

**SPEC. NO.:** PS-50525-XXXXX-XXX

**REVISION:** E

**PRODUCT NAME:** 0.5MM PITCH ZIF FPC/FFC CONNECTOR

**PRODUCT NO:** 50525. 50526. 50527. 50528. 50529. 50530. 50576  
51618 SERIES

<b>PREPARED:</b>     <b>DATE:</b> <b>2019.08.27</b>	<b>CHECKED:</b>     <b>DATE:</b> <b>2019.08.27</b>	<b>APPROVED:</b>     <b>DATE:</b> <b>2019.08.27</b>
---	--	---

**TITLE: 0.5MM PITCH ZIF FPC/FPC SMT TYPE CONNECTOR**

RELEASE DATE: 2019.08.27

REVISION: E

ECN No: ECN-1908354

PAGE: **2** OF **10**

1	REVISION HISTORY .....	3
2	SCOPE .....	4
3	APPLICABLE DOCUMENTS.....	4
4	REQUIREMENTS.....	4
5	PERFORMANCE .....	5
6	INFRARED REFLOW CONDITION.....	8
7	PRODUCT QUALIFICATION AND TEST SEQUENCE.....	9
8	FPC WITHDRAWAL FORCE.....	10

Aces P/N: **50525 50526 50527 50528 50529 50530 50576**  
**51618 Series**

TITLE: **0.5MM PITCH ZIF FPC/FFC SMT TYPE CONNECTOR**

RELEASE DATE: 2019.08.27

REVISION: E

ECN No: ECN-1908354

PAGE: **3** OF **10**

## 1 Revision History

Rev.	ECN #	Revision Description	Approved	Date
O	ECN-0811117	New SPEC	Jason Chen	2008.11.17
A	ECN-0907053	Revised Fitting Nail /Housing Retention Force	Jason Chen	2009.07.25
B	ECN-1310122	ADD 51618 SERIES	GUKEQING	2013.10.28
C	ECN-1401253	ADD WORKING VOLTAGE	XUFEI	2014.01.15
D	ECN-1511217	UPDATE THE TEST SEQUENCE	XUBIN	2015.11.19
E	ECN-1908354	CHANGE FPC TO FPC/FFC	HUANGYAN	2019.08.27

TITLE: **0.5MM PITCH ZIF FPC/FFC SMT TYPE CONNECTOR**

RELEASE DATE: 2019.08.27

REVISION: E

ECN No: ECN-1908354

PAGE: **4** OF **10**

## 2 SCOPE

This specification covers performance, tests and quality requirements for **0.5mm pitch ZIF FPC/FFC SMT type connector**.

Aces' P/N: **50525-XXXXX-XXX;**  
**50526-XXXXX-XXX;**  
**50527-XXXXX-XXX;**  
**50528-XXXXX-XXX;**  
**50529-XXXXX-XXX;**  
**50530-XXXXX-XXX;**  
**50576-XXXXX-XXX;**  
**51618-XXXXX-V01**

## 3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

## 4 REQUIREMENTS

### 4.1 Design and Construction

Product shall be of design, construction and physical dimensions specified on applicable product drawing.

### 4.2 Materials and Finish

- 4.2.1 Contact: High performance copper alloy.  
Finish: (a) Contact Area: [See Order Information](#).  
(b) Under plate: [Nickel-plated all over](#).  
(c) Solder area: [See Order Information](#).
- 4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-0.
- 4.2.3 Actuator: Thermoplastic or Thermoplastic High Temp., UL94V-0.
- 4.2.4 Nut or Ear: [Copper Alloy](#),  
Finish: [See Order Information](#).

### 4.3 Ratings

- 4.3.1 Working voltage less than 36 volts (per pin)**
- 4.3.2 Voltage: [125 Volts AC \(per pin\)](#)
- 4.3.3 Current: [0.5 Amperes \(per pin\)](#)
- 4.3.4 Operating Temperature : [-20°C to +85°C](#)

TITLE: **0.5MM PITCH ZIF FPC/FFC SMT TYPE CONNECTOR**

RELEASE DATE: 2019.08.27

REVISION: E

ECN No: ECN-1908354

PAGE: **5** OF **10**

## 5 Performance

### 5.1. Test Requirements and Procedures Summary

Item	Requirement	Standard
Examination of Product	Product shall meet requirements of applicable product drawing and specification.	Visual, dimensional and functional per applicable quality inspection plan.
<b>ELECTRICAL</b>		
Item	Requirement	Standard
Low Level Contact Resistance	<b>55 m Ω</b> Max.(initial)per contact <b>20 m Ω</b> Max. Change allowed	Mate connectors, measure by dry circuit, <b>20mV</b> Max., <b>100mA</b> Max. (EIA-364-23)
Insulation Resistance	<b>100 M Ω</b> Min.	Unmated connectors, apply <b>500 V</b> DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: <b>1 mA</b> max.	<b>500 VAC</b> Min. at sea level for <b>1</b> minute. Test between adjacent contacts of unmated connectors. (EIA-364-20)
Temperature Rise	<b>30°C</b> Max. Change allowed	Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25°C (EIA-364-70, METHOD1,CONDITION1)

