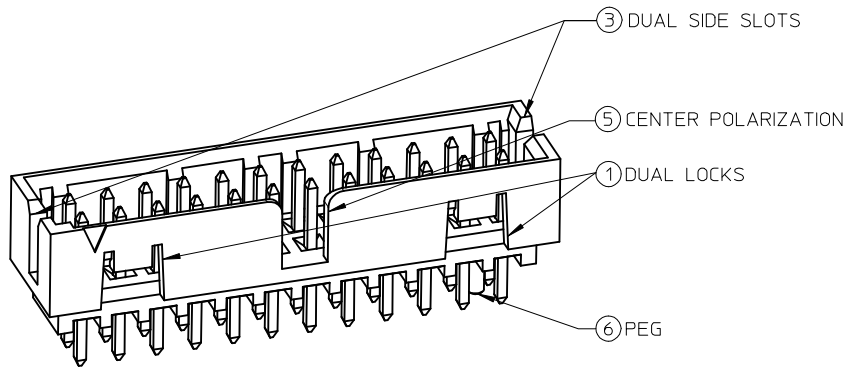
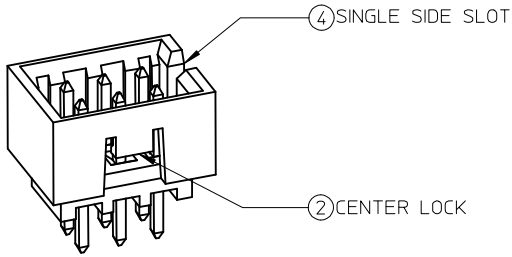


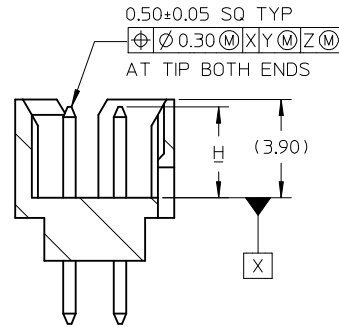
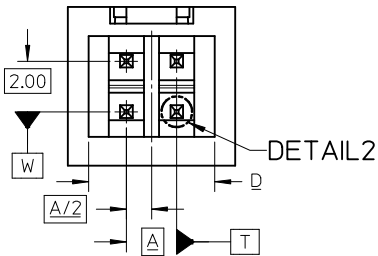
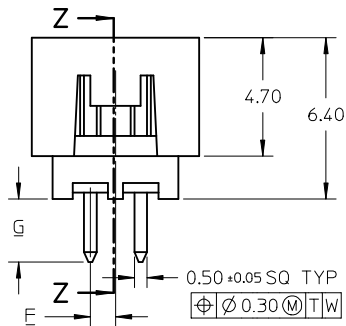
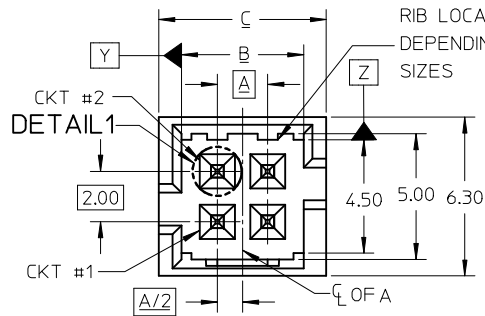
FEATURES SELECTION GUIDE



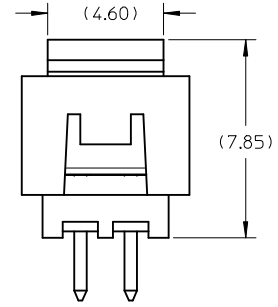
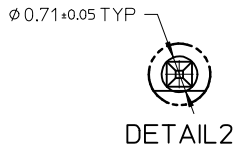
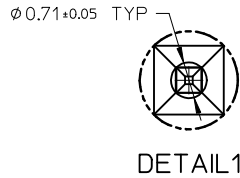
CIRCUIT SIZE	FEATURES						SHEET NO
	FRICTION LOCKS		SIDE SLOTS		5 CENTER POLARIZATION	6 PEG	
	1 DUAL	2 CENTER	3 DUAL	4 SINGLE			
4	N.A	N.A	YES	N.A	N.A	N.A	2 - 3
	N.A	YES	YES	N.A	N.A	N.A	
	N.A	YES	N.A	YES	N.A	N.A	
6	N.A	N.A	YES	N.A	N.A	N.A	4 - 5
	N.A	N.A	YES	N.A	N.A	YES	
	N.A	YES	YES	N.A	N.A	N.A	
	N.A	YES	YES	N.A	N.A	YES	
	N.A	YES	N.A	YES	N.A	N.A	
	N.A	YES	N.A	YES	N.A	YES	
	N.A	N.A	YES	N.A	YES	N.A	
8 TO 12	N.A	N.A	YES	N.A	YES	N.A	6 - 8
	N.A	N.A	YES	N.A	YES	YES	
	N.A	YES	YES	N.A	N.A	N.A	
	N.A	YES	YES	N.A	N.A	YES	
	N.A	YES	N.A	YES	N.A	N.A	
	N.A	YES	N.A	YES	N.A	YES	
14 TO 50	YES	N.A	YES	N.A	YES	N.A	9 - 13
	YES	N.A	YES	N.A	YES	YES	

RELEASED EC NO: S2015-1188 DRW:GMENARLY 2015/04/15 CHKD:CGOH 2015/06/29 APPR:KHLIM 2015/06/29	QUALITY SYMBOLS	GENERAL TOLERANCES (UNLESS SPECIFIED)	DIMENSION STYLE MM ONLY	SCALE NTS	DESIGN UNITS METRIC	THIRD ANGLE PROJECTION	
	$\nabla_A = 0$ $\nabla_C = 0$ $\nabla_P = 0$	mm INCH 4 PLACES ± --- ± --- 3 PLACES ± --- ± --- 2 PLACES ± 0.20 ± --- 1 PLACE ± --- ± --- 0 PLACE ± --- ± ---	DRAWN BY: GMENARLY DATE: 2015/04/15 CHECKED BY: DATE:	TITLE MILLIGRID 2MM PITCH, THROUGH HOLE VERTICAL SHROUDED HEADER			
	ANGULAR ± 3 ° DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS	APPROVED BY: KHLIM DATE: 2015/06/29 MATERIAL NO. DOCUMENT NO.	SEE TABLE SD-87831-0001				
	A	SIZE: A3 THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	SHEET NO. 1 OF 13				

