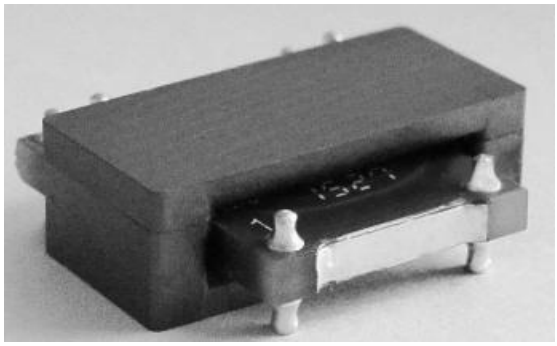
Champs 20F1 Series BCM Flyback Solutions DC2014A & DC2393A



- Footprint: 17.8 x 21.0 mm
- Low Profile: 7.0mm Height
- Proven in actual DC-DC converter using LT8302 & LT8304 ICs.
- Designs Available as Demonstration Boards.
- Optimized for No-Opto Isolated Flyback Converter Design, BCM Mode Operation.
- Typical Efficiency 92%
- Aggressive Interleave planar construction -- lowest achievable Leakage Inductance.
- Multilayer PCB optimization for lowest AC resistance & Proximity Loss Effect.
- Wide variety of PNs, Designs and Turns Ratios in stock. If not listed, Contact Us.
- Integer Turns 1 thru 16 Available [Contact Us if Not Shown in Table].
- Surface Mount, Thru-Hole, Pad-to-Pad, Embedded Planar Windings as Options

General Notes:

1. This subset of Champs' 20F1 series is earmarked to function in No-Opto Isolated Flyback circuits as described by the LT8302 and LT8304 ICs from Analog Devices.

2. Input Voltage and Output Power Ratings are a function of the IC's on-board FET and not a limitation of the transformer. In other applications the 20F1 part can operate over a wider Vin range or to 60W Output Power. Increased height allows increased power output due to higher current capability.

3. Integer Turns available from 1T to 16T. Can be used as Primary or Secondary. Mechanical configuration and outline allow for a "flex" arrangement. Contact factory for information on any flyback topology design

4. All designs can be supplied with planar windings as embedded in the pcb of the Main Module of the converter. Heat Sink and installed power components SM assembly and installation are also available.

5. All transformers installed with associated power components are available from Champs as Main Modules to be installed as a functioning DC-DC converter application. Accompanying Base-Boards ease the task of evaluation. Aspects of this construction are patent pending concepts of Champs and are made available as "open source".

1. Input Voltage Range 36-72. BCM Flyback.

Champs PN	Vin (Min)	Vin (Max)	Vout	Iout (Adc)	Pout (Watts)	Freq (KHz)	Ipk [Rated]	Ipk [Max]	Mode
20F1-1402-68R	36	72	3.3	3.60	12.0	105-200	1.9	2.90	BCM
20F1-1202-72R	36	72	5.0	2.50	12.5	140-245	1.7	2.35	BCM
20F1-1606-84R	36	72	12.0	1.25	15.0	105-185	2.0	2.68	BCM
20F1-1203-78R	36	60	12.0	1.25	15.0	160-320	1.6	1.90	BCM
Note: At Vin < 36V the above PNs will operate with a de-rated Power Rating									

LT8304 Product Page & DC2393A Ref Design:

http://www.analog.com/en/products/power-management/switching-regulators/flyback-forward-isolated-controllers/lt8304.html#product-overview

http://www.analog.com/en/design-center/evaluation-hardware-and-software/evaluation-boards-kits/dc2393a.html

2. Input Voltage Range 18-36. BCM Flyback.

Champs PN	Vin (Min)	Vin (Max)	Vout	Iout (Adc)	Pout (Watts)	Freq (KHz)	Ipk [Rated]	Ipk [Max]	Mode
20F1-0802-16R	18	36	3.3	4.54	15	105-185	4.3	7.0	BCM
20F1-0702-17R	18	36	5.0	2.50	12.5	115-200	4.0	5.5	BCM
20F1-0706-17R	18	36	12.0	1.25	15.0	105-185	4.2	5.8	BCM
Note: At Vin <18V the Power Rating decreases to that shown in Table 3 below									

3. Input Voltage Range 8-32. BCM Flyback.

Champs PN	Vin (Min)	Vin (Max)	Vout	Iout (Adc)	Pout (Watts)	Freq (KHz)	Ipk [Rated]	Ipk [Max]	Mode (BCM/CCM)
20F1-0802-18R	8	32	3.3	2.25	7.5	85-330	3.6	6.3	BCM
20F1-0502-14R	8	32	5.0	1.5	7.5	105-330	3.75	5.0	BCM
20F1-0706-18R	8	32	12.0	0.625	7.5	80-310	3.5	5.5	BCM
20F1-0504-11R	8	30	12.0	0.60	7.2	100-330	3.6	5.0	BCM
Note: At Vin > 8V the Power Rating increases to that shown in Table 2 above									

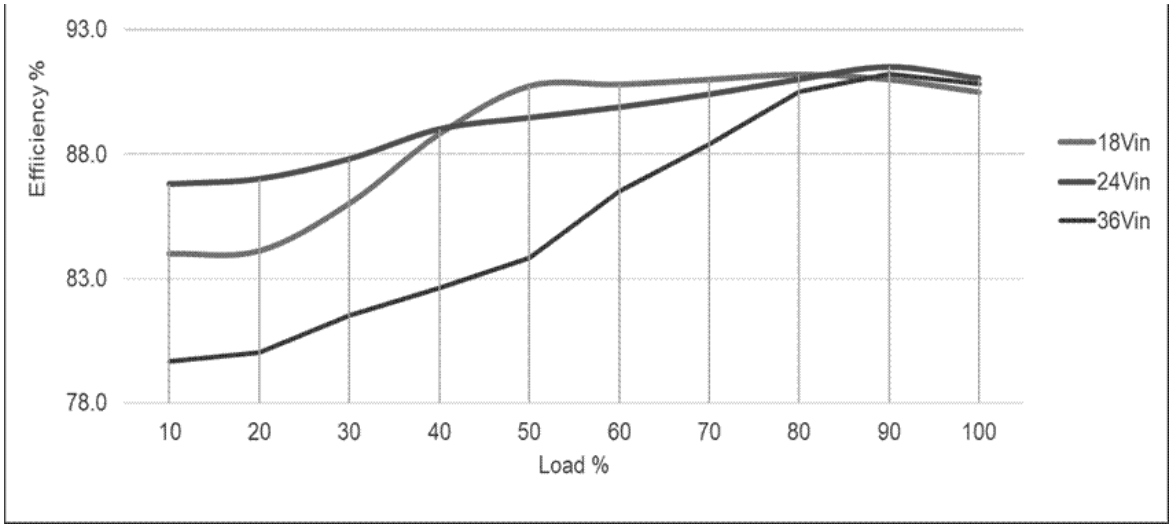
LT8302 Product Page & DC2014A Ref Design:

