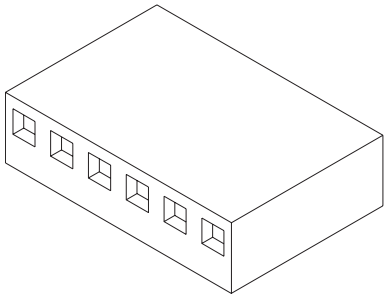
3.96mm (.156") Pitch KK® Crimp Terminal Housing

41695



Features and Benefits
- Sizes 2 to 20 circuits
- Locking ramp feature available
- Polarizing rib feature available for side-to-side polarization
- Offset pin entry holes provide 180˚ polarization
- Accepts entire line of .156" contacts
- Optional voids available

Reference Information
Product Specification: PS-08-50
Packaging: Bag
UL File No.: E29179
CSA File No.: LR19980
Mates With: Molex KK 3.96mm (.156") pitch headers or 1.14mm (.045") pins
Use With: 2478, 2578, 6838 and 7258 terminals
Designed In: Inches

Electrical
Voltage: 250V AC max.
Current: Phosphor Bronze—7.0A max.
Brass—5.0A max.
Dielectric Withstanding Voltage: 1500V AC
Insulation Resistance: 500K Megohms min.

Mechanical
Contact Insertion Force: 1.8kg (4 lb) max.
Contact Retention to Housing: 3.6kg (8 lb) min.
Mating Force: Square pin—2.25 lb max.
Round pin—1.60 lb max.
Unmating Force: Square pin—0.84 lb min.
Round pin—0.60 lb min.
Normal Force: 0.75kg (1.65 lb)
Durability: 25 cycles max.

Physical
Housing: Polyester, UL 94V-0
Operating Temperature: 0 to +75˚C

Circuits	Order No.		
	With Locking Ramp and Polarizing Ribs	Without Locking Ramp or Polarizing Ribs	With Locking Ramp Only
2	09-50-8023	09-50-8020	09-50-8021
3	09-50-8033	09-50-8030	09-50-8031
4	09-50-8043	09-50-8040	09-50-8041
5	09-50-8053	09-50-8050	09-50-8051
6	09-50-8063	09-50-8060	09-50-8061
7	09-50-8073	09-50-8070	09-50-8071
8	09-50-8083	09-50-8080	09-50-8081
9	09-50-8093	09-50-8090	09-50-8091
10	09-50-8103	09-50-8100	09-50-8101
11	09-50-8113	09-50-8110	09-50-8111

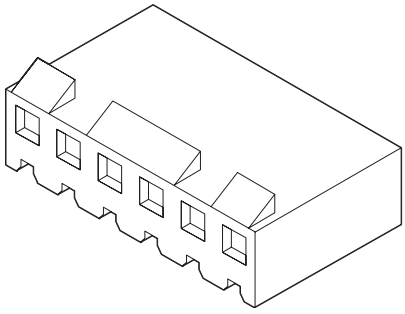
Circuits	Order No.		
	With Locking Ramp and Polarizing Ribs	Without Locking Ramp or Polarizing Ribs	With Locking Ramp Only
12	09-50-8123	09-50-8120	09-50-8121
13	09-50-8133	09-50-8130	09-50-8131
14	09-50-8143	09-50-8140	09-50-8141
15	09-50-8153	09-50-8150	09-50-8151
16	09-50-8163	09-50-8160	09-50-8161
17	09-50-8173	09-50-8170	09-50-8171
18	09-50-8183	09-50-8180	09-50-8181
19	09-50-8193	09-50-8190	09-50-8191
20	09-50-8203	09-50-8200	09-50-8201

Note: When mating polarizing rib version with breakaway friction lock header or polarizing wall series, the end friction lock or polarizing wall of header must be removed.

	Order No.
Polarizing Key	15-04-0297

3.96mm (.156") Pitch KK® Crimp Terminal Housing

2139



Features and Benefits
- Sizes 2 to 24 circuits
- Locking ramp available
- Molded void options available
- Standard ramp options available
- Polarizing pegs and keys available
- End-to-end stackable

Reference Information
Product Specification: PS-08-50
Packaging: Bag
UL File No.: E29179
CSA File No.: LR19980
Mates With: Molex KK 3.96mm (.156") pitch headers or 1.14mm (.045") pins
Use With: 2478 and 2578
Designed In: Inches

Electrical
Voltage: 250V AC max.
Current: Phosphor Bronze—7.0A max.
Brass—5.0A max.
Dielectric Withstanding Voltage: 1500V AC
Insulation Resistance: 50K Megohms min.

