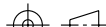


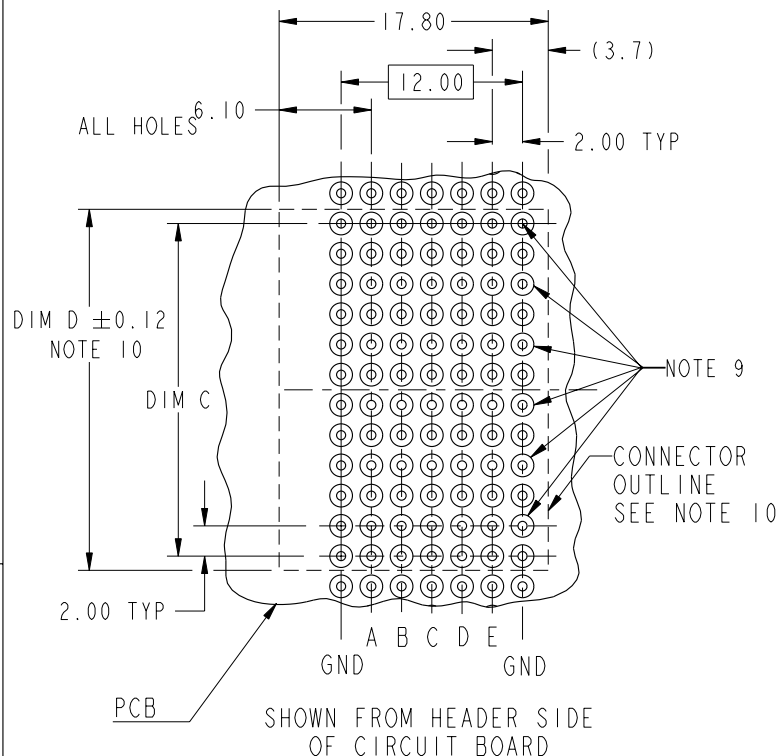


1 2						3 4											
PRODUCT NO.	PLATING PERFORM- ANCE LEVEL	SHROUD TO USE FOR REAR-PLUG-UP APPLICATIONS	LENGTH DIM D	PIN FIELD DIM C	CONNECTOR SIZE	PRODUCT NO.	PLATING PERFORM- ANCE LEVEL	SHROUD TO USE FOR REAR-PLUG-UP APPLICATIONS	LENGTH DIM D	PIN FIELD DIM C	CONNECTOR SIZE						
84817-101ZZZ	TELCORDIA CO	84818-101	11.88	10.00	1 MOD	84817-901ZZZ	TELCORDIA CO	84818-101	11.88	10.00	1 MOD						
84817-101ZZZLF		84818-101LF				84817-901ZZZLF		84818-101LF									
84817-102ZZZ		84818-102	23.88	22.00	2 MOD	84817-902ZZZ		84818-102	23.88	22.00	2 MOD						
84817-102ZZZLF		84818-102LF				84817-902ZZZLF		84818-102LF									
84817-103ZZZ		84818-103	35.88	34.00	3 MOD	84817-903ZZZ		84818-103	35.88	34.00	3 MOD						
84817-103ZZZLF		84818-103LF				84817-903ZZZLF		84818-103LF									
84817-104ZZZ		84818-104	47.88	46.00	4 MOD	84817-904ZZZ		84818-104	47.88	46.00	4 MOD						
84817-104ZZZLF		84818-104LF				84817-904ZZZLF		84818-104LF									
84817-301ZZZ	CUSTOMER SPECIAL	84818-301	11.88	10.00	1 MOD												
84817-301ZZZLF		84818-301LF															
84817-302ZZZ		84818-302	23.88	22.00	2 MOD												
84817-302ZZZLF		84818-302LF															
84817-303ZZZ		84818-303	35.88	34.00	3 MOD												
84817-303ZZZLF		84818-303LF															
84817-304ZZZ		84818-304	47.88	46.00	4 MOD												
84817-304ZZZLF		84818-304LF															
84817-501ZZZ	TELCORDIA UE	84818-501	11.88	10.00	1 MOD												
84817-501ZZZLF		84818-501LF															
84817-502ZZZ		84818-502	23.88	22.00	2 MOD												
84817-502ZZZLF		84818-502LF															
84817-503ZZZ		84818-503	35.88	34.00	3 MOD												
84817-503ZZZLF		84818-503LF															
84817-504ZZZ		84818-504	47.88	46.00	4 MOD												
84817-504ZZZLF		84818-504LF															

