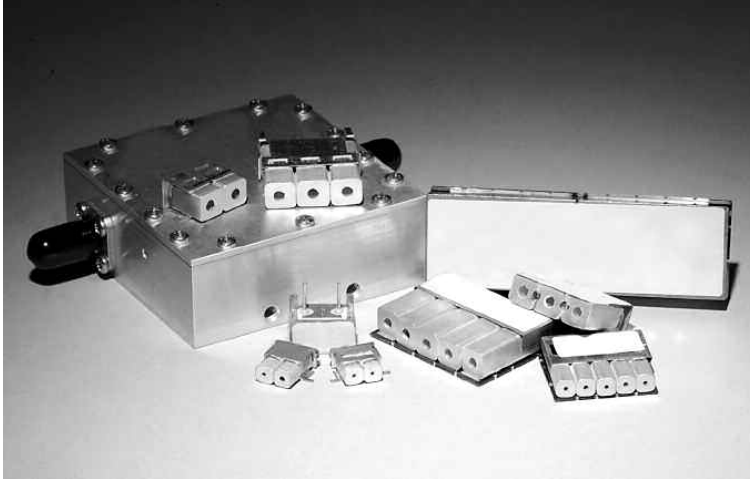


DATA SHEET

Microwave Garnets



Aluminum Doped

Composition and Type Number	Magnetization 4πMs (Gauss)	Lande's G-factor g-eff (Nominal Value)	Line Width Δh Oe @ -3 dB	Dielectric Constant ε'	Dielectric Loss Tangent Tan δ = ε''/ε'	Curie Temperature Tc (°C) (Nominal Value)	Spin Wave Line Width ΔHk oe (Nominal Value)	Remanent Induction* Br (Gauss) (Nominal Value)	Coercive Force* Hc (oe) (Nominal Value)	Initial Permeability† μo (Nominal Value)
G-1009	175 ± 25g	2.03	≤50	13.8 ± 5%	≤ 0.0002	85	1.5	40	0.90	11
G-250	250 ± 25g	2.02	≤45	13.8 ± 5%	≤ 0.0002	105	1.4	123	0.62	34
G-300	300 ± 25g	2.02	≤45	14.0 ± 5%	≤ 0.0002	120	2	162	0.62	46
G-350	350 ± 25g	2.01	≤45	14.0 ± 5%	≤ 0.0002	130	1.4	213	0.66	31
G-400	400 ± 25g	2.01	≤45	14.1 ± 5%	≤ 0.0002	135	1.4	224	0.69	41
G-475	475 ± 25g	2.01	≤45	14.1 ± 5%	≤ 0.0002	140	1.4	310	0.60	40
G-510	550 ± 5%	2.00	≤48	14.3 ± 5%	≤ 0.0002	155	1.3	398	0.55	37
G-610	680 ± 5%	2.00	≤48	14.5 ± 5%	≤ 0.0002	185	1.5	515	0.70	50

§ Measured @ 9.4 GHz

† Measured @ 1 KHz

* Measured @ 60 Hz or 2 KHz with H_{app} = 5xH_c

For any composition the minimum line width is fixed by KI/Ms. For some shapes and sizes, line widths even closer to the theoretical limit are possible. Typical value for this series is 20oe, which is available in some shapes and sizes.

Bars and Rods are Available for All Material Types, as well as discs, triangles and composites.

Gadolinium Doped

Composition and Type Number	Magnetization $4\pi M_s$ (Gauss)	Lande [§] G-factor g-eff (Nominal Value)	Line Width [§] Δh Oe @ -3 dB	Dielectric [§] Constant ϵ'	Dielectric Loss Tangent $\tan \delta = \epsilon''/\epsilon'$	Curie Temperature T [°] (°C) (Nominal Value)	Spin Wave Line Width ΔH_k oe (Nominal Value)	Remanent Induction* B _r (Gauss) (Nominal Value)	Coercive Force* H _c (oe) (Nominal Value)	Initial Permeability [†] μ_0 (Nominal Value)
G-1005	725 ± 5%	2.02	≤300	15.4 ± 5%	≤ 0.0002	280	7.6	357	1.51	26
G-1003	870 ± 5%	2.00	≤186	15.4 ± 5%	≤ 0.0002	280	6.4	543	1.10	36
G-1002	1000 ± 5%	1.99	≤132	15.4 ± 5%	≤ 0.0002	280	5.8	672	0.93	48
G-1001	1200 ± 5%	1.99	≤96	15.2 ± 5%	≤ 0.0002	280	4.3	717	1.00	72
G-1600	1600 ± 5%	1.98	≤66	15.1 ± 5%	≤ 0.0002	280	3.8	986	0.83	116

Gadolinium Aluminum Doped

Composition and Type Number	Magnetization $4\pi M_s$ (Gauss)	Lande [§] G-factor g-eff (Nominal Value)	Line Width [§] Δh Oe @ -3 dB	Dielectric [§] Constant ϵ'	Dielectric Loss Tangent $\tan \delta = \epsilon''/\epsilon'$	Curie Temperature T [°] (°C) (Nominal Value)	Spin Wave Line Width ΔH_k oe (Nominal Value)	Remanent Induction* B _r (Gauss) (Nominal Value)	Coercive Force* H _c (oe) (Nominal Value)	Initial Permeability [†] μ_0 (Nominal Value)
G-1006	400 ± 25g	2.01	<78	14.2 ± 5%	< 0.0002	150	4.2	185	1.00	23
G-500	550 ± 5%	2.00	<78	14.4 ± 5%	< 0.0002	180	3.5	280	0.80	28
G-600	680 ± 5%	2.00	<72	14.6 ± 5%	< 0.0002	200	4.0	375	0.69	347
G-1004	800 ± 5%	2.00	<90	14.8 ± 5%	< 0.0002	240	5.2	493	0.93	38
G-800	800 ± 5%	2.00	<66	14.7 ± 5%	< 0.0002	230	4.3	504	0.69	60
G-1000	1000 ± 5%	1.99	<66	14.7 ± 5%	< 0.0002	250	3.6	641	0.97	56
G-1021	1100 ± 5%	1.99	<108	15.2 ± 5%	< 0.0002	280	5.4	722	0.76	54
G-1200	1200 ± 5%	1.98	<60	15.1 ± 5%	< 0.0002	260	3.2	795	0.83	65
G-1400	1400 ± 5%	1.98	<60	15.1 ± 5%	< 0.0002	265	3.1	918	0.69	89

Holmium Doped

Composition and Type Number	Magnetization $4\pi M_s$ (Gauss)	Lande [§] G-factor g-eff (Nominal Value)	Line Width [§] Δh Oe @ -3 dB	Dielectric [§] Constant ϵ'	Dielectric Loss Tangent $\tan \delta = \epsilon''/\epsilon'$	Curie Temperature T [°] (°C) (Nominal Value)	Spin Wave Line Width ΔH_k oe (Nominal Value)	Remanent Induction* B _r (Gauss) (Nominal Value)	Coercive Force* H _c (oe) (Nominal Value)	Initial Permeability [†] μ_0 (Nominal Value)
G-4260	550 ± 5%	2.00	≤120	14.4 ± 5%	≤ 0.0002	180	8.5	280	0.80	28
G-4259	800 ± 5%	2.00	≤132	14.8 ± 5%	≤ 0.0002	240	8.1	493	0.93	38
G-4258	1000 ± 5%	1.99	≤156	15.4 ± 5%	≤ 0.0002	280	8.9	672	0.93	48
G-4257	1200 ± 5%	1.99	≤120	15.2 ± 5%	≤ 0.0002	280	8.1	717	1.00	72
G-4256	1600 ± 5%	1.98	≤84	15.1 ± 5%	≤ 0.0002	280	5.4	986	0.83	116

§ Measured @ 9.4 GHz

† Measured @ 1 KHz

* Measured @ 60 Hz or 2 KHz with H_{app} = 5xH_c

For any composition the minimum line width is fixed by KI/Ms. For some shapes and sizes, line widths even closer to the theoretical limit are possible. Typical value for this series is 20oe, which is available in some shapes and sizes.

Bars and Rods are Available for All Material Types, as well as discs, triangles and composites.

Narrow Line Width Series*

Composition and Type Number	Magnetization $4\pi M_s$ (Gauss)	Lande [§] G-factor g-eff (Nominal Value)	Line Width [§] Δh Oe @ -3 dB	Dielectric [§] Constant ϵ'	Dielectric Loss Tangent $\tan \delta = \epsilon''/\epsilon'$	Curie Temperature T^c (°C) (Nominal Value)	Spin Wave Line Width ΔH_k oe (Nominal Value)	Remanent Induction* B_r (Gauss) (Nominal Value)	Coercive Force* H_c (oe) (Nominal Value)	Initial Permeability [†] μ_0 (Nominal Value)
G-113	1780 ± 5%	1.97	≤25	15.0 ± 5%	≤ 0.0002	280	1.4	1277	0.45	134
G-810	800 ± 5%	1.99	≤25	14.6 ± 5%	≤ 0.0002	200	1.5	543	0.62	46
G-1010	1000 ± 5%	1.99	≤25	14.7 ± 5%	≤ 0.0002	210	1.4	694	1.55	66
G-1210	1200 ± 5%	1.98	≤25	14.8 ± 5%	≤ 0.0002	220	1.3	784	0.69	87

