



February 2011
EMPro Default 3D Library

© **Agilent Technologies, Inc. 2000-2011**

5301 Stevens Creek Blvd., Santa Clara, CA 95052 USA

No part of this documentation may be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Agilent Technologies, Inc. as governed by United States and international copyright laws.

Acknowledgments

Mentor Graphics is a trademark of Mentor Graphics Corporation in the U.S. and other countries. Mentor products and processes are registered trademarks of Mentor Graphics Corporation. * Calibre is a trademark of Mentor Graphics Corporation in the US and other countries. "Microsoft®, Windows®, MS Windows®, Windows NT®, Windows 2000® and Windows Internet Explorer® are U.S. registered trademarks of Microsoft Corporation. Pentium® is a U.S. registered trademark of Intel Corporation. PostScript® and Acrobat® are trademarks of Adobe Systems Incorporated. UNIX® is a registered trademark of the Open Group. Oracle and Java and registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners. SystemC® is a registered trademark of Open SystemC Initiative, Inc. in the United States and other countries and is used with permission. MATLAB® is a U.S. registered trademark of The Math Works, Inc.. HiSIM2 source code, and all copyrights, trade secrets or other intellectual property rights in and to the source code in its entirety, is owned by Hiroshima University and STARC. FLEXIm is a trademark of Globetrotter Software, Incorporated. Layout Boolean Engine by Klaas Holwerda, v1.7 <http://www.xs4all.nl/~kholwerd/bool.html> . FreeType Project, Copyright (c) 1996-1999 by David Turner, Robert Wilhelm, and Werner Lemberg. QuestAgent search engine (c) 2000-2002, JObjects. Motif is a trademark of the Open Software Foundation. Netscape is a trademark of Netscape Communications Corporation. Netscape Portable Runtime (NSPR), Copyright (c) 1998-2003 The Mozilla Organization. A copy of the Mozilla Public License is at <http://www.mozilla.org/MPL/> . FFTW, The Fastest Fourier Transform in the West, Copyright (c) 1997-1999 Massachusetts Institute of Technology. All rights reserved.

The following third-party libraries are used by the NlogN Momentum solver:

"This program includes Metis 4.0, Copyright © 1998, Regents of the University of Minnesota", <http://www.cs.umn.edu/~metis> , METIS was written by George Karypis (karypis@cs.umn.edu).

Intel@ Math Kernel Library, <http://www.intel.com/software/products/mkl>

SuperLU_MT version 2.0 - Copyright © 2003, The Regents of the University of California, through Lawrence Berkeley National Laboratory (subject to receipt of any required approvals from U.S. Dept. of Energy). All rights reserved. SuperLU Disclaimer: THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF

SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

7-zip - 7-Zip Copyright: Copyright (C) 1999-2009 Igor Pavlov. Licenses for files are: 7z.dll: GNU LGPL + unRAR restriction, All other files: GNU LGPL. 7-zip License: This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version. This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details. You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA. unRAR copyright: The decompression engine for RAR archives was developed using source code of unRAR program. All copyrights to original unRAR code are owned by Alexander Roshal. unRAR License: The unRAR sources cannot be used to re-create the RAR compression algorithm, which is proprietary. Distribution of modified unRAR sources in separate form or as a part of other software is permitted, provided that it is clearly stated in the documentation and source comments that the code may not be used to develop a RAR (WinRAR) compatible archiver. 7-zip Availability: <http://www.7-zip.org/>

AMD Version 2.2 - AMD Notice: The AMD code was modified. Used by permission. AMD copyright: AMD Version 2.2, Copyright © 2007 by Timothy A. Davis, Patrick R. Amestoy, and Iain S. Duff. All Rights Reserved. AMD License: Your use or distribution of AMD or any modified version of AMD implies that you agree to this License. This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version. This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details. You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA Permission is hereby granted to use or copy this program under the terms of the GNU LGPL, provided that the Copyright, this License, and the Availability of the original version is retained on all copies. User documentation of any code that uses this code or any modified version of this code must cite the Copyright, this License, the Availability note, and "Used by permission." Permission to modify the code and to distribute modified code is granted, provided the Copyright, this License, and the Availability note are retained, and a notice that the code was modified is included. AMD Availability: <http://www.cise.ufl.edu/research/sparse/amd>

