CT83x Series

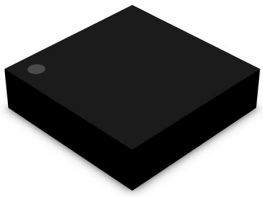
Omnipolar Digital TMR Latch/Sensor for Consumer & Industrial Applications

Product Description

The CT83x Series of integrated omnipolar magnetic latches and analog sensor are designed for consumer and industrial switching applications. It is based on Crocus Technology's patented Magnetic Logic Unit™ (MLU™) technology with integrated CMOS process to provide a monolithic solution for superior sensing performance.

SOT-23 Package

This series of magnetic latches feature an industry leading low power consumption as low as 200 nA. They are capable of handling large air gap applications with low magnetic fields down to 0.9 mT with best in class high frequency performance. The CT83x is offered in active-low push-pull CMOS and open drain configuration for design flexibility. The latches are available in a low profile and small form factor 4-lead LGA and 3-lead SOT-23 packages, providing cost effective and space-saving solutions for high volume manufacturing. Please contact factory for custom solutions.



1.40 x 1.40 x 0.44 mm LGA

Features and Benefits

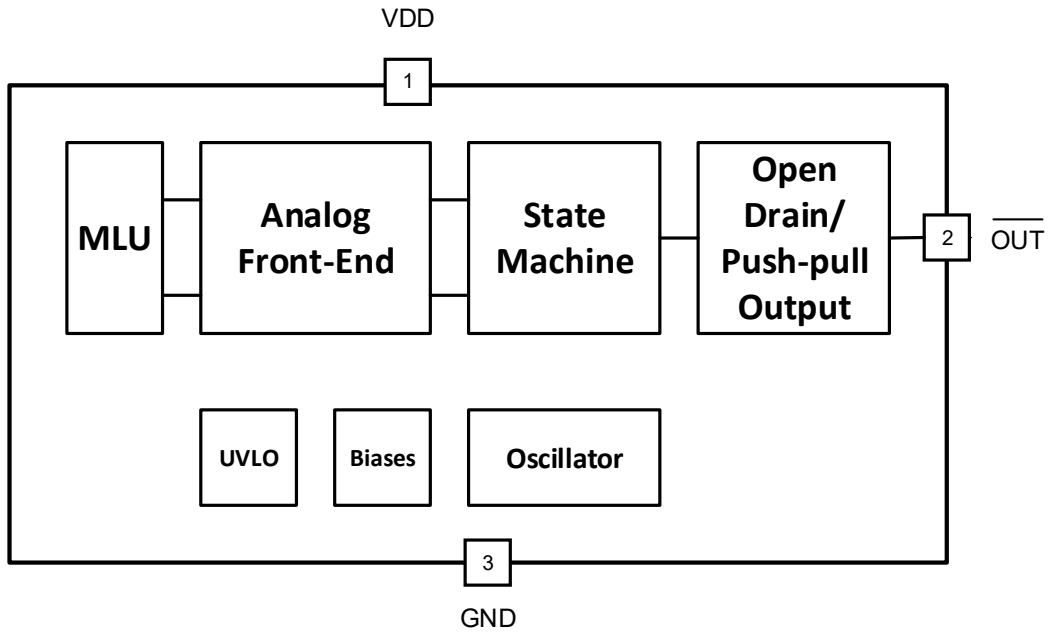
- High sensitivity, B_{OP} as low as 0.9 mT
- Resistant to mechanical stress
- Ultra-low power consumption as low as 200 nA
- Digital CMOS push-pull and open drain options
- Low profile and small form factor packaging
- RoHS Compliant

Application Examples

- IoT devices
- Smartphones, tablets, and laptops
- Door or lid closure detection
- Reed switch replacement
- Motor controllers
- Proximity detection
- Power switch or open-close detection
- Tamper-proofing for utility meters
- Fluid level detection

