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ELECTRONICS

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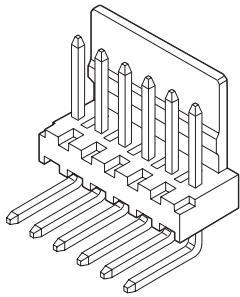
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Jameco Part Number 2033332

# 2.54mm (.100") Pitch KK<sup>®</sup> Header

7395

Right Angle, Square Pin  
Friction Lock



### Features and Benefits

- Sizes 2 to 28 circuits
- Edge mount only

### Reference Information

Mates With: 2695, 6471 and 7720S  
Designed In: Inches

### Physical

Housing: Natural nylon, UL 94V-0  
Contact: Brass, 0.64mm (.025") square  
Plating: Tin or Gold  
Operating Temperature: 0 to +75°C

2.54mm (.100") Pitch PCB and Wire Connectors

Circuits	Order No.		Lead-free
	Tin	Gold	
2	<a href="#">22-05-7028</a>	<a href="#">22-12-4022</a>	Yes
3	<a href="#">22-05-7038</a>	<a href="#">22-12-4032</a>	
4	<a href="#">22-05-7048</a>	<a href="#">22-12-4042</a>	
5	<a href="#">22-05-7058</a>	<a href="#">22-12-4052</a>	
6	<a href="#">22-05-7068</a>	<a href="#">22-12-4062</a>	
7	<a href="#">22-05-7078</a>	<a href="#">22-12-4072</a>	
8	<a href="#">22-05-7088</a>	<a href="#">22-12-4082</a>	
9	<a href="#">22-05-7098</a>	<a href="#">22-12-4092</a>	
10	<a href="#">22-05-7108</a>	<a href="#">22-12-4102</a>	

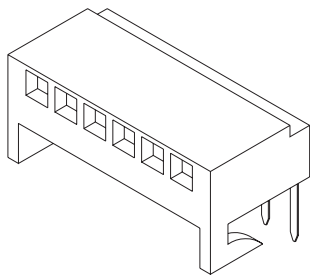
Circuits	Order No.		Lead-free
	Tin	Gold	
11	<a href="#">22-05-7118</a>	<a href="#">22-12-4112</a>	Yes
12	<a href="#">22-05-7128</a>	<a href="#">22-12-4122</a>	
13	<a href="#">22-05-7138</a>	<a href="#">22-12-4132</a>	
14	<a href="#">22-05-7148</a>	<a href="#">22-12-4142</a>	
15	<a href="#">22-05-7158</a>	<a href="#">22-12-4152</a>	
16	<a href="#">22-05-7168</a>	<a href="#">22-12-4162</a>	
17	<a href="#">22-05-7178</a>	<a href="#">22-12-4172</a>	
18	<a href="#">22-05-7188</a>	<a href="#">22-12-4182</a>	
19	<a href="#">22-05-7198</a>	<a href="#">22-12-4192</a>	

Circuits	Order No.		Lead-free
	Tin	Gold	
20	<a href="#">22-05-7208</a>	<a href="#">22-12-4202</a>	Yes
21	<a href="#">22-05-7218</a>	<a href="#">22-12-4212</a>	
22	<a href="#">22-05-7228</a>	<a href="#">22-12-4222</a>	
23	<a href="#">22-05-7238</a>	<a href="#">22-12-4232</a>	
24	<a href="#">22-05-7248</a>	<a href="#">22-12-4242</a>	
25	<a href="#">22-05-7258</a>	<a href="#">22-12-4252</a>	
26	<a href="#">22-05-7268</a>	<a href="#">22-12-4262</a>	
27	<a href="#">22-05-7278</a>	<a href="#">22-12-4272</a>	
28	<a href="#">22-05-7288</a>	<a href="#">22-12-4282</a>	

# 2.54mm (.100") Pitch KK<sup>®</sup> PC Board Connector

4455

Right Angle



### Features and Benefits

- Sizes 2 to 25 circuits
- End-to-end stackable
- See 44812 Series for high temperature version
- Thicker board hooks available

### Reference Information

Product Specification: PS-10-07  
Packaging: Tray  
UL File No.: E29179  
CSA File No.: LR19980  
Mates With: 4030, 4094, 4380, 42152, 42153, 42375,  
42376 and 42377 headers and .025" square pins  
Designed In: Inches

### Electrical

Voltage: 250V  
Current: 2.5A max.\*  
Contact Resistance: 20 milliohms max.  
Dielectric Withstanding Voltage: 1500V AC  
Insulation Resistance: 500K Megohms min.

