical Pull Test 100N Axial	110N Min.					
Mechanical Pull Test 75N Off-angle	75N Min.					
Connector to Connector Audible Click	67dB for unconditioned parts 65dB for conditioned parts					USCAR-17
Coding Efficiency	1. For single contact HS-MTP connection systems. It is known that certain key code combinations may not meet this requirement. Therefore, the combinations listed(TBD)					
	HS-MTP	1x1	1x2	2x2	2x3	
	Load min (N)	150	150	150	225	
Mechanical Shock	10 half-sine wave impulses (10 milliseconds duration at 35Gs force)					DIN IEC 60068
Vibration	(a) Random vibration (b) 5~1000Hz frequency (c) 8 hours in each of X,Y,Z axis (d) PSD					
	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					

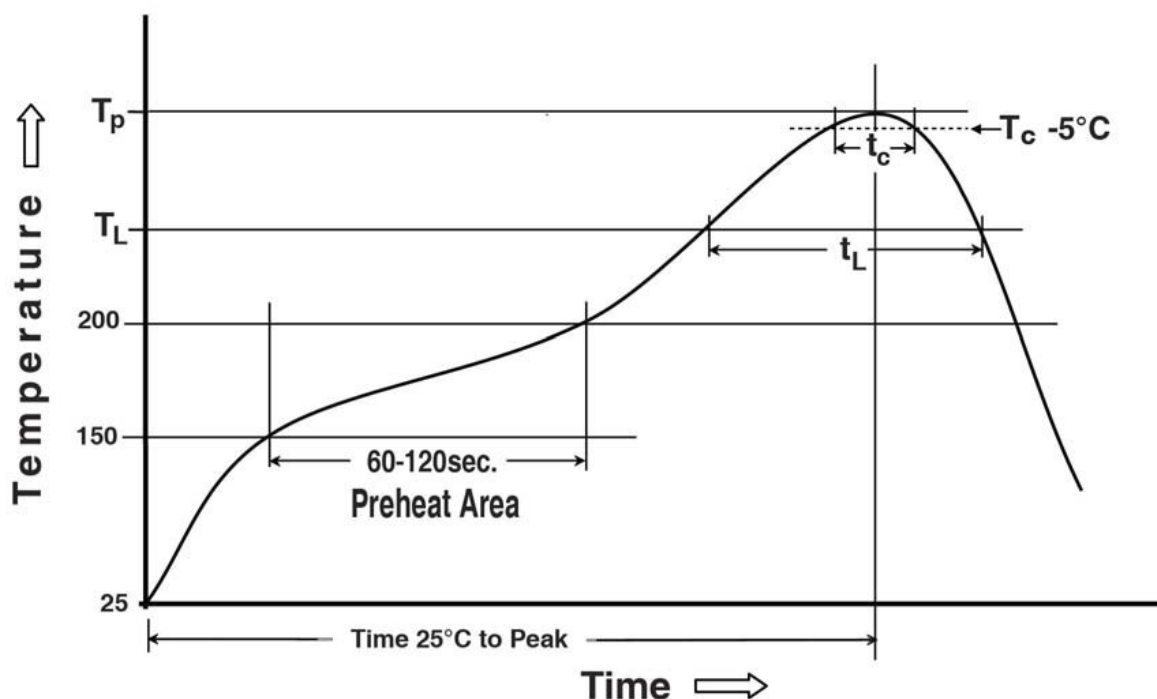


ENVIRONMENTAL		
Item	Requirement	Test Condition
Thermal Shock	Temperature: -40~105°C Duration: exposure time at temperature extreme 30 minutes, 100 cycles	SAE/USCAR-2
Temperature-Humidity Cycles	a. 0.5 hours @ -40±3°C b. 4.5 hours @ 80~100 percent relative humidity at +80 to 90°C This is the only step where humidity is controlled. Humidity not controlled c. 2 hours @ +85±3°C (105°C if applicable) d. 1 hours @ +23±3°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 defined temperature/ humidity cycles is 1 hours. g. All time periods listed in the defined cycles have a tolerance of ±5 minutes h. 40 cycles (320 hours) of the environmental exposure described above constitutes a complete temperature/ humidity cycling test	
High Temperature Exposure	Temperature: 105°C Duration: 1008 hours	



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