Figure 1: CT83x Block Diagrams

CT83x (SOT23 Package) Block Diagram



CT834 (SOT23 Package) Block Diagram

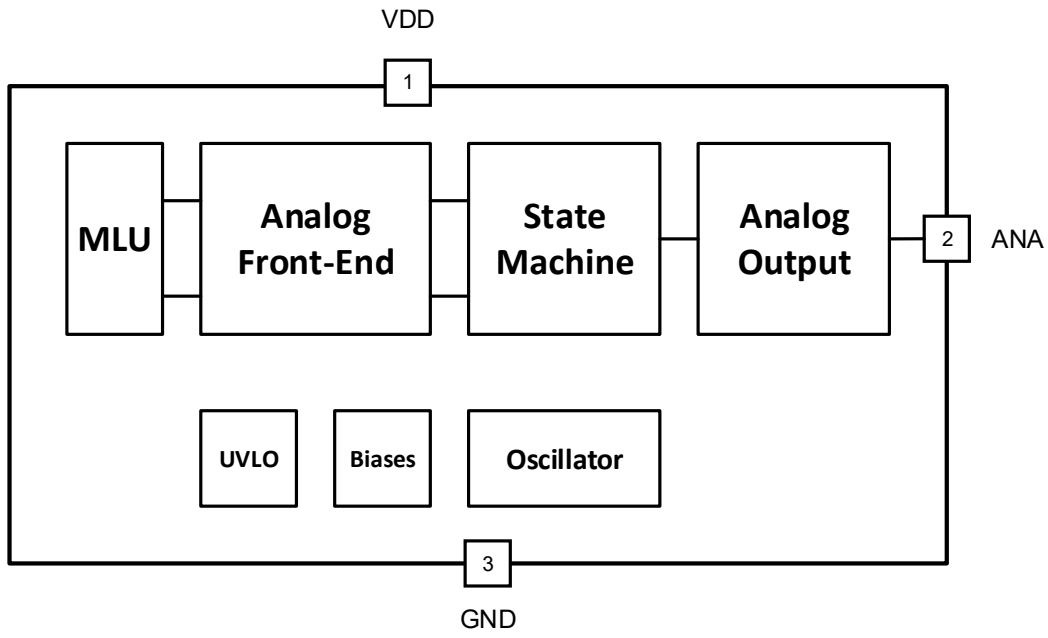
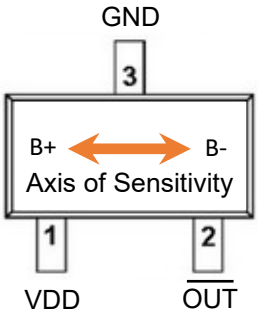
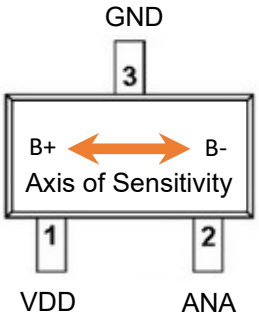


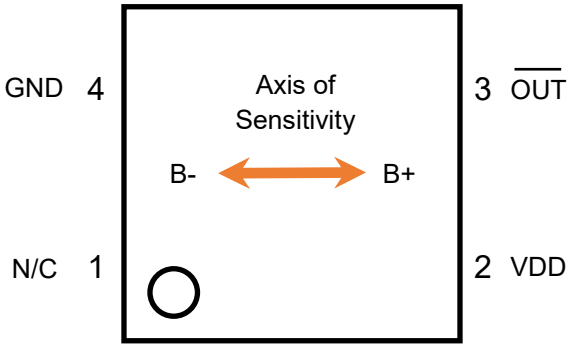
Figure 2: Package Pin-out with Axis of Sensitivity Diagrams