TITLE: **0.5MM PITCH ZIF FPC/FPC SMT TYPE CONNECTOR**

RELEASE DATE: 2019.08.27

REVISION: E

ECN No: ECN-1908354

PAGE: **6** OF **10**

<b>MECHANICAL</b>		
<b>Item</b>	<b>Requirement</b>	<b>Standard</b>
FPC Retention Force	Refer to page.10 FPC retention force	A connector shall be soldered on a board and insert the actuator, pull the FPC at the speed rate of <b>25.4 ± 3</b> mm/min.
Actuator Insertion Extraction Force	<b>3.2kgf</b> Max. <b>0.5kgf</b> Min.	Mate applicable FPC inset and Extract actuator at the speed of <b>25.4 ± 3</b> mm/minute.
Terminal / Housing Retention Force	<b>0.15kgf</b> MIN.	Operation Speed : <b>25.4 ± 3</b> mm/minute. Measure the contact retention force with tester.
Fitting Nail /Housing Retention Force	<b>0.15kgf</b> MIN.	Operation Speed : <b>25.4 ± 3</b> mm/minute. Measure the contact retention force with tester.
Durability	30 cycles.	The sample should be mounted in the tester and fully mated and unmated the number of cycles specified at the rate of <b>10 ± 3</b> mm/min. (EIA-364-09)
Vibration	<b>1 μ s</b> Max.	The electrical load condition shall be 100 mA maximum for all contacts. Subject to a simple harmonic motion having amplitude of 0.76mm (1.52mm maximum total excursion) in frequency between the limits of 10 and 55 Hz. The entire frequency range, from 10 to 55 Hz and return to 10 Hz, shall be traversed in approximately 1 minute. This motion shall be applied for 2 hours in each of three mutually perpendicular directions. (EIA-364-28 Condition I)
Shock (Mechanical)	<b>1 μ s</b> Max.	Subject mated connectors to 50 G's (peak value) half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks). The electrical load condition shall be 100mA maximum for all contacts. (EIA-364-27, test condition A)
Resistance to Reflow Soldering Heat	See Product Qualification and Test Sequence Group 10	Pre Heat : 150°C Max, 90sec Min. Heat : 200°C Min., 30sec Min. Peak Temp. : 230°C Max, 10sec

Aces P/N: **50525 50526 50527 50528 50529 50530 50576  
51618 Series**

TITLE: **0.5MM PITCH ZIF FPC/FFC SMT TYPE CONNECTOR**

RELEASE DATE: 2019.08.27

REVISION: E

ECN No: ECN-1908354

PAGE: **7** OF **10**

Resistance to <b>Reflow</b> Soldering Heat	See Product Qualification and Test Sequence Group 10( <b>Lead Free</b> )	Pre Heat : 150°C~180°C, 60~90sec. Heat : 230°C Min., 40sec Min. Peak Temp.260°C Max, 10secMax.
Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 5 cycles. 1 cycles: -40 +0/-3 °C, 30 minutes +85 +3/-0 °C, 30 minutes (EIA-364-32, test condition A)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40°C, 90~95% RH, Reefer to Method II. (EIA-364-31, Test condition A)
Temperature life	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at <b>85°C</b> for <b>96 hours</b> . Measure Signal. (EIA-364-17, Test condition A)
Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35°C <b>(I) Gold flash for 8 hours</b> <b>(II) Gold plating 5 u" for 96 hours.</b> (EIA-364-26)
Solder ability	Solder able area shall have minimum of 95% solder coverage.	Subject the test area of contacts into the flux for 5-10 sec. And then into solder bath, Temperature at <b>245 ±5°C</b> , for <b>4-5 sec.</b> (EIA-364-52)