### Mechanical

Mating Force: 199g max.  
Unmating Force: 57g min.

### Physical

Housing: Nylon, UL 94V-0  
Contact: Brass (contact Molex for Phosphor Bronze)  
Plating: See Table  
Operating Temperature: 0 to +75°C

Circuits	Order No.			Lead-free
	Tin	Gold	Select Gold	
2	<a href="#">22-15-2026</a>	<a href="#">22-16-2021</a>	<a href="#">22-16-2020</a>	Yes
3	<a href="#">22-15-2036</a>	<a href="#">22-16-2031</a>	<a href="#">22-16-2030</a>	
4	<a href="#">22-15-2046</a>	<a href="#">22-16-2041</a>	<a href="#">22-16-2040</a>	
5	<a href="#">22-15-2056</a>	<a href="#">22-16-2051</a>	<a href="#">22-16-2050</a>	
6	<a href="#">22-15-2066</a>	<a href="#">22-16-2061</a>	<a href="#">22-16-2060</a>	
7	<a href="#">22-15-2076</a>	<a href="#">22-16-2071</a>	<a href="#">22-16-2070</a>	
8	<a href="#">22-15-2086</a>	<a href="#">22-16-2081</a>	<a href="#">22-16-2080</a>	
9	<a href="#">22-15-2096</a>	<a href="#">22-16-2091</a>	<a href="#">22-16-2090</a>	
10	<a href="#">22-15-2106</a>	<a href="#">22-16-2101</a>	<a href="#">22-16-2100</a>	
11	<a href="#">22-15-2116</a>	<a href="#">22-16-2111</a>	<a href="#">22-16-2110</a>	
12	<a href="#">22-15-2126</a>	<a href="#">22-16-2121</a>	<a href="#">22-16-2120</a>	
13	<a href="#">22-15-2136</a>	<a href="#">22-16-2131</a>	<a href="#">22-16-2130</a>	

Circuits	Order No.			Lead-free
	Tin	Gold	Select Gold	
14	<a href="#">22-15-2146</a>	<a href="#">22-16-2141</a>	<a href="#">22-16-2140</a>	Yes
15	<a href="#">22-15-2156</a>	<a href="#">22-16-2151</a>	<a href="#">22-16-2150</a>	
16	<a href="#">22-15-2166</a>	<a href="#">22-16-2161</a>	<a href="#">22-16-2160</a>	
17	<a href="#">22-15-2176</a>	<a href="#">22-16-2171</a>	<a href="#">22-16-2170</a>	
18	<a href="#">22-15-2186</a>	<a href="#">22-16-2181</a>	<a href="#">22-16-2180</a>	
19	<a href="#">22-15-2196</a>	<a href="#">22-16-2191</a>	<a href="#">22-16-2190</a>	
20	<a href="#">22-15-2206</a>	<a href="#">22-16-2201</a>	<a href="#">22-16-2200</a>	
21	<a href="#">22-15-2216</a>	<a href="#">22-16-2211</a>	<a href="#">22-16-2210</a>	
22	<a href="#">22-15-2226</a>	<a href="#">22-16-2221</a>	<a href="#">22-16-2220</a>	
23	<a href="#">22-15-2236</a>	<a href="#">22-16-2231</a>	<a href="#">22-16-2230</a>	
24	<a href="#">22-15-2246</a>	<a href="#">22-16-2241</a>	<a href="#">22-16-2240</a>	
25	<a href="#">22-15-2256</a>	<a href="#">22-16-2251</a>	<a href="#">22-16-2250</a>	

