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ELECTRONICS

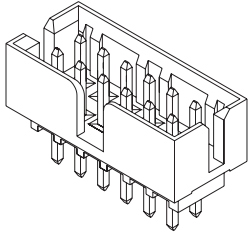
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Jameco Part Number 1978588

## 2.00mm (.079") Pitch Milli-Grid™ Header

### 87831 Shrouded Vertical, SMC



#### Features and Benefits

- Sizes 4 to 50 circuits
- Fully shrouded to protect pins during mating/unmating
- Center slot for polarization
- Front latches for mechanical locking
- Center polarization slot (6 to 12 circuits); center polarization slot and front latches (14 to 50 circuits)

#### Reference Information

Product Specification: PS-87831-027  
 Packaging: Tube (contact Molex for embossed tape)  
 UL File No.: E29179  
 CSA File No.: LR19980  
 Mates With: 50394, 51110 and 87568  
 Designed In: Millimeters

#### Electrical

Voltage: 125V  
 Current: 2.0A  
 Dielectric Withstanding Voltage: 1000V  
 Insulation Resistance: 1000 Megohms min.

#### Physical

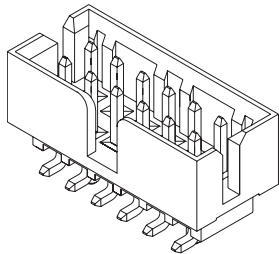
Housing: Black 4/6 nylon, UL 94V-0  
 Contact: Phosphor Bronze  
 Plating: See Table  
 Operating Temperature: -55 to +105°C

Circuits	Order No.		Lead-free
	15µm Select Gold	30µm Select Gold	
4	<a href="#">87831-0420</a>	<a href="#">87831-0421</a>	Yes
6	<a href="#">87831-0620</a>	<a href="#">87831-0621</a>	
8	<a href="#">87831-0820</a>	<a href="#">87831-0821</a>	
10	<a href="#">87831-1020</a>	<a href="#">87831-1021</a>	
12	<a href="#">87831-1220</a>	<a href="#">87831-1221</a>	
14	<a href="#">87831-1420</a>	<a href="#">87831-1421</a>	
16	<a href="#">87831-1620</a>	<a href="#">87831-1621</a>	
18	<a href="#">87831-1820</a>	<a href="#">87831-0621</a>	
20	<a href="#">87831-2020</a>	<a href="#">87831-2021</a>	
22	<a href="#">87831-2220</a>	<a href="#">87831-2221</a>	
24	<a href="#">87831-2420</a>	<a href="#">87831-2421</a>	
26	<a href="#">87831-2620</a>	<a href="#">87831-2621</a>	

Circuits	Order No.		Lead-free
	15µm Select Gold	30µm Select Gold	
28	<a href="#">87831-2820</a>	<a href="#">87831-2821</a>	Yes
30	<a href="#">87831-3020</a>	<a href="#">87831-3021</a>	
32	<a href="#">87831-3220</a>	<a href="#">87831-3221</a>	
34	<a href="#">87831-3420</a>	<a href="#">87831-3421</a>	
36	<a href="#">87831-3620</a>	<a href="#">87831-3621</a>	
38	<a href="#">87831-3820</a>	<a href="#">87831-3821</a>	
40	<a href="#">87831-4020</a>	<a href="#">87831-4021</a>	
42	<a href="#">87831-4220</a>	<a href="#">87831-4221</a>	
44	<a href="#">87831-4420</a>	<a href="#">87831-4421</a>	
46	<a href="#">87831-4620</a>	<a href="#">87831-4621</a>	
48	<a href="#">87831-4820</a>	<a href="#">87831-4821</a>	
50	<a href="#">87831-5020</a>	<a href="#">87831-5021</a>	