UMFPACK 5.0.2 - UMFPACK Notice: The UMFPACK code was modified. Used by permission. UMFPACK Copyright: UMFPACK Copyright © 1995-2006 by Timothy A. Davis. All Rights Reserved. UMFPACK License: Your use or distribution of UMFPACK or any modified version of UMFPACK implies that you agree to this License. This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License

as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version. This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details. You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA Permission is hereby granted to use or copy this program under the terms of the GNU LGPL, provided that the Copyright, this License, and the Availability of the original version is retained on all copies. User documentation of any code that uses this code or any modified version of this code must cite the Copyright, this License, the Availability note, and "Used by permission." Permission to modify the code and to distribute modified code is granted, provided the Copyright, this License, and the Availability note are retained, and a notice that the code was modified is included. UMFPACK Availability: <http://www.cise.ufl.edu/research/sparse/umfpack> UMFPACK (including versions 2.2.1 and earlier, in FORTRAN) is available at <http://www.cise.ufl.edu/research/sparse> . MA38 is available in the Harwell Subroutine Library. This version of UMFPACK includes a modified form of COLAMD Version 2.0, originally released on Jan. 31, 2000, also available at <http://www.cise.ufl.edu/research/sparse> . COLAMD V2.0 is also incorporated as a built-in function in MATLAB version 6.1, by The MathWorks, Inc. <http://www.mathworks.com> . COLAMD V1.0 appears as a column-preordering in SuperLU (SuperLU is available at <http://www.netlib.org>). UMFPACK v4.0 is a built-in routine in MATLAB 6.5. UMFPACK v4.3 is a built-in routine in MATLAB 7.1.

Qt Version 4.6.3 - Qt Notice: The Qt code was modified. Used by permission. Qt copyright: Qt Version 4.6.3, Copyright (c) 2010 by Nokia Corporation. All Rights Reserved. Qt License: Your use or distribution of Qt or any modified version of Qt implies that you agree to this License. This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version. This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details. You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA Permission is hereby granted to use or copy this program under the terms of the GNU LGPL, provided that the Copyright, this License, and the Availability of the original version is retained on all copies. User documentation of any code that uses this code or any modified version of this code must cite the Copyright, this License, the Availability note, and "Used by permission." Permission to modify the code and to distribute modified code is granted, provided the Copyright, this License, and the Availability note are retained, and a notice that the code was modified is included. Qt Availability: <http://www.qtsoftware.com/downloads> Patches Applied to Qt can be found in the installation at: `$HPEESOF_DIR/prod/licenses/thirdparty/qt/patches`. You may also contact Brian Buchanan at Agilent Inc. at brian_buchanan@agilent.com for more information.

The HiSIM_HV source code, and all copyrights, trade secrets or other intellectual property rights in and to the source code, is owned by Hiroshima University and/or STARC.

Errata The ADS product may contain references to "HP" or "HPEESOF" such as in file names and directory names. The business entity formerly known as "HP EEsof" is now part of Agilent Technologies and is known as "Agilent EEsof". To avoid broken functionality and to maintain backward compatibility for our customers, we did not change all the names and labels that contain "HP" or "HPEESOF" references.

