Twin Builder Components: Magnetic

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AVX Magnetic Components

Jiles-Atherton Model for AVX B1

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2500
MSHYP	Saturation Magnetization (Hyperbola)	real	291884 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	16.5632 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	291884 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	13.2689 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5.33333e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1418
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.113603
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for AVX B2

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1900
MSHYP	Saturation Magnetization (Hyperbola)	real	302807 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	23.855 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	302807 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	14.1452 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	3.72222e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1496
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.088709
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10 [A/m]
RHO	Electrical Resistivity of Core Material	real	6 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for AVX B3

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1900
MSHYP	Saturation Magnetization (Hyperbola)	real	311720 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	19.05 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	311720 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	16.4653 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	6.94444e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1161
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.100307
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10 [A/m]
RHO	Electrical Resistivity of Core Material	real	6 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for AVX B5

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1800
MSHYP	Saturation Magnetization (Hyperbola)	real	304449 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	20.7822 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	304449 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	17.1853 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	6.94444e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1228
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.101548
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10 [A/m]
RHO	Electrical Resistivity of Core Material	real	6 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for AVX B7

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2000
MSHYP	Saturation Magnetization (Hyperbola)	real	304449 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	19.9829 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	304449 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	15.3868 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5.33333e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1312
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.101029
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10 [A/m]
RHO	Electrical Resistivity of Core Material	real	6 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for AVX F1

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2300
MSHYP	Saturation Magnetization (Hyperbola)	real	317668 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	21.7276 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	317668 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	13.4812 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	2.111111e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.185373
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.097565
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10 [A/m]
RHO	Electrical Resistivity of Core Material	real	6 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for AVX F2

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1900
MSHYP	Saturation Magnetization (Hyperbola)	real	266209 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	12.5133 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	266209 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	15.0021 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000101667
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.0893
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	12.2 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.107017
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10 [A/m]
RHO	Electrical Resistivity of Core Material	real	6 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for AVX F4

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1300
MSHYP	Saturation Magnetization (Hyperbola)	real	256246 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	8.6729 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	256246 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	11.5461 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	8.55555e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.044
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	12.2 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.058531
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10.4 [A/m]
RHO	Electrical Resistivity of Core Material	real	6 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Epcos Magnetic Components

Jiles-Atherton Model for Epcos N27

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2000
MSHYP	Saturation Magnetization (Hyperbola)	real	362657 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	30.6365 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	362657 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	27.726[A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000101667
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1689
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	24.4 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.152828
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	20 [A/m]
RHO	Electrical Resistivity of Core Material	real	3 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Epcos N41

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2800
MSHYP	Saturation Magnetization (Hyperbola)	real	302785 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	22.7737 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	302785 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	14.1437 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	3.72222e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2105
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.130747
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	9.95 [A/m]
RHO	Electrical Resistivity of Core Material	real	2 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Epcos N49

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1500
MSHYP	Saturation Magnetization (Hyperbola)	real	359718 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	39.7519 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	356186 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	29.7685 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	8.55556e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1657
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	23.5 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.12528
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	20.6007 [A/m]
RHO	Electrical Resistivity of Core Material	real	4 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Epcos N72

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2500
MSHYP	Saturation Magnetization (Hyperbola)	real	322876 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	24.9774 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	302475 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	14.5033 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	3.72222e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1933
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.119824
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10.0501 [A/m]
RHO	Electrical Resistivity of Core Material	real	2 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Epcos N87

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2200
MSHYP	Saturation Magnetization (Hyperbola)	real	341315 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	28.0539 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	320515 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	15.8005 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	3.72222e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1807
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.108405
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10.1483 [A/m]
RHO	Electrical Resistivity of Core Material	real	4 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Epcos N92

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1500
MSHYP	Saturation Magnetization (Hyperbola)	real	374052 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	33.2473 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	355912 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	17.9303 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	3.72222e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1332
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.3 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.075517
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10.1486 [A/m]
RHO	Electrical Resistivity of Core Material	real	2 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Epcos N97

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2300
MSHYP	Saturation Magnetization (Hyperbola)	real	369007 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	29.9749 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	343240 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	14.9908 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	2.11111e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1868
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.3 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.100407
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10.3154 [A/m]
RHO	Electrical Resistivity of Core Material	real	4 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Ferroxcube Magnetic Components

Jiles-Atherton Model for Ferroxcube 3C81

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2700
MSHYP	Saturation Magnetization (Hyperbola)	real	305710 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	38.7124 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	283716 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	17.634[A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	2.11111e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.3418
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	12.2 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.167753
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10.3794 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 3C90