## 2.00mm (.079") Pitch Milli-Grid™ Header

### 87832 Shrouded SMT



#### Features and Benefits

- Sizes 4 to 50 circuits
- Fully shrouded to protect pins during mating/unmating
- Center slot for polarization
- Front latches for mechanical locking
- Locating pegs for automatic insertion process
- Center polarization slot (6 to 12 circuits); center polarization and front latches (14 to 50 circuits)
- Contact Molex for embossed tape

#### Reference Information

Product Specification: PS-87831-027  
 Packaging: Tube (contact Molex for tape and reel)  
 UL File No.: E29179  
 CSA File No.: LR19980  
 Mates With: 50394, 51110 and 87568  
 Designed In: Millimeters

#### Electrical

Current: 2.0A  
 Dielectric Withstanding Voltage: 1000V  
 Insulation Resistance: 1000 Megohms min.

#### Physical

Housing: Black 4/6 nylon, UL 94V-0  
 Contact: Phosphor Bronze  
 Plating: See Table  
 Operating Temperature: -55 to +105°C

Circuits	Order No.		Lead-free
	15µm Select Gold	30µm Select Gold	
4	<a href="#">87832-0420</a>	<a href="#">87832-0421</a>	Yes
6	<a href="#">87832-0620</a>	<a href="#">87832-0621</a>	
8	<a href="#">87832-0820</a>	<a href="#">87832-0821</a>	
10	<a href="#">87832-1020</a>	<a href="#">87832-1021</a>	
12	<a href="#">87832-1220</a>	<a href="#">87832-1221</a>	
14	<a href="#">87832-1420</a>	<a href="#">87832-1421</a>	
16	<a href="#">87832-1620</a>	<a href="#">87832-1621</a>	
18	<a href="#">87832-1820</a>	<a href="#">87832-1821</a>	
20	<a href="#">87832-2020</a>	<a href="#">87832-2021</a>	
22	<a href="#">87832-2220</a>	<a href="#">87832-2221</a>	
24	<a href="#">87832-2420</a>	<a href="#">87832-2421</a>	
26	<a href="#">87832-2620</a>	<a href="#">87832-2621</a>	

Circuits	Order No.		Lead-free
	15µm Select Gold	30µm Select Gold	
28	<a href="#">87832-2820</a>	<a href="#">87832-2821</a>	Yes
30	<a href="#">87832-3020</a>	<a href="#">87832-3021</a>	
32	<a href="#">87832-3220</a>	<a href="#">87832-3221</a>	
34	<a href="#">87832-3420</a>	<a href="#">87832-3421</a>	
36	<a href="#">87832-3620</a>	<a href="#">87832-3621</a>	
38	<a href="#">87832-3820</a>	<a href="#">87832-3821</a>	
40	<a href="#">87832-4020</a>	<a href="#">87832-4021</a>	
42	<a href="#">87832-4220</a>	<a href="#">87832-4221</a>	
44	<a href="#">87832-4420</a>	<a href="#">87832-4421</a>	
46	<a href="#">87832-4620</a>	<a href="#">87832-4621</a>	
48	<a href="#">87832-4820</a>	<a href="#">87832-4821</a>	
50	<a href="#">87832-5020</a>	<a href="#">87832-5021</a>	



# PRODUCT SPECIFICATION

## 1.0 SCOPE

This specification covers the performance requirements for Milli-Grid 2mm Dual Row Shrouded Headers.

## 2.0 PRODUCT DESCRIPTION

2.1 Product covered by this specification are for series number

Product Name	Part Number
MGrid Headers (Vertical)	87831 Series
MGrid Headers (SMT)	87832 Series
MGrid Headers (R/A)	87833 Series

These series mate with Molex :

- a. Milli-Grid 2mm Grid Wire to Board Connector, Crimp Receptacle Housing, 51110 series and Crimp Terminal, 50394 series.
- b. 2mm Milli-Grid Dual Row IDT, 87568 series.

2.2 For dimensions, materials & plating, refer to the appropriate product drawings.

2.3 Safety Agency Approvals:

UL File Number : E29179  
 CSA File Number : LR19980

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

The following documents are part of this specification to the extent specified herewith. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and reference documents, this specification shall take the precedence.