Mechanical
Contact Insertion Force: 1.8kg (4 lb) max.
Contact Retention to Housing: 3.6kg (8 lb) min.
Mating Force: Square pin—2.25 lb max.
Round pin—1.60 lb max.
Unmating Force: Square pin—0.84 lb min.
Round pin—0.60 lb min.
Normal Force: 0.75kg (1.65 lb)

Physical
Housing: Nylon, UL 94V-2 (see 41695 for UL 94V-0 polyester)
Operating Temperature: 0 to +75˚C

Circuits	Order No.	
	Without Locking Ramp	With Locking Ramp
2	09-50-7021	09-50-3021
3	09-50-7031	09-50-3031
4	09-50-7041	09-50-3041
5	09-50-7051	09-50-3051
6	09-50-7061	09-50-3061
7	09-50-7071	09-50-3071
8	09-50-7081	09-50-3081
9	09-50-7091	09-50-3091

Circuits	Order No.	
	Without Locking Ramp	With Locking Ramp
10	09-50-7101	09-50-3101
11	09-50-7111	09-50-3111
12	09-50-7121	09-50-3121
13	09-50-7131	09-50-3131
14	09-50-7141	09-50-3141
15	09-50-7151	09-50-3151
16	09-50-7161	09-50-3161
17	09-50-7171	09-50-3171

Circuits	Order No.	
	Without Locking Ramp	With Locking Ramp
18	09-50-7181	09-50-3181
19	09-50-7191	09-50-3191
20	09-50-7201	09-50-3201
21	09-50-7211	09-50-3211
22	09-50-7221	09-50-3221
23	09-50-7231	09-50-3231
24	09-50-7241	09-50-3241

Note: Use 41695 for .100" and over insulation diameter wire

	Order No.
Polarizing Key	15-04-0219
Polarizing Peg	15-04-0220

1.0 SCOPE

This Product Specification covers the 3.96 mm (.156 inch) centerline (pitch) 1.14mm (.045) square pin headers when mated with either printed circuit board (PCB) connectors or connectors terminated with 18 to 26 AWG wire using crimp technology.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBERS

Crimp Terminals: 2478,2578,2878,2477,
Crimp Housings: 2139, 41695
PCB Connectors: 2145, 41815
Headers: 41771, 41772, 41791, 41792, 42471, 42472, 42491, 42492, 41661, 41662, 41671, 61672, 41681, 41682
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

3.1 PS-45499-002 COSMETIC SPECIFICATION

4.0 RATINGS

4.1 VOLTAGE

250 Volts

4.2 CURRENT

(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.)

a. For Crimp Terminals- and Applicable Wires

Wire Awg	Amps (Max) With Brass	Amps (Max) With Phos Bronze	Wire Insulation Dia
18	5.00	7.00	See terminal drawings
20	4.75	6.25	See terminal drawings
22	4.50	5.50	See terminal drawings
24	4.25	5.00	See terminal drawings
26	4.00	4.50	See terminal drawings

4.2 CURRENT (cont)

b. For Printed Circuit Board Connectors

Connector Style	Amps (Max) With Brass	Amps (Max) With Phos Bronze
Top Entry	4.50	5.00
Right Angle	4.50	5.00
Bottom Entry	4.00	4.50

4.3 TEMPERATURE (ambient + 30^{0}C temp rise)

	Brass	Phos Bronze
Operating Temperature	0^{0}C to +50^{0}C	0^{0}C to +75^{0}C
Non Operating Temperature	-40^{0}C to +105^{0}C	-40^{0}C to +105^{0}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.	1.2 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℃ MAXIMUM

