DATA SHEET

3B7
Material specification

Supersedes data of September 2004 2008 Sep 01

FERROXCUBE
A YAGEO COMPANY

3B7 SPECIFICATIONS

A low frequency filter material optimized for frequencies up to 0.1 MHz.

SYMBOL	CONDITIONS	VALUE	UNIT
μ_i	25 °C; ≤10 kHz; 0.25 mT	2300 ±20%	
B	25 °C; 10 kHz; 1200 A/m	≈ 440	mT
	100 °C; 10 kHz; 1200 A/m	≈ 320	
$\tan\delta/\mu_i$	25 °C; 100 kHz; 0.25 mT	$\leq 5 \times 10^{-6}$	
	25 °C; 500 kHz; 0.25 mT	$\approx 25 \times 10^{-6}$	
	25 °C; 1 MHz; 0.25 mT	$\approx 120 \times 10^{-6}$	
D_F	25 °C; 10 kHz; 0.25 mT	$\leq 4.5 \times 10^{-6}$	
α_F	+20 to 70 °C; ≤10 kHz; 0.25 mT	$(0 \pm 0.6) \times 10^{-6}$	K^{-1}
ρ	DC, 25 °C	≈ 1	Ωm
T_C		≥ 170	°C
density		≈ 4800	kg/m^3

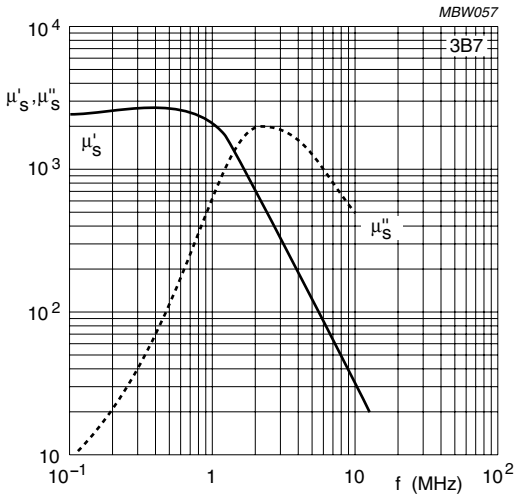

Fig.1 Complex permeability as a function of frequency.

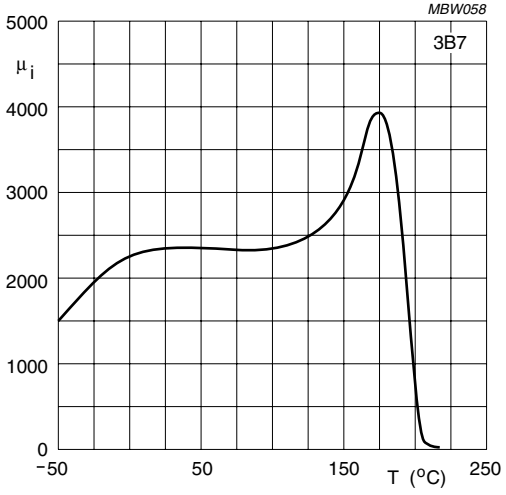

Fig.2 Initial permeability as a function of temperature.

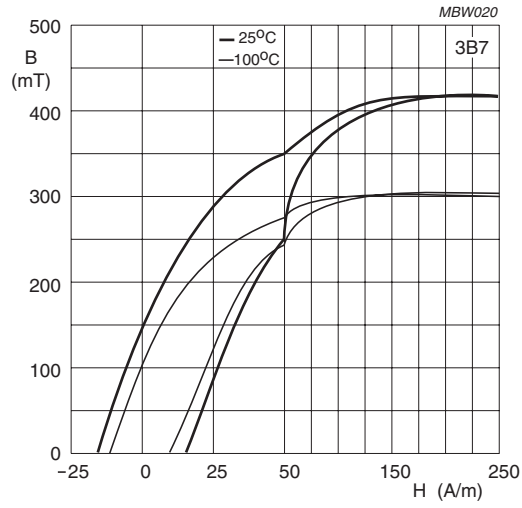

Fig.3 Typical B-H loops.

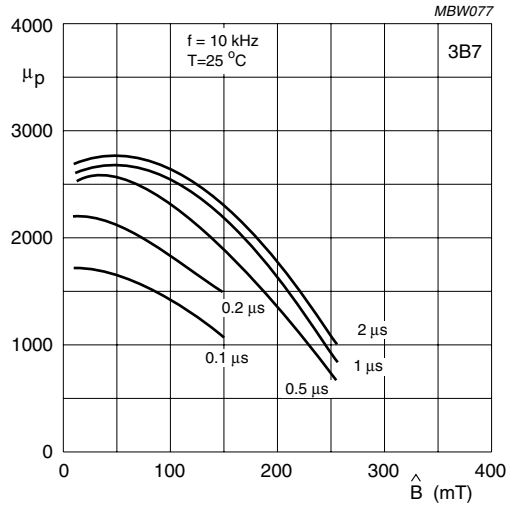

Fig.4 Pulse characteristics (unipolar pulses).