MIL-STD-202 Test Methods for Electrical and Electronic Component Parts.

MIL-STD-1344 Test Methods of Electrical Connector

Reference Product Specifications

PS-51110-001 Milli-Grid 2mm Grid Wire to Board Connector

PS-87568-004 2mm Milli-Grid Dual Row IDT Receptacle

REVISION: <b>A1</b>	ECR/ECN INFORMATION: EC No: <b>S2006-0204</b> DATE: <b>2005/08/08</b>	TITLE: <b>MILLIGRID 2MM DUAL ROW SHROUDED HEADERS</b>	SHEET No. <b>1 of 3</b>
DOCUMENT NUMBER: <b>PS-87831-027</b>	CREATED / REVISED BY: <b>YLQIAO 2005/08/08</b>	CHECKED BY: <b>BOKOK 2005/08/23</b>	APPROVED BY: <b>PTLIM 2005/08/23</b>



# PRODUCT SPECIFICATION

## 4.0 RATINGS

- 4.1 Voltage : 125
- 4.2 Current : 2.00 Amp MAXIMUM
- 4.3 Operating Temperature : -55°C to +105°C

## 5.0 PERFORMANCE

### 5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	<b>Insulation Resistance</b>	Apply 500 VDC for 1 minute per MIL-STD -1344A, METHOD 3003.1	<b>1000</b> Megaohms Minimum
2	<b>Dielectric Strength</b>	1000 Vrms for 1 minute between adjacent terminals.	No breakdown

### 5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
3	<b>Pin/ Terminal Retention Force (in Housing)</b>	Apply an axial load on the terminal in the housing to dislodge the terminals from the connector at a rate of 0.50 inch per minute	Retention Force: 850 g Min per pin. (Before heat soldering)

REVISION:	ECR/ECN INFORMATION:	TITLE:		SHEET No.
<b>A1</b>	EC No: <b>S2006-0204</b> DATE: <b>2005/08/08</b>	<b>MILLIGRID 2MM DUAL ROW SHROUDED HEADERS</b>		<b>2 of 3</b>
DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:	
<b>PS-87831-027</b>	<b>YLQIAO 2005/08/08</b>	<b>BOKOK 2005/08/23</b>	<b>PTLIM 2005/08/23</b>	