Calcium Vanadium Doped

Composition and Type Number	Magnetization $4\pi M_s$ (Gauss)	Lande [§] G-factor g-eff (Nominal Value)	Line Width [§] Δh Oe @ -3 dB	Dielectric [§] Constant ϵ'	Dielectric Loss Tangent $\tan \delta = \epsilon''/\epsilon'$	Curie Temperature T^c (°C) (Nominal Value)	Spin Wave Line Width ΔH_k oe (Nominal Value)	Remanent Induction* B_r (Gauss) (Nominal Value)	Coercive Force* H_c (oe) (Nominal Value)	Initial Permeability [†] μ_0 (Nominal Value)
TTVG-800	800 ± 5%	2	≤15	13.9 ± 5%	≤ 0.0002	192	2	560	0.6	129
TTVG-930	930 ± 5%	2	≤10	14.0 ± 5%	≤ 0.0002	188	2	380	0.4	225
TTVG-1000	1000 ± 5%	2	≤10	14.0 ± 5%	≤ 0.0002	199	2	320	0.3	210
TTVG-1100	1100 ± 5%	2	≤10	14.1 ± 5%	≤ 0.0002	205	2	600	0.6	209
TTVG-1200	1200 ± 5%	2	≤10	14.4 ± 5%	≤ 0.0002	208	2	635	0.3	221
TTVG-1400	1400 ± 5%	2	≤10	14.5 ± 5%	≤ 0.0002	215	2	825	0.3	263
TTVG-1600	1600 ± 5%	2	≤10	14.6 ± 5%	≤ 0.0002	220	2	1000	0.6	227
TTVG-1850	1850 ± 5%	2	≤10	14.8 ± 5%	≤ 0.0002	200	2	1232	0.5	388
TTZ1950	1950 ± 5%	2	≤15	15.0 ± 5%	≤ 0.0002	235	2	—	—	—

§ Measured @ 9.4 GHz

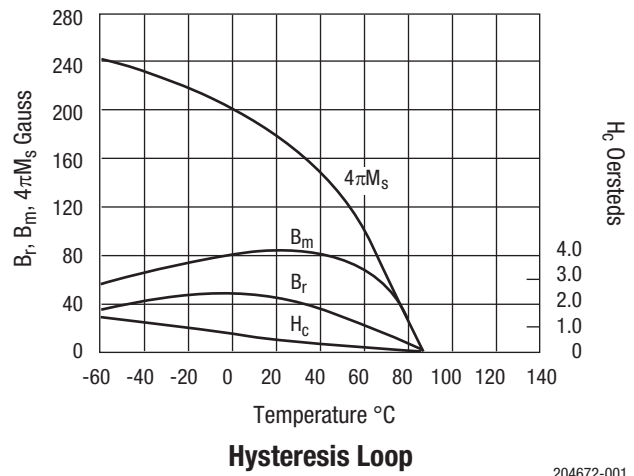
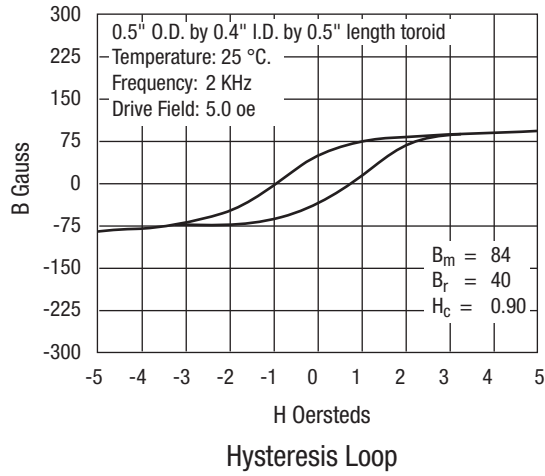
† Measured @ 1 KHz

* Measured @ 60 Hz or 2 KHz with $H_{app} = 5xH_c$

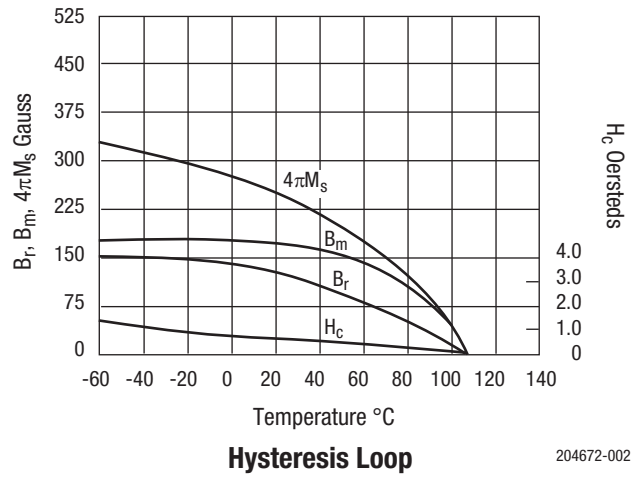
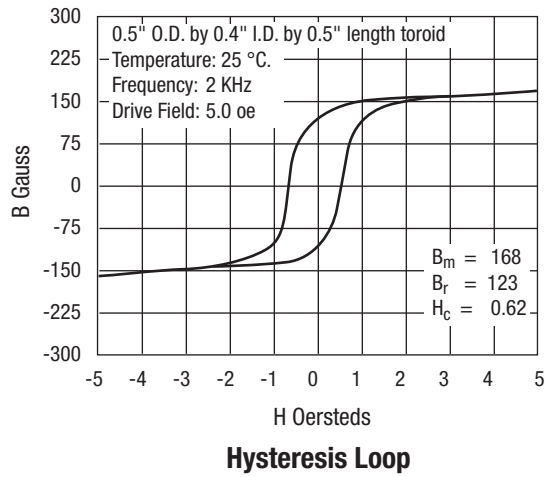
For any composition the minimum line width is fixed by K_1/M_s . For some shapes and sizes, line widths even closer to the theoretical limit are possible. Typical value for this series is 20oe, which is available in some shapes and sizes.

Bars and Rods are Available for All Material Types, as well as discs, triangles and composites.

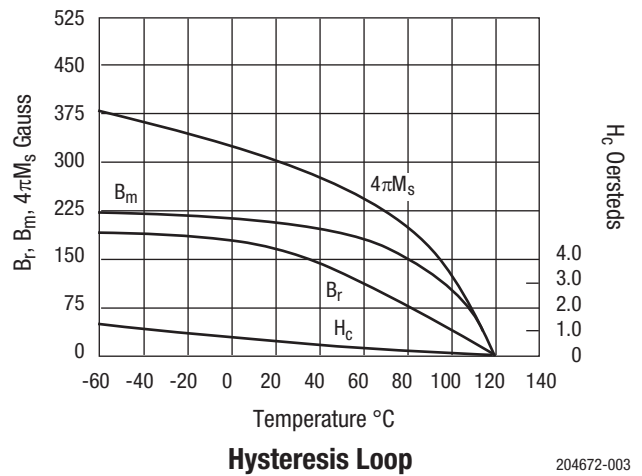
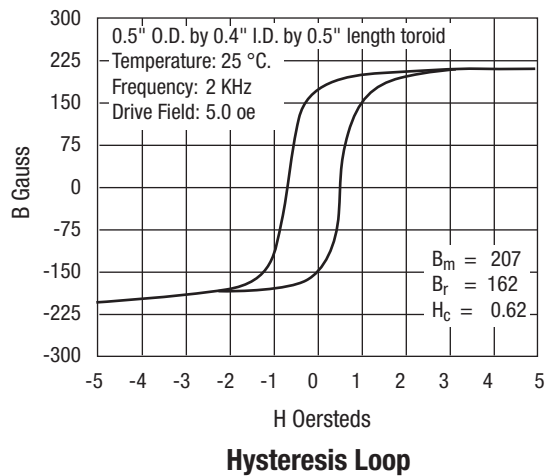
G-1009 Aluminum Doped