Material specification 3B7

DATA SHEET STATUS DEFINITIONS

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DATA SHEET

3B46
Material specification

Supersedes data of September 2004 2008 Sep 01

FERROXCUBE
A YAGEO COMPANY

3B46 SPECIFICATIONS

A medium permeability material with high saturation flux density. This material is suitable as linear filter choke with dc bias current, over a broad temperature range. It has been specifically designed for use in POTS-splitters for DSL applications.

SYMBOL	CONDITIONS	VALUE	UNIT
μ_i	25 °C; ≤10 kHz; 0.25 mT	3800 ± 20%	
B	25 °C;10 kHz; 1200 A/m	≈ 545	mT
	100 °C; 10 kHz; 1200 A/m	≈ 435	
$\tan\delta/\mu_i$	25 °C; 10 kHz; 0.25 mT	$\approx 0.6 \times 10^{-6}$	
	25 °C; 100 kHz; 0.25 mT	$\approx 1.6 \times 10^{-6}$	
η_B	25 °C; 10 kHz; 1.5–3 mT	$\approx 0.12 \times 10^{-6}$	mT^{-1}
α_F	≤10 kHz; 0.25 mT; 5 to 25 °C	$\approx 4.4 \times 10^{-6}$	K^{-1}
	≤10 kHz; 0.25 mT; 25 to 55 °C	$\approx -2.2 \times 10^{-6}$	K^{-1}
ρ	DC; 25 °C	≈ 10	Ωm
T_C		≥ 255	°C
density		≈ 4800	kg/m^3

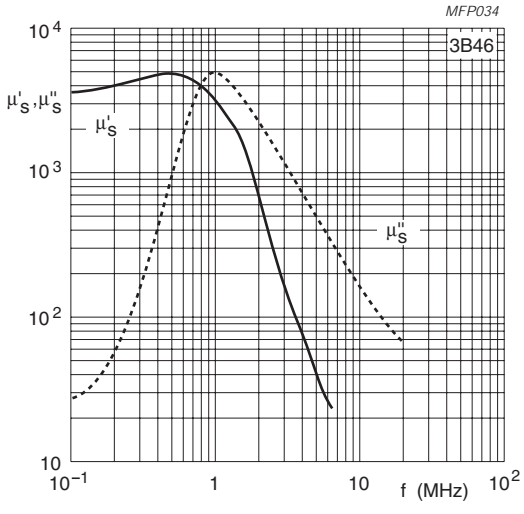

Fig.1 Complex permeability as a function of frequency.

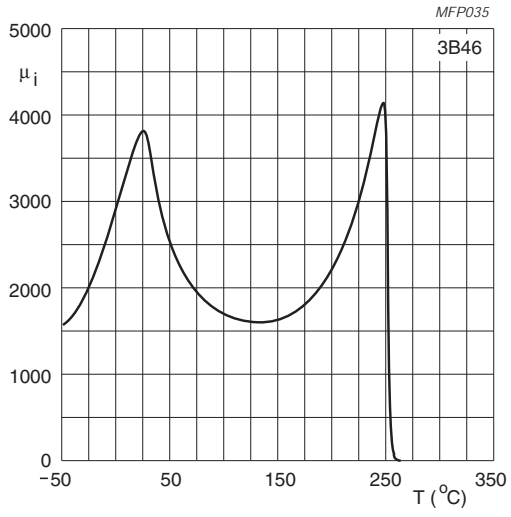

Fig.2 Initial permeability as a function of temperature.

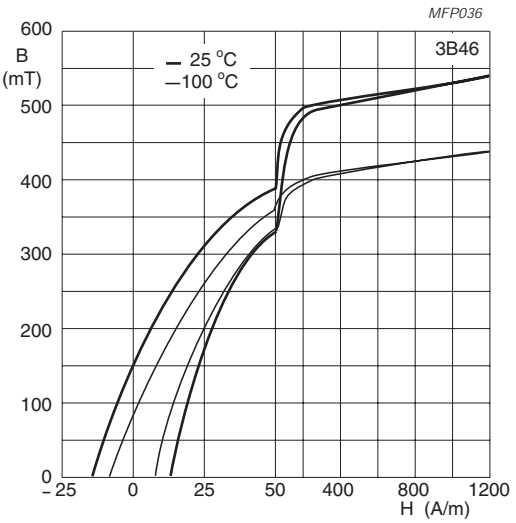

Fig.3 Typical B-H loops.