# PRODUCT SPECIFICATION

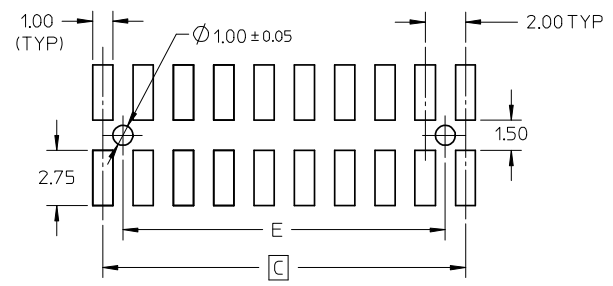
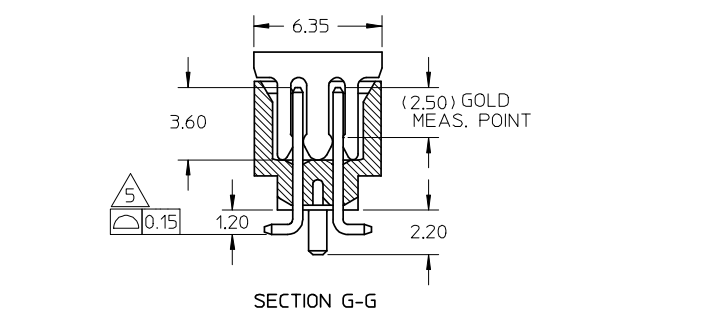
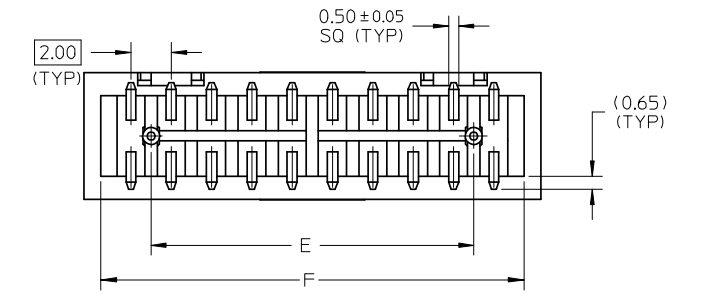
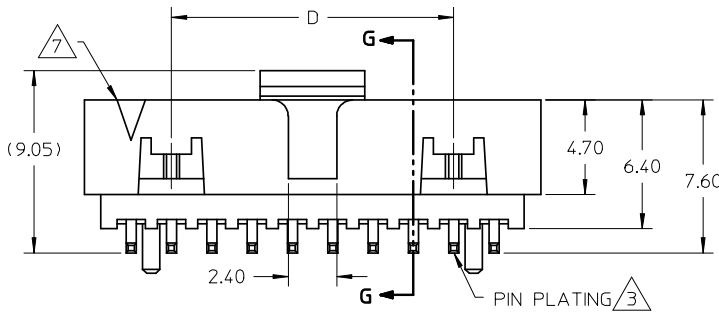
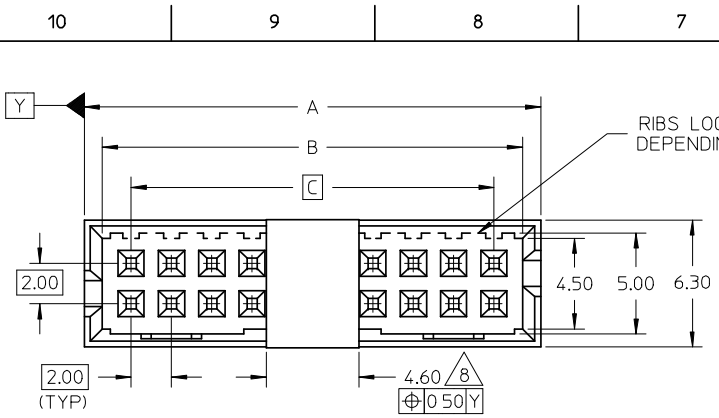
## 5.3 ENVIROMENT REQUIREMENTS

4.	<b>Solderability</b>	Solder Time: 5 +/-0.5 secs. Solder Temperature: 260+/- 5°C	95% of the immersed area must show no voids, pin holes.
5.	<b>Resistance to Soldering Heat (Through Hole)</b>	Solder tail to be dipped in flux as per MIL-STD-202F method 210 condition B.  Solder Temperature: 260 +/- 5°C Solder Time: 10 +/- 1 secs	No damage in appearance of the connector
	<b>Resistance to IR reflow heat (SMT)</b>	Pass product through IR machine for 3 cycles of the following reflow profile:  Average Ramp Rate            3°C/sec max. Preheat Temp. (Min.)        150 °C Preheat Temp. (Max.)        200°C Preheat Time                    60 – 180 sec Ramp to Peak                    3°C/sec max. Time over liquidus (217°C) 60 – 150 sec Peak Temperature              260 +/-5°C Time within 5°C of peak      20 – 40 sec. Ramp – Cool Down              6°C/sec max. Time 25°C to Peak              8 mins max.	No damage in appearance of the connector
6.	<p style="text-align: center;"><b><u>Reflow Temperature Profile</u></b></p> <p>The graph shows a reflow temperature profile with the following stages: Room Temperature (RT), Preheat, Ramp to Peak, Peak Temperature, and Cool Down. The y-axis is labeled 'Temp' and the x-axis is labeled 'Time'.</p>		

## 6.0 Packaging

Product shall be packed in either Tube or Tape & Reel and protected against damage during handling, transportation and storage.