mat'l code SEE NOTE 5				tolerances unless otherwise specified			CUSTOMER		FCI www.fciconnect.com		
ltr	ecn no.	dr	date	linear	0.X ±0.1		COPY		title VERTICAL SIGNAL HDR 5 ROW PRESS-FIT, SPECIAL LOAD, STD.		
AG					0.XX ±0.05		projection				
					.XXX ±.020						
				angles	0° ±2°						
				dr	K. BELL	2000-03-29			product family		code
				engr	M. HAHN	2000-03-29			METRAL 1000		213
				chr	M. HAHN	2000-03-29	scale		size	dwg no	sheet
				appd	M. HAHN	2000-03-29					1:1
sheet	revision										
index	sheet										



RECOMMENDED PCB LAYOUT

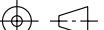


PRESS-FIT HOLES	OPTION 1
HOLE DIAMETER AFTER PLATING	0.65-0.80
DRILLED HOLE	0.81-0.86 (0.85 DRILL)
COPPER PLATING	0.025 MIN
SnPb PLATING	0.005-0.015

SEE PRINT 58315 FOR ADDITIONAL
PCB INFORMATION

NOTES:

- SEE APPLICATION SPECIFICATION GS-20-010 FOR INFORMATION ON AVAILABLE TOOLING, CIRCUIT BOARD DESIGN CONSIDERATIONS, REPAIR PROCEDURES AND PRODUCT OFFERINGS.
- SEE FCI PUBLICATION 950511-028 FOR "ELECTRICAL PERFORMANCE DATA FOR DIFFERENTIAL APPLICATIONS."
- SEE FCI PUBLICATION 950511-029 FOR "ELECTRICAL PERFORMANCE DATA FOR SINGLE-ENDED APPLICATION."
- UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS AND TOLERANCES ARE IN ACCORDANCE WITH ASME Y14.5, 1994
- HOUSING MATERIAL: LCP, 30% GLASS FILLED, FLAME RETARDANT PER UL 94-V0.
PIN MATERIAL: PHOSPHOR BRONZE
GROUND SPRING MATERIAL: PHOSPHOR BRONZE
- PLATING INFORMATION: PLATING ON CONTACT AREA MEETS THE PERFORMANCE LEVELS AS SHOWN IN TABLE ON SHEET 1. PLATING ON "LF" TAILS IS Sn. PLATING ON ALL OTHER TAILS IS SnPb.
- DIMENSIONAL RESTRICTIONS OF PINS IN HEADERS.
FOR MATING WITH METRAL 1000 RECEPTACLES
DIM A : 5.00mm MIN, 8.00mm MAX FOR ROWS A-E
DIM A : 5.00mm MIN, 5.75mm MAX FOR ROW GND NEXT TO ROW A
DIM C : 5.00mm MIN, 8.00mm MAX FOR ROWS A-E
DIM C : 4.60mm MIN, 6.30mm MAX FOR ROW GND NEXT TO ROW A
FOR MATING WITH METRAL 4000 RECEPTACLES