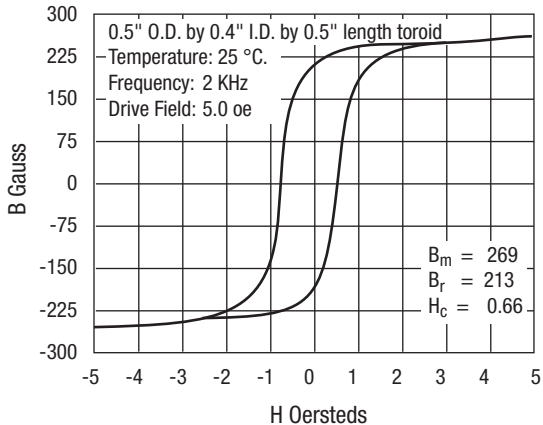
G-250 Aluminum Doped



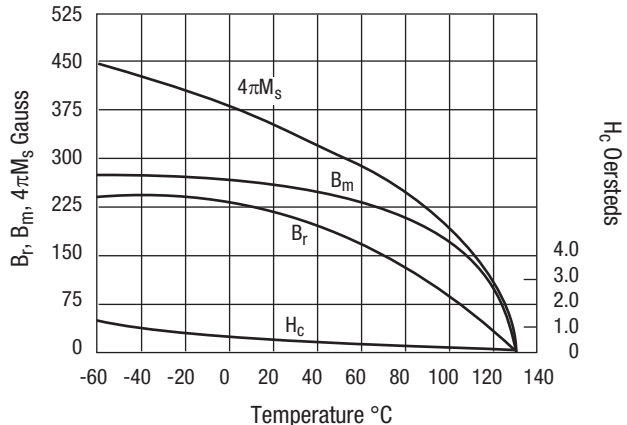
G-300 Aluminum Doped



G-350 Aluminum Doped



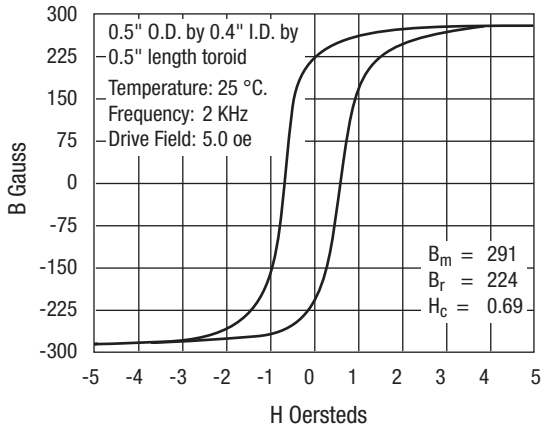
Hysteresis Loop



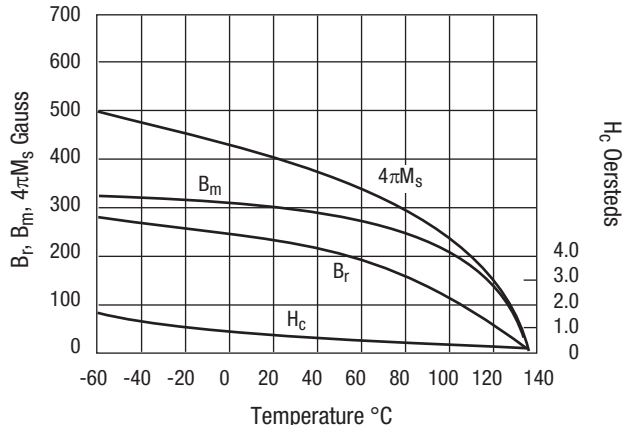
Hysteresis Loop

204672-004

G-400 Aluminum Doped



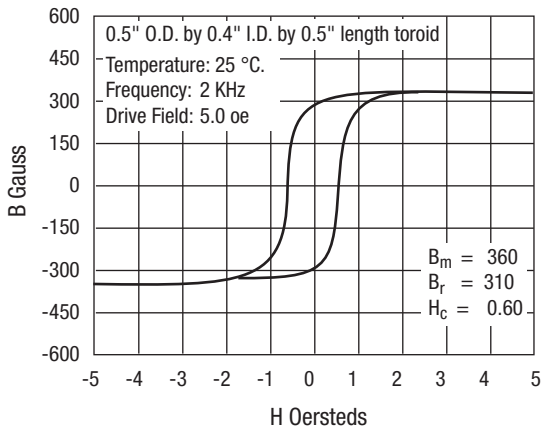
Hysteresis Loop



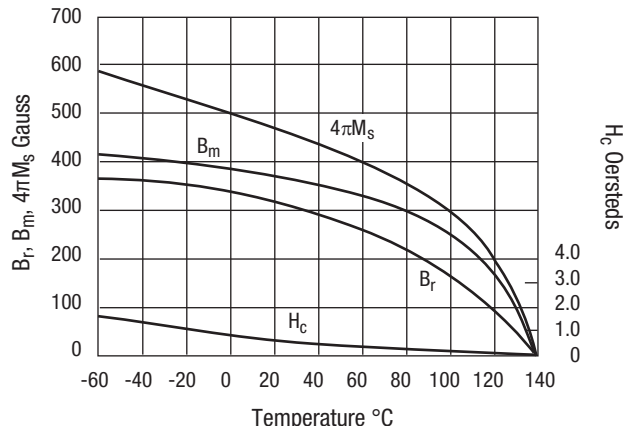
Hysteresis Loop

204672-005

G-475 Aluminum Doped



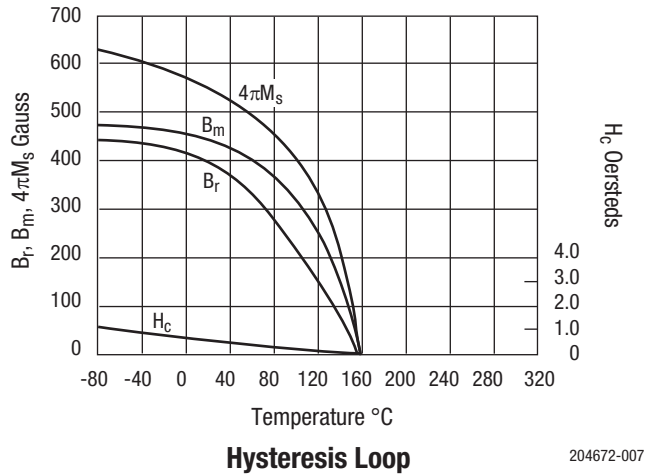
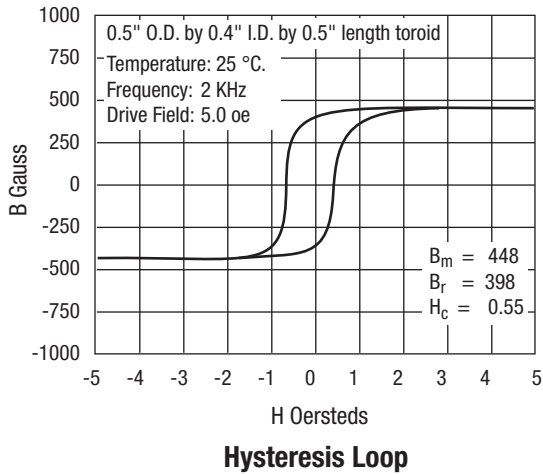
Hysteresis Loop



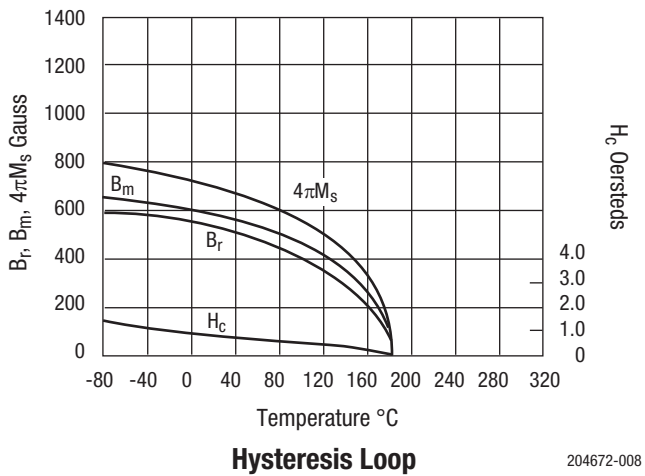
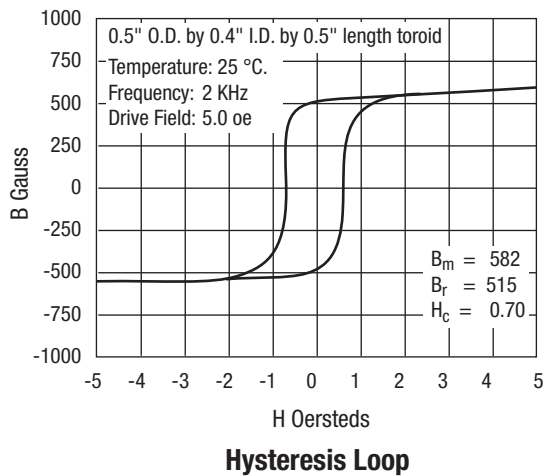
Hysteresis Loop

204672-006

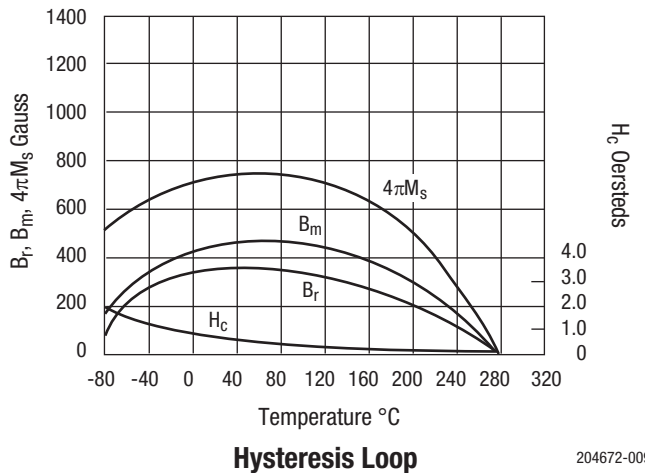
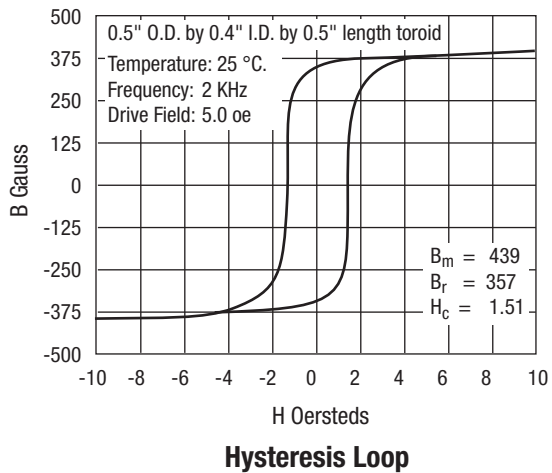
G-510 Aluminum Doped



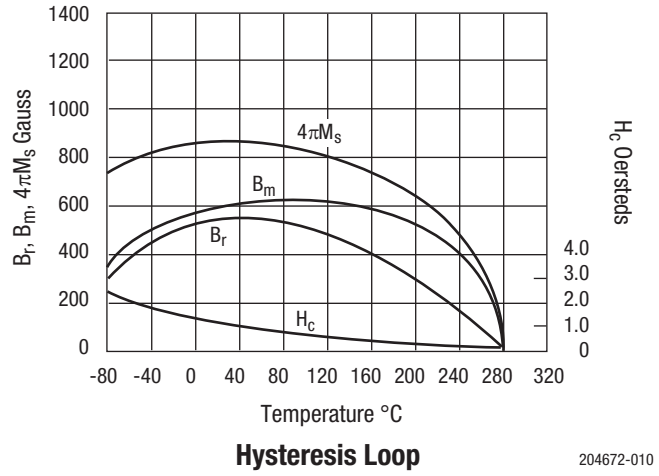
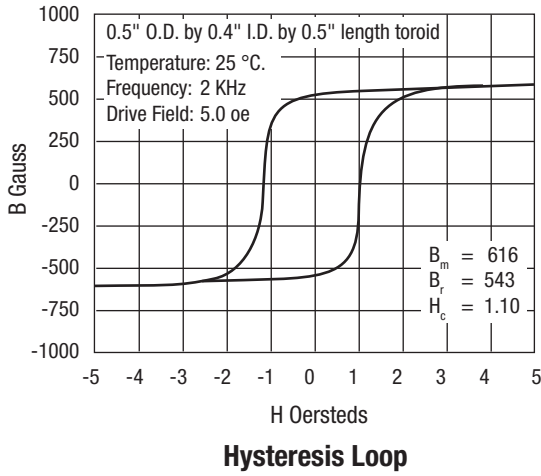
G-610 Aluminum Doped