http://www.analog.com/en/products/power-management/switching-regulators/flyback-forward-isolated-controllers/lt8302.html#product-overview

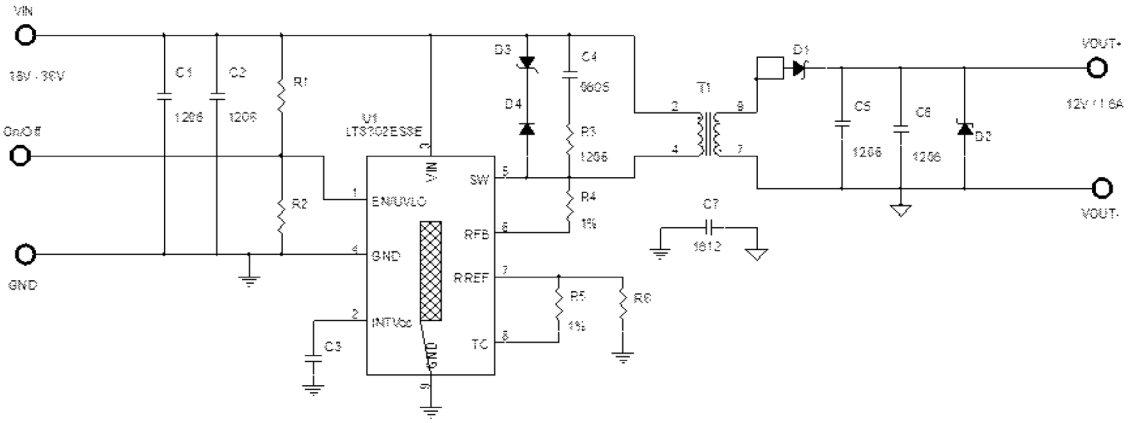
http://www.analog.com/en/design-center/evaluation-hardware-and-software/evaluation-boards-kits/dc2014a.html#eb-overview

4. Input Voltage Range 18-36. BCM Flyback -- Demo Boards Specifications

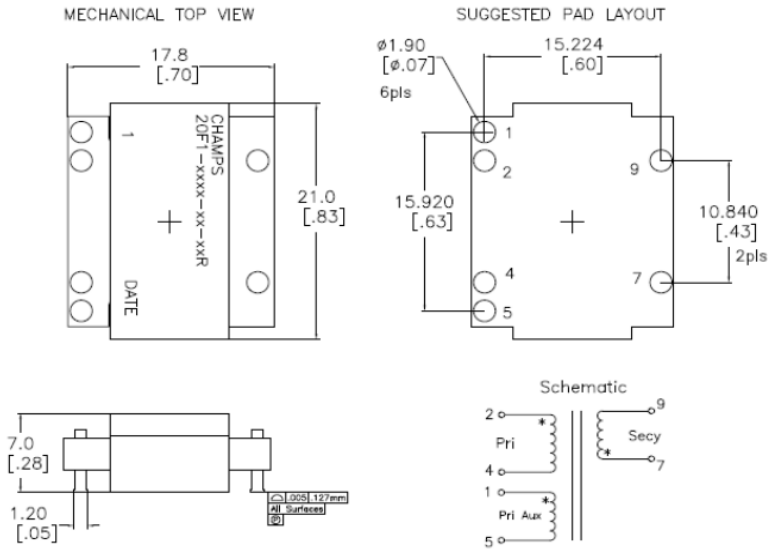
Champs Part No	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency %		Mode	Dimension (mm)
					Min	Typ		
IPPCM 20F1-0802-16R	18-36 Vin	3.3 Vout	4.54 A	15 W	88	90	BCM	20.83 x 21.34 x 9.0
IPPCM-20F1-0702-17R	18-36 Vin	5 Vout	2.5 A	12.5 W	88	90	BCM	20.83 x 21.34 x 9.0
IPPCM-20F1-0706-17R	18-36 Vin	12 Vout	1.25 A	15 W	89	92	BCM	20.83 x 21.34 x 9.0



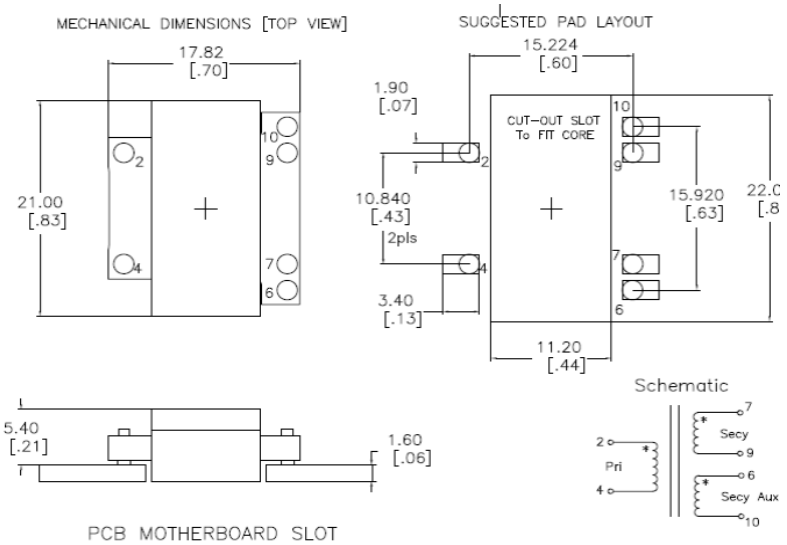
Typical Efficiency Curve: 18-36Vin to 12Vout 15W