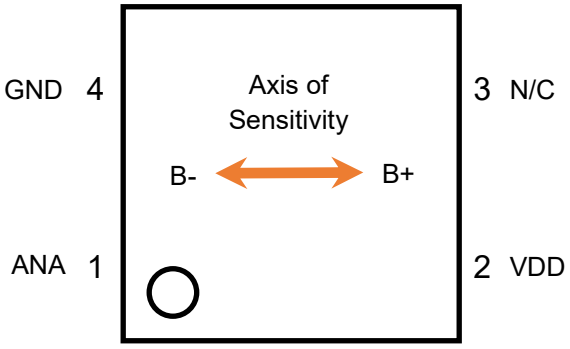
SOT-23 Package for CT83x



SOT-23 Package for CT834DR-IS3



LGA Package for CT832



LGA Package for CT834DR-IL1

Table 1: Pin-out Information

Pin # for SOT23 Package CT831/2/4	Pin # for LGA Package CT832BV, CT834	Pin Name	Pin Description
1	2	VDD	Supply Voltage
2	3	$\overline{OUT}$ ANA N/C	Output Signal (Active LOW) for CT83x. Analog Output for CT834 in SOT23 Package No Connect for CT834 in LGA Package.
3	4	GND	Ground
-	1	ANA (or N/C)	Analog Output for CT834. No Connect for CT832.

Table 2: Absolute Maximum Ratings

Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{DD}	-0.3	4.0	V
Push-pull Output (Active LOW)	V_{OUT_PP}	-0.3	V_{DD} + 0.3	V
Open Drain Output Voltage (Active LOW)	V_{OUT_OD}	-0.3	5.5	V
Analog Output	V_{ANA}	-0.3	V_{DD} + 0.3	V
Input and Output Current	I_{IN} / I_{OUT}	-10	+10	mA
Junction temperature	T_J	-40	+125	°C
Storage temperature	T_{STG}	-65	+150	°C
Soldering temperature	T_{SOL}		+260	°C
ESD Level, Human Body Model per JESD22-A114	V_{ESD_HBM}	±4.0		kV

Table 3: Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for the actual device operation. Recommended operating conditions are specified to ensure optimal performance to the data sheet specifications. Crocus Technology does not recommend exceeding them or designing to absolute maximum ratings.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{DD}		2.7	3.0	3.6	V
Output Voltage	V_{OUT}				3.6	V
Operating Magnetic Flux	B				12	mT
Ambient Temperature	T_A		-40	+25	+125	°C
Junction Temperature	T_J		-40		+125	°C

Table 4: Thermal Properties

Junction-to-ambient thermal resistance is a function of application and board layout and is determined in accordance to JEDEC standard JESD51 for a four (4) layer 2s2p FR-4 printed circuit board (PCB). Special attention must be paid not to exceed junction temperature $T_{J(MAX)}$ at a given ambient temperature.

Parameter	Symbol	Min	Typ	Max	Unit
Junction-to-Ambient Thermal Resistance for SOT23 Package	$\theta_{JA(SOT23)}$		202		°C/W
Junction-to-Ambient Thermal Resistance for LGA Package	$\theta_{JA(LGA)}$		165		°C/W

Table 5: Electrical Characteristics for CT83x Series

Unless otherwise specified: V_{DD} = 2.7 V to 3.6 V, T_A = -40°C to +125°C. Typical values are V_{DD} = 3.0 V and T_A = +25°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Power-On Time	t_{ON}	V_{DD} > 2.7 V		500		µs
Under-voltage Lockout Threshold, Rising V_{DD}	V_{UVLO_RISE}	Rising V_{DD}		2.20	2.60	V
Under-voltage Lockout Threshold, Falling V_{DD}	V_{UVLO_FALL}	Falling V_{DD}	1.90	2.15		V
Under-voltage Lockout Hysteresis	V_{UV_HYST}			50		mV
Push-Pull Output						
Output Voltage High $\overline{OUT}$	V_{OH}	I_{OUT} = -2 mA	0.9 × V_{DD}			V
Output Voltage Low $\overline{OUT}$	V_{OL}	I_{OUT} = +2 mA			0.1 × V_{DD}	V
Current for $\overline{OUT}$	I_{OUT}			±2		mA
Open Drain Output						
High Level Output Voltage	V_{OH}				5.5	V
Low Level Output Voltage	V_{OL}	I_{OUT} ≤ 20 mA	0		0.5	V
High Impedance Output Leakage Current (1)	I_{LEAK}	V_{OH} = 5.5 V, B = 0		20		pA

(1) Guaranteed by design and bench characterization.