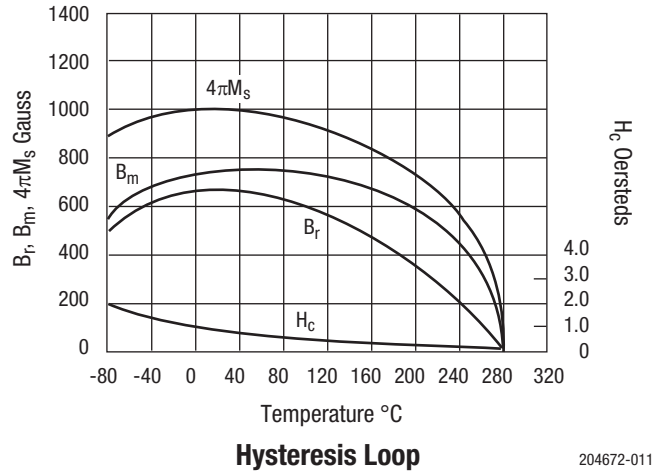
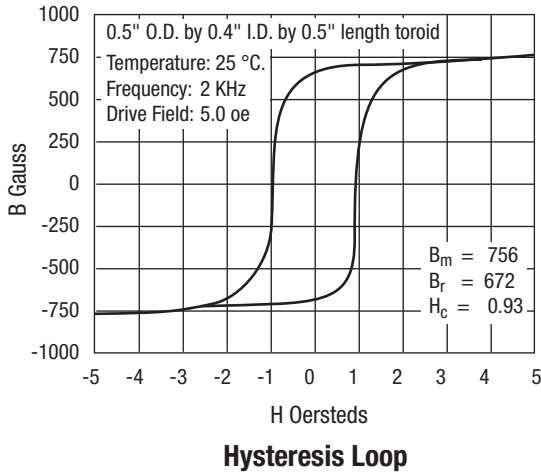
G-1005 Gadolinium Doped



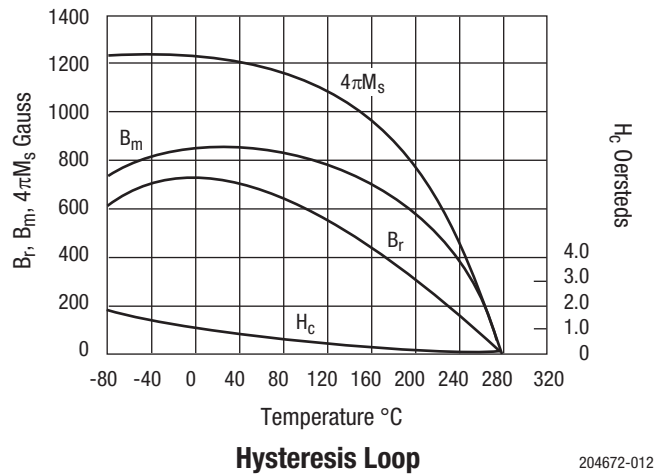
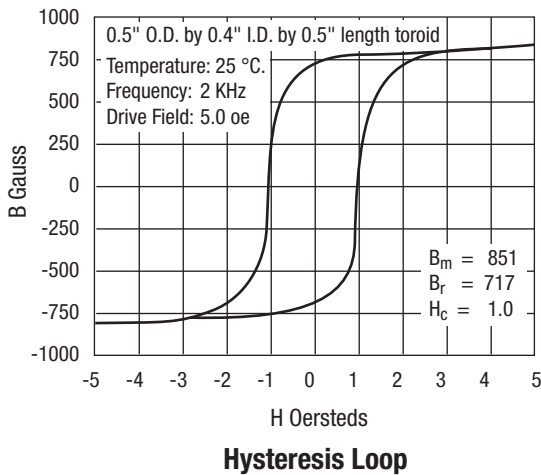
G-1003 Gadolinium Doped



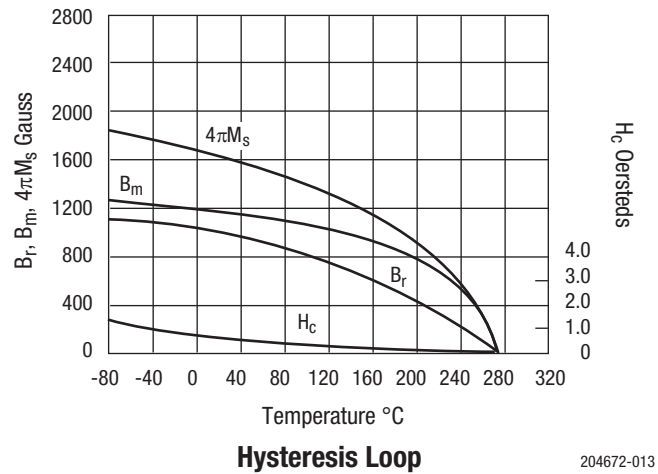
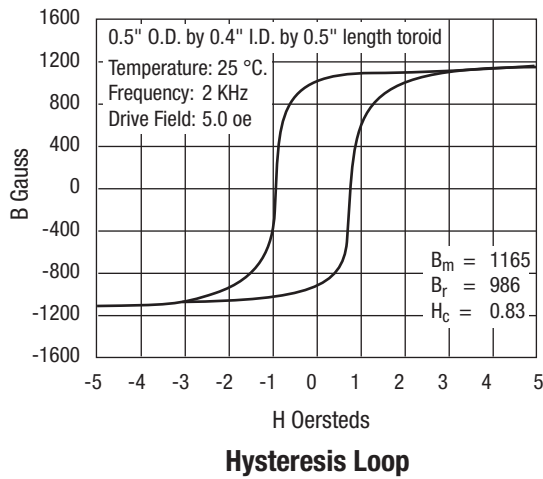
G-1002 Gadolinium Doped



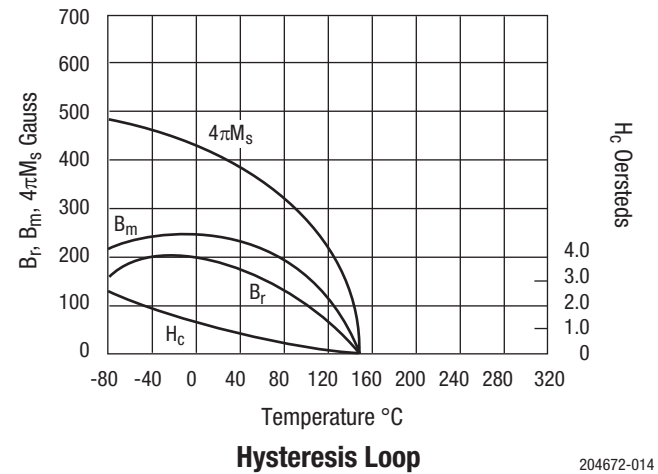
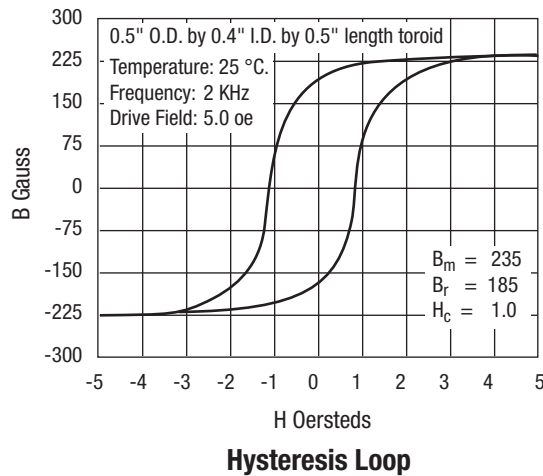
G-1001 Gadolinium Doped



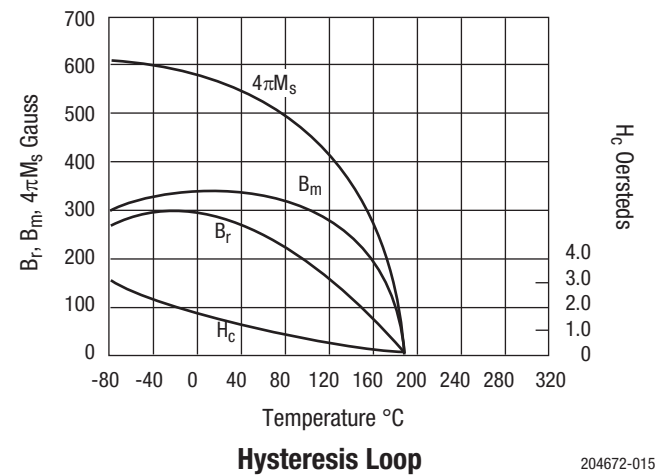
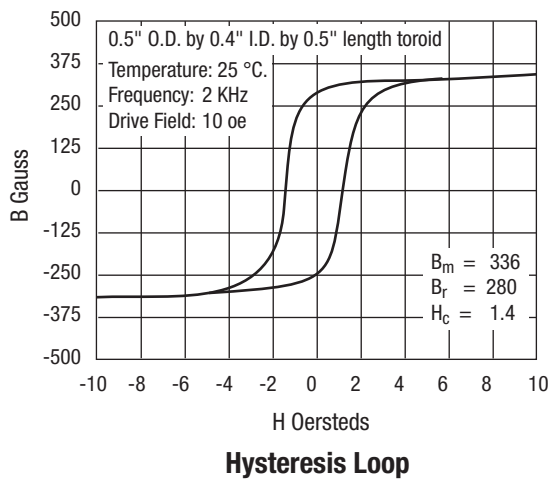
G-1600 Gadolinium Doped