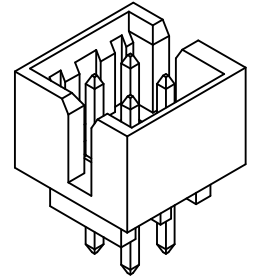
4 CIRCUITS



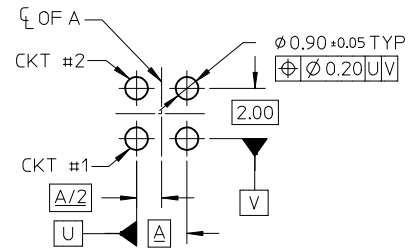
SECTION Z-Z



VIEW FOR HEADER WITH CAP



VIEW FOR HEADER WITH ONLY DUAL SLOTS



RECOMMENDED PCB LAYOUT

NOTES:

- MATERIALS:
HOUSING: 30% GF, NYLON, UL94V-0, COLOR: BLACK
PIN: 0.50MM SQ PHOSPHOR BRONZE
- FINISHES: REFER TO PLATING OPTIONS
- PRODUCT SPECIFICATION: PS-87831-027
- PACKAGING SPECIFICATION:
TUBE: PK-87831-001, TAPE AND REEL: PK-87831-300
- MATES WITH: A. MOLEX CRIMP RECEPTACLE HOUSING: 51110 SERIES AND CRIMP TERMINAL: 50394 SERIES
B. MOLEX 2MM MILLIGRID DUAL ROW IDT: 87568 SERIES
C. MOLEX 2MM MILLIGRID DUAL ROW RECEPTACLE: 79107 (GOLD PLATED), 78787 (TIN PLATED)


RELEASED EC NO: S2015-1188 DRWNG:GMENARLY 2015/04/15 CHKD:CGOH 2015/06/29 APPR:KHLIM 2015/06/29	QUALITY SYMBOLS $F_A=0$ $F_B=0$ $F_P=0$	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE	SCALE	DESIGN UNITS	THIRD ANGLE PROJECTION	
				MM ONLY	NTS	METRIC		
		mm	INCH	DRAWN BY	DATE	TITLE		
		4 PLACES	± ---	± ---	GMENARLY	2015/04/15	MILLIGRID 2MM PITCH, THROUGH HOLE VERTICAL SHROUDED HEADER	
3 PLACES	± ---	± ---	CHECKED BY	DATE				
2 PLACES	± 0.20	± ---	APPROVED BY	DATE				
1 PLACE	± ---	± ---	KHLIM	2015/06/29	DOCUMENT NO.			
0 PLACE	± ---	± ---	MATERIAL NO.		SD-87831-0001			
ANGULAR ± 3°		DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		SEE TABLE		SHEET NO.		
				SIZE		2 OF 13		
				THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION				

4 CIRCUITS

CKT SIZE	ASSY P/N WITHOUT CAP IN TUBE	ASSY P/N WITH CAP IN TUBE	ASSY P/N WITH CAP IN T&R	PLATING OPTIONS	FRICTION LOCKS		SIDE SLOTS		CENTER POLARIZATION	PEG	DIMENSION							
					DUAL	CENTER	DUAL	SINGLE			A	B	C	D	E	F	G	H
4	87831-0419	N.A	N.A	1	N.A	N.A	YES	N.A	N.A	N.A	2.00	4.85	6.65	5.00	N.A	N.A	2.50	3.60±0.20
	87831-0420	N.A	N.A	2														
	87831-0421	N.A	N.A	3														
	87831-0436	N.A	N.A	4														
	87831-0441	87831-0456	N.A	2	N.A	YES	YES	N.A	N.A	N.A						1.00	2.50	
	87831-0442	N.A	N.A	3														
	87831-5141	N.A	N.A	2	N.A	YES	YES	N.A	N.A	N.A						3.50		
	87831-5142	N.A	N.A	3														
	87831-6141	N.A	N.A	2	N.A	YES	YES	N.A	N.A	N.A						2.80		
	87831-6142	N.A	N.A	3														
87831-0443	N.A	N.A	2	N.A	YES	N.A	YES	N.A	N.A	2.50								
87831-0444	N.A	N.A	3															

PLATING OPTIONS:

- 1 - 0.05-0.13um/2-5uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 2 - 0.38um/15uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 3 - 0.76um/30uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTETIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 4 - 2.50um/100uin MIN. MATTE TIN OVER 1.25um/50uin MIN. NICKEL OVERALL.

RELEASED EC NO: S2015-1188 DRW:GMENARLY 2015/04/15 CHKD:CGOH 2015/06/29 APPR:KHLIM 2015/06/29	DESCRIPTION REV A	QUALITY SYMBOLS	GENERAL TOLERANCES (UNLESS SPECIFIED)	DIMENSION STYLE	SCALE	DESIGN UNITS	THIRD ANGLE PROJECTION		
		$F_A=0$ $F_G=0$ $F_P=0$	mm INCH 4 PLACES ± --- ± --- 3 PLACES ± --- ± --- 2 PLACES ± 0.20 ± --- 1 PLACE ± --- ± --- 0 PLACE ± --- ± ---	MM ONLY	NTS	METRIC	DRAWN BY: GMENARLY DATE: 2015/04/15 CHECKED BY: _____ DATE: _____ APPROVED BY: KHLIM DATE: 2015/06/29	TITLE: MILLIGRID 2MM PITCH, THROUGH HOLE VERTICAL SHROUDED HEADER 	
		ANGULAR ± 3 °	DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS	SEE TABLE	DOCUMENT NO. SD-87831-0001		SHEET NO. 3 OF 13		
		MATERIAL NO.		THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION					