DIM A : 5.00mm MIN, 6.50mm MAX FOR ROWS A, B, D & E
DIM A : 5.00mm MIN, 8.00mm MAX FOR ROW C
DIM A : 5.00mm MIN, 5.75mm MAX FOR ROW GND NEXT TO ROW A
DIM C : 5.00mm MIN, 7.00mm MAX FOR ROWS A, B, D & E
DIM C : 5.00mm MIN, 8.00mm MAX FOR ROW C
DIM C : 4.60mm MIN, 6.30mm MAX FOR ROW GND NEXT TO ROW A
- THE MIN PCB THICKNESS FOR REAR PLUG-UP APPLICATIONS IS 2.9mm
SINCE THE COMPLAINT SECTIONS OF THE GROUND SPRING OF THE HEADER DIRECTLY OPPOSE THE GROUND SPRING OF THE SHROUD. THE MIN PCB THICKNESS FOR FRONT PLUG-UP ONLY APPLICATIONS IS 1.6mm.
- THESE HOLES ARE NEEDED FOR REAR PLUG-UP DESIGNS USING A SHROUD AND MAY BE OMITTED FOR FRONT PLUG-UP ONLY DESIGNS.
- THE "CONNECTOR OUTLINE" IS THE MIN OUTLINE REQUIRED. TO DETERMINE THE OUTLINE NECESSARY TO PERMIT THE VARIOUS TYPES OF REPAIR OPERATIONS, SEE APPLICATION SPECIFICATION GS-20-010.
- CURRENT RATING : 1 AMP PER PIN
- TEMPERATURE RANGE : -55°C TO +105°C
- P/N 84817-X01ZZZ SHOWN ON SHEET 1.
- THE PRODUCTS WHERE THE PART NUMBERS END IN "LF" MEET EUROPEAN UNION DIRECTIVES AND OTHER COUNTRY REGULATIONS AS DESCRIBED IN GS-22-008. ALL PRODUCTS WILL WITHSTAND EXPOSURE TO 260°C FOR 60 SECONDS IN A CONVECTION INFRA-RED OR VAPOR PHASE REFLOW OVEN.
- FOR LEAD FREE PART NUMBERS, ADD "LF" SUFFIX. EXAMPLE: 84817-XXXXLF.
- SEE PRODUCT SPEC GS-12-110 FOR PERFORMANCE, TEST, AND SIGNAL INTEGRITY INFORMATION.
- PIN TYPE IS AT THE MANUFACTURERS OPTION AND CAN BE EITHER BABY-H OR EYE OF THE NEEDLE STYLE

mat'l code SEE NOTE 5				tolerances unless otherwise specified		CUSTOMER		 www.fciconnect.com	
ltr	ecr no.	dr	date	linear	0.X ± .1		COPY		title VERTICAL SIGNAL HDR 5 ROW PRESS-FIT, SPECIAL LOAD, STD
AG					0.XX ± .05		projection 		
					.XXX ± .020				
				angles	0° ± 2°		MM 		product family METRAL 1000
				dr	K. BELL	2000-03-29	scale 1:1	size A	
				enrg	M. HAHN	2000-03-29			
				chr	M. HAHN	2000-03-29			
				appd	M. HAHN	2000-03-29			code 213
sheet index		revision sheet							sheet 3

