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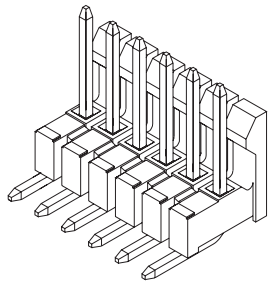
Jameco Part Number 1965681

2.54mm (.100") Pitch KK® Breakaway Header

42228
Right Angle Friction Lock



Features and Benefits
- Sizes 2 to 36 circuits
- Available with kinked pins for better PC board retention
- Available with end backwalls removed for left to right polarization
- Various pin lengths available (contact Molex)
- Voided circuits available (contact Molex)

Reference Information
Product Specification: PS-10-07
Packaging: Bag
Tooling Information: See cutting tool section
UL File No.: E29179
CSA File No.: LR19980
Mates With: 2695, 4455, 6471, 7720 and 7880
Designed In: Inches

Electrical
Voltage: 250V
Current: 4.0A
Contact Resistance: 20 milliohms max.
Dielectric Withstanding Voltage: 1500V
Insulation Resistance: 50,000 Megohms min.

Mechanical
Durability: Tin—25 cycles max.
Gold—100 cycles max.

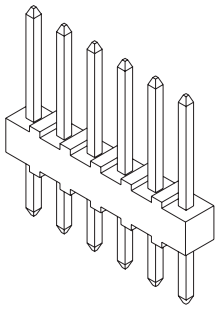
Physical
Housing: Glass-filled nylon, UL 94V-0
Contact: Phosphor Bronze, 0.64mm (.025") square
Plating: See Table
Operating Temperature: -40 to +105˚C

Order No.								
Standard			With Kinked Tails			With Backwalls Removed		
Tin	15µ" Select Gold	30µ" Select Gold	Tin	15µ" Select Gold	30µ" Select Gold	Tin	15µ" Select Gold	30µ" Select Gold
22-28-1XX0	22-28-1XX1	22-28-1XX2	22-28-1XX3	22-28-1XX4	22-28-1XX5	22-28-1XX6*	22-28-1XX7*	22-28-1XX8*
Replace XX with no. of circuits, 02-36								

* Available in 3 to 36 circuits only
Circuit 1 designation is used to orient the header to locate the voided circuit. Review mating connector to assure correct mating orientation.

2.54mm (.100") Pitch KK® Solid Header

4030
Vertical



Features and Benefits
- Sizes 2 to 28 circuits
- 4030 with voids is 4380 Series
- Various pin lengths available
- Voided circuits available (contact Molex)

Reference Information
Product Specification: PS-10-07
Packaging: Bag
UL File No.: E29179
CSA File No.: LR19980
Mates With: 2695, 4455, 6471, 7720 and 7880
Designed In: Inches

Electrical
Voltage: 250V
Current: 4.0A
Contact Resistance: 20 milliohms max.
Dielectric Withstanding Voltage: 1500V
Insulation Resistance: 50K Megohms min.

Mechanical
Durability: Tin—25 cycles max.
Gold—100 cycles max.

Physical
Housing: Nylon, UL 94V-0
Contact: Brass, 0.64mm (.025") square
Plating: See Table
Operating Temperature: 0 to +75˚C

Circuits	Order No.		Lead-free
	Tin	Gold	
2	22-03-2021	22-10-2021	Yes
3	22-03-2031	22-10-2031	
4	22-03-2041	22-10-2041	
5	22-03-2051	22-10-2051	
6	22-03-2061	22-10-2061	
7	22-03-2071	22-10-2071	
8	22-03-2081	22-10-2081	
9	22-03-2091	22-10-2091	
10	22-03-2101	22-10-2101	

Circuits	Order No.		Lead-free
	Tin	Gold	
11	22-03-2111	22-10-2111	Yes
12	22-03-2121	22-10-2121	
13	22-03-2131	22-10-2131	
14	22-03-2141	22-10-2141	
15	22-03-2151	22-10-2151	
16	22-03-2161	22-10-2161	
17	22-03-2171	22-10-2171	
18	22-03-2181	22-10-2181	
19	22-03-2191	22-10-2191	

Circuits	Order No.		Lead-free
	Tin	Gold	
20	22-03-2201	22-10-2201	Yes
21	22-03-2211	22-10-2211	
22	22-03-2221	22-10-2221	
23	22-03-2231	22-10-2231	
24	22-03-2241	22-10-2241	
25	22-03-2251	22-10-2251	
26	22-03-2261	22-10-2261	
27	22-03-2271	22-10-2271	
28	22-03-2281	22-10-2281	

Note: In the Far East, the polyester product has different Engineering No. and Order No.
Circuit 1 designation is used to orient the header to locate the voided circuit. Review mating connector to assure correct mating orientation.