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2] **NOTE:** This value displays as **m^2 wire** in the user interface.
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2300
MSHYP	Saturation Magnetization (Hyperbola)	real	324496 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	25.1774 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	324496 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	21.9092 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	8.55555e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1784
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	18.3 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.155223
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	15 [A/m]

RHO	Electrical Resistivity of Core Material	real	5 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 3C91

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	3000
MSHYP	Saturation Magnetization (Hyperbola)	real	334045 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	30.0227 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	304896 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	14.3313 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	2.11111e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2695
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.140964
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10.147 [A/m]
RHO	Electrical Resistivity of Core Material	real	5 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 3C92

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1500
MSHYP	Saturation Magnetization (Hyperbola)	real	381792 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	33.8787 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	363773 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	18.5575 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	3.72222e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.133
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.3 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.07647
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10.1282 [A/m]
RHO	Electrical Resistivity of Core Material	real	5 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 3C93

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1800
MSHYP	Saturation Magnetization (Hyperbola)	real	364915 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	35.1319 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	344943 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	18.5685 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	3.72222e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1732
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.3 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.096827
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	9.95 [A/m]
RHO	Electrical Resistivity of Core Material	real	5 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 3C94

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2300
MSHYP	Saturation Magnetization (Hyperbola)	real	325445 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	31.9698 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	325445 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	27.8199 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.0001101667
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2258
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	25.3 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.196525
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	19.9 [A/m]
RHO	Electrical Resistivity of Core Material	real	5 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 3C96

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2000
MSHYP	Saturation Magnetization (Hyperbola)	real	364915 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	35.1319 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	334759 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	16.4479 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	2.11111e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1925
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.3 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.098218
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10.1568 [A/m]
RHO	Electrical Resistivity of Core Material	real	5 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 3F3

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

See *Jiles-Atherton Core Model* in the Basic Elements components for more details.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2000
MSHYP	Saturation Magnetization (Hyperbola)	real	313680 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	21.7276 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	313680 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	16.0868 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5.33333e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1385
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.102517
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10 [A/m]
RHO	Electrical Resistivity of Core Material	real	2 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 3F35

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1400
MSHYP	Saturation Magnetization (Hyperbola)	real	334640 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	34.3099 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	334640 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	32.5146 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1434
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	30.5 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.135931
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	25 [A/m]
RHO	Electrical Resistivity of Core Material	real	10 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 3F4

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	900
MSHYP	Saturation Magnetization (Hyperbola)	real	293558 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	51.4199 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	291268 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	41.8817 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1575
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	63.25 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.129268
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	53.4729 [A/m]
RHO	Electrical Resistivity of Core Material	real	10 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 3F45

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	900
MSHYP	Saturation Magnetization (Hyperbola)	real	293446 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	51.3839 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	293446 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	40.6291 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1574
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	63.25 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.12447
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	52 [A/m]
RHO	Electrical Resistivity of Core Material	real	10 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 3F5

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	650
MSHYP	Saturation Magnetization (Hyperbola)	real	295428 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	90.6235 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	283308 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	54.938 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1991
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	61 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.125851
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	51.6934 [A/m]
RHO	Electrical Resistivity of Core Material	real	10 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Ferroxcube 4F1

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	80
MSHYP	Saturation Magnetization (Hyperbola)	real	261339 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	128.2184 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	243694 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	72.7355 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.0388
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	189.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.023579
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	169.5 [A/m]
RHO	Electrical Resistivity of Core Material	real	100000 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Magnetics Magnetic Components

Jiles-Atherton Model for Magnetics A

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	20000
MSHYP	Saturation Magnetization (Hyperbola)	real	9375646 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	1.2567 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	1483290 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	2.8416 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.0027
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	89.1491 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.038312
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	18.6563 [A/m]
RHO	Electrical Resistivity of Core Material	real	4 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Magnetics D

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2000
MSHYP	Saturation Magnetization (Hyperbola)	real	820011 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	0.802 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	662775 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	1.1067 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.002
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	3.3339 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.003338
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	2.8776 [A/m]
RHO	Electrical Resistivity of Core Material	real	3 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Magnetics E

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	20000
MSHYP	Saturation Magnetization (Hyperbola)	real	1012427 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	1.8516[A/m]
MSLAN	Saturation Magnetization (Langevin)	real	608491 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	4.6488 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	2.11111e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.0366
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	36.125 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.152789
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	21.68 [A/m]
RHO	Electrical Resistivity of Core Material	real	2 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Magnetics F

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	3000
MSHYP	Saturation Magnetization (Hyperbola)	real	283463 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	7.3665 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	283463 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	10.8106 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	6.94444e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.0779
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	16.445 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.114375
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	14.105 [A/m]
RHO	Electrical Resistivity of Core Material	real	2 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Magnetics H