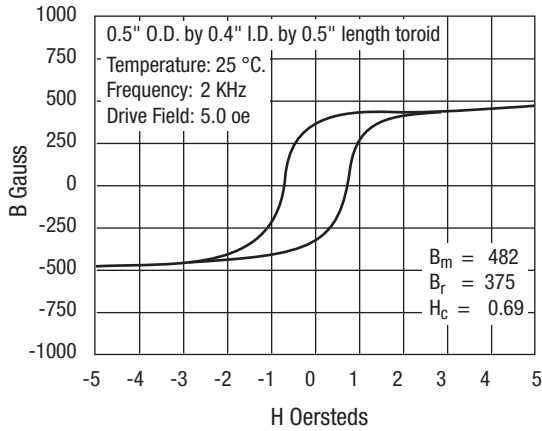
G-1006 Gadolinium Aluminum Doped



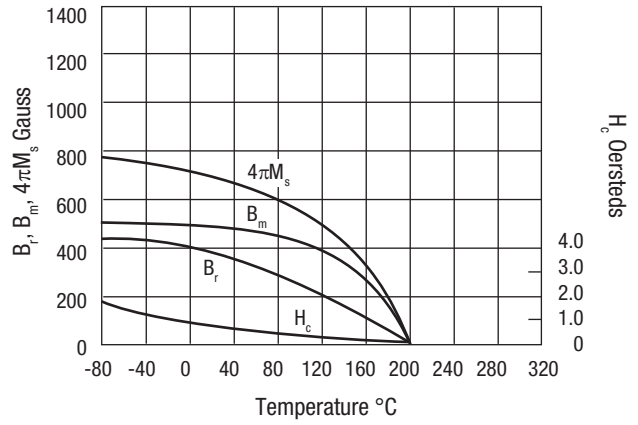
G-500 Gadolinium Aluminum Doped



G-600 Gadolinium Aluminum Doped



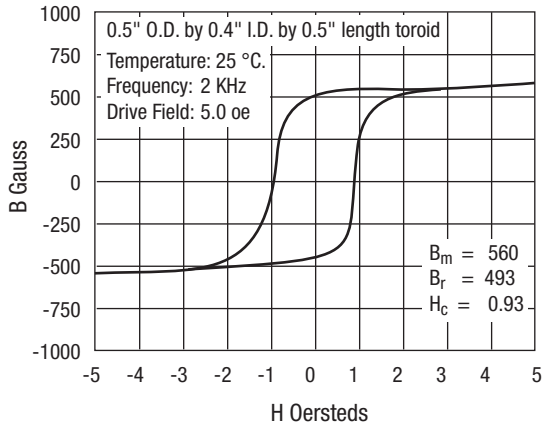
Hysteresis Loop



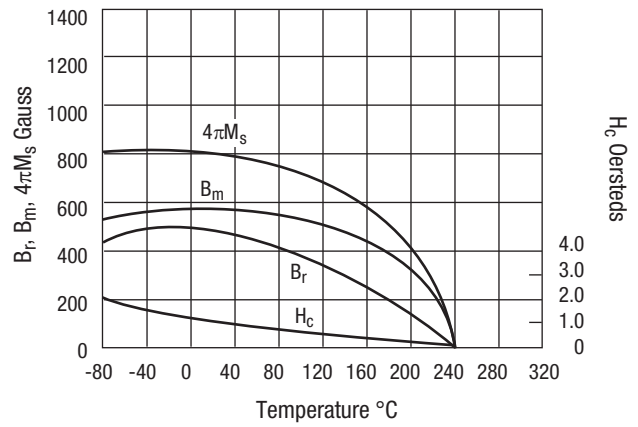
Hysteresis Loop

204672-016

G-1004 Gadolinium Aluminum Doped



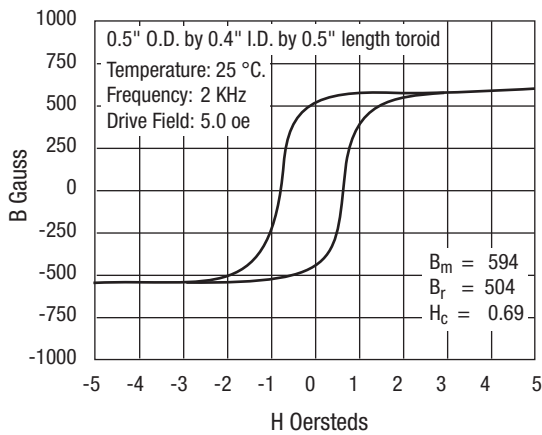
Hysteresis Loop



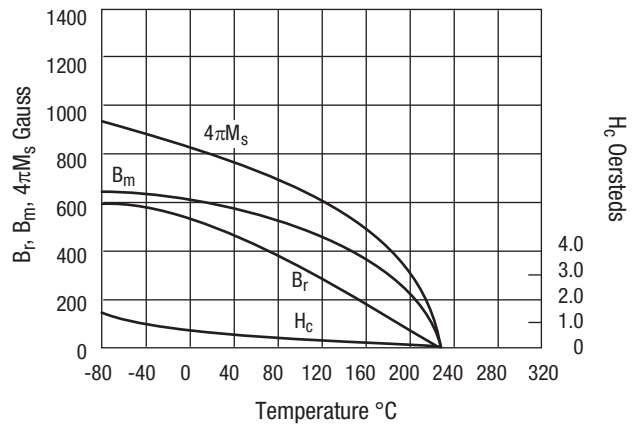
Hysteresis Loop

204672-017

G-800 Gadolinium Aluminum Doped



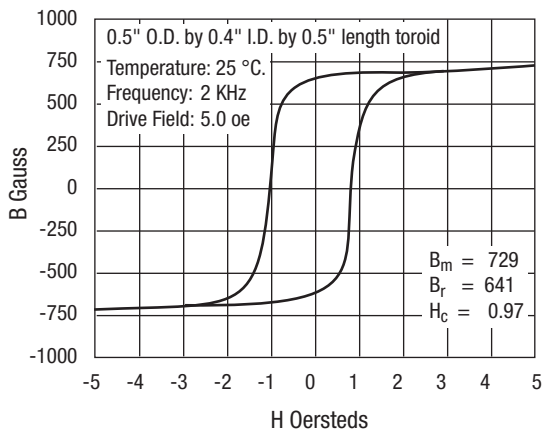
Hysteresis Loop



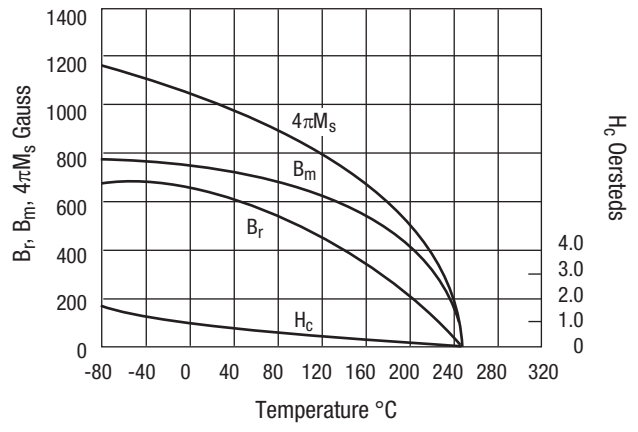
Hysteresis Loop

204672-018

G-1000 Gadolinium Aluminum Doped



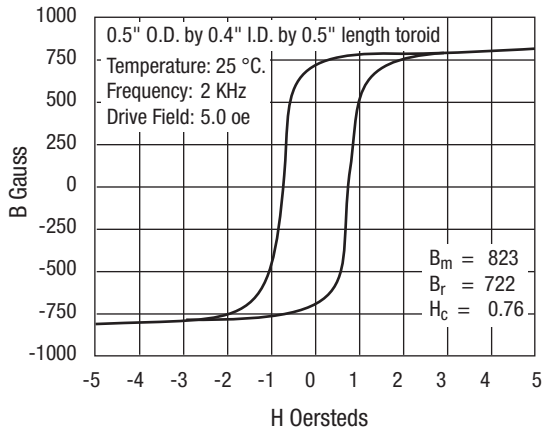
Hysteresis Loop



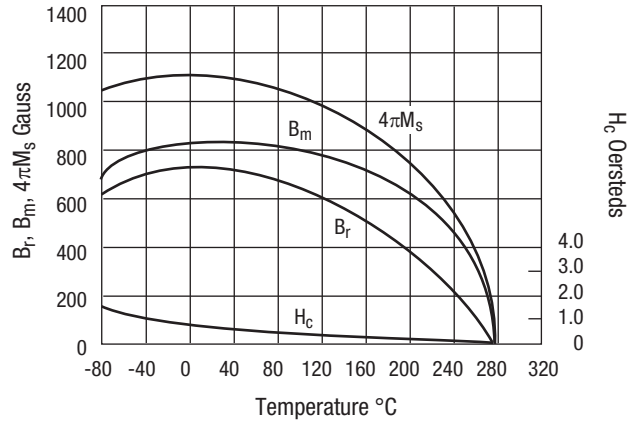
Hysteresis Loop

204672-019

G-1021 Gadolinium Aluminum Doped



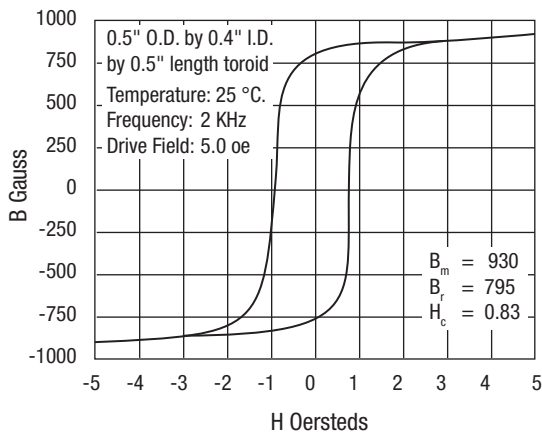