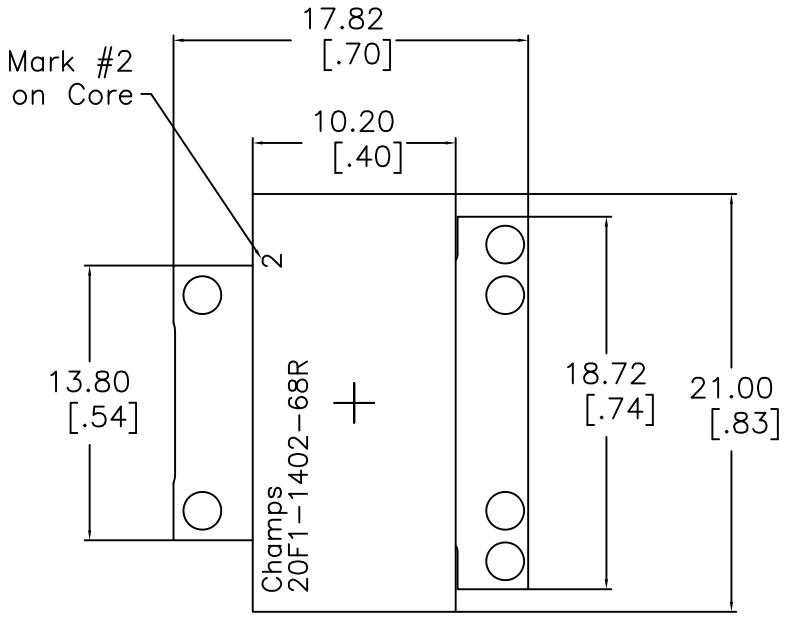
Reference Design: 20F1 Series LT8302 Schematic



Mechanical Design Drawing 20F1 Surface Mount



Mechanical Design Drawing 20F1 Pad-to-Pad



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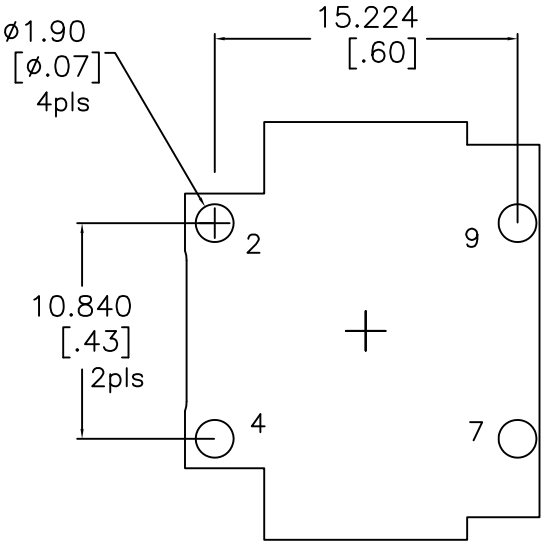
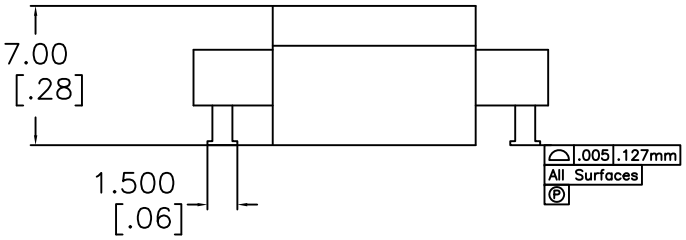
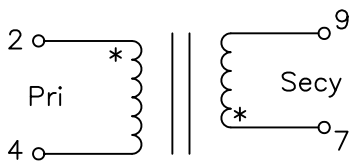




Schematic



NOTES:
1. TURNS RATIO [7–9] : [2–4] = 0.143 ±2%
2. DCR [2–4] = 90 mohm ±12%, [7–9] = 1.75 mohm Nom ±12%
3. Inductance [2–4]= 68 uH ±10%, 100KHz, 1.0 VRMS @ 25C
4. Leakage Inductance [2–4] Short [7–9] = 280nH Nom @100 KHz
5. Dielectric Strength [2–4] to [7–9] 1500 VDC,
   [2–4] to CORE 1500 VDC, [7–9] to CORE 500 VDC
6. Weight 6.8 grams Max | RoHS & REACH Compliant
7. Rated Temperature Range: –55C to +130C [Inclusive of Temp Rise]

No.	DESCRIPTION REVISIONS	DATE	APPR

THIRD ANGLE PROJECTION

TOLERANCES/UNITS in MM
UNLESS OTHERWISE INDICATED
.XXX ± 0.254
.XX ± 0.508
.X ± 0.78
ANGLE ± 0.78

CHAMPS TECHNOLOGIES

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Champs-Tech PN 20F1-1402-68R

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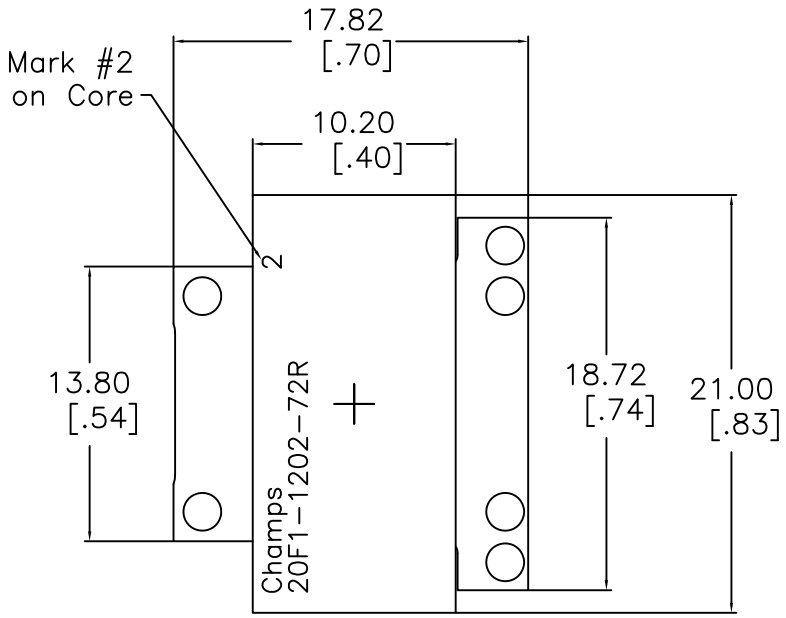