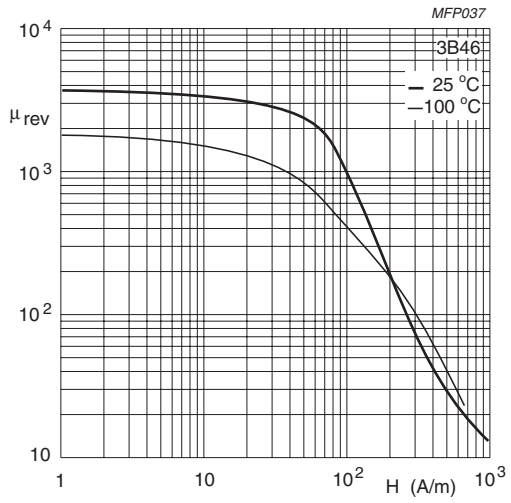

Fig.4 Reversible permeability as a function of magnetic field strength.

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DATA SHEET

3D3
Material specification

Supersedes data of September 2004 2008 Sep 01

FERROXCUBE
A YAGEO COMPANY

3D3 SPECIFICATIONS

A medium frequency filter and tuning material optimized for frequencies from 0.2 up to 2 MHz.

SYMBOL	CONDITIONS	VALUE	UNIT
μ_i	25 °C; ≤10 kHz; 0.25 mT	750 ±20%	
B	25 °C; 10 kHz; 1200 A/m	≈ 380	mT
	100 °C; 10 kHz; 1200 A/m	≈ 310	
$\tan\delta/\mu_i$	25 °C; 300 kHz; 0.25 mT	$\leq 10 \times 10^{-6}$	
	25 °C; 1 MHz; 0.25 mT	$\leq 30 \times 10^{-6}$	
η_B	25 °C; 100 kHz; 1.5 to 3 mT	$\leq 1.8 \times 10^{-3}$	T^{-1}
D_F	25 °C; 10 kHz; 0.25 mT	$\leq 12 \times 10^{-6}$	
α_F	25 to 70 °C; ≤10 kHz; 0.25 mT	$(1.5 \pm 1) \times 10^{-6}$	K^{-1}
ρ	DC; 25 °C	≈ 2	Ωm
T_C		≥ 200	°C
density		≈ 4700	kg/m^3

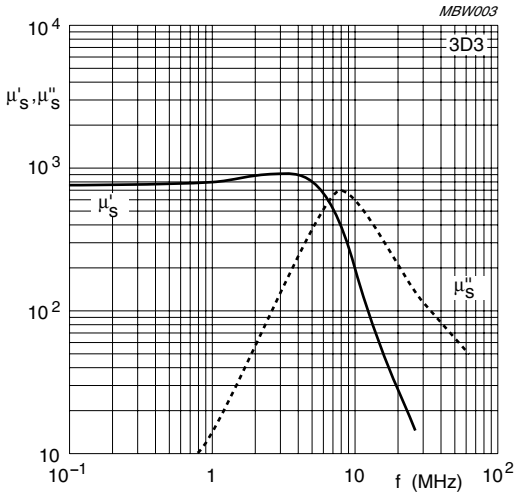

Fig.1 Complex permeability as a function of frequency.

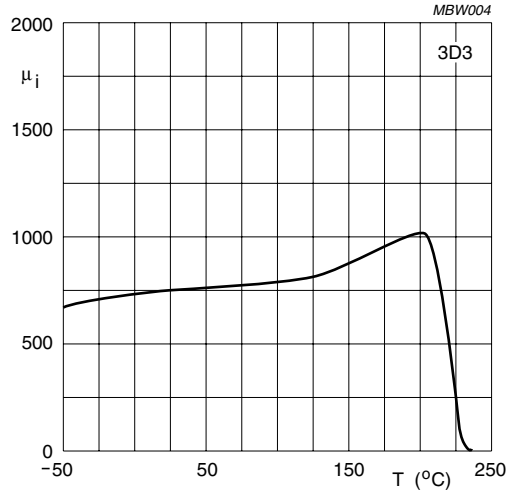

Fig.2 Initial permeability as a function of temperature.