Typical Timing Characteristics for CT83x

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

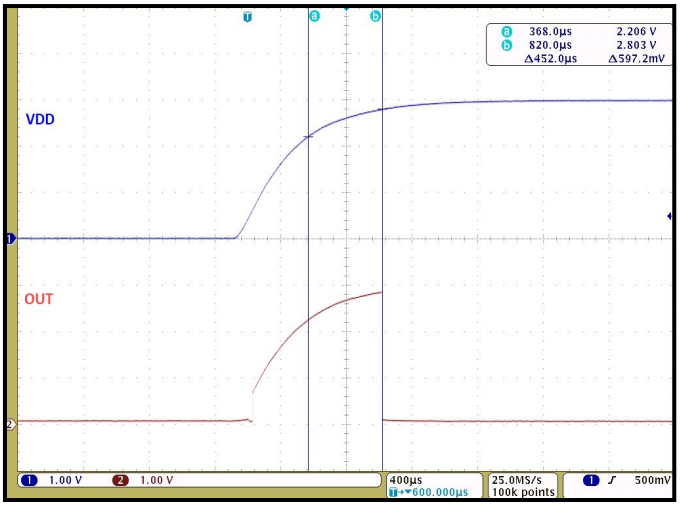


Figure 3. Power-On Time for Push-pull Output (V_{DD} and $\overline{OUT}$)

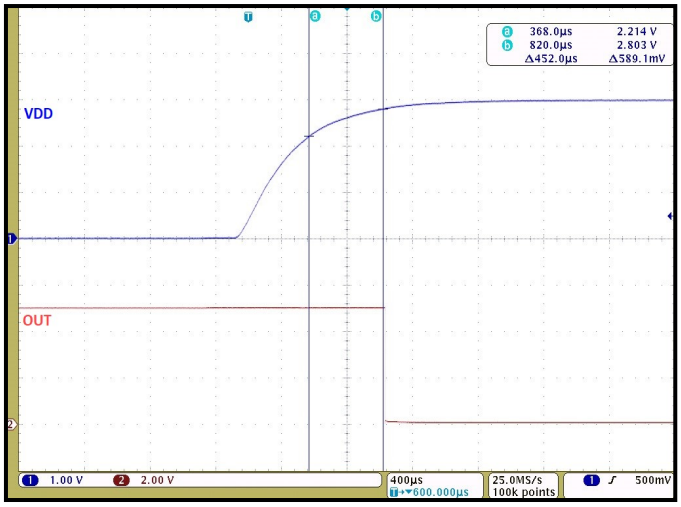


Figure 4. Power-On Time for Open Drain Output (V_{DD} and $\overline{OUT}$)

Table 6: Electrical & Magnetic Characteristics for CT831BV

Unless otherwise specified: V_{DD} = 2.7 V to 3.6 V, T_A = -40°C to +125°C. Typical values are V_{DD} = 3.0 V and T_A = +25°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Average Supply Current	$I_{DD(AVG)}$	t ≥ 10 s		200	700	nA
Sampling Frequency	f_S		1	2	4	Hz
Active Mode Time	t_{ACT}			1.40		µs
Idle Mode Time	t_{IDLE}		250	500	1,000	ms
Operate Point	B_{OPS}		2.7	3.0	3.8	mT
Operate Point	B_{OPN}		-3.8	-3.0	-2.7	mT
Release point	B_{RPS}		1.8	2.0	2.7	mT
Release point	B_{RPN}		-2.7	-2.0	-1.8	mT
Hysteresis	B_{HYST}	$B_{HYST} = B_{OP} - B_{RP}$	0.5	1.0		mT

Table 7: Electrical & Magnetic Characteristics for CT832BV

Unless otherwise specified: V_{DD} = 2.7 V to 3.6 V, T_A = -40°C to +125°C. Typical values are V_{DD} = 3.0 V and T_A = +25°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Average Supply Current	$I_{DD(AVG)}$	t ≥ 10 s		200	700	nA
Sampling Frequency	f_S		1	2	4	Hz
Active Mode Time	t_{ACT}			1.4		µs
Idle Mode Time	t_{IDLE}		250	500	1,000	ms
Operate Point	B_{OPS}		2.7	3.0	3.8	mT
Operate Point	B_{OPN}		-3.8	-3.0	-2.7	mT
Release point	B_{RPS}		1.8	2.0	2.7	mT
Release point	B_{RPN}		-2.7	-2.0	-1.8	mT
Hysteresis	B_{HYST}	$B_{HYST} = B_{OP} - B_{RP}$	0.5	1.0		mT