PRODUCT SPECIFICATION

1.0 SCOPE

This Product Specification covers the 2.54 mm (.100 inch) centerline (pitch) 0.64 mm (.025) square pin headers when mated with either printed circuit board (PCB) connectors or connectors terminated with 22 to 28 AWG wire using crimp technology.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBERS

Crimp Terminals: 2759, 41572, 6459
Crimp Housings: 2695
PCB Connectors: 4455, 42625
Headers: 4030, 4094, 6373, 7478, 42225, 42226, 42227, 42228, 42152, 42153, 42375, 42376, 42377, 42624.
Other products conforming to this specification are noted on the individual drawings.

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Terminal Material: Brass or Phos. Bronze (for Max performance use phos bronze material.)
Housing: Nylon or Polyester
Pins: Brass or Phos. Bronze
For more information on dimensions, materials, and plating see the individual drawings.

2.3 SAFETY AGENCY APPROVALS

UL File Number …….. E29179
CSA ……...LR19980

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

None

4.0 RATINGS

4.1 VOLTAGE

250 Volts

4.2 CURRENT AND APPLICABLE WIRES

(Current is dependent on connector size, contact material, plating, ambient temperature, printed circuit board characteristics and related factors. Actual current rating is application dependent and should be evaluated for each application.)

AWG	Amps (Max)	Outside Insulation Diameter
22	4.00	See Drawings
24	3.75	See Drawings
26	3.50	See Drawings
28	3.00	See Drawings

4.3 TEMPERATURE (ambient + 30° temp rise)

Operating: 0°C to +75°C
Nonoperating: - 40°C to +105°C

5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA.	10 milliohms MAXIMUM [initial]
Contact Resistance of Wire Termination (Low Level)	Terminate the applicable wire to the terminal and measure wire using a voltage of 20 mV and a current of 100 mA.	2 milliohms MAXIMUM [initial]
Insulation Resistance	Unmate & unmount connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM
Dielectric Withstanding Voltage	Unmate connectors: apply a voltage of {two times the rated voltage plus 1000 volts} VAC for 1 minute between adjacent terminals and between terminals to ground.	No breakdown
Capacitance	Measure between adjacent terminals at 1 MHz.	2 picofarads MAXIMUM
Temperature Rise (via Current Cycling)	Mate connectors: measure the temperature rise at the rated current after: 1) 96 hours (steady state) 2) 240 hours (45 minutes ON and 15 minutes OFF per hour) 3) 96 hours (steady state)	Temperature rise: +30°C MAXIMUM

5.2 MECHANICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT		
Connector Mate and Unmate Forces	Per circuit when mated to an .025 Sq. pin. Mate and unmate connector (male to female) at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	1.95 N (0.438 lbf) MAXIMUM insertion force & 0.56 N (0.125 lbf) MINIMUM withdrawal force		
Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. (Forces will change with platings and materials.)	17.8 N (4.0 lbf) MINIMUM withdrawal force		
Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. (Forces will change with platings and materials.)	6.67 N (1.5 lbf) MAXIMUM insertion force		
Durability	Mate connectors up to 25 cycles at a maximum rate of 10 cycles per minute prior to Environmental Tests.	10 milliohms MAXIMUM (change from initial)		
Vibration (Random)	Mate connectors and vibrate per EIA 364-28, test condition VII.	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond		
Shock (Mechanical)	Mate connectors and shock at 50 g's with ½ sine wave (11 milliseconds) shocks in the ±X,±Y,±Z axes (18 shocks total).	10 milliohms MAXIMUM (change from initial]) & Discontinuity < 1 microsecond		
Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. (For maximum performance use Molex application tooling with stranded tinned copper wire)	22 awg = 44 N (10 lbf) 24 awg = 35 N (8 lbf) 26 awg = 26 N (6 lbf) 28 awg = 17 N (4 lbf) 30 awg = 13 N (3 lbf)		
Normal Force	Apply a perpendicular force.	2.94 N (300 grams) average		
Kinked PC Pin Insertion Force (into PCB Hole)	Apply an axial insertion force on pins at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	Number of kinked pins	Maximum Insertion force (per pin)	Average Insertion force (per pin)
		2	44.0 N (9.9 lbf)	15.1N (3.4 lbf)
		4	21.4 N (4.8 lbf)	9.8 N (2.2 lbf)
		6	18.2 N (4.1 lbf)	4.9 N (1.1 lbf)