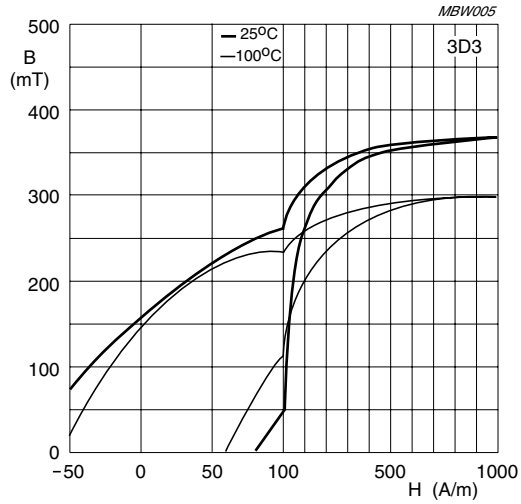

Fig.3 Typical B-H loops.

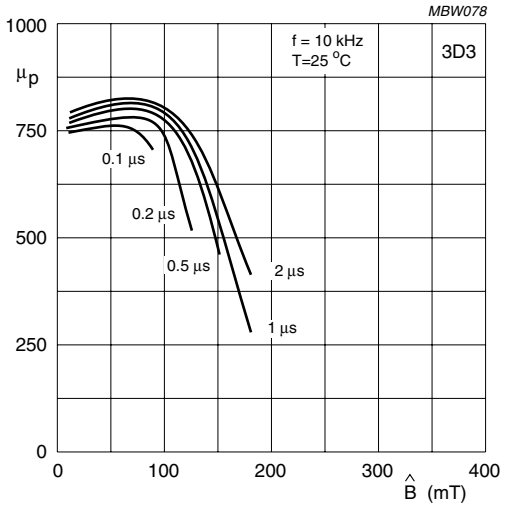

Fig.4 Pulse characteristics (unipolar pulses).

Material specification 3D3

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DATA SHEET

3H3
Material specification

Supersedes data of September 2004 2008 Sep 01

FERROXCUBE
A YAGEO COMPANY

3H3 SPECIFICATIONS

A low frequency filter material optimized for frequencies up to 0.2 MHz.

	CONDITIONS	VALUE	UNIT
μ_i	25 °C; ≤10 kHz; 0.25 mT	2000 ±20%	
B	25 °C; 10 kHz; 1200 A/ m	≈ 360	mT
	100 °C; 10 kHz; 1200 A/ m	≈ 270	
$\tan\delta/\mu_i$	25 °C; 0.25 mT; 30 kHz	$\leq 1.6 \times 10^{-6}$	
	25 °C; 0.25 mT; 100 kHz	$\leq 2.5 \times 10^{-6}$	
η_B	25 °C; 100 kHz; 1.5 to 3 mT	$\leq 0.6 \times 10^{-3}$	T^{-1}
D_F	0.25 mT; 10 kHz: 25 °C	$\leq 3 \times 10^{-6}$	
	40 °C	$\leq 3 \times 10^{-6}$	
α_F	≤10 kHz; 0.25 mT;		K^{-1}
	5 to 25 °C	$(0.7 \pm 0.3) \times 10^{-6}$	
	25 to 55 °C	$(0.7 \pm 0.3) \times 10^{-6}$	
	25 to 70 °C	$(0.7 \pm 0.3) \times 10^{-6}$	
ρ	DC; 25 °C	≈2	Ωm
T_C		≥160	°C
density		≈4700	kg/m^3

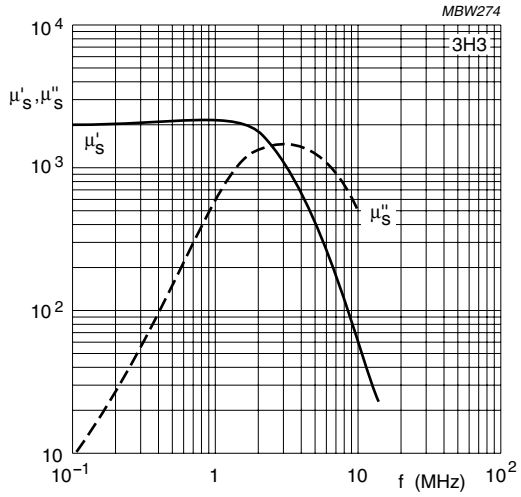

Fig.1 Complex permeability as a function of frequency.