Typical Electrical Characteristics for CT831BV and CT832BV

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

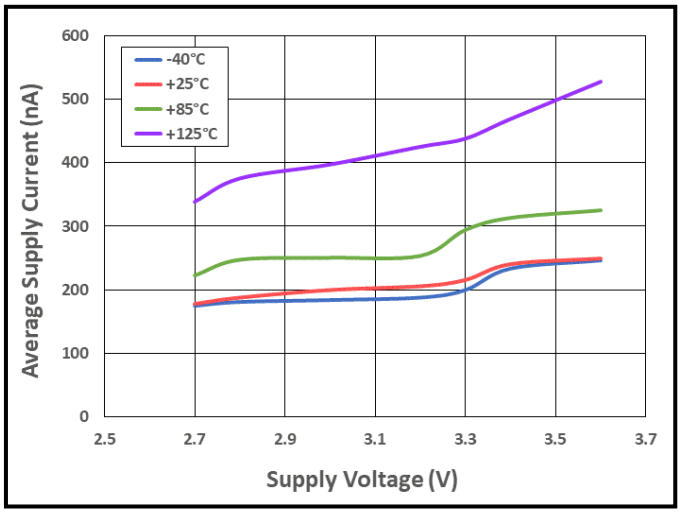


Figure 5. Average Supply Current vs. Supply Voltage vs. Temperature

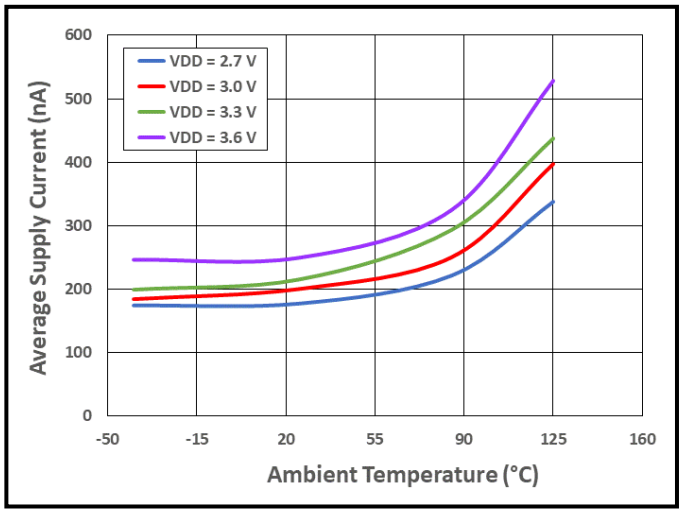


Figure 6. Average Supply Current vs. Temperature vs. Supply Voltage

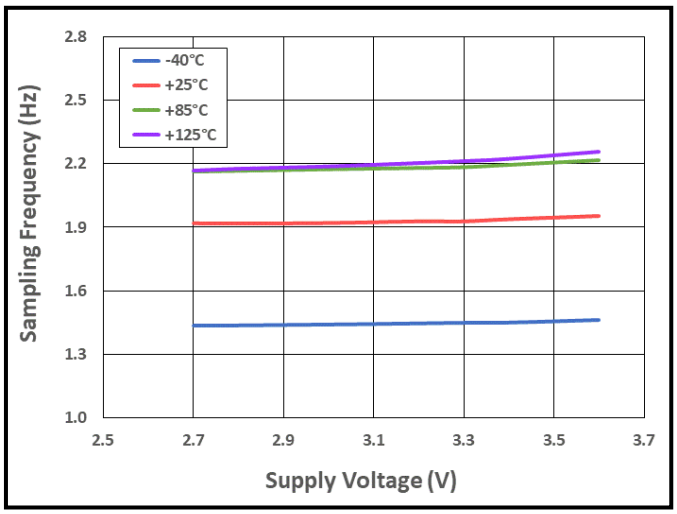


Figure 7. Sampling Frequency vs. Supply Voltage vs. Temperature