Hysteresis Loop



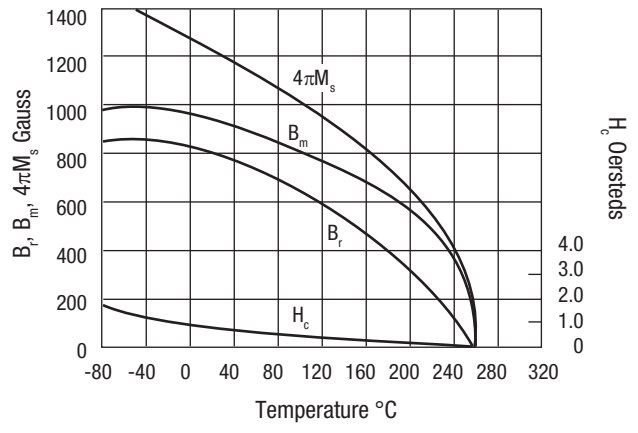
Hysteresis Loop

204672-020

G-1200 Gadolinium Aluminum Doped



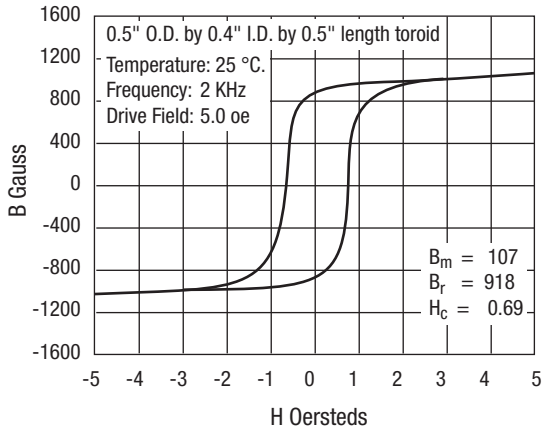
Hysteresis Loop



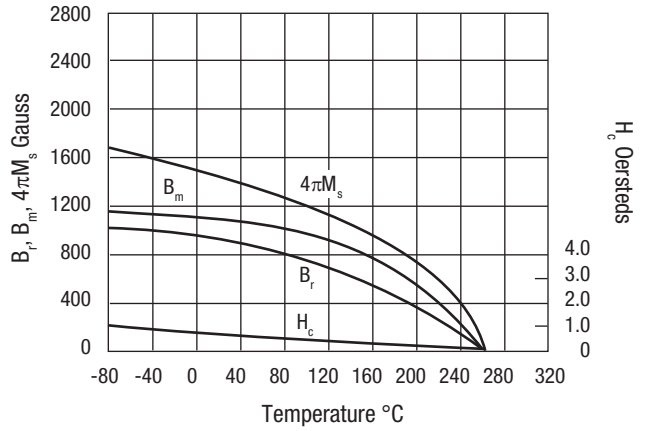
Hysteresis Loop

204672-021

G-1400 Gadolinium Aluminum Doped



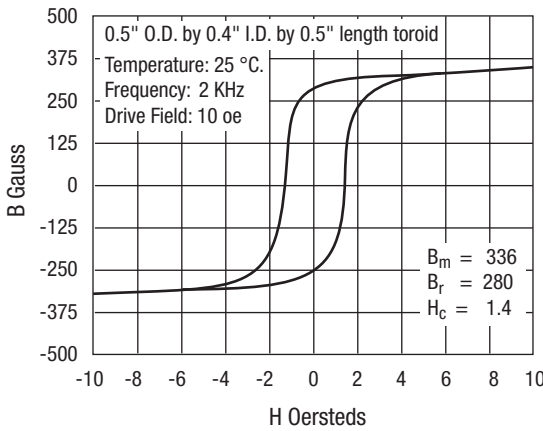
Hysteresis Loop



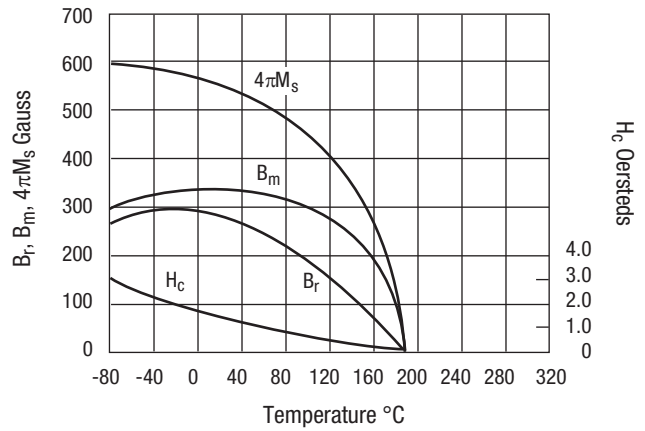
Hysteresis Loop

204672-022

G-4260 Gadolinium & Aluminum Holmium Doped



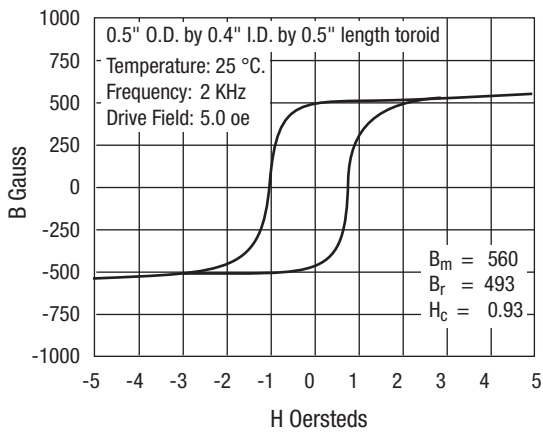
Hysteresis Loop



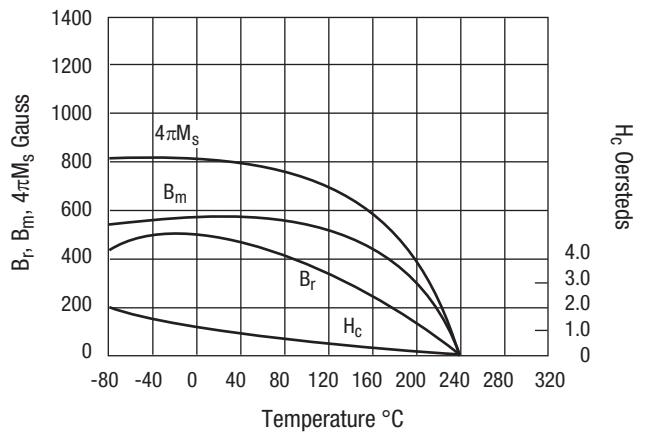
Hysteresis Loop

204672-023

G-4259 Gadolinium & Aluminum Holmium Doped



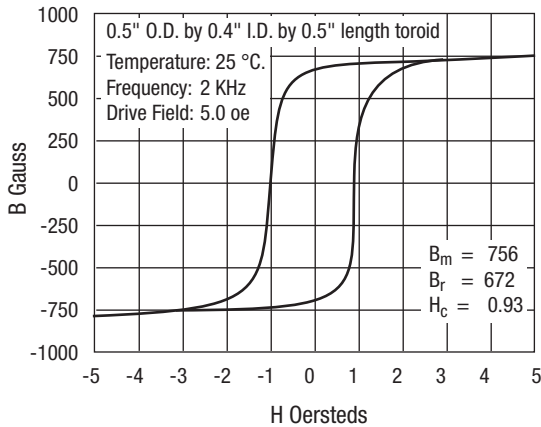
Hysteresis Loop



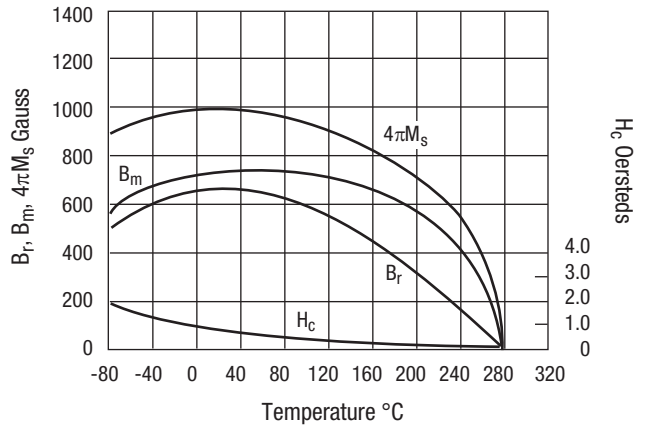
Hysteresis Loop

204672-024

G-4258 Gadolinium & Aluminum Holmium Doped



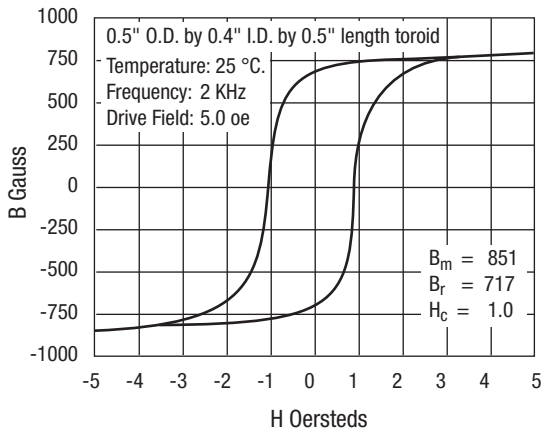