6 CIRCUITS

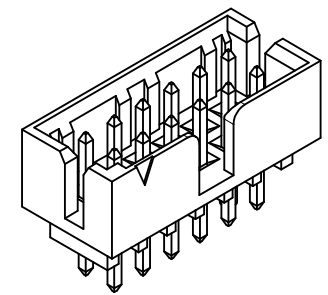
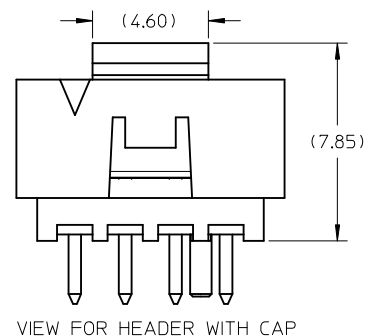
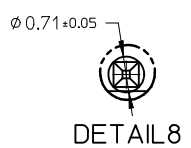
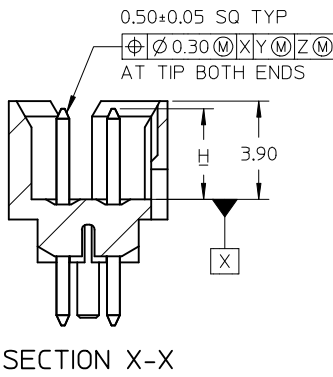
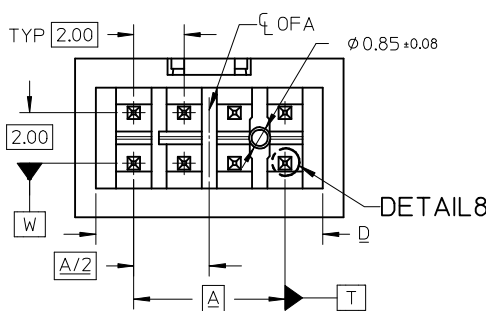
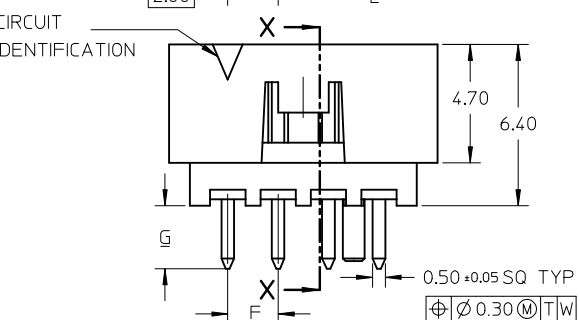
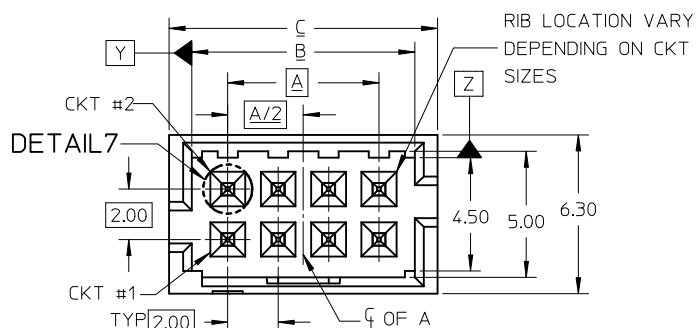
CKT SIZE	ASSY P/N WITHOUT CAP IN TUBE	ASSY P/N WITH CAP IN TUBE	ASSY P/N WITH CAP IN T&R	PLATING OPTIONS	FRICTION LOCKS		SIDE SLOTS		CENTER POLARIZATION	PEG	DIMENSION							
					DUAL	CENTER	DUAL	SINGLE			A	B	C	D	E	F	G	H
6	87831-0619	N.A	N.A	1	N.A	N.A	YES	N.A	N.A	N.A	4.00	6.85	8.65	7.00	N.A	N.A	2.50	3.60±0.20
	87831-0620	N.A	N.A	2														
	87831-0621	N.A	N.A	3														
	87831-0636	N.A	N.A	4														
	87831-0628	N.A	N.A	2	N.A	N.A	YES	N.A	N.A	YES						N.A	2.50	
	87831-0629	N.A	N.A	3														
	87831-0641	N.A	N.A	2	N.A	YES	YES	N.A	N.A	N.A						2.50		
	87831-0642	N.A	87831-5552	3														
	87831-5241	N.A	N.A	2														
	87831-5242	N.A	N.A	3	N.A	YES	YES	N.A	N.A	N.A						2.50		
	87831-6241	N.A	N.A	2														
	87831-6242	N.A	N.A	3														
	87831-0643	N.A	N.A	2														
	87831-0644	N.A	N.A	3	N.A	YES	N.A	YES	N.A	N.A						2.50		
	87831-0645	N.A	N.A	2														
	87831-0646	N.A	N.A	3														
87831-0632	N.A	N.A	2															
87831-5119	N.A	N.A	1	N.A	N.A	YES	N.A	YES	N.A	N.A	2.50	3.60±0.20						

PLATING OPTIONS:

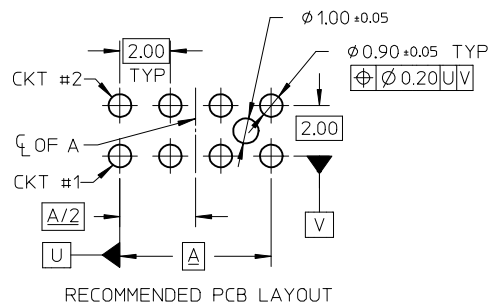
- 1 - 0.05-0.13um/2-5uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 2 - 0.38um/15uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 3 - 0.76um/30uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 4 - 2.50um/100uin MIN. MATTE TIN OVER 1.25um/50uin MIN. NICKEL OVERALL.

RELEASED EC NO: S2015-1188 DRWNG:GMENARLY 2015/04/15 CHKD:CGOH 2015/06/29 APPR:KHL IM 2015/06/29	DESCRIPTION QUALITY SYMBOLS $F_A=0$ $F_G=0$ $F_P=0$	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE MM ONLY		SCALE NTS	DESIGN UNITS METRIC	THIRD ANGLE PROJECTION				
				mm	INCH	DRAWN BY GMENARLY	DATE 2015/04/15	TITLE MILLIGRID 2MM PITCH, THROUGH HOLE VERTICAL SHROUDED HEADER				
				4 PLACES ± --- ± ---	3 PLACES ± --- ± ---	CHECKED BY		DATE				
				2 PLACES ± 0.20 ± ---	1 PLACE ± --- ± ---	APPROVED BY KHL IM		DATE 2015/06/29				
		0 PLACE ± --- ± ---	ANGULAR ± 3 °		MATERIAL NO.		DOCUMENT NO.		SHEET NO.			
		DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		SEE TABLE		SD-87831-0001		5 OF 13				
		THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION										