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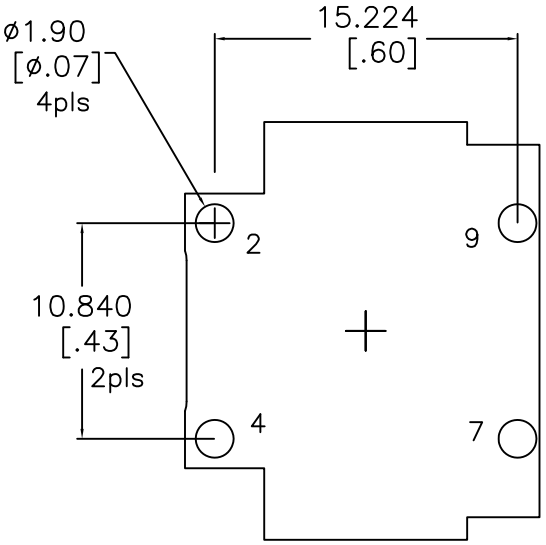

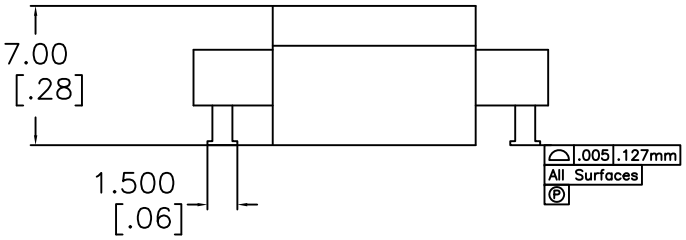

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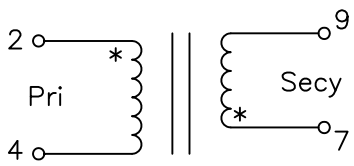

NOTES:
1. TURNS RATIO [7–9] : [2–4] = 0.167 ±2%
2. DCR [2–4] = 60 mohm ±12%, [7–9] = 1.75 mohm Nom ±12%
3. Inductance [2–4]= 72 uH ±10%, 100KHz, 1.0 VRMS @ 25C
4. Leakage Inductance [2–4] Short [7–9] = 280nH Nom @100 KHz
5. Dielectric Strength [2–4] to [7–9] 1500 VDC,
   [2–4] to CORE 1500 VDC, [7–9] to CORE 500 VDC
6. Weight 6.8 grams Max | RoHS & REACH Compliant
7. Rated Temperature Range: –55C to +130C [Inclusive of Temp Rise]

No.	DESCRIPTION REVISIONS	DATE	APPR

THIRD ANGLE PROJECTION

TOLERANCES/UNITS in MM
UNLESS OTHERWISE INDICATED
.XXX ± 0.254
.XX ± 0.508
.X ± 0.78
ANGLE ±

CHAMPS TECHNOLOGIES

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Champs-Tech PN 20F1-1202-72R

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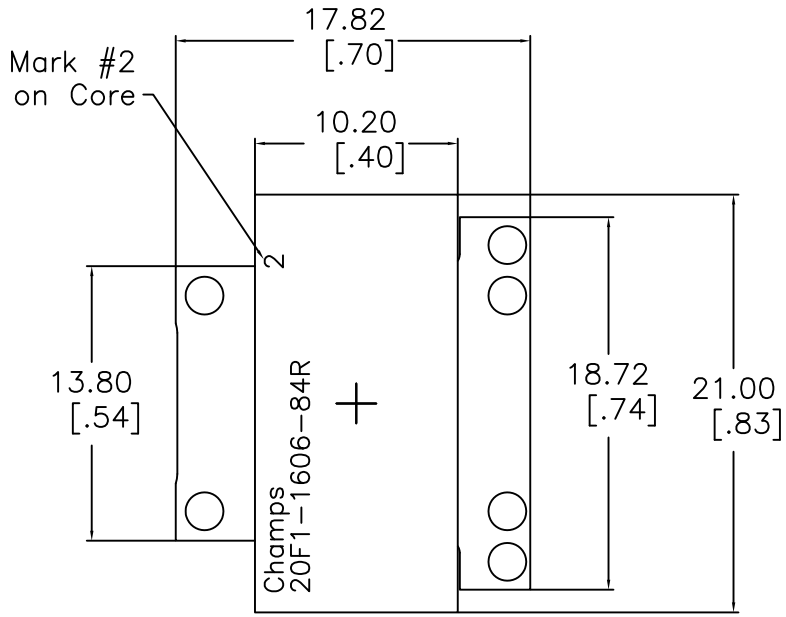

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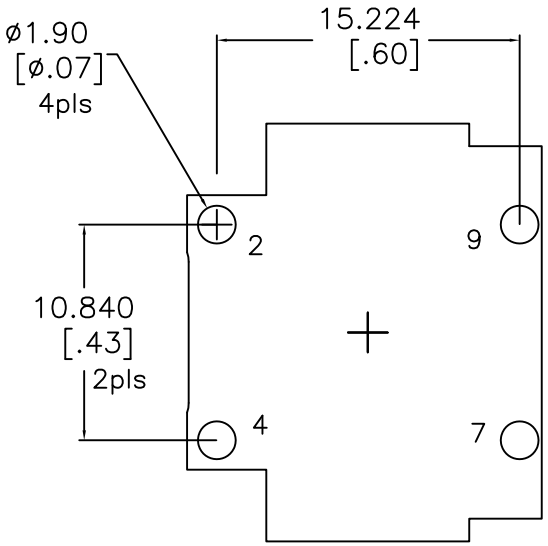