Hysteresis Loop



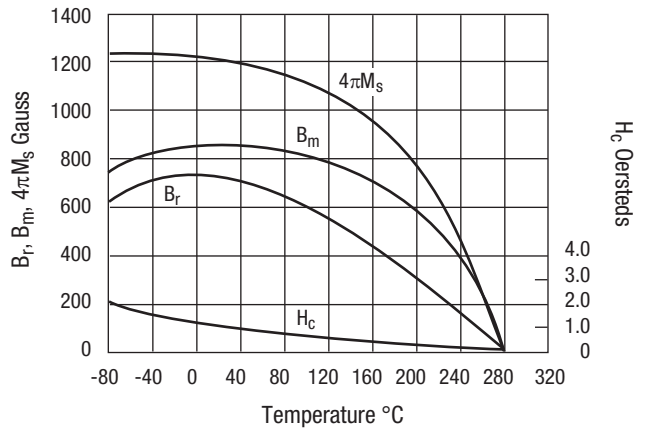
Hysteresis Loop

204672-025

G-4257 Gadolinium & Aluminum Holmium Doped



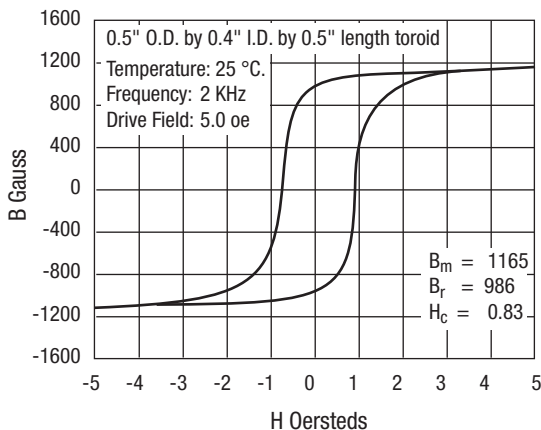
Hysteresis Loop



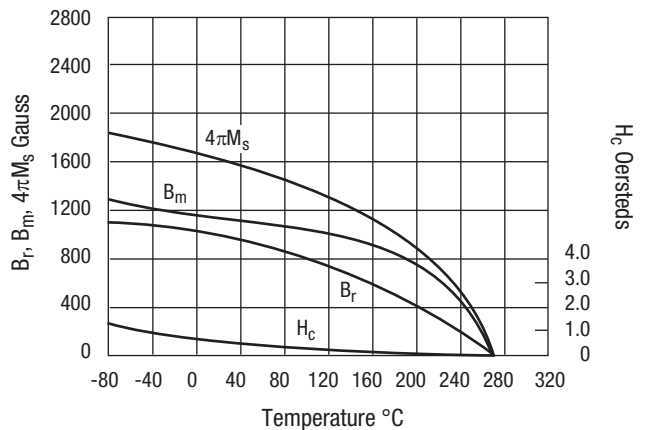
Hysteresis Loop

204672-026

G-4256 Gadolinium & Aluminum Holmium Doped



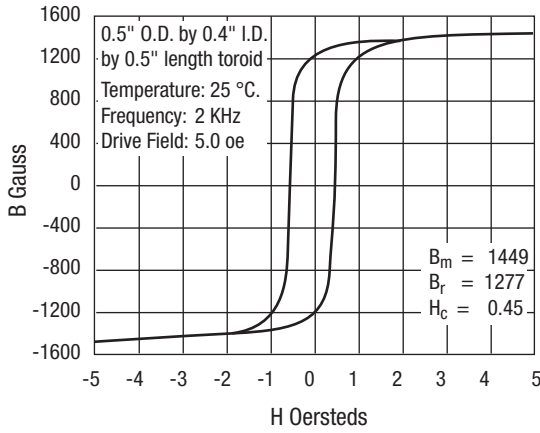
Hysteresis Loop



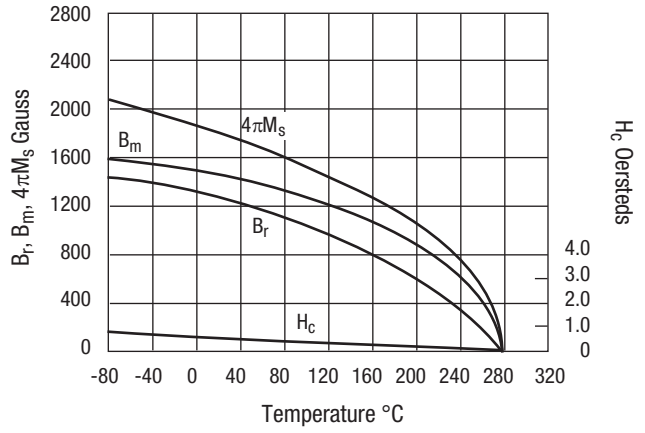
Hysteresis Loop

204672-027

G-113 Yttrium



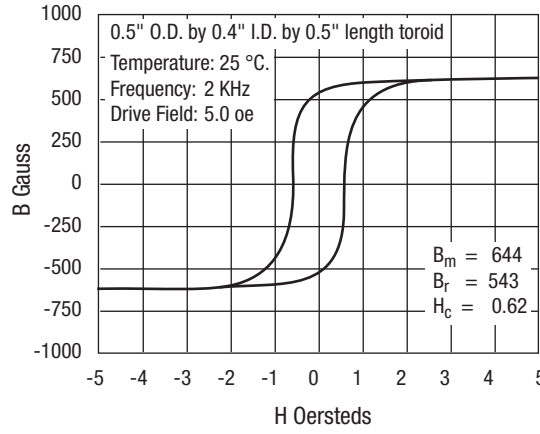
Hysteresis Loop



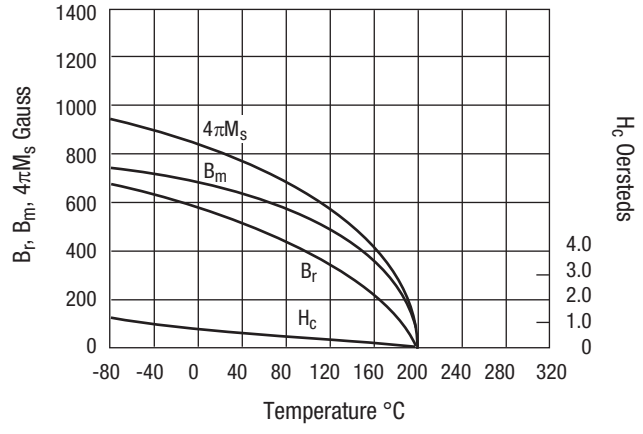
Hysteresis Loop

204672-028

G-810 Aluminum Doped



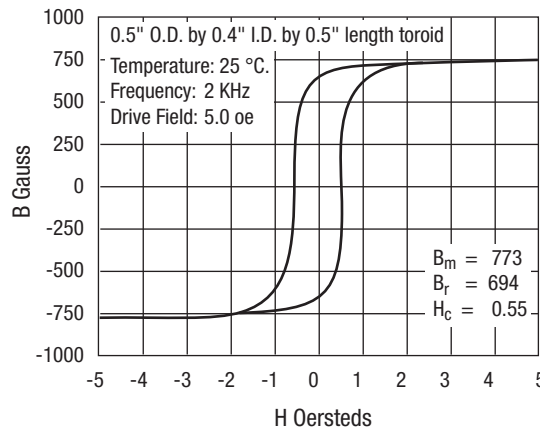
Hysteresis Loop



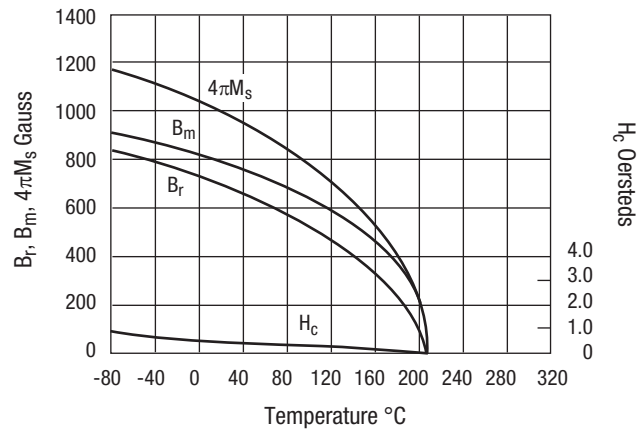
Hysteresis Loop

204672-029

G-1010 Aluminum Doped



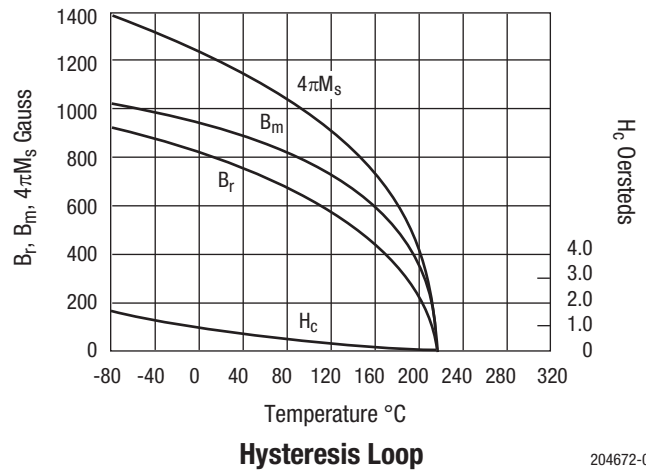
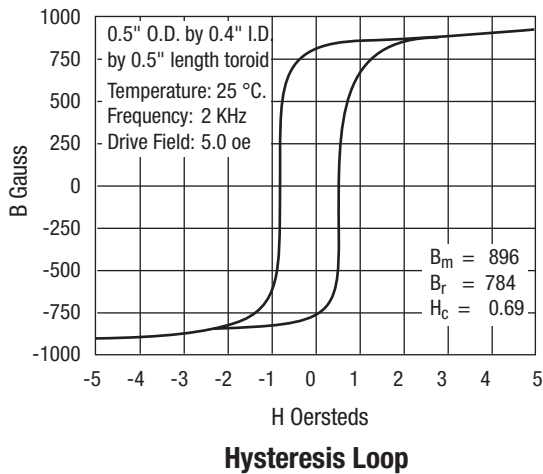
Hysteresis Loop