8 TO 12 CIRCUITS



VIEW FOR HEADER WITH CENTER POLARIZATION AND DUAL SIDE SLOTS



- NOTES:
- MATERIALS:
HOUSING: 30% GF, NYLON, UL94V-0, COLOR: BLACK
PIN: 0.50MM SQ PHOSPHOR BRONZE
 - FINISHES: REFER TO PLATING OPTIONS
 - PRODUCT SPECIFICATION: PS-87831-027
 - PACKAGING SPECIFICATION:
TUBE: PK-87831-001, TAPE AND REEL: PK-87831-300
 - MATES WITH: A. MOLEX CRIMP RECEPTACLE HOUSING: 51110 SERIES AND CRIMP TERMINAL: 50394 SERIES
B. MOLEX 2MM MILLIGRID DUAL ROW IDT: 87568 SERIES
C. MOLEX 2MM MILLIGRID DUAL ROW RECEPTACLE: 79107 (GOLD PLATED), 78787 (TIN PLATED)

RELEASED EC NO: S2015-1188 DRWN:GMENARLY 2015/04/15 CHKD:CGOH 2015/06/29 APPR:KHLIM 2015/06/29	DESCRIPTION QUALITY SYMBOLS $\nabla_A=0$ $\nabla_E=0$ $\nabla_F=0$	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE MM ONLY		SCALE NTS	DESIGN UNITS METRIC	THIRD ANGLE PROJECTION			
			mm	INCH	DRAWN BY GMENARLY	DATE 2015/04/15	TITLE MILLIGRID 2MM PITCH, THROUGH HOLE VERTICAL SHROUDED HEADER				
			4 PLACES	± ---	± ---	CHECKED BY	DATE				
			3 PLACES	± ---	± ---	APPROVED BY KHLIM	DATE 2015/06/29				
	2 PLACES	± 0.20	± ---	MATERIAL NO.		DOCUMENT NO.		SHEET NO.			
	1 PLACE	± ---	± ---	SEE TABLE		SD-87831-0001		6 OF 13			
	0 PLACE	± ---	± ---	THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION							
	ANGULAR ± 3 °										
	DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS										

8 CIRCUITS

F	CKT SIZE	ASSY P/N WITHOUT CAP IN TUBE	ASSY P/N WITH CAP IN TUBE	ASSY P/N WITH CAP IN T&R	PLATING OPTIONS	FRICTION LOCKS		SIDE SLOTS		CENTER POLARIZATION	PEG	DIMENSION															
						DUAL	CENTER	DUAL	SINGLE			A	B	C	D	E	F	G	H								
E	8	87831-0819	N.A	N.A	1	N.A	N.A	YES	N.A	YES	N.A	6.00	8.85	10.65	9.00	N.A	N.A	2.50	3.60±0.20								
		87831-0820	N.A	N.A	2																						
		87831-0821	N.A	N.A	3																						
		87831-0836	N.A	N.A	4	N.A	N.A	YES	N.A	YES	YES						YES	N.A		2.50							
		87831-0828	N.A	N.A	2																						
		87831-0829	N.A	N.A	3																						
		87831-0841	N.A	87831-5551	2	N.A	YES	YES	N.A	N.A	N.A						N.A	3.00		2.50							
		87831-0842	N.A	N.A	3																						
		87831-5441	N.A	N.A	2																						
		87831-5442	N.A	N.A	3	N.A	YES	YES	N.A	N.A	N.A						N.A	3.00		3.50							
		N.A	87831-5541	N.A	2																						
		N.A	87831-5542	N.A	3																						
		D		87831-5741	N.A	N.A	2	N.A	YES	YES	N.A						N.A	N.A		6.00	8.85	10.65	9.00	N.A	3.00	2.50	3.60 ^{+0.15} _{-0.10}
				87831-5742	N.A	N.A	3																				
				87831-0832	N.A	N.A	2																				
87831-0843	N.A			N.A	2	N.A	YES	N.A	YES	N.A	N.A	YES	2.50														
87831-0844	N.A			N.A	3																						
87831-0845	N.A			N.A	2																						
87831-0846	N.A			N.A	3	N.A	YES	N.A	YES	N.A	YES	YES	2.50														

PLATING OPTIONS:

- 1 - 0.05-0.13um/2-5uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 2 - 0.38um/15uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 3 - 0.76um/30uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 4 - 2.50um/100uin MIN. MATTE TIN OVER 1.25um/50uin MIN. NICKEL OVERALL.

RELEASED EC NO: S2015-1188 DRAWN: GEMEARLY 2015/04/15 CH'KD: CGOH 2015/06/29 APPR: KHL IM 2015/06/29	DESCRIPTION REV	QUALITY SYMBOLS	GENERAL TOLERANCES (UNLESS SPECIFIED)	DIMENSION STYLE	SCALE	DESIGN UNITS	THIRD ANGLE PROJECTION		
		$\nabla_A = 0$ $\nabla_C = 0$ $\nabla_P = 0$	mm INCH 4 PLACES ± --- ± --- 3 PLACES ± --- ± --- 2 PLACES ± 0.20 ± --- 1 PLACE ± --- ± --- 0 PLACE ± --- ± ---	MM ONLY	NTS	METRIC	DRAWN BY: GMENARLY DATE: 2015/04/15 CHECKED BY: _____ DATE: _____ APPROVED BY: KHL IM DATE: 2015/06/29	TITLE MILLIGRID 2MM PITCH, THROUGH HOLE VERTICAL SHROUDED HEADER	
			ANGULAR ± 3 °	SEE TABLE	DOCUMENT NO.	MATERIAL NO. SD-87831-0001 SHEET NO. 7 OF 13			
			DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS	SIZE A3	THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION				