**Note.** Flowing Mixed Gas shell be conduct by customer request.

**TITLE: 0.5MM PITCH ZIF FPC/FPC SMT TYPE CONNECTOR**

RELEASE DATE: 2019.08.27

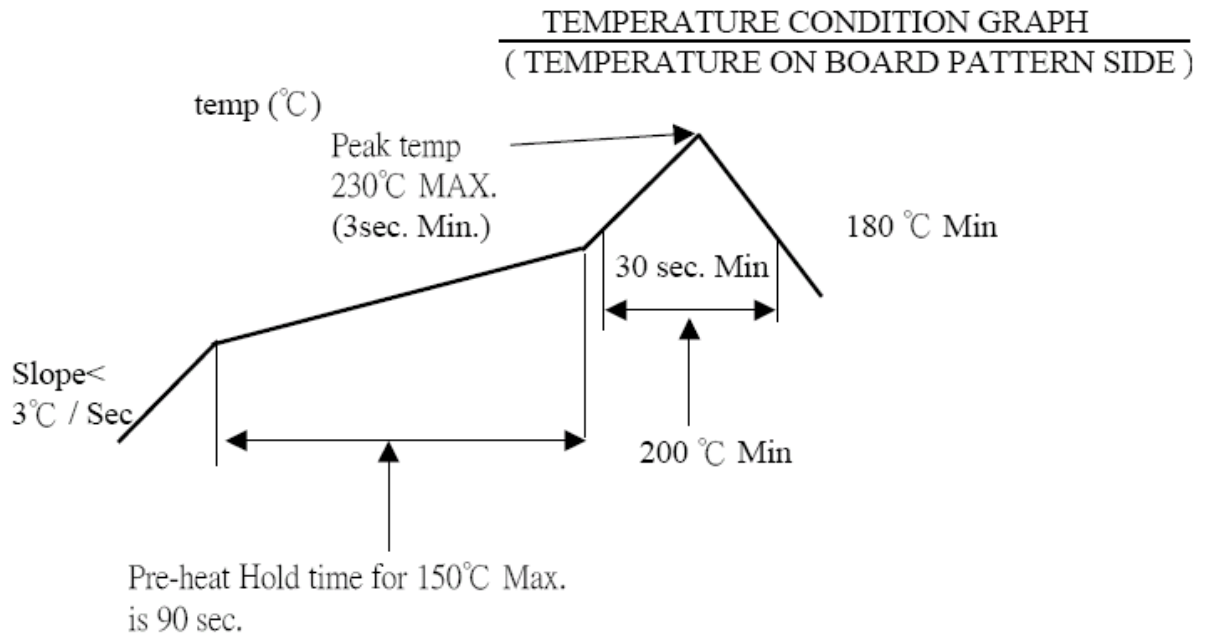
REVISION: E

ECN No: ECN-1908354

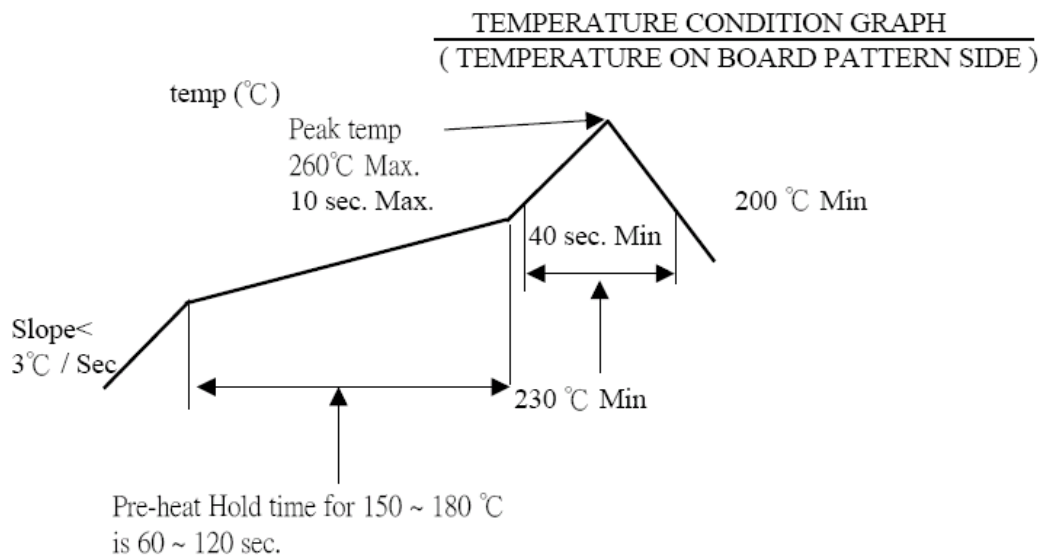
PAGE: **8** OF **10**

**6 INFRARED REFLOW CONDITION**

6.1. General Process



6.2. Lead-free Process





TITLE: **0.5MM PITCH ZIF FPC/FPC SMT TYPE CONNECTOR**

RELEASE DATE: 2019.08.27

REVISION: E

ECN No: ECN-1908354

PAGE: **9** OF **10**

## 7 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence									
Examination of Product				1、7	1、6	1、4				1
Low-signal Level Contact Resistance		1、5	1、4	2、10	2、9	2、5				3
Insulation Resistance				3、9	3、8					
Dielectric Withstanding Voltage				4、8	4、7					
Temperature rise	1									
Durability		3								
Vibration			2							
Shock (Mechanical)			3							
Thermal Shock				5						
Humidity				6						
Temperature life					5					
Salt Spray						3				
Solder ability							1			
FPC Retention Force		2、4								
Terminal / Housing Retention Force								1		
Fitting Nail /Housing Retention Force									1	
Resistance to Soldering Heat										2
Sample Size	2	4	4	4	4	4	2	4	4	4

TITLE: **0.5MM PITCH ZIF FPC/FPC SMT TYPE CONNECTOR**

RELEASE DATE: 2019.08.27

REVISION: E

ECN No: ECN-1908354

PAGE: **10** OF **10**

## 8 FPC WITHDRAWAL FORCE

NO. OF Ckt .	Withdrawal Force (Min)	NO. OF Ckt.	Withdrawal Force (Min)
4	0.30Kgf	23	0.75Kgf
5		24	
6		25	1.2Kgf
7		26	
8		27	
9		28	
10	29		
11	0.75Kgf	30	
12		31	
13		32	
14		33	
15		34	1.6Kgf
16		35	
17		36	
18		37	
19		38	
20		39	
21		40	
22			