Typical Magnetic Characteristics for CT831BV and CT832BV

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

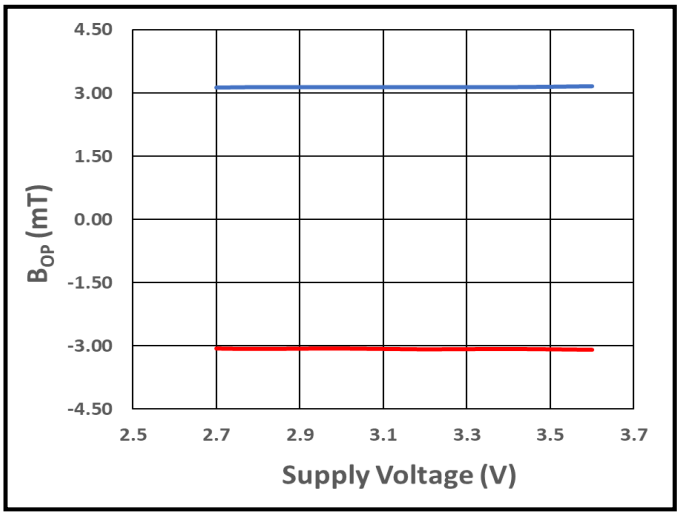


Figure 8. B_{OPN} (Red) and B_{OPS} (Blue) vs. Supply Voltage at +25°C

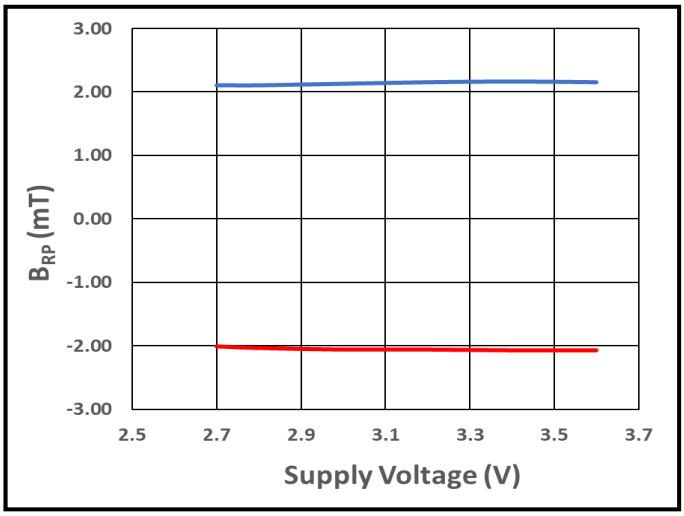


Figure 9. B_{RPN} (Red) and B_{RPS} (Blue) vs. Supply Voltage at +25°C

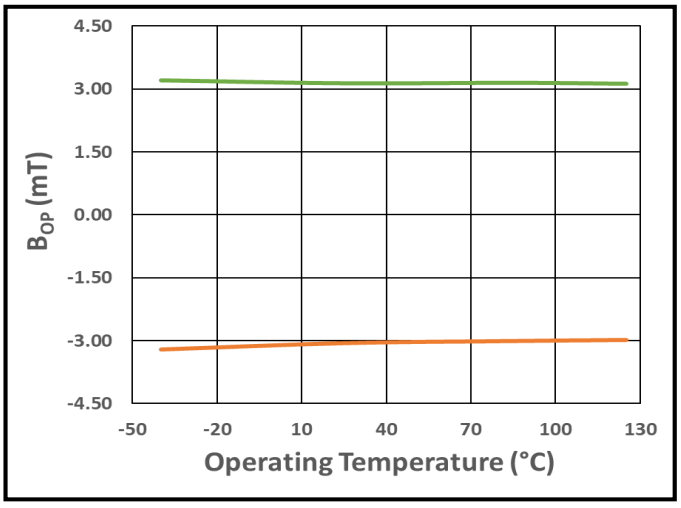


Figure 10. B_{OPN} (Orange) and B_{OPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