10 TO 12 CIRCUITS

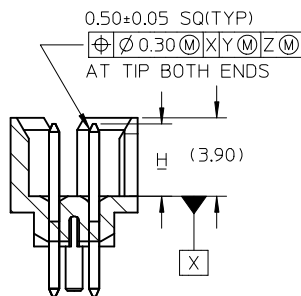
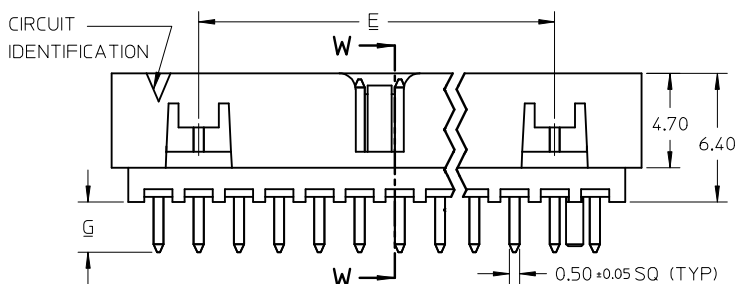
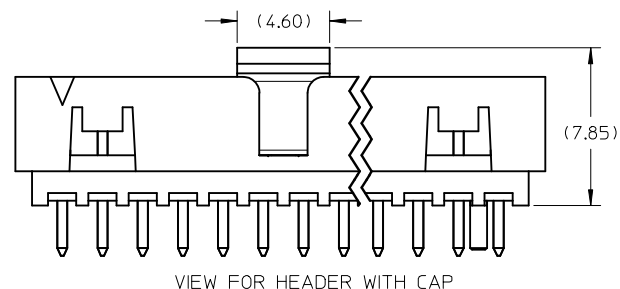
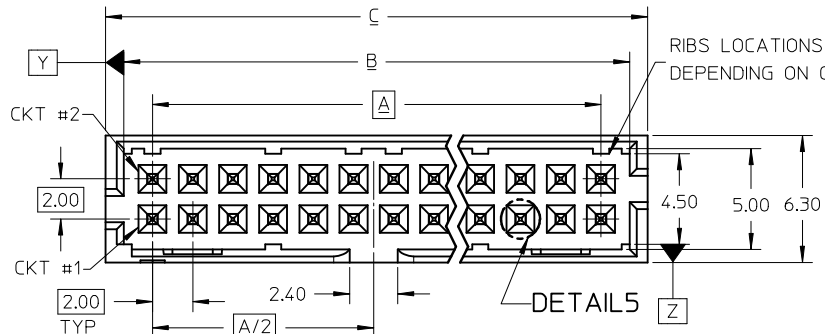
CKT SIZE	ASSY P/N WITHOUT CAP IN TUBE	ASSY P/N WITH CAP IN TUBE	ASSY P/N WITH CAP IN T&R	PLATING OPTIONS	FRICTION LOCKS		SIDE SLOTS		CENTER POLARIZATION	PEG	DIMENSION													
					DUAL	CENTER	DUAL	SINGLE			A	B	C	D	E	F	G	H						
10	87831-1019	N.A	N.A	1	N.A	N.A	YES	N.A	YES	N.A	8.00	10.85	12.65	11.00	N.A	N.A	2.50	3.60±0.20						
	87831-1020	N.A	N.A	2																				
	87831-1021	N.A	N.A	3																				
	87831-1036	N.A	N.A	4																				
	87831-1010	N.A	N.A	2																				
	87831-1011	N.A	N.A	3																				
	87831-1028	N.A	N.A	2	N.A	N.A	YES	N.A	YES	YES						N.A	8.00		10.85	12.65	11.00	N.A	2.50	3.60±0.20
	87831-1029	N.A	N.A	3																				
	87831-1035	N.A	N.A	3																				
	87831-1041	N.A	N.A	2	N.A	YES	YES	N.A	N.A	N.A						N.A	8.00		10.85	12.65	11.00	N.A	2.50	3.60±0.20
	87831-1042	N.A	87831-5553	3																				
	87831-1032	N.A	N.A	2																				
87831-1043	N.A	N.A	2	N.A	YES	N.A	YES	N.A	N.A	N.A	8.00	10.85	12.65	11.00	N.A	2.50	3.60±0.15 -0.10							
87831-1044	N.A	N.A	3																					
87831-1045	N.A	N.A	2																					
87831-1046	N.A	N.A	3	N.A	YES	N.A	YES	N.A	YES	N.A	8.00	10.85	12.65	11.00	N.A	2.50	3.60±0.15 -0.10							
87831-1219	N.A	N.A	1																					
87831-1220	N.A	N.A	2																					
12	87831-1221	N.A	N.A	3	N.A	N.A	YES	N.A	YES	N.A	10.00	12.85	14.65	13.00	N.A	N.A	2.50	3.60±0.20						
	87831-1236	N.A	N.A	4																				
	87831-1228	N.A	N.A	2																				
	87831-1229	N.A	N.A	3																				
	87831-1241	N.A	N.A	2																				
	87831-1242	N.A	N.A	3																				
	87831-1255	87831-1256	N.A	2	N.A	YES	YES	N.A	N.A	N.A						10.00	12.85		14.65	13.00	N.A	2.50	3.60±0.15 -0.10	
	87831-1232	N.A	N.A	2																				
	87831-1243	N.A	N.A	2																				
	87831-1244	N.A	N.A	3	N.A	YES	N.A	YES	N.A	N.A						10.00	12.85		14.65	13.00	N.A	2.50	3.60±0.15 -0.10	
	87831-1245	N.A	N.A	2																				
	87831-1246	N.A	N.A	3																				

PLATING OPTIONS:

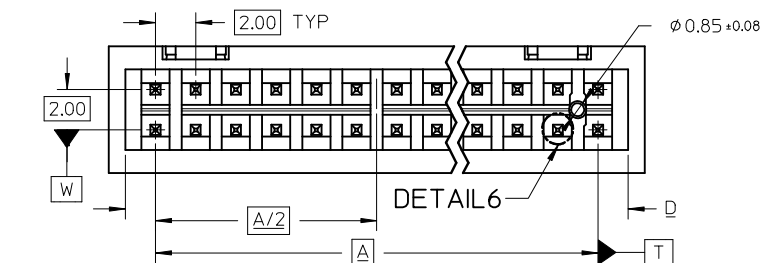
- 1 - 0.05-0.13um/2-5uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 2 - 0.38um/15uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 3 - 0.76um/30uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 4 - 2.50um/100uin MIN. MATTE TIN OVER 1.25um/50uin MIN. NICKEL OVERALL.