Pro/E

3

cage code 22526

4



PIN NO.	DIM A MATING LENGTH	DIM B TAIL LENGTH	PCB THICKNESS RANGE ACCOMMODATED BY PIN'S TAIL LENGTH				
			WHEN MATING TO A 73981 OR 84688 SERIES RECEPTACLE		WHEN MATING TO A 52057 SERIES METRAL 4000 RECEPTACLE		
			ROWS A,B,C,D,E	GROUND ROW	ROWS:A,B,DE	ROW C	GROUND ROW
01*	5.00	4.30	1.60 MIN	1.60 MIN	1.60 MIN	1.60 MIN	1.60 MIN
22		12.20	2.95 - 3.80	2.95 - 4.20	2.95 - 3.80	2.95 - 3.80	2.95 - 4.20
30		12.95	2.95 - 4.55	3.25 - 4.95	2.95 - 4.55	2.95 - 4.55	3.25 - 4.95
05		13.70	2.95 - 5.30	4.00 - 5.70	3.30 - 5.30	2.95 - 5.30	4.00 - 5.70
35		14.45	3.05 - 6.05	4.75 - 6.45	4.05 - 6.05	3.05 - 6.05	4.75 - 6.45
48		15.20	3.80 - 6.80	5.50 - 7.20	4.80 - 6.80	3.80 - 6.80	5.50 - 7.20
40		15.70	4.30 - 7.30	6.00 - 7.70	5.30 - 7.30	4.30 - 7.30	6.00 - 7.70
65		16.40	5.00 - 8.00	6.70 - 8.40	6.00 - 8.00	5.00 - 8.00	6.70 - 8.40
09		17.10	5.70 - 8.70	7.40 - 9.10	6.70 - 8.70	5.70 - 8.70	7.40 - 9.10
02*	5.75	4.30	1.60 MIN	1.60 MIN	1.60 MIN	1.60 MIN	1.60 MIN
44		12.20	2.95 - 3.80	2.95 - 4.20	2.95 - 3.80	2.95 - 3.80	2.95 - 4.20
31		12.95	2.95 - 4.55	3.25 - 4.95	2.95 - 4.55	2.95 - 4.55	3.25 - 4.95
06		13.70	2.95 - 5.30	4.00 - 5.70	3.30 - 5.30	2.95 - 5.30	4.00 - 5.70
36		14.45	3.05 - 6.05	4.75 - 6.45	4.05 - 6.05	3.05 - 6.05	4.75 - 6.45
49		15.20	3.80 - 6.80	5.50 - 7.20	4.80 - 6.80	3.80 - 6.80	5.50 - 7.20
25		15.70	4.30 - 7.30	6.00 - 7.70	5.30 - 7.30	4.30 - 7.30	6.00 - 7.70
66		16.40	5.00 - 8.00	6.70 - 8.40	6.00 - 8.00	5.00 - 8.00	6.70 - 8.40
10		17.10	5.70 - 8.70	7.40 - 9.10	6.70 - 8.70	5.70 - 8.70	7.40 - 9.10
03*	6.50	4.30	1.60 MIN	1.60 MIN	1.60 MIN	1.60 MIN	1.60 MIN
45		12.20	2.95 - 3.80	2.95 - 4.20	2.95 - 3.80	2.95 - 3.80	2.95 - 4.20
32		12.95	2.95 - 4.55	3.25 - 4.95	2.95 - 4.55	2.95 - 4.55	3.25 - 4.95
07		13.70	2.95 - 5.30	4.00 - 5.70	3.30 - 5.30	2.95 - 5.30	4.00 - 5.70
37		14.45	3.05 - 6.05	4.75 - 6.45	4.05 - 6.05	3.05 - 6.05	4.75 - 6.45
50		15.20	3.80 - 6.80	5.50 - 7.20	4.80 - 6.80	3.80 - 6.80	5.50 - 7.20
41		15.70	4.30 - 7.30	6.00 - 7.70	5.30 - 7.30	4.30 - 7.30	6.00 - 7.70
24		16.40	5.00 - 8.00	6.70 - 8.40	6.00 - 8.00	5.00 - 8.00	6.70 - 8.40
11		17.10	5.70 - 8.70	7.40 - 9.10	6.70 - 8.70	5.70 - 8.70	7.40 - 9.10

mat'l code SEE NOTE 5				tolerances unless otherwise specified		CUSTOMER		www.fciconnect.com		
ltr	ecn no.	dr	date	linear	0.X ±.1		projection			
AG					0.XX ±.05					
					.XXX ±.020					
				angles	0° ±2°		 MM 1:1			
				dr	K. BELL	2000-03-29		product family METRAL 1000		
				engr	M. HAHN	2000-03-29		code 213		
				chr	M. HAHN	2000-03-29		sheet 4		
				appd	M. HAHN	2000-03-29	size A		dwg no 84817	
sheet index		revision sheet								