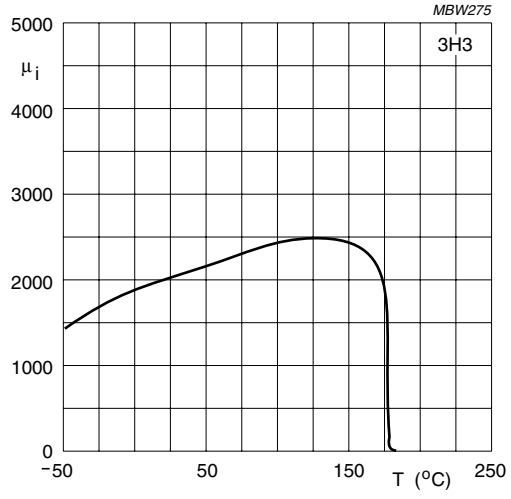

Fig.2 Initial permeability as a function of temperature.

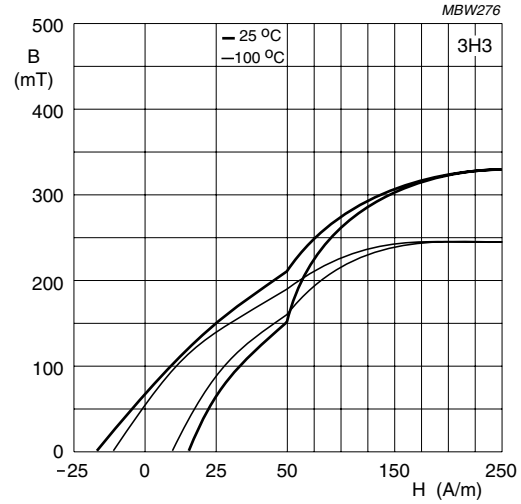

Fig.3 Typical B-H loops.

Material specification 3H3

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DATA SHEET

4A11
Material specification

Supersedes data of September 2008 2013 Sep 10

FERROXCUBE
A YAGEO COMPANY

4A11 SPECIFICATIONS

Medium permeability NiZn ferrite for use in wideband EMI-suppression (30 - 1000 MHz) as well as RF wideband and balun transformers.

SYMBOL	CONDITIONS	VALUE	UNIT
μ_i	25 °C; ≤10 kHz; 0.25 mT	850 ±20%	
B	25 °C; 10 kHz; 1200 A/m	≈ 340	mT
	100 °C; 10 kHz; 1200 A/m	≈ 230	
$\tan\delta/\mu_i$	25 °C; 1 MHz; 0.25 mT	$\leq 100 \times 10^{-6}$	
	25 °C; 3 MHz; 0.25 mT	$\leq 1000 \times 10^{-6}$	
ρ	DC; 25 °C	$\approx 10^5$	Ωm
T_C		≥ 150	°C
density		≈ 5100	kg/m^3

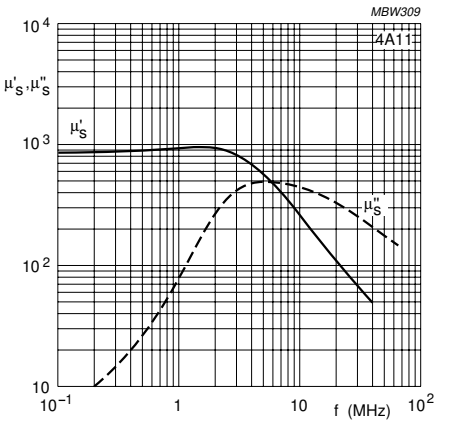

Fig.1 Complex permeability as a function of frequency.

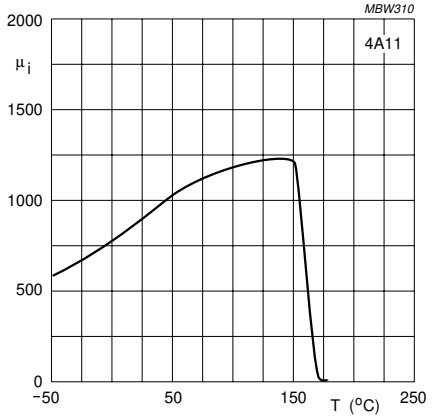

Fig.2 Initial permeability as a function of temperature.

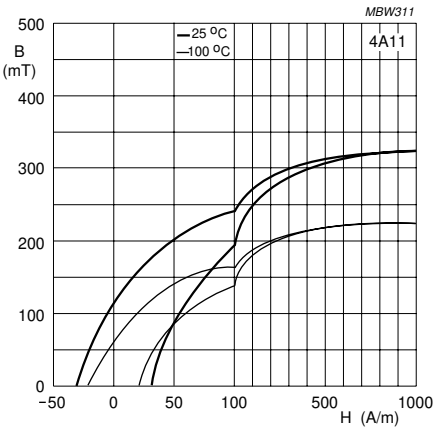

Fig.3 Typical B-H loops.