\* Current rating is dependent upon PCB traces, Copper weight, solder, etc. (contact Molex for more information)

	Order No.
Polarizing Key 4161-1	15-04-9209



# PRODUCT SPECIFICATION

## 1.0 SCOPE

This Product Specification covers the following

- A. 2.50 mm centerline (pitch) 0.64 mm square pin headers
- B. 2.54 mm centerline (pitch) 0.64 mm 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: 4809, 2759, 41572, 6459, 40445, 8088

Crimp Housings: 2695, 5051,6471

PCB Connectors: 7534,4455

Headers: 3022,3202,3094,3494,6410,7930,7395,90578

Wire to board connector : 7690

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

Operating: - 40°C to +75°C (Inclusive of 30°C temperature rise)

Storage: - 40°C to +85°C

REVISION: <b>C</b>	ECR/ECN INFORMATION: EC No: <b>E2007-0164</b> DATE: <b>2006-08-23</b>	TITLE: <b>PRODUCT SPECIFICATION 2.50mm &amp; 2.54mm CENTER KK CONNECTORS</b>	SHEET No. <b>1 of 5</b>
DOCUMENT NUMBER: <b>PS-99020-0088</b>	CREATED / REVISED BY: <b>D.Waszkiewicz</b>	CHECKED BY: <b>D.Moriarty</b>	APPROVED BY: <b>J.Dennehy</b>



# PRODUCT SPECIFICATION

## 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 Megaohms 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

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# PRODUCT SPECIFICATION

## 5.2 MECHANICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Connector Mate and Unmate Forces	Per circuit when mated to a 0.635mm Sq. pin. Mate and unmate connector (male to female) at a rate of 25 ± 6 mm per minute.	1.95 N MAXIMUM insertion force & 0.56 N MINIMUM withdrawal force
Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm per minute. (Forces will change with platings and materials.)	17.8 N MINIMUM withdrawal force
Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm. (Forces will change with platings and materials.)	6.67 N 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. (For maximum performance use Molex application tooling with stranded tinned copper wire)	22 awg = 44 N 24 awg = 35 N 26 awg = 26 N 28 awg = 17 N 30 awg = 13 N
Normal Force	Apply a perpendicular force.	2.94 N (300 grams) average

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# PRODUCT SPECIFICATION

## 5.3 ENVIRONMENTAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT										
Shock (Thermal)	Mate connectors; expose to 5 cycles of: <table border="1"> <thead> <tr> <th>Temperature °C</th> <th>Duration (Minutes)</th> </tr> </thead> <tbody> <tr> <td>-40 +0/-3</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> <tr> <td>+105 +3/-0</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> </tbody> </table>	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
Temperature °C	Duration (Minutes)											
-40 +0/-3	30											
+25 ±10	5 MAXIMUM											
+105 +3/-0	30											
+25 ±10	5 MAXIMUM											
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 Megaohms 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 Megaohms MINIMUM & Visual: No Damage										
Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)										

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# PRODUCT SPECIFICATION

## 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
Salt Spray	Mate connectors: Duration: 48 hours exposure; Atmosphere: salt spray from a 5% solution; Temperature: 35 +1/-2°C	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	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.