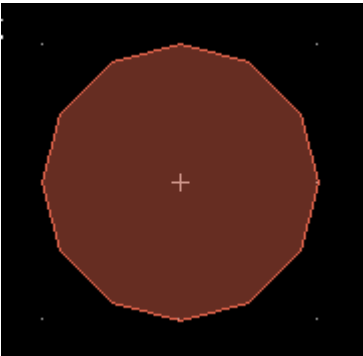
Warranty The material contained in this document is provided "as is", and is subject to being changed, without notice, in future editions. Further, to the maximum extent permitted by applicable law, Agilent disclaims all warranties, either express or implied, with regard to this documentation and any information contained herein, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Agilent shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or of any information contained herein. Should Agilent and the user have a separate written agreement with warranty terms covering the material in this document that conflict with these terms, the warranty terms in the separate agreement shall control.

Technology Licenses The hardware and/or software described in this document are furnished under a license and may be used or copied only in accordance with the terms of such license. Portions of this product include the SystemC software licensed under Open Source terms, which are available for download at <http://systemc.org/>. This software is redistributed by Agilent. The Contributors of the SystemC software provide this software "as is" and offer no warranty of any kind, express or implied, including without limitation warranties or conditions or title and non-infringement, and implied warranties or conditions merchantability and fitness for a particular purpose. Contributors shall not be liable for any damages of any kind including without limitation direct, indirect, special, incidental and consequential damages, such as lost profits. Any provisions that differ from this disclaimer are offered by Agilent only.

Restricted Rights Legend U.S. Government Restricted Rights. Software and technical data rights granted to the federal government include only those rights customarily provided to end user customers. Agilent provides this customary commercial license in Software and technical data pursuant to FAR 12.211 (Technical Data) and 12.212 (Computer Software) and, for the Department of Defense, DFARS 252.227-7015 (Technical Data - Commercial Items) and DFARS 227.7202-3 (Rights in Commercial Computer Software or Computer Software Documentation).

EMPro_LIBS3D_Block	6
EMPro_LIBS3D_BlockArray	7
EMPro_LIBS3D_BlockArrayOutline	8
EMPro_LIBS3D_Cylinder	8
EMPro_LIBS3D_CylinderArray	9
EMPro_LIBS3D_CylinderArrayOutline	10
EMPro_LIBS3D_SolderBall	11
EMPro_LIBS3D_SolderBallArray	12
EMPro_LIBS3D_SolderBallArrayOutline	13
EMPro_LIBS3D_SpanBlock	14
EMPro_LIBS3D_SpanBlockArray	14
EMPro_LIBS3D_SpanBlockArrayOutline	15
EMPro_LIBS3D_SpanCylinder	16
EMPro_LIBS3D_SpanCylinderArray	16
EMPro_LIBS3D_SpanCylinderArrayOutline	17
EMPro_LIBS3D_SpanSolderBall	18
EMPro_LIBS3D_SpanSolderBallArray	19
EMPro_LIBS3D_SpanSolderBallArrayOutline	19

EMPro_LIBS3D_Block



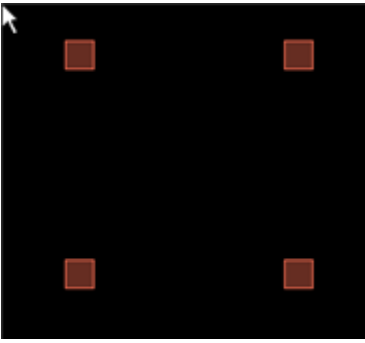
Description: A block

Library: EMPro Default 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	An XML file containing the model data.	None	None
DesignKitName	The design kit containing the component.	None	None
Layer	The layer for placing a block.	cond:drawing	None
Layer2	The layer used to draw the markup.	default:drawing	None
PlaceCustomComponentOnTop	Place the component on top of the specified layer.	None	None
depth	Depth of block	1.00e+001	mil
height	Height of block	1.00e+001	mil
material	Material	Cu	None
width	Width of block	1.00e+001	mil