Material specification 4A11

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DATA SHEET

4B2
Material specification

Supersedes data of September 2004 2008 Sep 01

FERROXCUBE
A YAGEO COMPANY

4B2 SPECIFICATIONS

Medium permeability NiZn ferrite for use in RF tuning, especially antenna rods in RFID transponders in automotive applications, and wideband and balun transformers.

SYMBOL	CONDITIONS	VALUE	UNIT
μ_i	25 °C; ≤10 kHz; 0.25 mT	250 ± 20 %	
B	25 °C; 10 kHz; 3000 A/m	≈ 360	mT
	100 °C; 10 kHz; 3000 A/m	≈ 310	
$\tan\delta/\mu_i$	25 °C; 3 MHz; 0.25 mT	$\leq 300 \times 10^{-6}$	
α_F	≤10 kHz; 0.25 mT;		K^{-1}
	−40 to 25 °C	$(-1 \pm 4) \times 10^{-6}$	
	−10 to 55 °C	$(-1 \pm 4) \times 10^{-6}$	
	0 to 25 °C	$(-2.5 \pm 4) \times 10^{-6}$	
	25 to 55 °C	$(2 \pm 4) \times 10^{-6}$	
	25 to 85 °C	$(0.5 \pm 4) \times 10^{-6}$	
ρ	DC; 25 °C	$\approx 10^5$	Ωm
T_C		≥ 335	°C
density		≈ 4600	kg/m^3

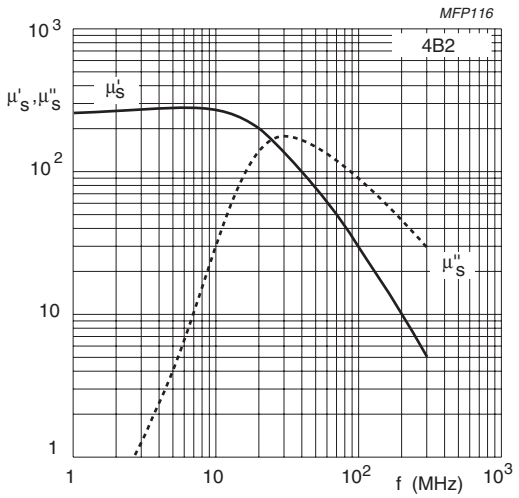

Fig.1 Complex permeability as a function of frequency.

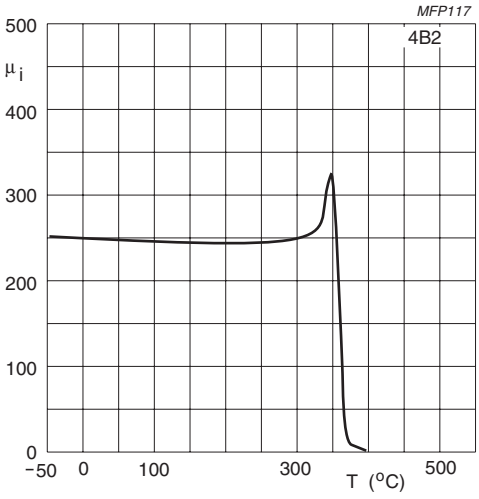

Fig.2 Initial permeability as a function of temperature.

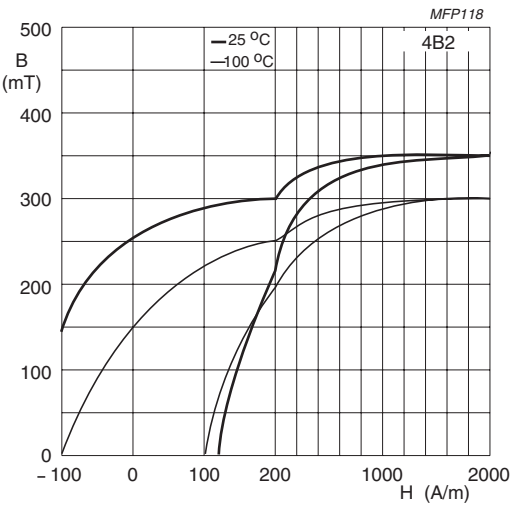

Fig.3 Typical B-H loops.

Material specification 4B2

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DATA SHEET

4C65
Material specification

Supersedes data of September 2004 2008 Sep 01

FERROXCUBE
A YAGEO COMPANY

4C65 SPECIFICATIONS

Low permeability NiZn ferrite for use in RF tuning, wideband and balun transformers.