5.2 MECHANICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Connector Mate and Unmate Forces	Per circuit when mated to a .045 Sq. pin. Mate and unmate connector (male to female) at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	Without Friction Lock 9.4 N (2.12 lbf) MAXIMUM insertion force & 1.8 N (0.40 lbf) MINIMUM withdrawal force
		With Friction Lock 10.7 N (2.40 lbf) MAXIMUM insertion force & 4.0 N (0.90 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.)	17.8 N (4.0 lbf) MAXIMUM insertion 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.)	35.6 N (8.0 lbf) MINIMUM withdrawal 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)	18 awg = 89 N (20 lbf) 20 awg = 66 N (15 lbf) 22 awg = 53 N (12 lbf) 24 awg = 35 N (8 lbf) 26 awg = 22 N (5 lbf)
Normal Force	Apply a perpendicular force.	7.34 N (748 grams) average

5.3 ENVIRONMENTAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Shock (Thermal)	Mate connectors; expose to 5 cycles of: Temperature ℃ — 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℃	10 milliohms MAXIMUM (change from initial]) & Visual: No Damage
Humidity (Steady State)	Mate connectors: expose to a temperature of 40 ± 2℃ 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℃ at 80 ± 5% relative humidity and 65 ± 3℃ 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

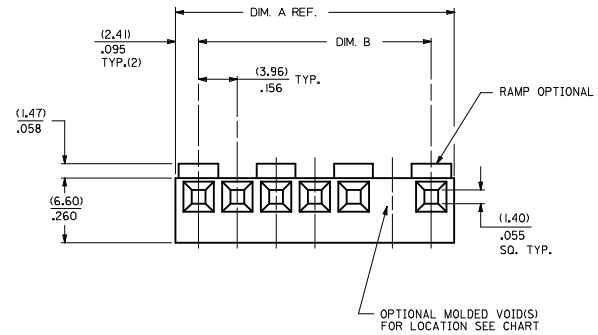
DESCRIPTION	TEST CONDITION	REQUIREMENT
Solder Resistance	Dip connector terminal tails in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 230 ± 5℃	Visual: No Damage to insulator material
Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3℃	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
Corrosive Atmosphere: Flowing Mixed Gas (FMG)	Mate connectors: Test per EIA-364-65, method 2A	10 milliohms MAXIMUM (change from initial) & Visual: No Damage

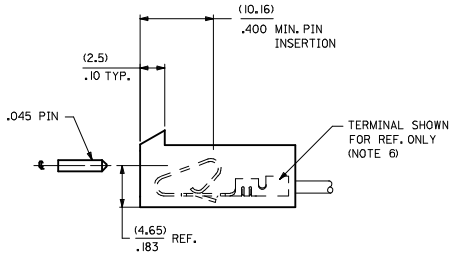
6.0 PACKAGING

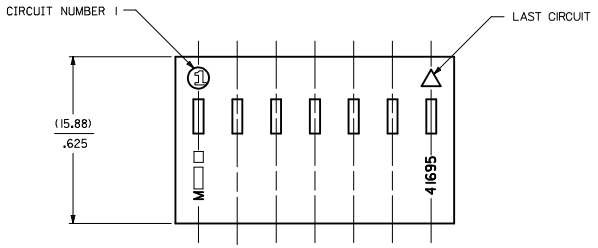
Parts shall be packaged to protect against damage during handling, transit and storage.

7.0 GAGES AND FIXTURES

8.0 OTHER







NO. OF CKTS	DIM. A	DIM. B
1	NOT AVAILABLE	
2	(8.79) .346	(3.96±.05) .156±.002
3	(12.75) .502	(7.92±.08) .312±.003
4	(16.71) .658	(11.89±.08) .468±.003
5	(20.67) .814	(15.85±.08) .624±.003
6	(24.64) .970	(19.81±.10) .780±.004
7	(28.60) 1.126	(23.77±.10) .936±.004
8	(32.56) 1.282	(27.74±.10) 1.092±.004
9	(36.53) 1.438	(31.70±.10) 1.248±.004
10	(40.49) 1.594	(35.66±.15) 1.404±.006
11	(44.45) 1.750	(39.62±.15) 1.560±.006
12	(48.41) 1.906	(43.59±.15) 1.716±.006
13	(52.37) 2.062	(47.55±.15) 1.872±.006
14	(56.34) 2.218	(51.51±.18) 2.028±.007
15	(60.30) 2.374	(55.47±.18) 2.184±.007
16	(64.26) 2.530	(59.44±.20) 2.340±.008
17	(68.22) 2.686	(63.40±.20) 2.496±.008
18	(72.19) 2.842	(67.36±.23) 2.652±.009
19	(76.15) 2.998	(71.32±.23) 2.808±.009
20	(80.11) 3.154	(75.28±.23) 2.964±.009