RELEASED EC NO: S2015-1188 DRWG:GMENARLY CHKD:CGOH APPR:KHL IM	2015/04/15 2015/06/29 2015/06/29	DESCRIPTION REV	QUALITY SYMBOLS	GENERAL TOLERANCES (UNLESS SPECIFIED)	DIMENSION STYLE	SCALE	DESIGN UNITS	THIRD ANGLE PROJECTION			
			$F_A=0$ $F_G=0$ $F_P=0$	mm INCH 4 PLACES ± --- ± --- 3 PLACES ± --- ± --- 2 PLACES ± 0.20 ± --- 1 PLACE ± --- ± --- 0 PLACE ± --- ± ---	MM ONLY	NTS	METRIC	DRAWN BY: GMENARLY DATE: 2015/04/15 CHECKED BY: _____ DATE: _____	TITLE: MILLIGRID 2MM PITCH, THROUGH HOLE VERTICAL SHROUDED HEADER		
				ANGULAR ± 3°	SEE TABLE			APPROVED BY: KHL IM DATE: 2015/06/29	molex DOCUMENT NO. SD-87831-0001 SHEET NO. 8 OF 13		
				DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS				THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION			

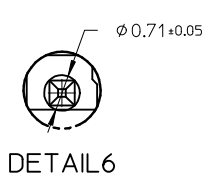
14 TO 50 CIRCUITS



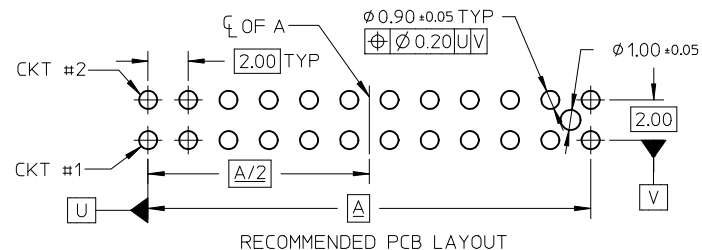
SECTION W-W



DETAIL5



DETAIL6



RECOMMENDED PCB LAYOUT

NOTES:

- MATERIALS:
HOUSING: 30% GF, NYLON, UL94V-0, COLOR: BLACK
PIN: 0.50MM SQ PHOSPHOR BRONZE
- FINISHES: REFER TO PLATING OPTIONS
- PRODUCT SPECIFICATION: PS-87831-027
- PACKAGING SPECIFICATION:
TUBE: PK-87831-001, TAPE AND REEL: PK-87831-300
- MATES WITH: A. MOLEX CRIMP RECEPTACLE HOUSING: 51110 SERIES AND CRIMP TERMINAL: 50394 SERIES
B. MOLEX 2MM MILLIGRID DUAL ROW IDT: 87568 SERIES
C. MOLEX 2MM MILLIGRID DUAL ROW RECEPTACLE: 79107 (GOLD PLATED), 78787 (TIN PLATED)

RELEASED EC NO: S2015-1188 DRWN:GMENARLY 2015/04/15 CHKD:CGOH 2015/06/29 APPR:KHL IM 2015/06/29	DESCRIPTION QUALITY SYMBOLS $F_a=0$ $F_b=0$ $F_p=0$	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE MM ONLY	SCALE NTS	DESIGN UNITS METRIC	THIRD ANGLE PROJECTION
		4 PLACES ± --- ± --- 3 PLACES ± --- ± --- 2 PLACES ± 0.20 ± --- 1 PLACE ± --- ± --- 0 PLACE ± --- ± ---	mm INCH DRAWN BY DATE GMENARLY 2015/04/15 CHECKED BY DATE	TITLE MILLIGRID 2MM PITCH, THROUGH HOLE VERTICAL SHROUDED HEADER			
		ANGULAR ± 3 ° DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS	APPROVED BY DATE KHL IM 2015/06/29	DOCUMENT NO. SD-87831-0001			
		SEE TABLE	MATERIAL NO.	SHEET NO. 9 OF 13			

THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION

14 TO 20 CIRCUITS

F	CKT SIZE	ASSY P/N WITHOUT CAP IN TUBE	ASSY P/N WITH CAP IN TUBE	ASSY P/N WITH CAP IN T&R	PLATING OPTIONS	FRICTION LOCKS		SIDE SLOTS		CENTER POLARIZATION	PEG	DIMENSION							
						DUAL	CENTER	DUAL	SINGLE			A	B	C	D	E	F	G	H
E	14	87831-1419	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	12.00	14.85	16.65	15.00	8.00	N.A	2.50	3.60±0.20
		87831-1420	N.A	87831-5554	2														
		87831-1421	N.A	N.A	3														
		87831-1436	N.A	N.A	4														
		87831-1428	N.A	N.A	2														
		87831-1429	N.A	N.A	3														
		87831-1435	N.A	N.A	3														
D	16	87831-1410	N.A	N.A	2	YES	N.A	YES	N.A	YES	N.A	14.00	16.85	18.65	17.00	10.00	N.A	2.50	3.60±0.20
		87831-1411	N.A	N.A	3														
		87831-1619	N.A	N.A	1														
		87831-1620	N.A	N.A	2														
		87831-1621	N.A	N.A	3														
		87831-1636	N.A	N.A	4														
		87831-1628	N.A	N.A	2														
C	18	87831-1629	N.A	N.A	3	YES	N.A	YES	N.A	YES	N.A	16.00	18.85	20.65	19.00	12.00	N.A	2.50	3.60±0.20
		87831-1819	N.A	N.A	1														
		87831-1820	N.A	N.A	2														
		87831-1821	N.A	N.A	3														
		87831-1836	N.A	N.A	4														
		87831-1828	N.A	N.A	2														
A	20	87831-1829	N.A	N.A	3	YES	N.A	YES	N.A	YES	N.A	18.00	20.85	22.65	21.00	14.00	N.A	2.50	3.60±0.20
		87831-2019	N.A	N.A	1														
		87831-2020	N.A	N.A	2														
		87831-2021	N.A	N.A	3														
		87831-2036	N.A	N.A	4														
		87831-2028	N.A	N.A	2														
		87831-2029	N.A	N.A	3														
		87831-2035	N.A	N.A	3														
87831-2010	N.A	N.A	2																
87831-2011	N.A	N.A	3																

PLATING OPTIONS:

- 0.05-0.13um/2-5uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 0.38um/15uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 0.76um/30uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 2.50um/100uin MIN. MATTE TIN OVER 1.25um/50uin MIN. NICKEL OVERALL.