5.3 ENVIRONMENTAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Shock (Thermal)	Mate connectors; expose to 5 cycles of: Temperature °C — Duration (Minutes) -40 +0/-3 — 30 +25 ±10 — 5 MAXIMUM +105 +3/-0 — 30 +25 ±10 — 5 MAXIMUM	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
Thermal Aging	Mate connectors; expose to: 96 hours at 105 ± 2°C	10 milliohms MAXIMUM (change from initial]) & Visual: No Damage
Humidity (Steady State)	Mate connectors: expose to a temperature of 40 ± 2°C with a relative humidity of 90-95% for 96 hours. Note: Remove surface moisture and air dry for 1 hour prior to measurements.	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage
Humidity (Cyclic)	Mate connectors: cycle per EIA-364-31: 24 cycles at temperature 25 ± 3°C at 80 ± 5% relative humidity and 65 ± 3°C at 50 ± 5% relative humidity; dwell time of 1.0 hour; ramp time of 0.5 hours. {Note: Remove surface moisture and air dry for 1 hour prior to measurements.}	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage
Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)

5.3 ENVIRONMENTAL REQUIREMENTS

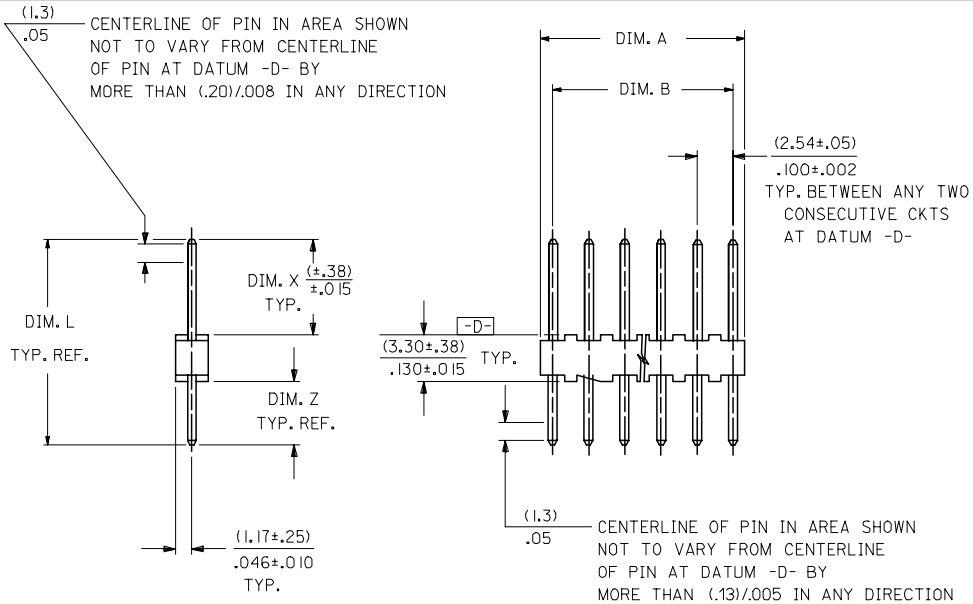
DESCRIPTION	TEST CONDITION	REQUIREMENT
Solder Resistance	Dip connector terminal tails in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 230 ± 5°C	Visual: No Damage to insulator material
Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
Corrosive Atmosphere: Flowing Mixed Gas (FMG)	Test per EIA-364-65, Class II, Exposure to gasses for 4 days, unmated.	10 milliohms MAXIMUM (change from initial) & Visual: No Damage

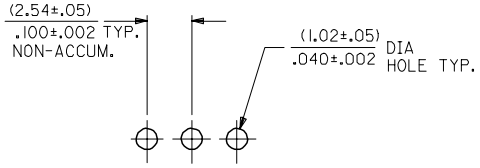
6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.