REVISION:  <b>A1</b>	ECR/ECN INFORMATION: EC No: <b>S2006-0204</b> DATE: <b>2005/08/08</b>	TITLE:  <b>MILLIGRID 2MM DUAL ROW SHROUDED HEADERS</b>	SHEET No.  <b>3 of 3</b>
DOCUMENT NUMBER:  <b>PS-87831-027</b>	CREATED / REVISED BY: <b>YLQIAO 2005/08/08</b>	CHECKED BY: <b>BOKOK 2005/08/23</b>	APPROVED BY: <b>PTLIM 2005/08/23</b>



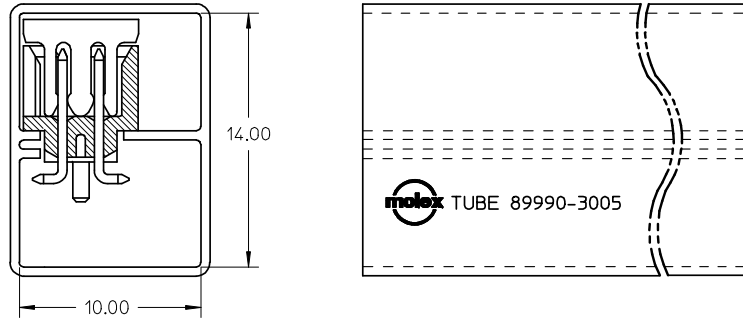
RECOMMENDED PCB PATTERN

CKT SIZE	A	B	C	D	E	F
4	6.65	4.85	2.00	-----	-----	5.00
6	8.65	6.85	4.00	-----	2.00	7.00
8	10.65	8.85	6.00	-----	4.00	9.00
10	12.65	10.85	8.00	-----	6.00	11.00
12	14.65	12.85	10.00	-----	8.00	13.00
14	16.65	14.85	12.00	8.00	10.00	15.00
16	18.65	16.85	14.00	10.00	12.00	17.00
18	20.65	18.85	16.00	12.00	14.00	19.00
20	22.65	20.85	18.00	14.00	16.00	21.00
22	24.65	22.85	20.00	16.00	18.00	23.00
24	26.65	24.85	22.00	18.00	20.00	25.00
26	28.65	26.85	24.00	20.00	22.00	27.00
28	30.65	28.85	26.00	22.00	24.00	29.00
30	32.65	30.85	28.00	24.00	26.00	31.00
32	34.65	32.85	30.00	26.00	28.00	33.00
34	36.65	34.85	32.00	28.00	30.00	35.00
36	38.65	36.85	34.00	30.00	32.00	37.00
38	40.65	38.85	36.00	32.00	34.00	39.00
40	42.65	40.85	38.00	34.00	36.00	41.00
42	44.65	42.85	40.00	36.00	38.00	43.00
44	46.65	44.85	42.00	38.00	40.00	45.00
46	48.65	46.85	44.00	40.00	42.00	47.00
48	50.65	48.85	46.00	42.00	44.00	49.00
50	52.65	50.85	48.00	44.00	46.00	51.00