41695-✳-✳N-##

MATERIAL CODE
N=MOLDED NATURAL
B=BLACK
G=GLOW WIRE

OPTION CODE

CODE	RAMP	POLARIZE	PACKAGING	RIB	
A	NO	NO	BULK PER PK-41695-001	NO	
B	YES	NO	BULK PER PK-41695-002	NO	
D	YES	YES	BULK PER PK-41695-003	NO	
E	YES	NO	BULK PER PK-41695-002	YES	
G	END RAMP ONLY	YES	BULK PER PK-41695-003	NO	

VOID CODE
BLANK=NO VOIDS
NO.=NO. CORRESPONDS TO CKT. NO. VOIDED
MULT. VOIDS=START WITH 51

NO. OF CKTS.

NOTES:
1. MATERIAL: N - GLASS FILLED POLYESTER, UL94V-0, MOLDED NATURAL
   B - GLASS FILLED POLYESTER, UL94V-0, MOLDED BLACK
   G - UL94V-0 PA6 NYLON , IEC 60335-1, 4th EDITION GLOW WIRE CAPABLE,
   COLOR: BLACK
2. FINISH: SEE TERMINAL DRAWINGS
3. PRODUCT SPECIFICATION: PS-08-50 AND PS-40-02
4. PACKAGING INFORMATION: SEE LEGEND
5. MATES WITH (3.96)/1.56 CENTER HEADERS AND (1.14)/.045 SQUARE
   OR ROUND PINS
6. HOUSING ACCEPTS STANDARD TERMINAL NOS.:
   2478 (18-24 AWG) WITH (2.79)/.110 MAX. INSULATION DIA.
   2578 (22-26 AWG) WITH (1.65)/.065 MAX. INSULATION DIA.
   OR TRIFURCON TERMINAL NOS.:
   6438 (18-22 AWG) WITH (2.79)/.110 MAX. INSULATION DIA.
   6838 (18-24 AWG) WITH (2.79)/.110 MAX. INSULATION DIA.
   7258 (22-26 AWG) WITH (1.65)/.065 MAX. INSULATION DIA.
7. BOW (.006 MM/MM) / .006 IN/IN.
8. (0.13)/.005 MAX. FLASH ALLOWED ALONG DIMENSION B AND
   IN LOCKING WINDOW.
9. THIS PART CONFORMS TO CLASS B REQUIREMENTS OF COSMETIC
   SPECIFICATION PS-45499-002.

REV	DESCRIPTION	
G4	ADD PART NUMBERS	2008/10/30
	EC NO: UCP2009-1002	2008/10/30
	DRWN:MKIPPER	2008/10/30
	CHKD:SSOUSEK	
	APPR:FSMITH	

QUALITY SYMBOLS
▼=0
▽=0

GENERAL TOLERANCES (UNLESS SPECIFIED)

	mm	INCH
4 PLACES	±---	±---
3 PLACES	±---	±.010
2 PLACES	±0.25	±.014
1 PLACE	±0.36	±---
ANGULAR ±1/2°		

DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS

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

DRAWN BY	SKOWRONSKI	DATE 04/05/86
CHECKED BY	PATEL	DATE 04/05/86
APPROVED BY	LENZ	DATE 04/05/86
MATERIAL NO.	SEE CHART	
DOCUMENT NO.	SD-41695	SHEET NO. 1 OF 4

TITLE: (3.96)/.156 CENTERLINE CONNECTOR HOUSING FOR KK CRIMP TERMINALS

MOLEX INCORPORATED

SIZE D

SHT	REV
4	G4
3	G4
2	G4
1	G4

tb_frame_D_P_ME_T
Rev. D 2004/04/02

41695-N-AN-*

PART NO.	ENG. NO.	VOIDS
	NOT AVAILABLE	
09-50-8020	41695-N-A2	
09-50-8030	41695-N-A3	
09-50-8040	41695-N-A4	
09-50-8050	41695-N-A5	
09-50-8060	41695-N-A6	
09-50-8070	41695-N-A7	
09-50-8080	41695-N-A8	
09-50-8090	41695-N-A9	
09-50-8100	41695-N-A10	
09-50-8110	41695-N-A11	
09-50-8120	41695-N-A12	
09-50-8130	41695-N-A13	
09-50-8140	41695-N-A14	
09-50-8150	41695-N-A15	
09-50-8160	41695-N-A16	
09-50-8170	41695-N-A17	
09-50-8180	41695-N-A18	
09-50-8190	41695-N-A19	
09-50-8200	41695-N-A20	
09-50-9085	41695-N-A8-2	2
41695-0001	41695-N-A6-3	3