PIN NO.	DIM A MATING LENGTH	DIM B TAIL LENGTH	PCB THICKNESS RANGE ACCOMMODATED BY PIN LENGTH				
			WHEN MATING TO A 73981 OR 84688 SERIES RECEPTACLE		WHEN MATING TO A 52057 SERIES METRAL 4000 RECEPTACLE		
			ROWS A,B,C,D,E	GROUND ROW	ROWS:A,B,DE	ROW C	GROUND ROW
04*	7.25	4.30	1.60 MIN	1.60 MIN	1.60 MIN	1.60 MIN	1.60 MIN
46		12.20	2.95 - 3.80	2.95 - 4.20	2.95 - 3.80	2.95 - 3.80	2.95 - 4.20
33		12.95	2.95 - 4.55	3.25 - 4.95	2.95 - 4.55	2.95 - 4.55	3.25 - 4.95
08		13.70	2.95 - 5.30	4.00 - 5.70	3.30 - 5.30	2.95 - 5.30	4.00 - 5.70
38		14.45	3.05 - 6.05	4.75 - 6.45	4.05 - 6.05	3.05 - 6.05	4.75 - 6.45
51		15.20	3.80 - 6.80	5.50 - 7.20	4.80 - 6.80	3.80 - 6.80	5.50 - 7.20
42		15.70	4.30 - 7.30	6.00 - 7.70	5.30 - 7.30	4.30 - 7.30	6.00 - 7.70
67		16.40	5.00 - 8.00	6.70 - 8.40	6.00 - 8.00	5.00 - 8.00	6.70 - 8.40
12		17.10	5.70 - 8.70	7.40 - 9.10	6.70 - 8.70	5.70 - 8.70	7.40 - 9.10
19*	8.00	4.30	1.60 MIN	1.60 MIN	1.60 MIN	1.60 MIN	1.60 MIN
47		12.20	2.95 - 3.80	2.95 - 4.20	2.95 - 3.80	2.95 - 3.80	2.95 - 4.20
34		12.95	2.95 - 4.55	3.25 - 4.95	2.95 - 4.55	2.95 - 4.55	3.25 - 4.95
20		13.70	2.95 - 5.30	4.00 - 5.70	3.30 - 5.30	2.95 - 5.30	4.00 - 5.70
39		14.45	3.05 - 6.05	4.75 - 6.45	4.05 - 6.05	3.05 - 6.05	4.75 - 6.45
52		15.20	3.80 - 6.80	5.50 - 7.20	4.80 - 6.80	3.80 - 6.80	5.50 - 7.20
43		15.70	4.30 - 7.30	6.00 - 7.70	5.30 - 7.30	4.30 - 7.30	6.00 - 7.70
68		16.40	5.00 - 8.00	6.70 - 8.40	6.00 - 8.00	5.00 - 8.00	6.70 - 8.40
21		17.10	5.70 - 8.70	7.40 - 9.10	6.70 - 8.70	5.70 - 8.70	7.40 - 9.10

* STUB PINS - NO REAR PLUG-UP
** THE GREATEST RANGE OCCURS
WHEN THE B DIMENSION OF
PIN 'GND' IS ONE SIZE SHORTER
THEN THE OTHER PINS.

mat'l code SEE NOTE 5				tolerances unless otherwise specified		CUSTOMER		FCI www.fciconnect.com		
ltr	ecn no.	dr	date	linear	0.X ±.1		projection 	title VERTICAL SIGNAL HDR 5 ROW PRESS-FIT, SPECIAL LOAD, STD.		
AG					0.XX ±.05					
					.XXX ±.020					
				angles	0° ±2°		MM 1:1	product family METRAL 1000		
				dr	K. BELL	2000-03-29		size	dwg no	code
				enrg	M. HAHN	2000-03-29		A	84817	213
				chr	M. HAHN	2000-03-29				sheet
				appd	M. HAHN	2000-03-29			5	
sheet index	revision	sheet								