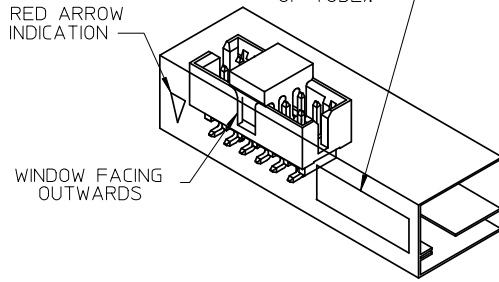
- NOTES:
- FOR ILLUSTRATION PURPOSES, 20 CIRCUIT SIZE WAFER IS SHOWN.
  - MATERIAL :  
HOUSING & CAP : 30% G.F., NYLON 46, UL94V-0, COLOR BLACK.  
PIN : 0.50MM SQ.PHOSPHOR BRONZE.
  - PLATING : 0.38um/15uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN.TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN.NICKEL OVERALL.
  - PRODUCT SPECIFICATION PS-87831-027 APPLIES.
  - COPLANARITY IS TO BE MEASURED BY RESTING THE SOLDER TAIL ON A GAUGE SURFACE.
  - NO SIDE LOCKING SLOT FROM 4 TO 12 CKT SIZE.
  - CKT 4 & 6 HAS NO IDENTIFICATION TAG.
  - POSITION OF CAP TO BE LOCATED AT CENTER OF DIMENSION 'A' REGARDLESS OF CIRCUIT SIZE.
  - TOP SURFACE OF CAP TO BE FLAT FOR THE PURPOSE OF PICK-&PLACE BY VACUUM SUCTION NOZZLE.
  - THIS HEADER MATES WITH MOLEX:
    - CRIMP RECEPTACLE HOUSING, 51110 SERIES WITH CRIMP TERMINAL, 50394 SERIES.
    - 2MM MILLIGRID DUAL ROW IDT, 87568 SERIES.
  - NO CENTRE POLARIZATION SLOT FOR CKT SIZE 4 AND 6.
  - PARTS SHALL BE PACKED IN MOISTURE BARRIER BAG.

ADD 878326622 PDR#1755 EC NO: S2008-0680 DRWN:ATSEE 2008/07/15 CHKD:SKANG 2008/07/15 APPR:MLONG 2008/02/18	QUALITY SYMBOLS ▽=0 ◻=0	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE MM ONLY		SCALE NTS	DESIGN UNITS METRIC	THIRD ANGLE PROJECTION		
			mm	INCH	DRAWN BY	DATE	TITLE			
		4 PLACES	± ---	± ---	ATSEE	2003/10/14	MGRID, SHROUDED HEADER SMT, W/PEGS/CAP FOR PICK & PLACE IN TUBE AND T&R			
		3 PLACES	± ---	± ---	CHECKED BY	DATE				
2 PLACES	± 0.2	± ---	KCL ING	2003/11/07	MOLEX INCORPORATED					
1 PLACE	± ---	± ---	APPROVED BY	DATE						
ANGULAR ± 3 °		DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		SKTOH	2003/11/07	DOCUMENT NO.		SHEET NO.		
SEE TABLE		SEE TABLE		SD-87832-006		1 OF 3		THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION		

**TUBE PACKAGING**



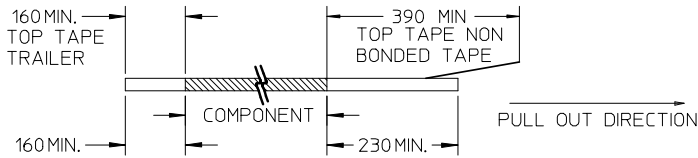
MOLEX LOGO & TUBE  
P/N: 89990-3005  
(ON THE LEFT HAND SIDE  
OF TUBE).



REF : ORIENTATION OF PART IN TUBE.  
(FOR THE REFERENCE OF PART/TUBE ASSEMBLY.)