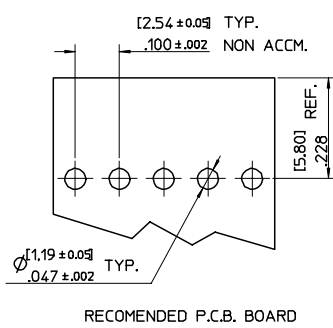
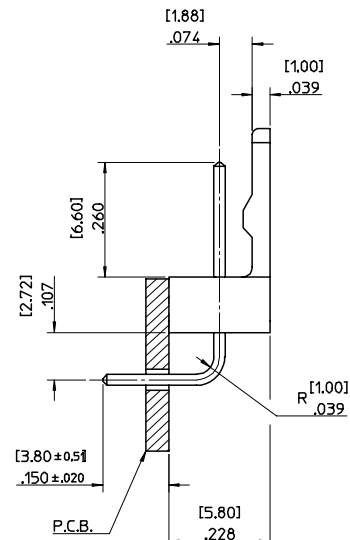
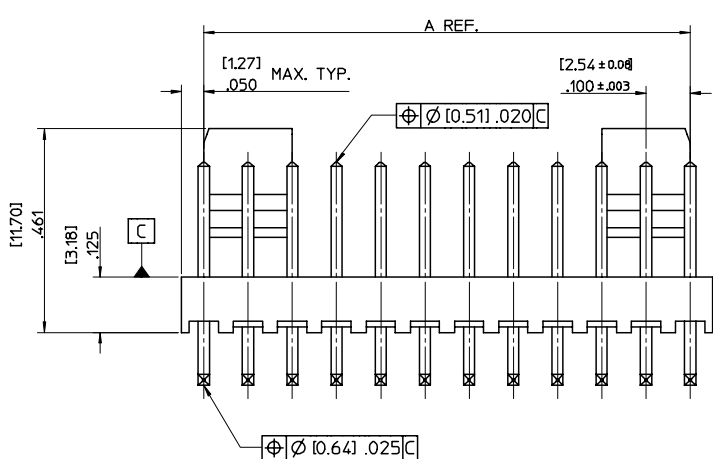
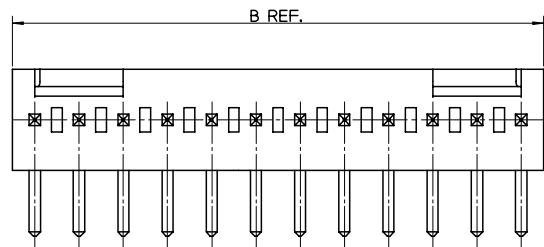
## 7.0 GAGES AND FIXTURES

## 8.0 CRIMP SPECIFICATIONS

WIRE GAUGE	CONDUCTOR CRIMP HEIGHT	PULL OUT FORCE	INSULATION DIA. (MAX).	WIRE STRIP LENGTH
22	.031-.033(0.79-0.84MM)	10#(4.54KG)	.062(1.57MM)	.100/.125 (2.54-3.17MM)
24	.029-.031(0.74-0.79MM)	8#(3.63KG)	.062(1.57MM)	.100/.125 (2.54-3.17MM)
26	.027-.029(0.68-0.74MM)	6#(2.72KG)	.062(1.57MM)	.100/.125 (2.54-3.17MM)
28	.026-.028(0.66-0.71MM)	4#(1.81KG)	.062(1.57MM)	.100/.125 (2.54-3.17MM)
30	.026-.027(0.66-0.63MM)	3#(1.36KG)	.062(1.57MM)	.100/.125 (2.54-3.17MM)

## 9.0 OTHER

REVISION: <b>C</b>	ECR/ECN INFORMATION: EC No: <b>E2007-0164</b> DATE: <b>2006-08-23</b>	TITLE: <b>PRODUCT SPECIFICATION 2.50mm &amp; 2.54mm CENTER KK CONNECTORS</b>	SHEET No. <b>5 of 5</b>
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AE-7395-N B

NO. OF CCTS.

WAFER ASSY. OPTION

PLATING TYPE  
BLANK: TIN  
G: GOLD

RECOMMENDED P.C.B. BOARD

PIN FINISH: [0.005]/0.0002 MIN. TIN OVER [0.003]/0.0001 MIN. COPPER	PIN FINISH: [0.0005]/0.00002 MIN. GOLD OVER [0.0008]/0.00003 MIN. NICKEL
--	---