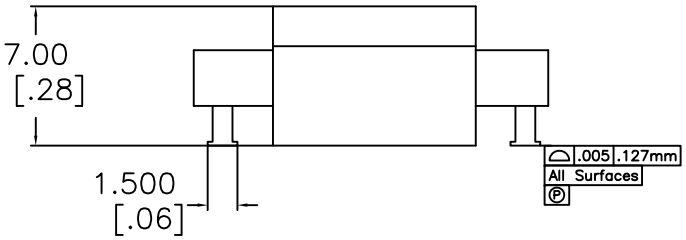

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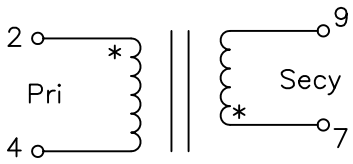

NOTES:
1. TURNS RATIO [7–9] : [2–4] = 0.375 ±2%
2. DCR [2–4] = 120 mohm ±12%, [7–9] = 14.5 mohm Nom ±12%
3. Inductance [2–4]= 84 uH ±10%, 100KHz, 1.0 VRMS @ 25C
4. Leakage Inductance [2–4] Short [7–9] = 280nH Nom @100 KHz
5. Dielectric Strength [2–4] to [7–9] 1500 VDC,
   [2–4] to CORE 1500 VDC, [7–9] to CORE 500 VDC
6. Weight 6.8 grams Max | RoHS & REACH Compliant
7. Rated Temperature Range: –55C to +130C [Inclusive of Temp Rise]

No.	DESCRIPTION REVISIONS	DATE	APPR

THIRD ANGLE PROJECTION

TOLERANCES/UNITS in MM
UNLESS OTHERWISE INDICATED
.XXX ± 0.254
.XX ± 0.508
.X ± 0.78
ANGLE ±

CHAMPS TECHNOLOGIES

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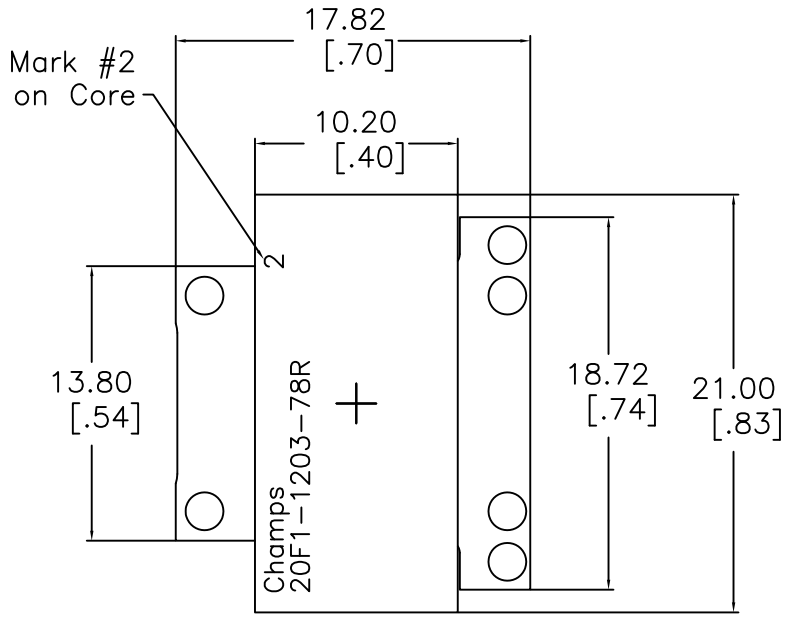

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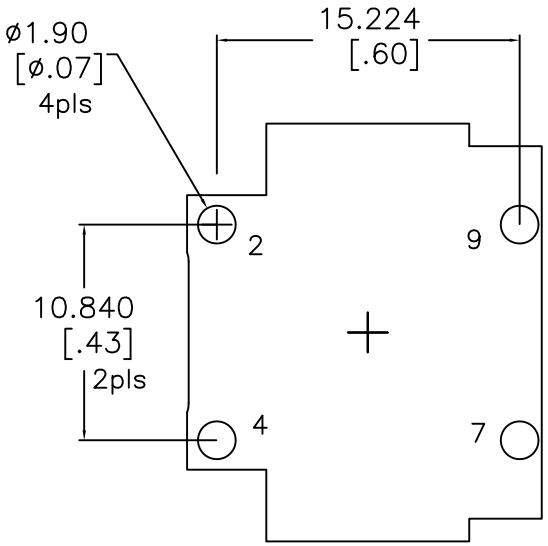

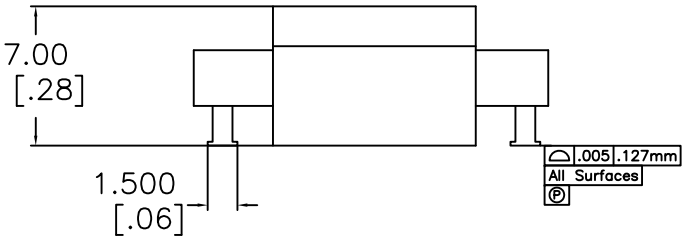

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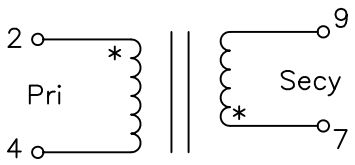

NOTES:
1. TURNS RATIO [7–9] : [2–4] = 0.25 ±2%
2. DCR [2–4] = 60 mohm ±12%, [7–9] = 1.75 mohm Nom ±12%
3. Inductance [2–4]= 78 uH ±10%, 100KHz, 1.0 VRMS @ 25C
4. Leakage Inductance [2–4] Short [7–9] = 280nH Nom @100 KHz
5. Dielectric Strength [2–4] to [7–9] 1500 VDC,
   [2–4] to CORE 1500 VDC, [7–9] to CORE 500 VDC
6. Weight 6.8 grams Max | RoHS & REACH Compliant
7. Rated Temperature Range: –55C to +130C [Inclusive of Temp Rise]

No.	DESCRIPTION REVISIONS	DATE	APPR

THIRD ANGLE PROJECTION

TOLERANCES/UNITS in MM
UNLESS OTHERWISE INDICATED
.XXX ± 0.254
.XX ± 0.508
.X ± 0.78
ANGLE ±

CHAMPS TECHNOLOGIES

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Champs-Tech PN 20F1-1203-78R