EMPro_LIBS3D_BlockArray



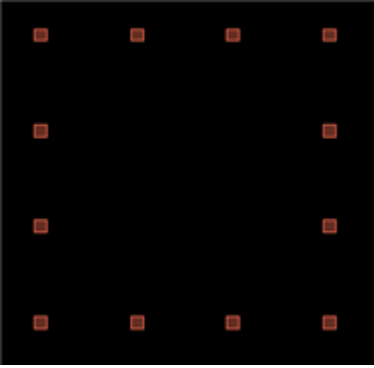
Description: An array of blocks

Library: EMPro 3D library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data	None	None
DesignKitName	The Design Kit containing the component	None	None
Layer	The layer on which to place the block.	cond:drawing	None
Layer2	The layer used to draw the markup.	default:drawing	None
PlaceCustomComponentOnTop	Place the component on top of the specified layer.	No	None
depth	Depth of block	1.00e+001	mil
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
height	Height of block	0.000254	meter
material	Material	Cu	None
nx	Number of components in X direction	2	None
ny	Number of components in Y direction	2	None
width	Width of block	1.00e+001	mil

EMPro_LIBS3D_BlockArrayOutline



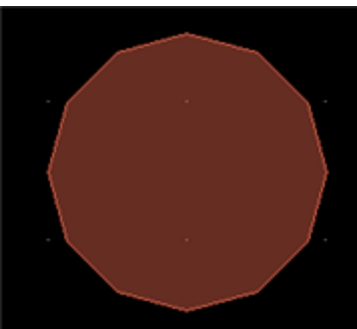
Description: An outline of an array of blocks

Library:

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data		
DesignKitName	The Design Kit containing the component		
Layer	The layer on which to place the block.	cond:drawing	
Layer2	The layer used to draw the markup.	default:drawing	
PlaceCustomComponentOnTop	Place the component on top of the specified layer.	No	
depth	Depth of block	1.00e+001	mil
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
height	Height of block	1.00e+001	mil
material	Material	Cu	None
nx	Number of components in X direction	4	None
ny	Number of components in Y direction	4	None
width	Width of block	1.00e+001	mil

EMPro_LIBS3D_Cylinder



Description: A cylinder

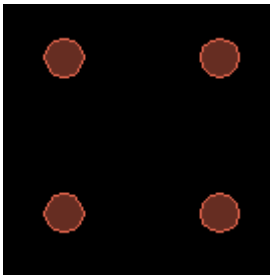
Description: A cylinder

Library: EMPro 3D library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data		
DesignKitName	The Design Kit containing the component		
Layer	The layer on which to place the block.	cond:drawing	
Layer2	The layer used to draw the markup.	default:drawing	
PlaceCustomComponentOnTop	Place the component on top of the specified layer.	No	
division	Number of divisions along z	12	None
height	Height of cylinder	1.00e+001	mil
material	Material	Cu	
radius	Radius of cylinder	1.00e+001	mil

EMPro_LIBS3D_CylinderArray



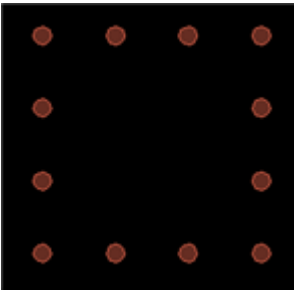
Description: An array of Cylinders

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data		
DesignKitName	The Design Kit containing the component		
Layer	The layer on which to place the cylinder	cond:drawing	
Layer2	The layer used to draw the markup.	default:drawing	
PlaceCustomComponentOnTop	Place the component on top of the specified layer.	No	
arcResolution	Arc resolution for the circular cross-section of the solder ball	45	deg
divisions	Number of divisions along z	12	none
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
height	Height of solder ball	1.00e+001	mil
material	Material	Cu	
radius	radius of cylinder	1.00e+001	mil
nx	Number of components in X direction	2	None
ny	Number of components in Y direction	2	None