7.0 GAGES AND FIXTURES

8.0 OTHER





RECOMMENDED P.C. BOARD HOLE DIMENSIONS

CKTS. NO. OF	DIM. B	DIM. A
2	.100 ± .002 (2.54 ± .05)	.190 ± .008 (4.83 ± .20)
3	.200 ± .005 (5.08 ± .13)	.290 ± .008 (7.37 ± .20)
4	.300 ± .005 (7.62 ± .13)	.390 ± .008 (9.91 ± .20)
5	.400 ± .005 (10.16 ± .13)	.490 ± .008 (12.45 ± .20)
6	.500 ± .006 (12.70 ± .15)	.590 ± .009 (14.99 ± .23)
7	.600 ± .006 (15.24 ± .15)	.690 ± .009 (17.53 ± .23)
8	.700 ± .006 (17.78 ± .15)	.790 ± .009 (20.07 ± .23)
9	.800 ± .007 (20.32 ± .18)	.890 ± .010 (22.61 ± .25)
10	.900 ± .007 (22.86 ± .18)	.990 ± .010 (25.15 ± .25)
11	1.000 ± .007 (25.40 ± .18)	1.090 ± .010 (27.69 ± .25)
12	1.100 ± .008 (27.94 ± .20)	1.190 ± .011 (30.23 ± .28)
13	1.200 ± .008 (30.48 ± .20)	1.290 ± .011 (32.77 ± .28)
14	1.300 ± .008 (33.02 ± .20)	1.390 ± .011 (35.31 ± .28)
15	1.400 ± .008 (35.56 ± .20)	1.490 ± .011 (37.85 ± .28)
16	1.500 ± .008 (38.10 ± .20)	1.590 ± .011 (40.39 ± .28)
17	1.600 ± .009 (40.64 ± .23)	1.690 ± .012 (42.93 ± .30)
18	1.700 ± .009 (43.18 ± .23)	1.790 ± .012 (45.47 ± .30)
19	1.800 ± .009 (45.72 ± .23)	1.890 ± .012 (48.01 ± .30)
20	1.900 ± .009 (48.26 ± .23)	1.990 ± .012 (50.55 ± .30)
21	2.000 ± .010 (50.80 ± .25)	2.090 ± .013 (53.09 ± .33)
22	2.100 ± .010 (53.34 ± .25)	2.190 ± .013 (55.63 ± .33)
23	2.200 ± .010 (55.88 ± .25)	2.290 ± .013 (58.17 ± .33)
24	2.300 ± .010 (58.42 ± .25)	2.390 ± .013 (60.71 ± .33)
25	2.400 ± .011 (60.96 ± .28)	2.490 ± .014 (63.25 ± .36)
26	2.500 ± .011 (63.50 ± .28)	2.590 ± .014 (65.79 ± .36)
27	2.600 ± .011 (66.04 ± .28)	2.690 ± .014 (68.33 ± .36)
28	2.700 ± .011 (68.58 ± .28)	2.790 ± .014 (70.87 ± .36)

NOTES:

1. MATERIAL: NYLON, UL94V-0, COLOR: WHITE
2. FINISH: 102: 0.00508/.000200 MIN TIN OVER 0.00254/.000100 MIN COPPER
   501: 0.00051/.000020 MIN GOLD OVER 0.00076/.000030 MIN NICKEL
3. PARTS CONFORM TO PRODUCT SPECIFICATION PS-10-07.
4. BULK PACK PER PK-4030-001.
5. PINS MUST CONFORM TO SOLDERABILITY SPECIFICATION SMES-152.
6. PIN PUSH OUT FORCE: 2 LBS. MIN.
7. PARTS ARE STACKABLE END TO END AND SIDE TO SIDE ON (2.54)/.100 CENTERS.
8. SEE SDA-4030-002 FOR CUTOMER DEFINED OPTIONS.
9. THIS PART CONFORMS TO CLASS B REQUIREMENTS OF COSMETIC
   SPECIFICATION PS-45499-002.

REV	DESCRIPTION	
CH2	UPDATE NOTES	2007/10/11
	EC NO: UCP2008-0017	2007/10/11
	DRWN:ADERR	2007/10/12
	CH'KD:LSCHMIDT	
	APPR:FSMITH	

QUALITY SYMBOLS
▼=0
▽=0

GENERAL TOLERANCES (UNLESS SPECIFIED)

	mm	INCH
4 PLACES	± ---	± ---
3 PLACES	± ---	± ---
2 PLACES	± ---	± ---
1 PLACE	± ---	± ---
ANGULAR ±1/2°		

DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS

DIMENSION STYLE: MM/IN
SCALE: ---
DESIGN UNITS: INCH
THIRD ANGLE PROJECTION

DRAWN BY	SAMIEC	DATE 1988/06/10
CHECKED BY	PATEL	DATE 1988/06/10
APPROVED BY	LENZ	DATE 1988/06/10

TITLE: KK HEADER (2.54)/.100 CENTERS STD CATALOG PRODUCTS

molex MOLEX INCORPORATED

MATERIAL NO.: SEE CHART
DOCUMENT NO.: SDA-4030
SHEET NO.: 1 OF 2

SIZE C

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SH.	REV.
2	CH2
1	CH2

ENG. NO.	PIN NO.	DIM. L	DIM. X	DIM. Z	PACKAGE PER	EDP NO. IN COL NO
A-4030 -NA(102)	2766 -1(102)	.560 (14.22)	.295 (7.49)	.135 (3.43)	PK-4030-001 BULK	1
A-4030 -NA(501)	2766 -1(501)	.560 (14.22)	.295 (7.49)	.135 (3.43)	PK-4030-001 BULK	2
A- -	-	( )	( )	( )		
A- -	-	( )	( )	( )		
A- -	-	( )	( )	( )		
A- -	-	( )	( )	( )		