Customer Part #:

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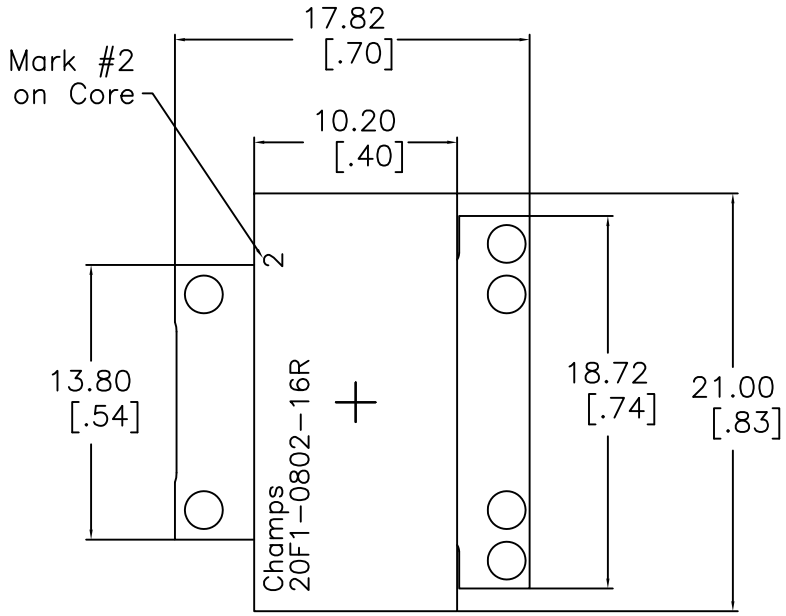

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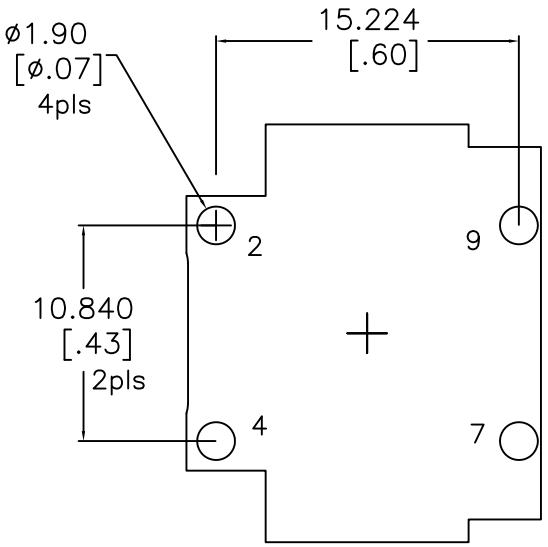

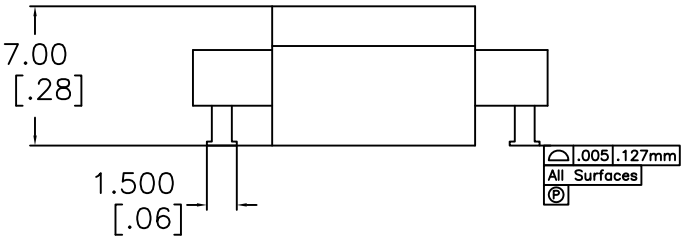

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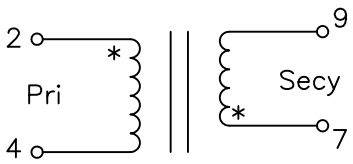

NOTES:
1. TURNS RATIO [7–9] : [2–4] = 0.25 ±2%
2. DCR [2–4] = 28 mohm ±12%, [7–9] = 1.75 mohm Nom ±12%
3. Inductance [2–4]= 16.0uH ±10%, 100KHz, 1.0 VRMS @ 25C
4. Leakage Inductance [2–4] Short [7–9] = 120nH Nom @100 KHz
5. Dielectric Strength [2–4] to [7–9] 1500 VDC,
   [2–4] to CORE 1500 VDC, [7–9] to CORE 500 VDC
6. Weight 6.8 grams Max | RoHS & REACH Compliant
7. Rated Temperature Range: –55C to +130C [Inclusive of Temp Rise]

No.	DESCRIPTION REVISIONS	DATE	APPR

THIRD ANGLE PROJECTION

CHAMPS TECHNOLOGIES

TOLERANCES/UNITS in MM UNLESS OTHERWISE INDICATED
.XXX ± 0.254
.XX ± 0.508
.X ± 0.78
ANGLE ±

	SIGN	DATE
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CHKD		
APPR		

Champs-Tech PN 20F1-0802-16R

Customer Part #:

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SIZE | SCALE 3:1

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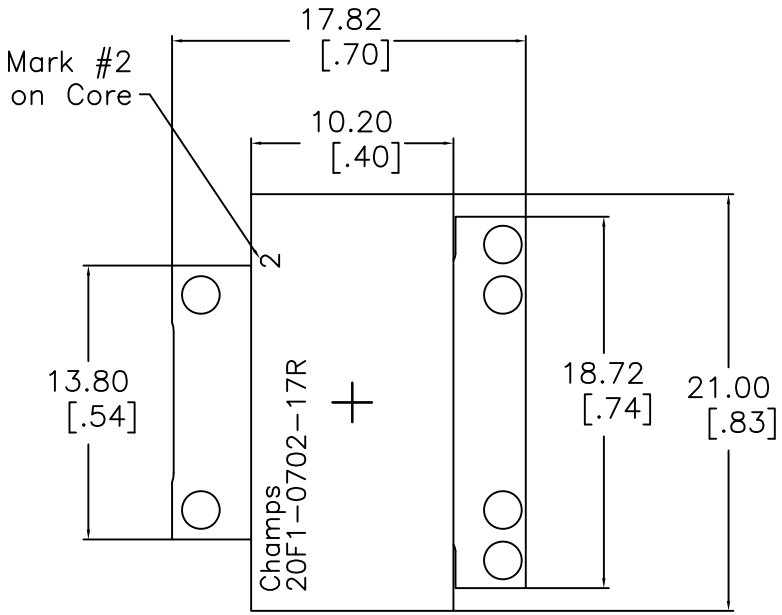
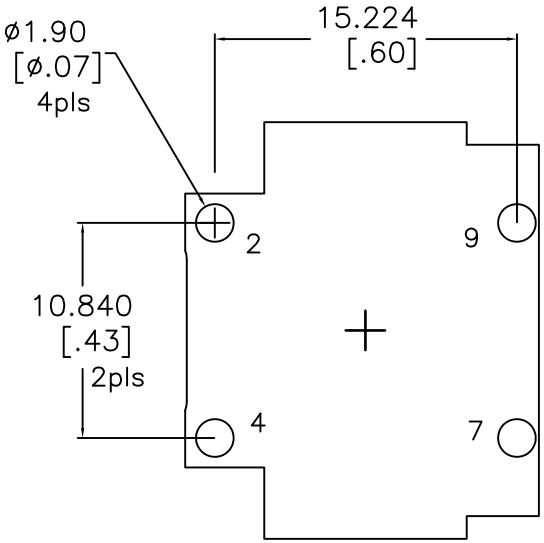
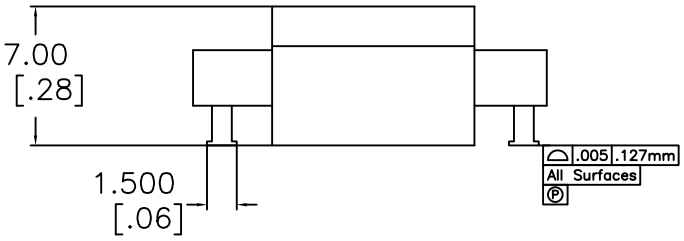


SUGGESTED PAD LAYOUT





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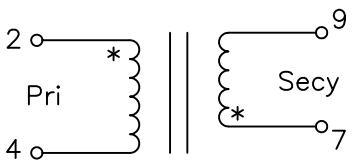

NOTES:
1. TURNS RATIO [7–9] : [2–4] = 0.286 ±2%
2. DCR [2–4] = 23 mohm ±12%, [7–9] = 1.75 mohm Nom ±12%
3. Inductance [2–4]= 17.0uH ±10%, 100KHz, 1.0 VRMS @ 25C
4. Leakage Inductance [2–4] Short [7–9] = 100nH Nom @100 KHz
5. Dielectric Strength [2–4] to [7–9] 1500 VDC,
   [2–4] to CORE 1500 VDC, [7–9] to CORE 500 VDC
6. Weight 6.8 grams Max | RoHS & REACH Compliant
7. Rated Temperature Range: –55C to +130C [Inclusive of Temp Rise]

No.	DESCRIPTION REVISIONS	DATE	APPR

THIRD ANGLE PROJECTION

TOLERANCES/UNITS in MM UNLESS OTHERWISE INDICATED

.XXX ± 0.254
.XX ± 0.508
.X ± 0.78
ANGLE ±

CHAMPS TECHNOLOGIES

	SIGN	DATE
DRAWN	HE	10.07.13
CHKD		
APPR		

Champs-Tech PN 20F1-0702-17R

Customer Part #:

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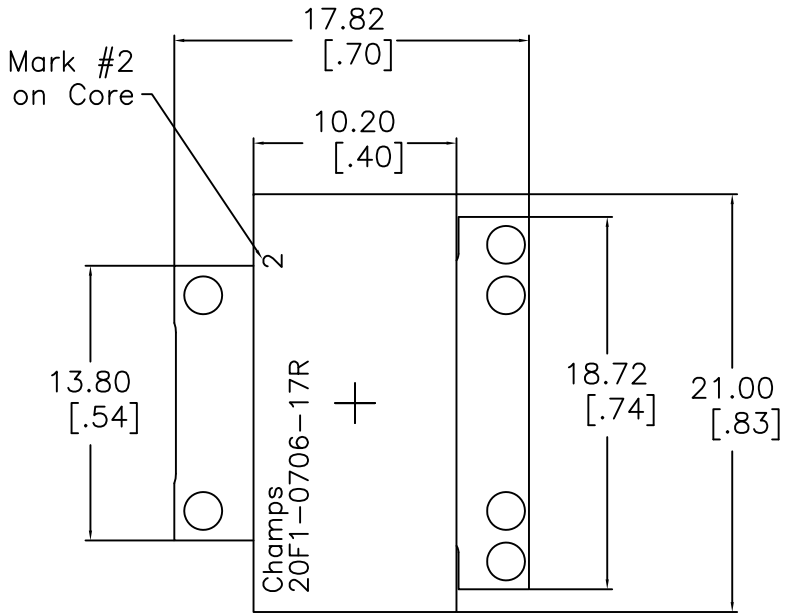
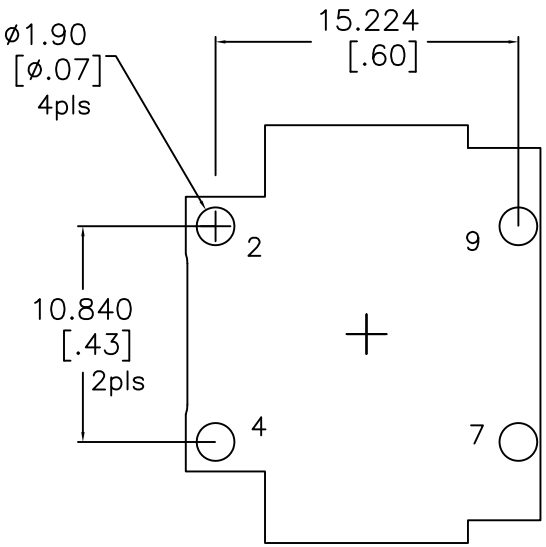
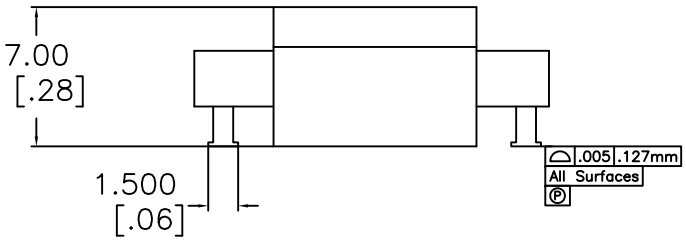
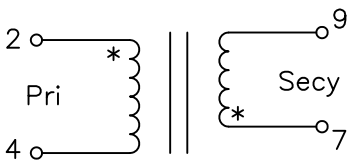