EMPro_LIBS3D_CylinderArrayOutline



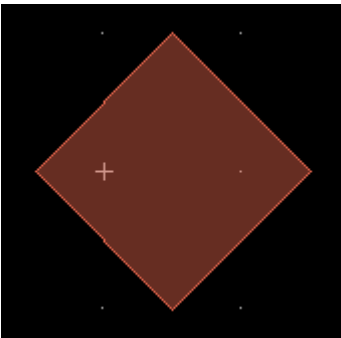
Description: An outline of an array of Cylinders

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data	None	None
DesignKitName	The Design Kit containing the component	None	None
Layer	The layer on which to place the cylinder	cond:drawing	None
Layer2	The layer used to draw the markup.	default:drawing	None
PlaceCustomComponentOnTop	Place the component on top of the specified layer.	No	None
divisions	Number of divisions along z	12	None
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
height	Height of cylinder	1.00e+001	mil
material	Material	Cu	None
nx	Number of components in X direction	4	None
ny	Number of components in Y direction	4	None
radius	Radius of cylinder	1.00e+001	mil

EMPro_LIBS3D_SolderBall



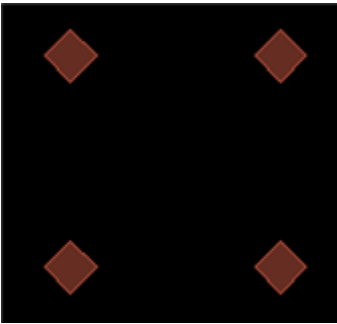
Description: A solder ball

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data	None	None
DesignKitName	The Design Kit containing the component	None	None
Layer	The layer on which to place the solder ball	cond:drawing	None
Layer2	The layer used to draw the markup	default:drawing	None
PlaceCustomComponentOnTop	Place the component on top of the specified layer	No	None
arcResolution	Arc resolution for the circular cross-section of the solder ball	45	deg
divisions	Number of divisions along z	3	None
height	Height of solder ball	1.00e+001	mil
material	Material	Cu	None
maxRadius	Maximal radius of solder ball	1.25e+001	mil
minRadius	Minimal radius of solder ball	1.00e+001	mil

EMPro_LIBS3D_SolderBallArray



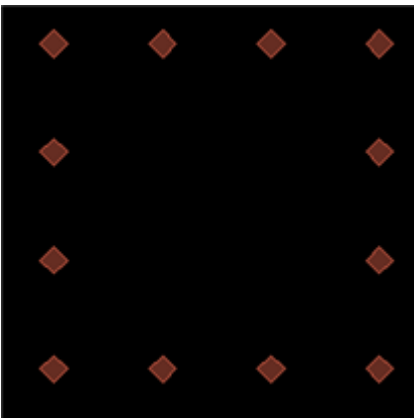
Description: An array of solder balls

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data	None	None
DesignKitName	The Design Kit containing the component	None	None
Layer	The layer on which to place the solder ball.	cond:drawing	None
Layer2	The layer used to draw the markup.	default:drawing	None
PlaceCustomComponentOnTop	Place the component on top of the specified layer.	No	None
arcResolution	Arc resolution for the circular cross-section of the solder ball	45	deg
divisions	Number of divisions along z	3	None
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
height	Height of solder ball	1.00e+001	mil
material	Material	Cu	None
maxRadius	Maximal radius of solder ball	1.25e+001	mil
minRadius	Minimal radius of solder ball	1.00e+001	mil
nx	Number of components in X direction	2	None
ny	Number of components in Y direction	2	None

EMPro_LIBS3D_SolderBallArrayOutline



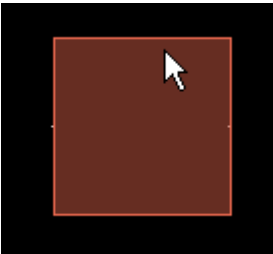
Description: An outline of an array of solder balls