NO. OF CCTS	DIM. A	DIM. B	PIN FINISH: [0.005]/0.0002 MIN. TIN OVER [0.003]/0.0001 MIN. COPPER		PIN FINISH: [0.0005]/0.00002 MIN. GOLD OVER [0.0008]/0.00003 MIN. NICKEL	
			ENG. NO.	PART NO.	ENG. NO.	PART NO.
2	2.54/100	5.08/200	AE-7395-2B	22-05-7028	AE-7395-2BG	22-12-4022
3	5.08/200	7.62/300	AE-7395-3B	22-05-7038	AE-7395-3BG	22-12-4032
4	7.62/300	10.16/400	AE-7395-4B	22-05-7048	AE-7395-4BG	22-12-4042
5	10.16/400	12.70/500	AE-7395-5B	22-05-7058	AE-7395-5BG	22-12-4052
6	12.70/500	15.24/600	AE-7395-6B	22-05-7068	AE-7395-6BG	22-12-4062
7	15.24/600	17.78/700	AE-7395-7B	22-05-7078	AE-7395-7BG	22-12-4072
8	17.78/700	20.32/800	AE-7395-8B	22-05-7088	AE-7395-8BG	22-12-4082
9	20.32/800	22.86/900	AE-7395-9B	22-05-7098	AE-7395-9BG	22-12-4092
10	22.86/900	25.40/1000	AE-7395-10B	22-05-7108	AE-7395-10BG	22-12-4102
11	25.40/1000	27.94/1100	AE-7395-11B	22-05-7118	AE-7395-11BG	22-12-4112
12	27.94/1100	30.48/1200	AE-7395-12B	22-05-7128	AE-7395-12BG	22-12-4122
13	30.48/1200	33.02/1300	AE-7395-13B	22-05-7138	AE-7395-13BG	22-12-4132
14	33.02/1300	35.56/1400	AE-7395-14B	22-05-7148	AE-7395-14BG	22-12-4142
15	35.56/1400	38.10/1500	AE-7395-15B	22-05-7158	AE-7395-15BG	22-12-4152
16	38.10/1500	40.64/1600	AE-7395-16B	22-05-7168	AE-7395-16BG	22-12-4162
17	40.64/1600	43.18/1700	AE-7395-17B	22-05-7178	AE-7395-17BG	22-12-4172
18	43.18/1700	45.72/1800	AE-7395-18B	22-05-7188	AE-7395-18BG	22-12-4182
19	45.72/1800	48.26/1900	AE-7395-19B	22-05-7198	AE-7395-19BG	22-12-4192
20	48.26/1900	50.80/2000	AE-7395-20B	22-05-7208	AE-7395-20BG	22-12-4202

- NOTES:-
- MATERIALS:  
WAFER: NYLON 6/6, UL 94, V-0, NATURAL COLOUR  
PIN: [0.64]/0.25 SQUARE HARD DRAWN BRASS  
FINISH: SEE CHART
  - PIN SOLDERABILITY PER MOLEX SPECIFICATION NUMBER 152
  - PIN PUSH OUT FORCE [0.907 KG]/2.0 LBS MIN.
  - PARTS TO BE FLAT WITHIN [0.13]/0.005 IN/IN
  - WAFERS STACKABLE END TO END

ORIGINAL RELEASE E.C. NO. E2005-1071 DRAWN: JDENNEHY 2005/06/20 CHKD: GMCWEENEY 2005/06/20 APPR: JDENNEHY 2005/07/07	QUALITY SYMBOLS ▽=0 ▽=0	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE MM ONLY		SCALE 5:1	DESIGN UNITS METRIC	THIRD ANGLE PROJECTION	
		4 PLACES ± --- ± --- 3 PLACES ± --- ± .010 2 PLACES ± 0.25 ± .015 1 PLACE ± 0.38 ± --- ANGULAR ± 2 °	mm INCH	DRAWN BY JDENNEHY	DATE 2005/05/13	CHECKED BY GMCWEENEY	DATE 2005/05/27	WAFER, R/A FRICTION LOCK (2.54)/.100 CENTERS (0.64)/.025 SQ. PIN	
DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		SEE CHART		MOLEX INCORPORATED		DOCUMENT NO. SD-7395-001		SHEET NO. 1 OF 1	