41695-N-BN-*

PART NO.	ENG. NO.	VOIDS
	NOT AVAILABLE	
09-50-8021	41695-N-B2	
09-50-8031	41695-N-B3	
09-50-8041	41695-N-B4	
09-50-8051	41695-N-B5	
09-50-8061	41695-N-B6	
09-50-8071	41695-N-B7	
09-50-8081	41695-N-B8	
09-50-8091	41695-N-B9	
09-50-8101	41695-N-B10	
09-50-8111	41695-N-B11	
09-50-8121	41695-N-B12	
09-50-8131	41695-N-B13	
09-50-8141	41695-N-B14	
09-50-8151	41695-N-B15	
09-50-8161	41695-N-B16	
09-50-8171	41695-N-B17	
09-50-8181	41695-N-B18	
09-50-8191	41695-N-B19	
09-50-8201	41695-N-B20	
09-50-9030	41695-N-B3-2	2
	41695-N-B5-2	2
	41695-N-B9-2	2
	41695-N-B11-2	2
09-50-9121	41695-N-B12-2	2
	41695-N-B14-2	2
09-50-9150	41695-N-B15-14	14
09-50-9060	41695-N-B6-5	5
09-50-9070	41695-N-B7-6	6
09-50-9071	41695-N-B7-2	2
09-50-9040	41695-N-B4-3	3
09-50-9090	41695-N-B9-7	7
	41695-N-B14-13	13
09-50-9136	41695-N-B13-5	5
09-50-9137	41695-N-B13-8	8
09-50-9050	41695-N-B5-51	2,4
09-50-9061	41695-N-B6-3	3
09-50-9080	41695-N-B8-2	2

41695-G-AN-*

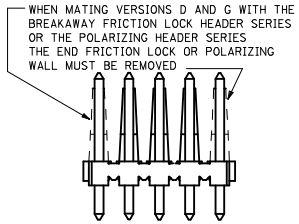
PART NO.	ENG. NO.	VOIDS
41695-2032	41695-G-A02	
41695-2033	41695-G-A03	
41695-2034	41695-G-A04	
41695-2035	41695-G-A05	
41695-2036	41695-G-A06	
41695-2037	41695-G-A07	
41695-2038	41695-G-A08	
41695-2039	41695-G-A09	
41695-2040	41695-G-A10	
41695-2041	41695-G-A11	
41695-2042	41695-G-A12	

41695-G-BN-*

PART NO.	ENG. NO.	VOIDS
41695-2000	41695-G-B02	
41695-2005	41695-G-B03	
41695-2002	41695-G-B04	
41695-2006	41695-G-B05	
41695-2007	41695-G-B06	
41695-2008	41695-G-B07	
41695-2009	41695-G-B08	
41695-2010	41695-G-B09	
41695-2011	41695-G-B10	
41695-2012	41695-G-B11	
41695-2013	41695-G-B12	

OPTION CODE D

RAMP WITH POLARIZING PEGS (RIBS)



WHEN MATING WITH BREAKAWAY HEADERS THE FRICTION LOCK WALL MUST BE REMOVED

ADD PART NUMBERS
EC NO: UCP2009-1002 2008/10/30
DRWN:MKIPPER 2008/10/30
CHKD:SSOUSEK 2008/10/30
APPR:FSMITH 2008/10/30
DESCRIPTION
REV
G4

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 09/22/86
CHECKED BY	PATEL	DATE 09/22/86
APPROVED BY	LENZ	DATE 09/22/86

TITLE: (3.96)/.156 CENTERLINE CONNECTOR HOUSING FOR KK CRIMP TERMINAL

MOLEX INCORPORATED

MATERIAL NO.: SEE CHART
DOCUMENT NO.: SD-41695
SHEET NO.: 2 OF 4
SIZE: D