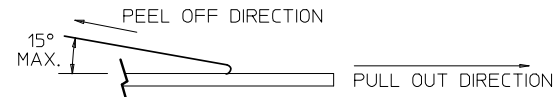
**NOTES:**

1. LEADER AND TRAILER TAPE



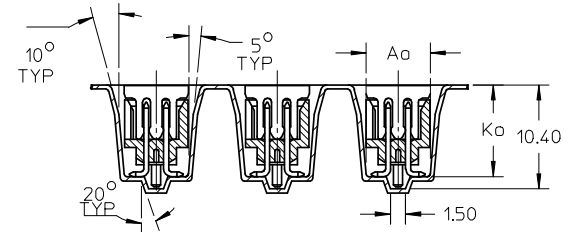
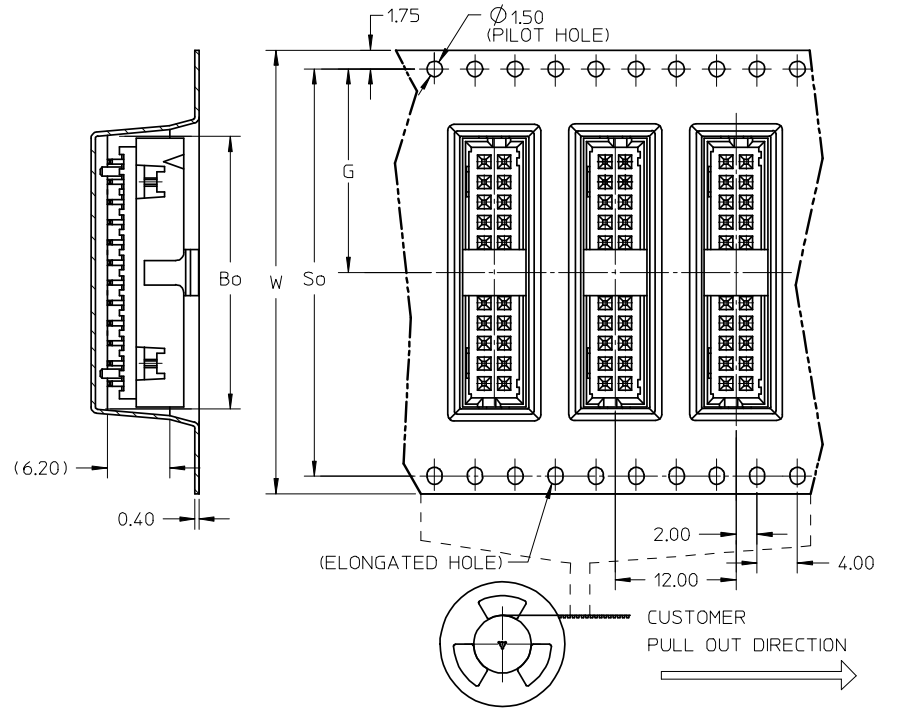
TAIL PART (EMPTY) LEADER PART (EMPTY)

2. PEELING OFF FORCE OF THE TOP TAPE: 20-80gf.  
(PEELING DIRECTION AS SHOWN IN FOLLOWING FIGURE)



3. PACKAGING STANDARD IS AS PER EIA-481.

**EMBOSSED CARRIER TAPE LAYOUT**  
24 CKT USE FOR ILLUSTRATION ONLY



ADD 878326622 PDR#1755 EC NO: S2008-0680 DRWN:ATSEE 2008/07/15 CHKD:SKANG 2008/07/15 APPR:MLONG 2008/02/18	QUALITY SYMBOLS ▽=0 ◻=0	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE MM ONLY		SCALE NTS	DESIGN UNITS METRIC	THIRD ANGLE PROJECTION		
			mm	INCH	DRAWN BY	DATE	TITLE			
		4 PLACES	± ---	± ---	ATSEE	2003/10/14	MGRID, SHROUDED HEADER SMT, W/PEGS/CAP FOR PICK & PLACE IN TUBE AND T&R			
		3 PLACES	± ---	± ---	CHECKED BY	DATE				
2 PLACES	± 0.2	± ---	KCL ING	2003/11/07	MOLEX INCORPORATED					
1 PLACE	± ---	± ---	APPROVED BY	DATE						
ANGULAR ± 3 °		DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		SKTOH	2003/11/07	DOCUMENT NO.		SHEET NO.		
A8		REV		SIZE A3		SEE TABLE		SD-87832-006		
				THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION				2 OF 3		

10 9 8 7 6 5 4 3 2 1

PLS REFER TO PART 87832-\*\*-08 FOR CENTER LOCKING SLOT OPTION.