SPECIAL LOAD PATTERNS		
PRODUCT #	ROW	PIN CODES
84817-XY001 SEE NOTE 15 LEAD FREE OPTION	E	01
	D	
	C	
	B	
	A	
	GND	
84817-XY002 *RPU SEE NOTE 15 LEAD FREE OPTION	E	22
	D	
	C	
	B	
	A	
	GND	
84817-XY011 SEE NOTE 15 LEAD FREE OPTION	E	02
	D	
	C	
	B	
	A	
	GND	
84817-XY021 SEE NOTE 15 LEAD FREE OPTION	E	02
	D	
	C	
	B	
	A	
	GND	
84817-XY022 SEE NOTE 15 LEAD FREE OPTION	E	02
	D	
	C	
	B	
	A	
	GND	
84817-XY023 SEE NOTE 15 LEAD FREE OPTION	E	02
	D	
	C	04
	B	
	A	02
	GND	
84817-XY024 *RPU SEE NOTE 15 LEAD FREE OPTION	E	06
	D	
	C	08
	B	
	A	06
	GND	
84817-XY025 *RPU SEE NOTE 15 LEAD FREE OPTION	E	06
	D	
	C	
	B	
	A	
	GND	
	GND	01

PCB THICKNESS
RANGE FOR REAR
PLUG UP
APPLICATIONS:
2.95 TO 3.80mm

PCB THICKNESS
RANGE FOR REAR
PLUG UP
APPLICATIONS:
4.00 TO 5.30mm

PCB THICKNESS
RANGE FOR REAR
PLUG UP
APPLICATIONS:
*2.30-3.30 TO 5.30mm

SPECIAL LOAD PATTERNS		
PRODUCT #	ROW	PIN CODES
84817-XY026 *RPU SEE NOTE 15 LEAD FREE OPTION	E	22
	D	
	C	
	B	
	A	
	GND	
84817-XY027 *RPU SEE NOTE 15 LEAD FREE OPTION	E	44
	D	
	C	
	B	
	A	
	GND	
84817-XY028 SEE NOTE 15 LEAD FREE OPTION	E	01
	D	03
	C	01
	B	01
	A	01
	GND	01
84817-XY029 SEE NOTE 15 LEAD FREE OPTION	E	02
	D	03
	C	03
	B	02
	A	02
	GND	01
84817-XY030 *RPU SEE NOTE 15 LEAD FREE OPTION	E	06
	D	07
	C	07
	B	06
	A	06
	GND	01
84817-XY031 *RPU SEE NOTE 15 LEAD FREE OPTION	E	25
	D	25
	C	02
	B	25
	A	25
	GND	02

PCB THICKNESS
RANGE FOR REAR
PLUG UP
APPLICATIONS:
2.95 TO 3.80mm

PCB THICKNESS
RANGE FOR REAR
PLUG UP
APPLICATIONS:
2.95 TO 3.80mm

PCB THICKNESS
RANGE FOR REAR
PLUG UP
APPLICATIONS:
2.95 TO 3.80mm

PCB THICKNESS
RANGE FOR REAR
PLUG UP
APPLICATIONS:
2.95 TO 3.80mm

mat'l code SEE NOTE 5				tolerances unless otherwise specified				CUSTOMER		FCI www.fciconnect.com		
ltr	ecn no.	dr	date	linear	0.X ±.1			projection	COPY			
AG					0.XX ±.05							
					.XXX ±.020							
				angles	0° ±2°				title VERTICAL SIGNAL HDR 5 ROW PRESS-FIT, SPECIAL LOAD, STD.			
				dr	K. BELL	2000-03-29			product family		METRAL 1000	code
				enrg	M. HAHN	2000-03-29			size	dwg no	213	sheet
				chr	M. HAHN	2000-03-29		A	84817	6		
				appd	M. HAHN	2000-03-29	scale	1:1				
sheet	revision											
index	sheet											