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	15000
MSHYP	Saturation Magnetization (Hyperbola)	real	193502 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	6.0747 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	180688 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	2.8531 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.4709
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	2.8 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.236834
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	2.0507 [A/m]
RHO	Electrical Resistivity of Core Material	real	0.1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Magnetics J

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	5000
MSHYP	Saturation Magnetization (Hyperbola)	real	175342 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	5.2226 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	169296 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	6.4595 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	6.94444e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1489
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	4.88 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.190738
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	4 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Magnetics K

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1500
MSHYP	Saturation Magnetization (Hyperbola)	real	1259723 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	394.2112 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	594273 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	77.3587 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	3.72222e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.4691
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	24.2013 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.19513
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	20 [A/m]
RHO	Electrical Resistivity of Core Material	real	20 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Magnetics P

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2500
MSHYP	Saturation Magnetization (Hyperbola)	real	305458 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	18.072 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	305458 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	15.8234 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	6.94444e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1478
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	12.2 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.129454
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10 [A/m]
RHO	Electrical Resistivity of Core Material	real	5 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Magnetics R

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2300
MSHYP	Saturation Magnetization (Hyperbola)	real	305458 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	17.3224 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	295276 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	16.6562 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	8.55556e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1304
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	11.75 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.129684
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	10 [A/m]
RHO	Electrical Resistivity of Core Material	real	6 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Magnetics S

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	25000
MSHYP	Saturation Magnetization (Hyperbola)	real	7173400 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	3.0477 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	3686920 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	6.4183 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.010621
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	55.4131 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.043519
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	24.7203 [A/m]
RHO	Electrical Resistivity of Core Material	real	3 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Magnetics W

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	1 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	10000
MSHYP	Saturation Magnetization (Hyperbola)	real	217031 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	7.3571 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	180845 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	2.993[A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.339
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	2.466 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.165487
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	2.0558 [A/m]
RHO	Electrical Resistivity of Core Material	real	0.15 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Micrometals Magnetic Components

Jiles-Atherton Model for Micrometals M-18

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	55
MSHYP	Saturation Magnetization (Hyperbola)	real	907050 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	6703.4821 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	743657 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	2181.51 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.3391
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	713.3977 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.158408
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	676 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Micrometals M-2

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	10
MSHYP	Saturation Magnetization (Hyperbola)	real	1176331 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	121640.6901 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	609840 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	21535.9004 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.9307
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	310.2312 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.317826
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	303.8 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Micrometals M-26

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	75
MSHYP	Saturation Magnetization (Hyperbola)	real	1169233 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	2983.5933 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	1080510 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	1109.67 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1888
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	477.4 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.075997
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	440 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Micrometals M-30

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	22
MSHYP	Saturation Magnetization (Hyperbola)	real	1095386 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	26793.9975 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	787144 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	6777.21 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.5137
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	416 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.180807
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	412.786 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Micrometals M-34

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	33
MSHYP	Saturation Magnetization (Hyperbola)	real	969561 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	15728.8378 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	796977 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	4593.1802 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.5191
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	427.3439 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.184424
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	416.999 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Micrometals M-35

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	33
MSHYP	Saturation Magnetization (Hyperbola)	real	969561 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	15728.8378 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	796977 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	4593.1802 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.5191
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	427.3439 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.184424
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	416.999 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Micrometals M-40

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	60
MSHYP	Saturation Magnetization (Hyperbola)	real	1273362 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	5227.8108 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	1076540 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	1677.85 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2422
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	379.6 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.091955
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	365 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Micrometals M-52

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	75
MSHYP	Saturation Magnetization (Hyperbola)	real	1332977 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	4954.1559 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	1118100 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	1592.59 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.275
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	541.7631 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.105404
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	500 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Micrometals M-8

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	35
MSHYP	Saturation Magnetization (Hyperbola)	real	1389643 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	26134.4668 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	1046990 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	7265.8301 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.6394
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	792.05 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.235952
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	755.404 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Steward Magnetic Components

Jiles-Atherton Model for Steward 24

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1050
MSHYP	Saturation Magnetization (Hyperbola)	real	239820 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	19.5101 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	239820 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	21.3584 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.0853
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	30.36 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.093424
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	26.04 [A/m]
RHO	Electrical Resistivity of Core Material	real	10000 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Steward 26

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	850
MSHYP	Saturation Magnetization (Hyperbola)	real	240463 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	12.6417 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	240463 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	17.6704 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.044634
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	36.68 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.062389
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	32.9 [A/m]
RHO	Electrical Resistivity of Core Material	real	100000 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Steward 27

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1500
MSHYP	Saturation Magnetization (Hyperbola)	real	257639 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	25.9651 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	249051 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	23.7182 [A/m]