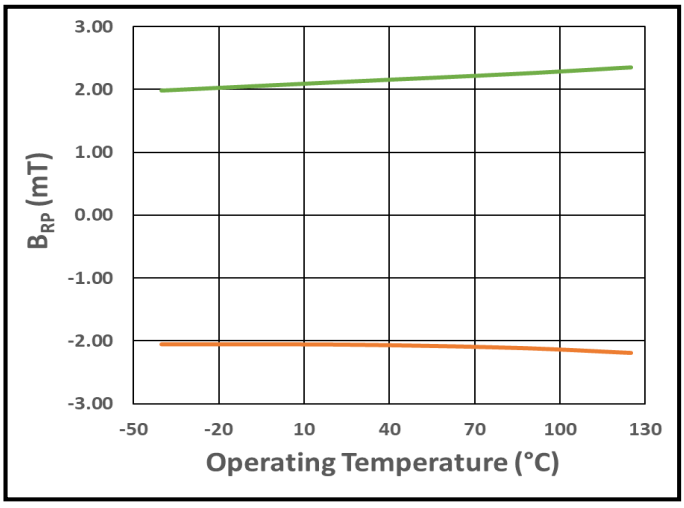


Figure 11. B_{RPN} (Orange) and B_{RPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

Table 8: Electrical & Magnetic Characteristics for CT832SK

Unless otherwise specified: V_{DD} = 2.7 V to 3.6 V, T_A = -40°C to +125°C. Typical values are V_{DD} = 3.0 V and T_A = +25°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Average Supply Current	$I_{DD(AVG)}$	t ≥ 10 s		230	700	nA
Sampling Frequency	f_S		7	10	13	Hz
Active Mode Time	t_{ACT}			1.4		µs
Idle Mode Time	t_{IDLE}		77	100	143	ms
Operate Point	B_{OPS}		0.8	0.9	1.2	mT
Operate Point	B_{OPN}		-1.2	-0.9	-0.8	mT
Release point	B_{RPS}		0.3	0.5	0.7	mT
Release point	B_{RPN}		-0.7	-0.5	-0.3	mT
Hysteresis	B_{HYST}	$B_{HYST} = B_{OP} - B_{RP}$	0.3	0.4		mT

Table 9: Electrical & Magnetic Characteristics for CT832EK

Unless otherwise specified: V_{DD} = 2.7 V to 3.6 V, T_A = -40°C to +125°C. Typical values are V_{DD} = 3.0 V and T_A = +25°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Average Supply Current	$I_{DD(AVG)}$	t ≥ 10 s		230	700	nA
Sampling Frequency	f_S		7	10	13	Hz
Active Mode Time	t_{ACT}			1.4		µs
Idle Mode Time	t_{IDLE}		77	100	143	ms
Operate Point	B_{OPS}			7.0		mT
Operate Point	B_{OPN}			-7.0		mT
Release Point	B_{RPS}			5.0		mT
Release Point	B_{RPN}			-5.0		mT
Hysteresis	B_{HYST}	$B_{HYST} = B_{OP} - B_{RP}$		2.0		mT