Hysteresis Loop

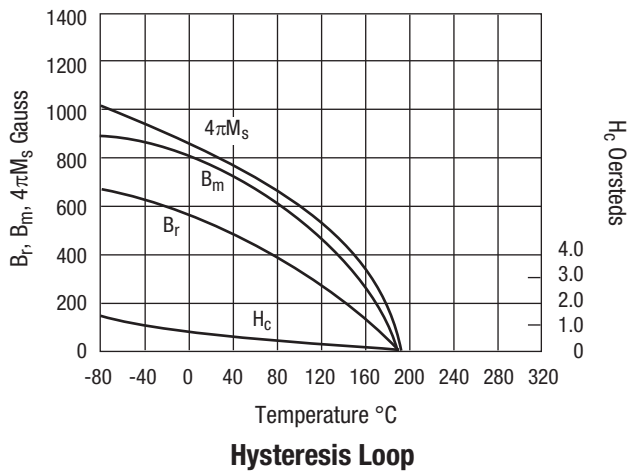
204672-030

G-1210 Aluminum Doped

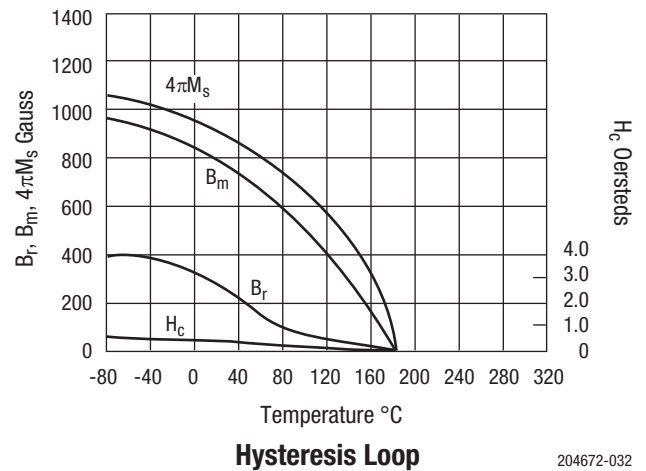


204672-031

TTVG-800 Narrow Line Width Garnet

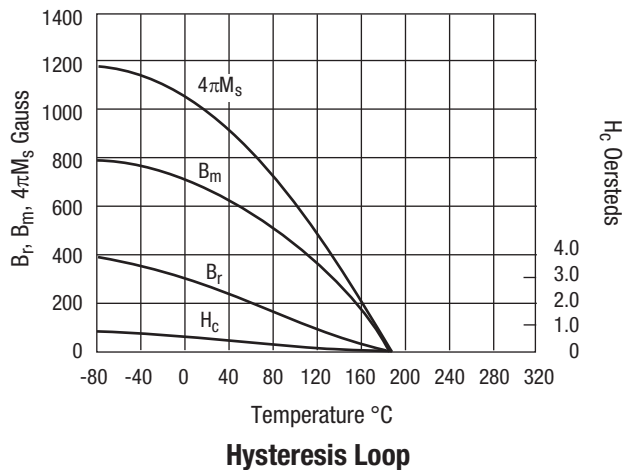


TTVG-930 Narrow Line Width Garnet

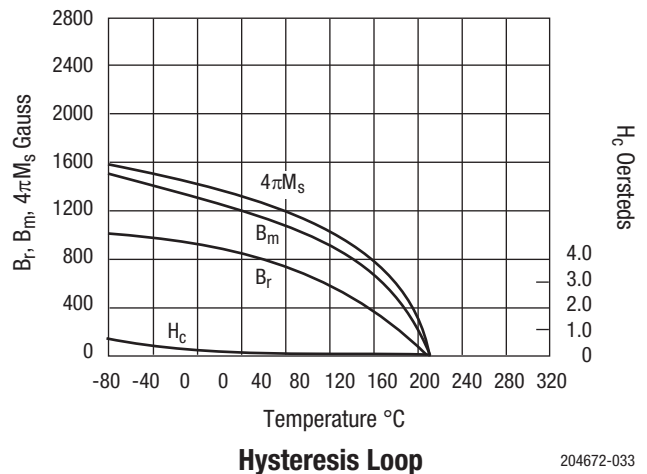


204672-032

TTVG-1000 Narrow Line Width Garnet

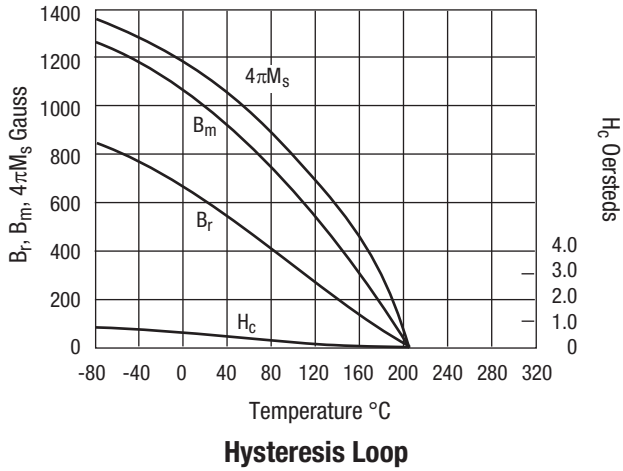


TTVG-1400 Narrow Line Width Garnet

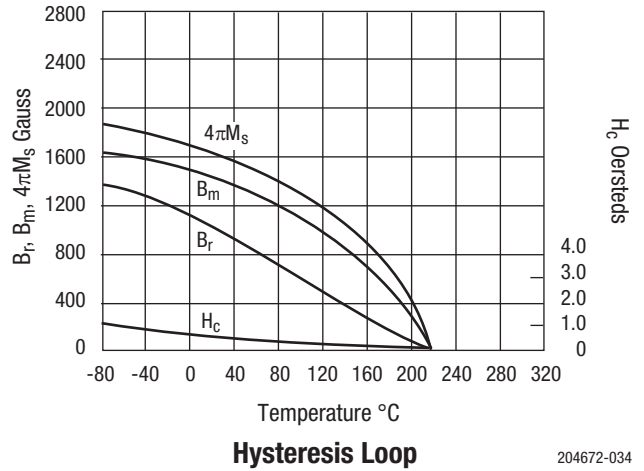


204672-033

TTVG-1100 Narrow Line Width Garnet

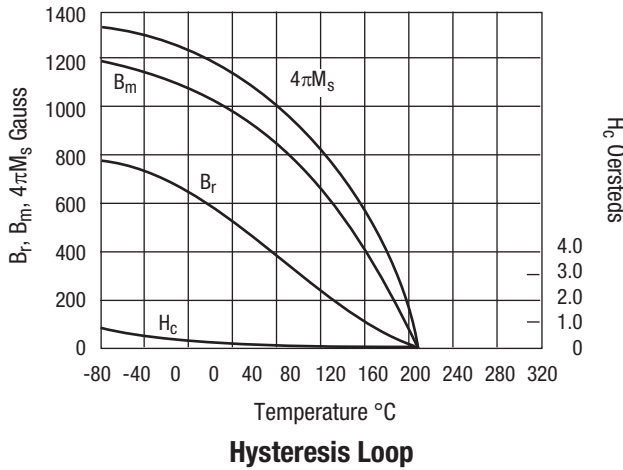


TTVG-1600 Narrow Line Width Garnet

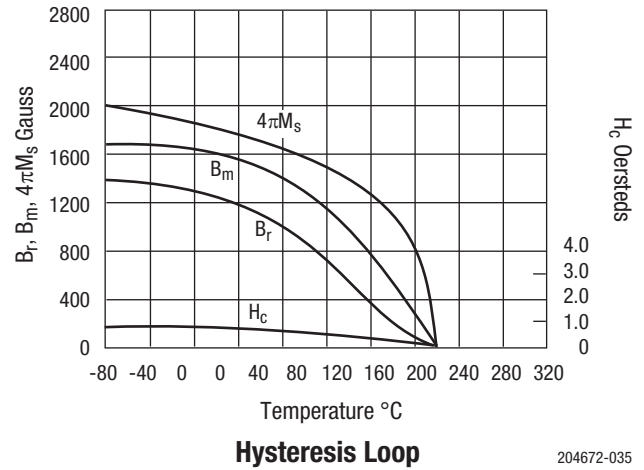


204672-034

TTVG-1200 Narrow Line Width Garnet



TTVG-1850 Narrow Line Width Garnet



204672-035

Copyright © 2006-2010, 2015, 2017, Trans-Tech Inc., All Rights Reserved.

Information in this document is provided in connection with Trans-Tech, Inc. ("Trans-Tech"), a wholly-owned subsidiary of Skyworks Solutions, Inc. These materials, including the information contained herein, are provided by Trans-Tech as a service to its customers and may be used for informational purposes only by the customer. Trans-Tech assumes no responsibility for errors or omissions in these materials or the information contained herein. Trans-Tech may change its documentation, products, services, specifications or product descriptions at any time, without notice. Trans-Tech makes no commitment to update the materials or information and shall have no responsibility whatsoever for conflicts, incompatibilities, or other difficulties arising from any future changes.

No license, whether express, implied, by estoppel or otherwise, is granted to any intellectual property rights by this document. Trans-Tech assumes no liability for any materials, products or information provided hereunder, including the sale, distribution, reproduction or use of Trans-Tech products, information or materials, except as may be provided in Trans-Tech Terms and Conditions of Sale.

THE MATERIALS, PRODUCTS, AND INFORMATION ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE, INCLUDING FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, PERFORMANCE, QUALITY, OR NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT; ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED. TRANS-TECH DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS, OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. TRANS-TECH SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING BUT NOT LIMITED TO ANY SPECIAL, INDIRECT, INCIDENTAL, STATUTORY, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THE MATERIALS OR INFORMATION, WHETHER OR NOT THE RECIPIENT OF MATERIALS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Trans-Tech products are not intended for use in medical, lifesaving, or life-sustaining applications, or other equipment in which the failure of the Trans-Tech products could lead to personal injury, death, or physical or environmental damage. Trans-Tech customers using or selling Trans-Tech products for use in such applications do so at their own risk and agree to fully indemnify Trans-Tech for any damages resulting from such improper use or sale.

Customers are responsible for their products and applications using Trans-Tech products, which may deviate from published specifications as a result of design defects, errors, or operation of products outside of published parameters or design specifications. Customers should include design and operating safeguards to minimize these and other risks. Trans-Tech assumes no liability for applications assistance, customer product design, or damage to any equipment resulting from the use of Trans-Tech products outside of stated published specifications or parameters.

Skyworks and the Skyworks symbol are trademarks or registered trademarks of Skyworks Solutions, Inc., in the United States and other countries. Third-party brands and names are for identification purposes only, and are the property of their respective owners.