SYMBOL	CONDITIONS	VALUE	UNIT
μ_i	25 °C; ≤10 kHz; 0.25 mT	125 ±20%	
B	25 °C; 10 kHz; 3000 A/m	≈ 380	mT
	100 °C; 10 kHz; 3000 A/m	≈ 340	
$\tan\delta/\mu_i$	25 °C; 3 MHz; 0.25 mT	$\leq 80 \times 10^{-6}$	
	25 °C; 10 MHz; 0.25 mT	$\leq 130 \times 10^{-6}$	
ρ	DC; 25 °C	$\approx 10^5$	Ωm
T_C		≥ 350	°C
density		≈ 4500	kg/m^3

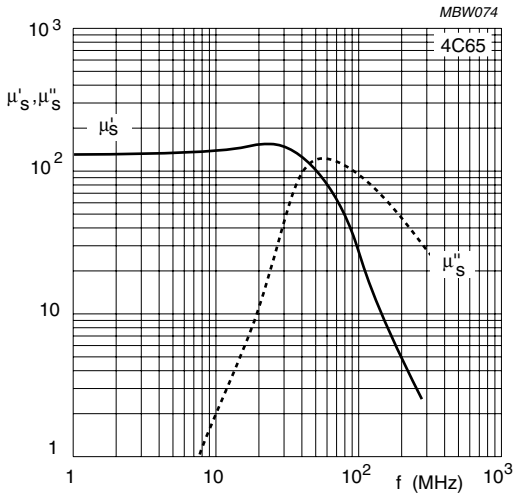

Fig.1 Complex permeability as a function of frequency.

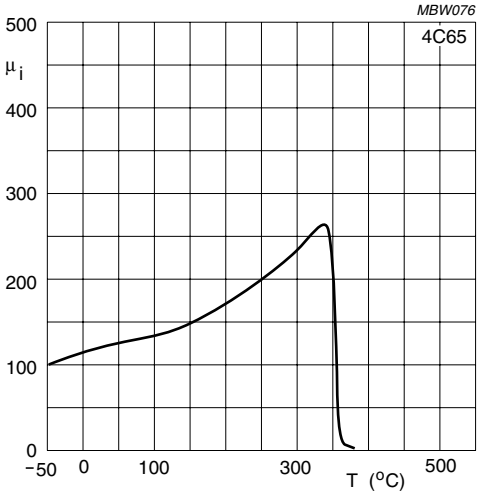

Fig.2 Initial permeability as a function of temperature.

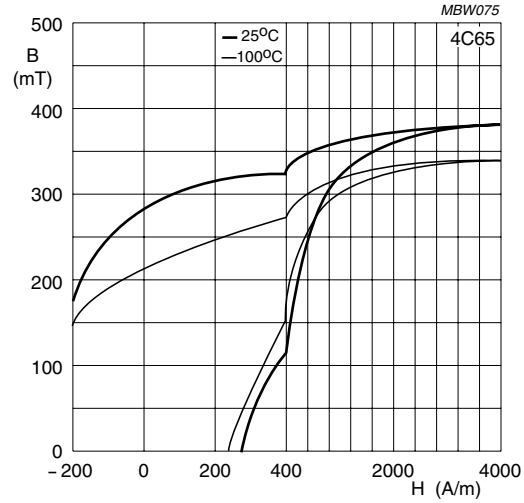

Fig.3 Typical B-H loops.

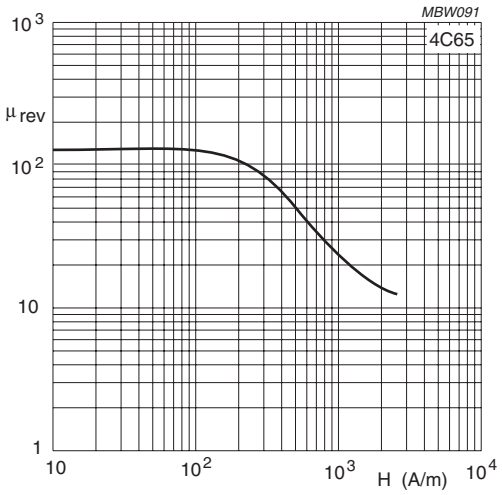

Fig.4 Reversible permeability as a function of magnetic field strength.