SUGGESTED PAD LAYOUT





Schematic



NOTES:
1. TURNS RATIO [7–9] : [2–4] = 0.857 ±2%
2. DCR [7–9] = 14.5 mohm Nom, [204] = 19 mohm Nom
3. Inductance [2–4]= 17.0 uH Nom, ±10% @100KHz, 1.0 VRMS @ 25C
4. Leakage Inductance [2–4] Short [7–9] = 70nH Nom @100 KHz
5. Dielectric Strength [2,4–1,5] to [7–9] 1500 VDC,
   [2–4] to CORE 1500 VDC, [7–9] to CORE 500 VDC
6. Weight 6.8 grams Max | RoHS & REACH Compliant
7. Temp Rating: –55C to +130C [Inclusive of Temp Rise]

No.	DESCRIPTION REVISIONS	DATE	APPR

THIRD ANGLE PROJECTION

CHAMPS TECHNOLOGIES

TOLERANCES/UNITS in MM
UNLESS OTHERWISE INDICATED
.XXX ± 0.254
.XX ± 0.508
.X ± 0.78
ANGLE ±

	SIGN	DATE
DRAWN	HE	10.07.13
CHKD		
APPR		

Champs-Tech PN 20F1-0706-17R

Customer Part #:

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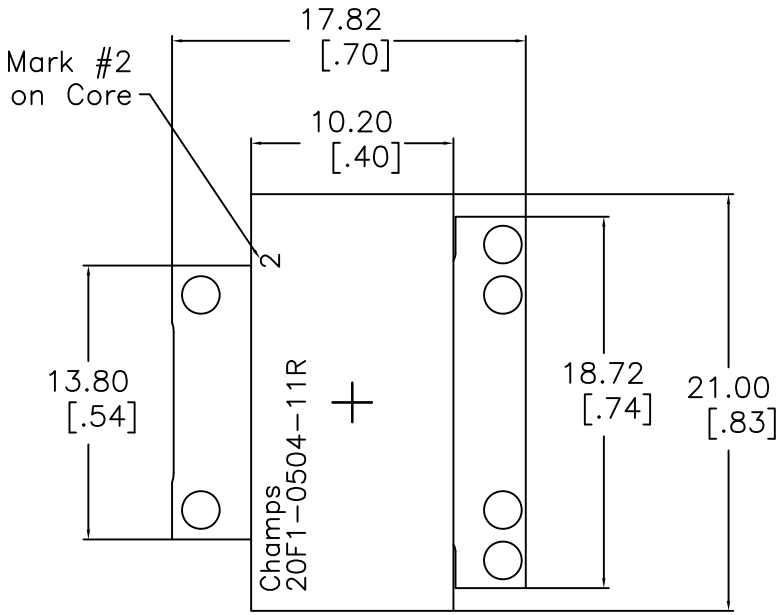
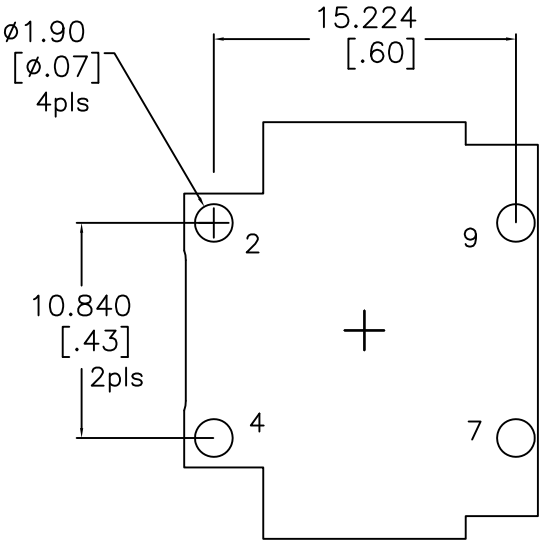
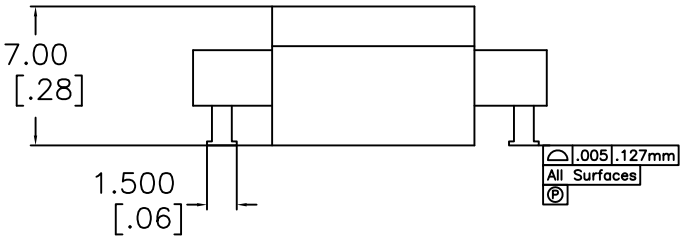
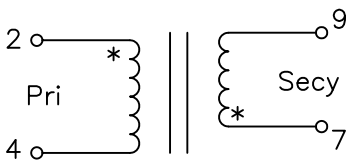


SUGGESTED PAD LAYOUT





Schematic



NOTES:
1. TURNS RATIO [7–9] : [2–4] = 0.80 ±2%
2. DCR [7–9] = 6.3 mohm Nom, [2–4] = 12 mohm Nom
3. Inductance [2–4]= 11.0 uH Nom, ±10% @100KHz, 1.0 VRMS @ 25C
4. Leakage Inductance [2–4] Short [7–9] = 50nH Nom @100 KHz
5. Dielectric Strength [2,4–1,5] to [7–9] 1500 VDC,
   [2–4] to CORE 1500 VDC, [7–9] to CORE 500 VDC
6. Weight 6.8 grams Max | RoHS & REACH Compliant
7. Temp Rating: –55C to +130C [Inclusive of Temp Rise]

No.	DESCRIPTION REVISIONS	DATE	APPR

THIRD ANGLE PROJECTION

TOLERANCES/UNITS in MM UNLESS OTHERWISE INDICATED

.XXX ± 0.254
.XX ± 0.508
.X ± 0.78
ANGLE ±

CHAMPS TECHNOLOGIES

	SIGN	DATE
DRAWN	HE	10.07.13
CHKD		
APPR		

Champs-Tech PN 20F1-0504-11R

Customer Part #:

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