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data	None	None
DesignKitName	The Design Kit containing the component	None	None
Layer	The layer on which to place the solder ball.	cond:drawing	None
Layer2	The layer used to draw the markup	default:drawing	None
PlaceCustomComponentOnTop	Place the component on top of the specified layer	No	
arcResolution	Arc resolution for the circular cross-section of the solder ball	45	deg
divisions	Number of divisions along z	3	none
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
height	Height of solder ball	1.00e+001	mil
material	Material	Cu	None
maxRadius	Maximal radius of solder ball	1.25e+001	mil
minRadius	Minimal radius of solder ball	1.00+001	mil
nx	Number of components in X direction	4	None

EMPro_LIBS3D_SpanBlock



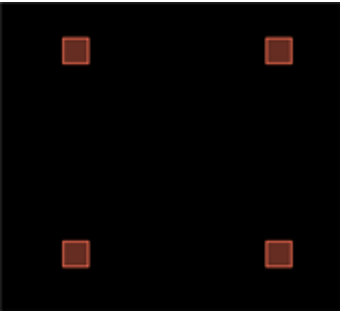
Description:A block spanning over a layer

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data	None	None
DesignKitName	The Design Kit containing the component	None	None
Layer	The layer over which the cylinder will span	cond:drawing	None
Layer2	The layer used to draw the markup.	default:drawing	None
depth	Depth of block	1.00e+001	mil
material	Material	Cu	None
width	Width of block	1.00e+001	mil

EMPro_LIBS3D_SpanBlockArray



Description: An array of SpanBlocks

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data		
DesignKitName	The Design Kit containing the component		
Layer	The layer over which the block will span	cond:drawing	
depth	Depth of block	1.00e+001	mil
Layer2	The layer used to draw the markup.	default:drawing	
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
height	Height of solder ball	0.000254	meter
material	Material	Cu	
nx	Number of components in X direction	2	None
ny	Number of components in Y direction	2	None
width	Width of block	1.00e+001	mil

EMPro_LIBS3D_SpanBlockArrayOutline

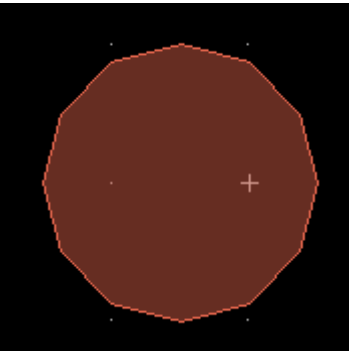
Description: An outline of an array of SpanBlocks

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data		
DesignKitName	The Design Kit containing the component		
Layer	The layer over which the block will span	cond:drawing	
Layer2	The layer used to draw the markup.	default:drawing	
depth : Depth of block	1.00e+001	mil	
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
material	Material	Cu	
nx	Number of components in X direction	2	None
ny	Number of components in Y direction	2	None
width : Width of block	1.00e+001	mil	

EMPro_LIBS3D_SpanCylinder



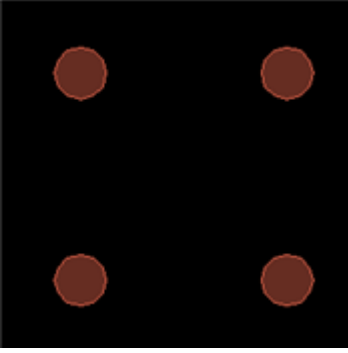
Description: A cylinder spanning over a layer

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data	None	None
DesignKitName	The Design Kit containing the component	None	None
Layer	The layer over which the cylinder will span	cond:drawing	None
Layer2	The layer used to draw the markup	default:drawing	None
divisions	Number of divisions along z	12	None
material	Material	Cu	None
radius	Radius of cylinder	1.00e+001	mil