REG OPTION	P/N W/O CAP IN TUBE	P/N W/CAP IN TUBE	P/N W/CAP IN TAPE & REEL	CKT SIZE	DIMENSION					
					W	G	Bo	So	Ao	Ko
NO	87832-0420	87832-0422	87832-5122	4	16.00	7.50	7.15	-----	6.40	9.30
YES	87832-0620	87832-0622	87832-5222	6	24.00	11.50	9.15	-----	6.40	9.30
YES	87832-0820	87832-0822	87832-5322	8	24.00	11.50	11.05	-----	6.40	9.30
YES	87832-1020	87832-1022	87832-5422	10	24.00	11.50	13.05	-----	6.40	9.30
YES	87832-1220	87832-1222	87832-5522	12	32.00	14.20	15.15	28.40	6.85	9.30
YES	87832-1420	87832-1422	87832-5622	14	32.00	14.20	17.05	28.40	6.40	9.30
YES	87832-1620	87832-1622	87832-5722	16	32.00	14.20	19.05	28.40	6.40	9.30
YES	87832-1820	87832-1822	87832-5822	18	44.00	20.20	21.05	40.40	6.40	9.30
YES	87832-2020	87832-2022	87832-5922	20	44.00	20.20	23.05	40.40	6.40	9.30
YES	87832-2220	87832-2222	87832-6022	22	44.00	20.20	25.05	40.40	6.40	9.30
YES	87832-2420	87832-2422	87832-6122	24	44.00	20.20	27.05	40.40	6.40	9.30
YES	87832-2620	87832-2622	87832-6222	26	44.00	20.20	29.05	40.40	6.40	9.30
YES	87832-2820	87832-2822	87832-6322	28	56.00	26.20	31.05	52.40	6.40	9.30
YES	87832-3020	87832-3022	87832-6422	30	56.00	26.20	33.05	52.40	6.40	9.30
YES	87832-3220	87832-3222	-----	32	-----	-----	-----	-----	-----	-----
YES	87832-3420	87832-3422	87832-6622	34	56.00	26.20	37.05	52.40	6.40	9.30
YES	87832-3620	87832-3622	-----	36	-----	-----	-----	-----	-----	-----
YES	87832-3820	87832-3822	-----	38	-----	-----	-----	-----	-----	-----
YES	87832-4020	87832-4022	87832-6922	40	56.00	26.20	43.05	52.40	6.40	9.30
YES	87832-4220	87832-4222	-----	42	-----	-----	-----	-----	-----	-----
YES	87832-4420	87832-4422	87832-7122	44	56.00	26.20	46.80	52.40	6.40	9.30
YES	87832-4620	87832-4622	87832-7222	46	56.00	26.20	47.05	52.40	6.40	9.30
YES	87832-4820	87832-4822	-----	48	-----	-----	-----	-----	-----	-----
YES	87832-5020	87832-5022	87832-7422	50	72.00	34.20	53.05	68.40	6.40	9.30

ADD 878326622 PDR#1755 EC NO: S2008-0680 DRWN:ATSEE 2008/02/15 CHKD:SKANG 2008/02/15 APPR:MLONG 2008/02/18	QUALITY SYMBOLS	GENERAL TOLERANCES (UNLESS SPECIFIED)	DIMENSION STYLE	SCALE	DESIGN UNITS	THIRD ANGLE PROJECTION
	▽=0 ◻=0	mm    INCH 4 PLACES ± --- ± --- 3 PLACES ± --- ± --- 2 PLACES ± 0.2 ± --- 1 PLACE ± --- ± --- ANGULAR ± 3 °	MM ONLY	NTS	METRIC	☉    ◻    ◻ THIRD ANGLE PROJECTION
	DESCRIPTION	DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS	DRAWN BY    DATE ATSEE    2003/10/14 CHECKED BY    DATE KCL ING    2003/11/07 APPROVED BY    DATE SKTOH    2003/11/07	TITLE	MGRID, SHROUDED HEADER SMT, W/PEGS/CAP FOR PICK & PLACE IN TUBE AND T&R	
	REV		SEE TABLE	MATERIAL NO.    DOCUMENT NO.    SHEET NO. MOLEX INCORPORATED SD-87832-006    3 OF 3	THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	

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