Pro/E

cage code 22526

PDM: Rev:AG

STATUS: Released

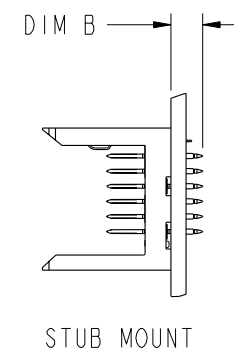
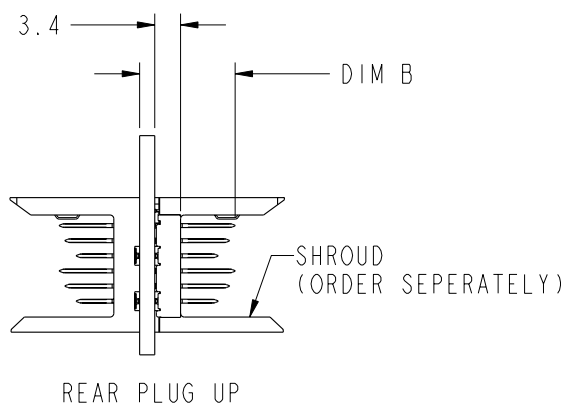
Printed: May 13, 2011



SPECIAL LOAD PATTERNS		
PRODUCT #	ROW	PIN CODES
84817-XY032 SEE NOTE 15 LEAD FREE OPTION	E	22
	D	
	C	45
	B	
	A	22
	GND	
84817-XY033 *RPU SEE NOTE 15 LEAD FREE OPTION	E	
	D	
	C	06
	B	
	A	
	GND	30
84817-XY034 SEE NOTE 15 LEAD FREE OPTION	E	
	D	
	C	03
	B	
	A	
	GND	02
84817-XY035 SEE NOTE 15 LEAD FREE OPTION	E	
	D	
	C	01
	B	
	A	-
	GND	01
84817-XY036 *RPU SEE NOTE 15 LEAD FREE OPTION	E	
	D	22
	C	
	B	01
	A	
	GND	22
84817-XY037 SEE NOTE 15 LEAD FREE OPTION	E	
	D	
	C	01
	B	
	A	
	GND	02
84817-XY038 *RPU SEE NOTE 15 LEAD FREE OPTION	E	
	D	
	C	49
	B	
	A	
	GND	
84817-XY039 *RPU SEE NOTE 15 LEAD FREE OPTION	E	
	D	
	C	36
	B	
	A	
	GND	06

PCB THICKNESS
RANGE FOR REAR
PLUG UP
APPLICATIONS:
2.95 TO 3.80mm

PCB THICKNESS
RANGE FOR REAR
PLUG UP
APPLICATIONS:
4.80 TO 6.80mm



mat'l code SEE NOTE 5				tolerances unless otherwise specified				CUSTOMER		FCi www.fciconnect.com						
ltr	ecr no.	dr	date	linear	0. X ±.1				COPY		projection title VERTICAL SIGNAL HDR 5 ROW PRESS-FIT, SPECIAL LOAD, STD					
AG			0.XX ±.05													
			.XXX ±.020													
			angles	0° ±2°												
			dr	K. BELL	2000-03-29		MM scale 1:1		product family					METRAL 1000	code	213
			enrg	M. HAHN	2000-03-29				size	dwg no				84817	sheet	7
			chr	M. HAHN	2000-03-29											
			appd	M. HAHN	2000-03-29											
sheet index	revision sheet															

Pro/E

cage code 22526

PDM: Rev:AG

STATUS: Released

Printed: May 13, 2011



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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