COLUMN NO. 1			COLUMN NO. 2		
EDP NO.	ENG. NO.	NO OF CKTS	EDP NO.	ENG. NO.	NO OF CKTS
22-03-2021	A-4030-02A(102)	2	22-10-2021	A-4030-02A(501)	2
22-03-2031	A-4030-03A(102)	3	22-10-2031	A-4030-03A(501)	3
22-03-2041	A-4030-04A(102)	4	22-10-2041	A-4030-04A(501)	4
22-03-2051	A-4030-05A(102)	5	22-10-2051	A-4030-05A(501)	5
22-03-2061	A-4030-06A(102)	6	22-10-2061	A-4030-06A(501)	6
22-03-2071	A-4030-07A(102)	7	22-10-2071	A-4030-07A(501)	7
22-03-2081	A-4030-08A(102)	8	22-10-2081	A-4030-08A(501)	8
22-03-2091	A-4030-09A(102)	9	22-10-2091	A-4030-09A(501)	9
22-03-2101	A-4030-10A(102)	10	22-10-2101	A-4030-10A(501)	10
22-03-2111	A-4030-11A(102)	11	22-10-2111	A-4030-11A(501)	11
22-03-2121	A-4030-12A(102)	12	22-10-2121	A-4030-12A(501)	12
22-03-2131	A-4030-13A(102)	13	22-10-2131	A-4030-13A(501)	13
22-03-2141	A-4030-14A(102)	14	22-10-2141	A-4030-14A(501)	14
22-03-2151	A-4030-15A(102)	15	22-10-2151	A-4030-15A(501)	15
22-03-2161	A-4030-16A(102)	16	22-10-2161	A-4030-16A(501)	16
22-03-2171	A-4030-17A(102)	17	22-10-2171	A-4030-17A(501)	17
22-03-2181	A-4030-18A(102)	18	22-10-2181	A-4030-18A(501)	18
22-03-2191	A-4030-19A(102)	19	22-10-2191	A-4030-19A(501)	19
22-03-2201	A-4030-20A(102)	20	22-10-2201	A-4030-20A(501)	20
22-03-2211	A-4030-21A(102)	21	22-10-2211	A-4030-21A(501)	21
22-03-2221	A-4030-22A(102)	22	22-10-2221	A-4030-22A(501)	22
22-03-2231	A-4030-23A(102)	23	22-10-2231	A-4030-23A(501)	23
22-03-2241	A-4030-24A(102)	24	22-10-2241	A-4030-24A(501)	24
22-03-2251	A-4030-25A(102)	25	22-10-2251	A-4030-25A(501)	25
22-03-2261	A-4030-26A(102)	26	22-10-2261	A-4030-26A(501)	26
22-03-2271	A-4030-27A(102)	27	22-10-2271	A-4030-27A(501)	27
22-03-2281	A-4030-28A(102)	28	22-10-2281	A-4030-28A(501)	28

UPDATE TITLE BLOCK
EC NO: UCP2008-0017 2007/10/11
DRWN:ADERR 2007/10/11
CHKD:LSCHMIDT 2007/10/12
APPR:FSMITH
DESCRIPTION
REV
CH2

QUALITY SYMBOLS
▼=0
▽=0

GENERAL TOLERANCES (UNLESS SPECIFIED)

	mm	INCH
4 PLACES	± ---	± ---
3 PLACES	± ---	± ---
2 PLACES	± ---	± ---
1 PLACE	± ---	± ---

ANGULAR ±1/2°

DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS

DIMENSION STYLE: IN/MM
SCALE: ---
DESIGN UNITS: INCH
THIRD ANGLE PROJECTION

DRAWN BY: SAMIEC DATE: 1993/07/15
CHECKED BY: PATEL DATE: 1993/07/15
APPROVED BY: LENZ DATE: 1993/07/15

TITLE: KK HEADER (2.54)/.100 CENTERS STD CATALOG PRODUCTS

molex MOLEX INCORPORATED

MATERIAL NO.: SEE CHART
DOCUMENT NO.: SDA-4030
SHEET NO.: 2 OF 2
SIZE: C

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