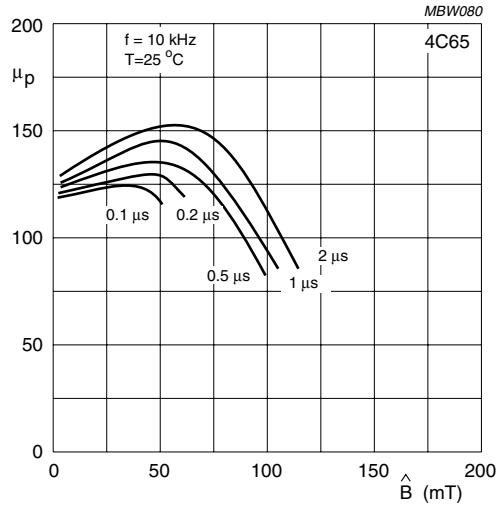

Fig.5 Pulse characteristics (unipolar pulses).

Material specification 4C65

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Product specification	Production	This data sheet contains final specifications. Ferroxcube reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

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PRODUCT STATUS DEFINITIONS

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Preferred		These products are recommended for use in current designs and are available via our sales channels.
Support	sup	These products are **not** recommended for new designs and may not be available through all of our sales channels. Customers are advised to check for availability.

DATA SHEET

4E1
Material specification

Supersedes data of September 2004 2008 Sep 01

FERROXCUBE
A YAGEO COMPANY

4E1 SPECIFICATIONS

Low permeability NiZn ferrite for use in RF tuning, wideband and balun transformers.

SYMBOL	CONDITIONS	VALUE	UNIT
μ_i	25 °C; ≤10 kHz; 0.25 mT	15 ±20%	
B	25 °C; 10 kHz; 20 kA/m	≈ 220	mT
	100 °C; 10 kHz; 20 kA/m	≈ 210	
$\tan\delta/\mu_i$	25 °C; 10 MHz; 0.25 mT	$\leq 300 \times 10^{-6}$	
	25 °C; 30 MHz; 0.25 mT	$\leq 350 \times 10^{-6}$	
ρ	DC; 25 °C	$\approx 10^5$	Ωm
T_C		≥ 500	°C
density		≈ 3700	kg/m^3

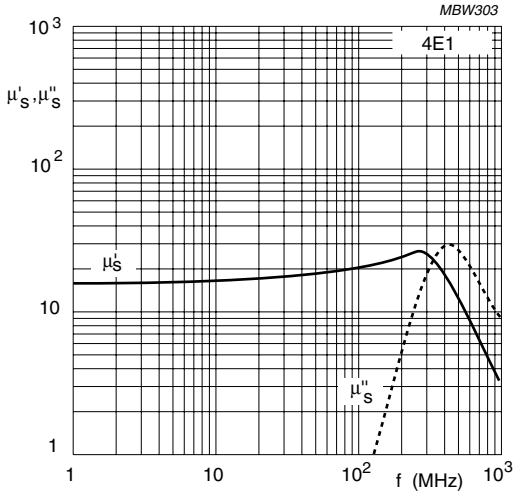

Fig.1 Complex permeability as a function of frequency.

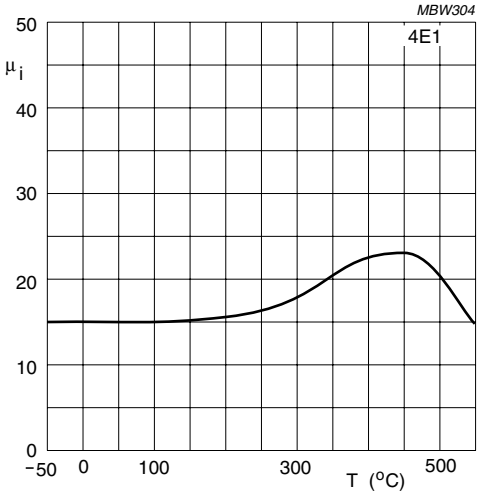

Fig.2 Initial permeability as a function of temperature.

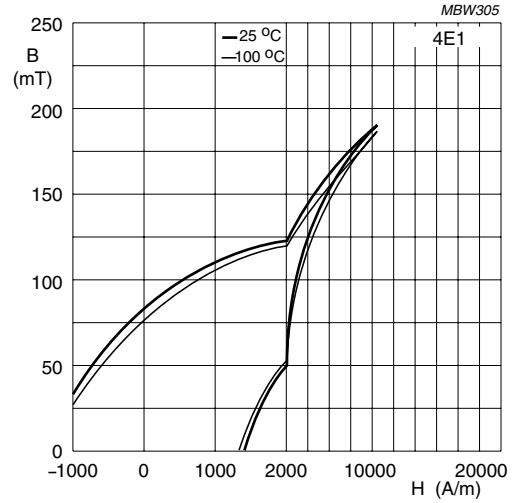

Fig.3 Typical B-H loops.

Material specification 4E1

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