RELEASED EC NO: S2015-1188 DRW:GMENARLY 2015/04/15 CHKD:CGOH 2015/06/29 APPR:KHLIM 2015/06/29	DESCRIPTION REV	QUALITY SYMBOLS	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE		SCALE	DESIGN UNITS	THIRD ANGLE PROJECTION			
		$F_A=0$ $F_G=0$ $F_P=0$	mm	INCH	MM ONLY	NTS	METRIC	DRAWN BY: GMENARLY DATE: 2015/04/15 CHECKED BY: _____ DATE: _____		TITLE: MILLIGRID 2MM PITCH, THROUGH HOLE VERTICAL SHROUDED HEADER		
			4 PLACES ± --- ± ---	3 PLACES ± --- ± ---	2 PLACES ± 0.20 ± ---	1 PLACE ± --- ± ---	0 PLACE ± --- ± ---	APPROVED BY: KHLIM DATE: 2015/06/29		molex DOCUMENT NO. SD-87831-0001 SHEET NO. 10 OF 13		
			ANGULAR ± 3 °		DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		SEE TABLE		THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION			

22 TO 30 CIRCUITS

F	CKT SIZE	ASSY P/N WITHOUT CAP IN TUBE	ASSY P/N WITH CAP IN TUBE	ASSY P/N WITH CAP IN T&R	PLATING OPTIONS	FRICTION LOCKS		SIDE SLOTS		CENTER POLARIZATION	PEG	DIMENSION													
						DUAL	CENTER	DUAL	SINGLE			A	B	C	D	E	F	G	H						
22	87831-2219	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	20.00	22.85	24.65	23.00	16.00	N.A	2.50	3.60±0.20							
	87831-2220	N.A	N.A	2																					
	87831-2221	N.A	N.A	3																					
	87831-2236	N.A	N.A	4																					
	87831-2228	N.A	N.A	2																					
87831-2229	N.A	N.A	3	YES	N.A	YES	N.A	YES	YES	2.50															
24	87831-2419	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	22.00	24.85	26.65	25.00	18.00	N.A	2.50	3.60±0.20							
	87831-2420	N.A	N.A	2																					
	87831-2421	N.A	N.A	3																					
	87831-2436	N.A	N.A	4																					
	87831-2428	N.A	N.A	2																					
	87831-2429	N.A	N.A	3																					
	87831-2435	N.A	N.A	3															YES	N.A	YES	N.A	YES	YES	3.50
87831-2410	N.A	N.A	2	YES	N.A	YES	N.A	YES	N.A	3.50															
26	87831-2619	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	24.00	26.85	28.65	27.00	20.00	N.A	2.50	3.60±0.20							
	87831-2620	N.A	N.A	2																					
	87831-2621	N.A	N.A	3																					
	87831-2636	N.A	N.A	4																					
	87831-2628	N.A	N.A	2																					
	87831-2629	N.A	N.A	3																					
	87831-2610	N.A	N.A	2															YES	N.A	YES	N.A	YES	N.A	3.50
28	87831-2819	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	26.00	28.85	30.65	29.00	22.00	N.A	2.50	3.60±0.20							
	87831-2820	N.A	N.A	2																					
	87831-2821	N.A	N.A	3																					
	87831-2836	N.A	N.A	4																					
	87831-2828	N.A	N.A	2																					
	87831-2829	N.A	N.A	3															YES	N.A	YES	N.A	YES	YES	2.50
30	87831-3019	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	28.00	30.85	32.65	31.00	24.00	N.A	2.50	3.60±0.20							
	87831-3020	N.A	N.A	2																					
	87831-3021	N.A	N.A	3																					
	87831-3036	N.A	N.A	4																					
	87831-3028	N.A	N.A	2																					
	87831-3029	N.A	N.A	3															YES	N.A	YES	N.A	YES	YES	2.50
	87831-3035	N.A	N.A	3															YES	N.A	YES	N.A	YES	YES	3.50
87831-3010	87831-3030	87831-3050	2	YES	N.A	YES	N.A	YES	N.A	3.50															

PLATING OPTIONS:

- 1 - 0.05-0.13um/2-5uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 2 - 0.38um/15uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 3 - 0.76um/30uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 4 - 2.50um/100uin MIN. MATTE TIN OVER 1.25um/50uin MIN. NICKEL OVERALL.

RELEASED
 IEC NO: S2015-1188
 DRW:GMENARLY 2015/04/15
 CH:KD:G0H 2015/06/29
 APPR:KHL IM 2015/06/29

DESCRIPTION

REV

QUALITY SYMBOLS

GENERAL TOLERANCES (UNLESS SPECIFIED)

	mm	INCH
4 PLACES	± ---	± ---
3 PLACES	± ---	± ---
2 PLACES	± 0.20	± ---
1 PLACE	± ---	± ---
0 PLACE	± ---	± ---

ANGULAR ± 3 °

DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS

DIMENSION STYLE

SCALE

DESIGN UNITS

THIRD ANGLE PROJECTION

DRAWN BY: GMENARLY DATE: 2015/04/15

CHECKED BY: DATE:

APPROVED BY: KHL IM DATE: 2015/06/29

MATERIAL NO.

DOCUMENT NO.

MILLIGRID

2MM PITCH, THROUGH HOLE

VERTICAL SHROUDED HEADER

molex

SEE TABLE

SD-87831-0001

SHEET NO. 11 OF 13

THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION

32 TO 40 CIRCUITS

F	CKT SIZE	ASSY P/N WITHOUT CAP IN TUBE	ASSY P/N WITH CAP IN TUBE	ASSY P/N WITH CAP IN T&R	PLATING OPTIONS	FRICTION LOCKS		SIDE SLOTS		CENTER POLARIZATION	PEG	DIMENSION						
						DUAL	CENTER	DUAL	SINGLE			A	B	C	D	E	F	G
32	87831-3219	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	30.00	32.85	34.65	33.00	26.00	N.A	2.50	3.60±0.20
	87831-3220	N.A	N.A	2														
	87831-3221	N.A	N.A	3														
	87831-3236	N.A	N.A	4														
	87831-3228	N.A	N.A	2	YES	N.A	YES	N.A	YES	YES							2.50	
87831-3229	N.A	N.A	3															
34	87831-3419	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	32.00	34.85	36.65	35.00	28.00	N.A	2.50	3.60±0.20
	87831-3420	N.A	N.A	2														
	87831-3421	N.A	N.A	3														
	87831-3436	N.A	N.A	4	YES	N.A	YES	N.A	YES	YES							2.50	
	87831-3428	N.A	N.A	2														
	87831-3429	N.A	N.A	3														
87831-3435	N.A	N.A	3	YES	N.A	YES	N.A	YES	YES	3.50								
36	87831-3619	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	34.00	36.85	38.65	37.00	30.00	N.A	2.50	3.60±0.20
	87831-3620	N.A	N.A	2														
	87831-3621	N.A	N.A	3														
	87831-3636	N.A	N.A	4	YES	N.A	YES	N.A	YES	YES							2.50	
	87831-3628	N.A	N.A	2														
	87831-3629	N.A	N.A	3														
38	87831-3819	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	36.00	38.85	40.65	39.00	32.00	N.A	2.50	3.60±0.20
	87831-3820	N.A	N.A	2														
	87831-3821	N.A	N.A	3														
	87831-3836	N.A	N.A	4	YES	N.A	YES	N.A	YES	YES							2.50	
	87831-3828	N.A	N.A	2														
	87831-3829	N.A	N.A	3														
40	87831-4019	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	38.00	40.85	42.65	41.00	34.00	N.A	2.50	3.60±0.20
	87831-4020	N.A	N.A	2														
	87831-4021	N.A	N.A	3														
	87831-4036	N.A	N.A	4	YES	N.A	YES	N.A	YES	YES							2.50	
	87831-4028	N.A	N.A	2														
	87831-4029	N.A	N.A	3														
87831-4010	N.A	N.A	2	YES	N.A	YES	N.A	YES	N.A	3.50								