EMPro_LIBS3D_SpanCylinderArray



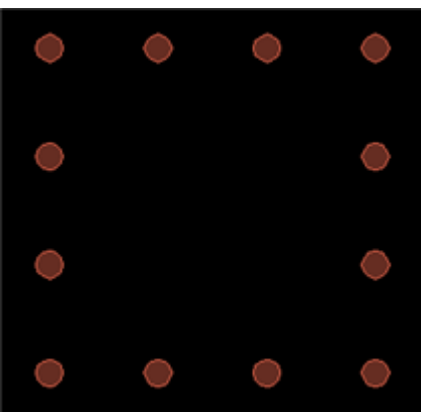
Description: An array of Span Cylinders

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data	None	None
DesignKitName	The Design Kit containing the component	None	None
Layer	The layer over which the cylinder will span	cond:drawing	None
Layer2	The layer used to draw the markup.	default:drawing	None
divisions	Number of divisions along z	12	None
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
material	Material	Cu	None
nx	Number of components in X direction	2	none
ny	Number of components in Y direction	2	None
radius	Radius of cylinder	1.00e+001	mil

EMPro_LIBS3D_SpanCylinderArrayOutline



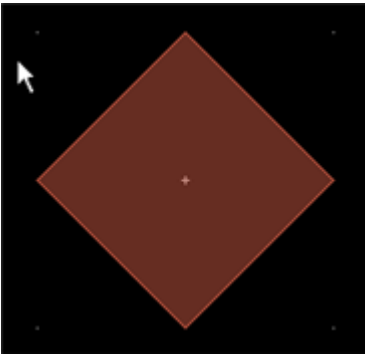
Description: An outline of an array of span cylinders

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data		
DesignKitName	The Design Kit containing the component		
Layer	The layer on over which the cylinder will span	cond:drawing	
Layer2	The layer used to draw the markup.	default:drawing	
PlaceCustomComponentOnTop	Place the component on top of the specified layer.	No	
division	Number of divisions along z	12	None
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
material	Material	Cu	
nx	Number of components in X direction	4	None
ny	Number of components in Y direction	4	None
radius	Radius of cylinder	1.00e+001	mil

EMPro_LIBS3D_SpanSolderBall



Description: A solder ball spanning over a layer

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data	None	None
DesignKitName	The Design Kit containing the component	None	None
Layer	The layer over which the solder ball will span.	cond:drawing	None
Layer2	The layer used to draw the markup.	default:drawing	None
arcResolution	Arc resolution for the circular cross-section of the solder ball	45	deg
divisions	Number of divisions along z	3	None
material	Material	Cu	None
maxRadius	Maximal radius of solder ball	1.25e+001	mil
minRadius	Minimal radius of solder ball	1.00e+001	mil

EMPro_LIBS3D_SpanSolderBallArray



Description:An array of spanning solder balls

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data		
DesignKitName	The Design Kit containing the component		
Layer	The layer over which the solder ball will span	cond:drawing	
Layer2	The layer used to draw the markup.	default:drawing	
arcResolution	Arc resolution for the circular cross-section of the solder ball	45	deg
divisions	Number of divisions along z	3	none
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
material	Material	Cu	
maxRadius	Maximal radius of solder ball	1.25e+001	mil
minRadius	Minimal radius of solder ball	1.00e+001	mil
nx	Number of components in X direction	2	None
ny	Number of components in Y direction	2	None

EMPro_LIBS3D_SpanSolderBallArrayOutline



Description: An outline of an array of spanning solder balls

Library: EMPro 3D Library

Parameters

Name	Description	Default Value	Unit
Desc3D	XML file containing the model data		
DesignKitName	The Design Kit containing the component		
Layer	The layer over which the solder ball will span	cond:drawing	
Layer2	The layer used to draw the markup.	default:drawing	
arcResolution	Arc resolution for the circular cross-section of the solder ball	45	deg
divisions	Number of divisions along z	3	none
dx	Distance between components in X direction	8e+001	mil
dy	Distance between components in Y direction	8e+001	mil
material	Material	Cu	
maxRadius	Maximal radius of solder ball	1.25e+001	mil
minRadius	Minimal radius of solder ball	1.25e+001	mil
nx	Number of components in X direction	4	None
ny	Number of components in Y direction	4	None