ALPHALAN	Interdomain Coupling Coefficient	real	0.000133889
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.1511
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	25.3 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.142756
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	20.8[A/m]
RHO	Electrical Resistivity of Core Material	real	10000 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Steward 31

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	4500
MSHYP	Saturation Magnetization (Hyperbola)	real	369077 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	18.6549 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	348239 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	10.7022 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	2.11111e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2274
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	9.76 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.138265
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	8.3187 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Steward 33

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2700
MSHYP	Saturation Magnetization (Hyperbola)	real	461975 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	50.1018 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	433239 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	26.7433 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	3.72222e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2927
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	19.52 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.166606
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	15.92 [A/m]
RHO	Electrical Resistivity of Core Material	real	5 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Steward 34

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	4000
MSHYP	Saturation Magnetization (Hyperbola)	real	374833 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	23.4958 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	333429 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	11.7524 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	2.11111e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2507
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	12.2 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.140953
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	9.868 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Steward 35

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	5000
MSHYP	Saturation Magnetization (Hyperbola)	real	338547 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	13.9147 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	329877 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	9.0632 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	2.11111e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2055
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	9.76 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.137344
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	8.217 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Steward 37

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	7500
MSHYP	Saturation Magnetization (Hyperbola)	real	326467 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	9.4762 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	319704 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	5.027 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2177
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	4.7 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.117913
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	4.2351 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Steward 40

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	10000
MSHYP	Saturation Magnetization (Hyperbola)	real	338592 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	7.9771 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	319091 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	4.1263 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2356
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	3.525 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.1293
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	3.1415 [A/m]
RHO	Electrical Resistivity of Core Material	real	0.5 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for Steward 42

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	7500
MSHYP	Saturation Magnetization (Hyperbola)	real	350650 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	13.9837 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	329490 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	8.6462 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	2.11111e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2991
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	7.59 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.1293
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	6.1079 [A/m]
RHO	Electrical Resistivity of Core Material	real	1 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

TDK Magnetic Components

Jiles-Atherton Model for TDK PC30

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2500
MSHYP	Saturation Magnetization (Hyperbola)	real	336479 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	28.4398 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	285279 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	12.8917 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	2.11111e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2112
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	9.1019 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.112929
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	7.9532 [A/m]
RHO	Electrical Resistivity of Core Material	real	10 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for TDK PC40

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2300
MSHYP	Saturation Magnetization (Hyperbola)	real	335251 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	51.4826 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	321518 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	20.6032 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.353
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	9.944 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.147322
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	8.8 [A/m]
RHO	Electrical Resistivity of Core Material	real	6.5 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for TDK PC44

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	2400
MSHYP	Saturation Magnetization (Hyperbola)	real	313622 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	32.8821 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	309152 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	14.3767 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5e-006
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.2515
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	7.345 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.111563
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	6.5 [A/m]
RHO	Electrical Resistivity of Core Material	real	6 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

Jiles-Atherton Model for TDK PC50

Library: Magnetic	Modeling Language: SML	Version Number: Twin Builder 2024.2

Figure 1. Component symbol

Description

This manufacturer supplied model is based on the Jiles-Atherton Core model.

Parameters

Table 1

Linear Jiles-Atherton Model

Name	Description	Data Type	Default Value [Unit]
H0	Initial magnetic field	real	0 [A/m]
M0	Initial Magnetization; |M0| ≥ 1	real	0 [A/m]
AE	Effective Area of Core Material	real	0.000198 [m^2]
LE	Effective Length of Core	real	0.07 [m]
LEVEL	Model Level Selector	real	0
MUE	Effective relative Permeability of Core; MUE > 1	real	1400
MSHYP	Saturation Magnetization (Hyperbola)	real	325290 [A/m]
AHYP	Thermal Energy Parameter (Hyperbola)	real	70.455 [A/m]
MSLAN	Saturation Magnetization (Langevin)	real	325290 [A/m]
ALAN	Thermal Energy Parameter (Langevin)	real	38.9254 [A/m]
ALPHALAN	Interdomain Coupling Coefficient	real	5.33333e-005
CHYP	Reversible Magnetization Coefficient (Hyperbola)	real	0.3731
KHYP	Pinning Energy (drag) Parameter (Hyperbola)	real	33.1282 [A/m]
CLAN	Reversible Magnetization Coefficient (Langevin)	real	0.16741
KLAN	Pinning Energy (drag) Parameter (Langevin)	real	27.2 [A/m]
RHO	Electrical Resistivity of Core Material	real	10 [Ohm*m]
KW1	Coefficient 1 for Electrical Resistivity in AC Simulation	real	0 [s/rad]
KW2	Coefficient 2 for Electrical Resistivity in AC Simulation	real	0 [s^2/rad^2]

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