PLATING OPTIONS:

- 1 - 0.05-0.13um/2-5uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 2 - 0.38um/15uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 3 - 0.76um/30uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 4 - 2.50um/100uin MIN. MATTE TIN OVER 1.25um/50uin MIN. NICKEL OVERALL.

RELEASED EC NO: S2015-1188 DRWING:GMENARLY 2015/04/15 CHKD:CGOH 2015/06/29 APPR:KHLIM 2015/06/29	DESCRIPTION	QUALITY SYMBOLS	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE		SCALE	DESIGN UNITS	THIRD ANGLE PROJECTION		
		$F_A=0$ $F_G=0$ $F_P=0$	mm	INCH	MM ONLY	NTS	METRIC	DRAWN BY: GMENARLY DATE: 2015/04/15 CHECKED BY: _____ DATE: _____		TITLE: MILLIGRID 2MM PITCH, THROUGH HOLE VERTICAL SHROUDED HEADER	
		4 PLACES ± --- ± --- 3 PLACES ± --- ± --- 2 PLACES ± 0.20 ± --- 1 PLACE ± --- ± --- 0 PLACE ± --- ± ---	ANGULAR ± 3 °		APPROVED BY: KHLIM DATE: 2015/06/29		MATERIAL NO.		DOCUMENT NO.		SHEET NO.
		DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		SEE TABLE		SD-87831-0001		12 OF 13		THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	

42 TO 50 CIRCUITS

CKT SIZE	ASSY P/N WITHOUT CAP IN TUBE	ASSY P/N WITH CAP IN TUBE	ASSY P/N WITH CAP IN T&R	PLATING OPTIONS	FRICTION LOCKS		SIDE SLOTS		CENTER POLARIZATION	PEG	DIMENSION														
					DUAL	CENTER	DUAL	SINGLE			A	B	C	D	E	F	G	H							
42	87831-4219	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	40.00	42.85	44.65	43.00	36.00	N.A	2.50	3.60±0.20							
	87831-4220	N.A	N.A	2																					
	87831-4221	N.A	N.A	3																					
	87831-4236	N.A	N.A	4																					
	87831-4228	N.A	N.A	2																					
87831-4229	N.A	N.A	3	YES	N.A	YES	N.A	YES	YES	2.50															
44	87831-4419	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	42.00	44.85	46.65	45.00	38.00	N.A	2.50	3.60±0.20							
	87831-4420	N.A	N.A	2																					
	87831-4421	N.A	N.A	3																					
	87831-4436	N.A	N.A	4																					
	87831-4428	N.A	N.A	2																					
	87831-4429	N.A	N.A	3															YES	N.A	YES	N.A	YES	YES	2.50
87831-4435	N.A	N.A	3	YES	N.A	YES	N.A	YES	YES	3.50															
46	87831-4619	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	44.00	46.85	48.65	47.00	40.00	N.A	2.50	3.60±0.20							
	87831-4620	N.A	N.A	2																					
	87831-4621	N.A	N.A	3																					
	87831-4636	N.A	N.A	4																					
	87831-4628	N.A	N.A	2																					
	87831-4629	N.A	N.A	3															YES	N.A	YES	N.A	YES	YES	2.50
48	87831-4819	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	46.00	48.85	50.65	49.00	42.00	N.A	2.50	3.60±0.20							
	87831-4820	N.A	N.A	2																					
	87831-4821	N.A	N.A	3																					
	87831-4836	N.A	N.A	4																					
	87831-4828	N.A	N.A	2																					
	87831-4829	N.A	N.A	3															YES	N.A	YES	N.A	YES	YES	2.50
50	87831-5019	N.A	N.A	1	YES	N.A	YES	N.A	YES	N.A	48.00	50.85	52.65	51.00	44.00	N.A	2.50	3.60±0.20							
	87831-5020	N.A	N.A	2																					
	87831-5021	N.A	N.A	3																					
	87831-5036	N.A	N.A	4																					
	87831-5028	N.A	N.A	2																					
	87831-5029	N.A	N.A	3															YES	N.A	YES	N.A	YES	YES	2.50
	87831-5035	N.A	N.A	3															YES	N.A	YES	N.A	YES	YES	3.50

PLATING OPTIONS:

- 1 - 0.05-0.13um/2-5uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 2 - 0.38um/15uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 3 - 0.76um/30uin GOLD IN CONTACT AREA AND 1.88um/75uin MIN. MATTE TIN IN SOLDER TAIL AREA OVER 1.27um/50uin MIN. NICKEL OVERALL.
- 4 - 2.50um/100uin MIN. MATTE TIN OVER 1.25um/50uin MIN. NICKEL OVERALL.

RELEASED IEC NO: S2015-1188 DRWNG:GMENARLY 2015/04/15 CHK'D:CGOH 2015/06/29 APPR:KHLIM 2015/06/29	QUALITY SYMBOLS $\nabla_F = 0$ $\nabla_E = 0$ $\nabla_D = 0$	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE		SCALE	DESIGN UNITS	THIRD ANGLE PROJECTION			
				MM ONLY		NTS	METRIC				
				mm	INCH	DRAWN BY DATE		TITLE			
						GMENARLY 2015/04/15		MILLIGRID 2MM PITCH, THROUGH HOLE VERTICAL SHROUDED HEADER			
				CHECKED BY DATE		molex					
				APPROVED BY DATE		DOCUMENT NO.					
				KHLIM 2015/06/29		SD-87831-0001					
				MATERIAL NO.		SHEET NO.					
				SEE TABLE		13 OF 13					
				ANGULAR $\pm 3^\circ$		THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION					
				DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS							

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9