Typical Electrical Characteristics for CT832SK and CT832EK

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

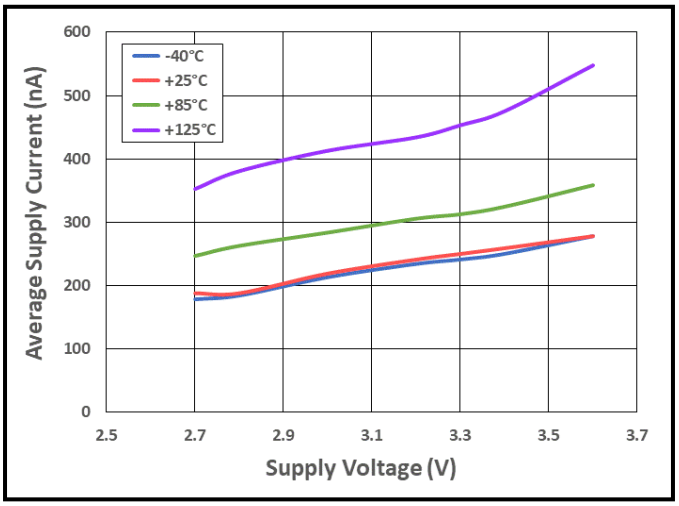


Figure 12. Average Supply Current vs. Supply Voltage vs. Temperature

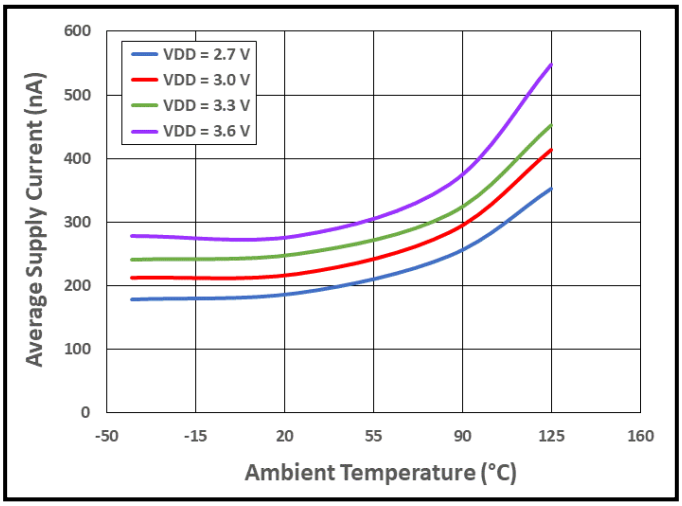


Figure 13. Average Supply Current vs. Temperature vs. Supply Voltage

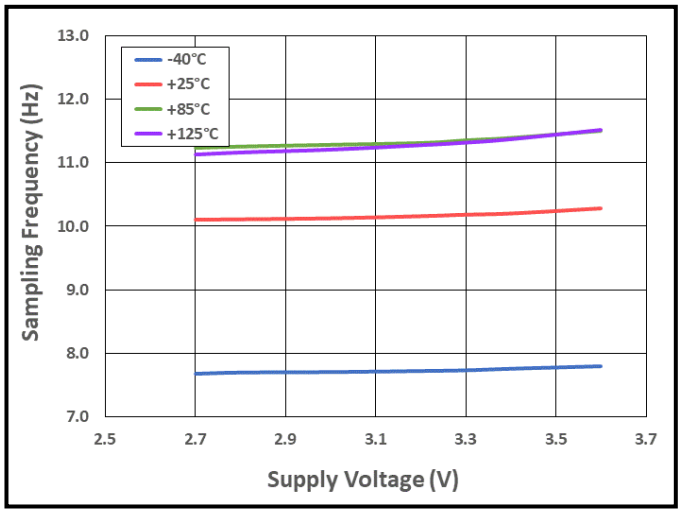


Figure 14. Sampling Frequency vs. Supply Voltage vs. Temperature

Typical Magnetic Characteristics for CT832SK

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

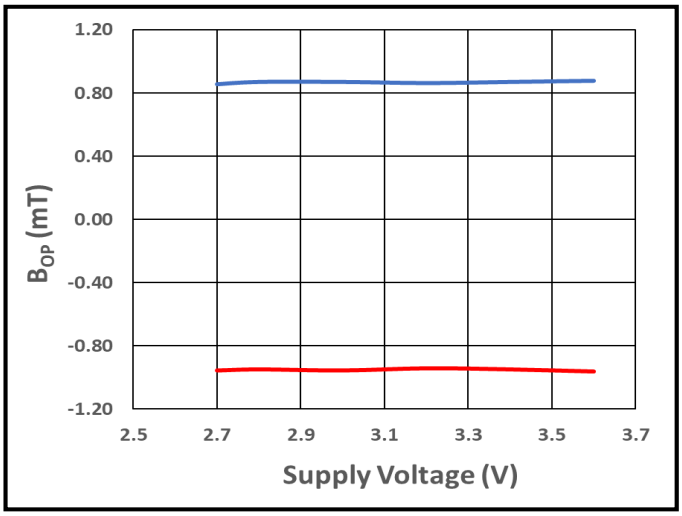


Figure 15. B_{OPN} (Red) and B_{OPS} (Blue) vs. Supply Voltage at +25°C

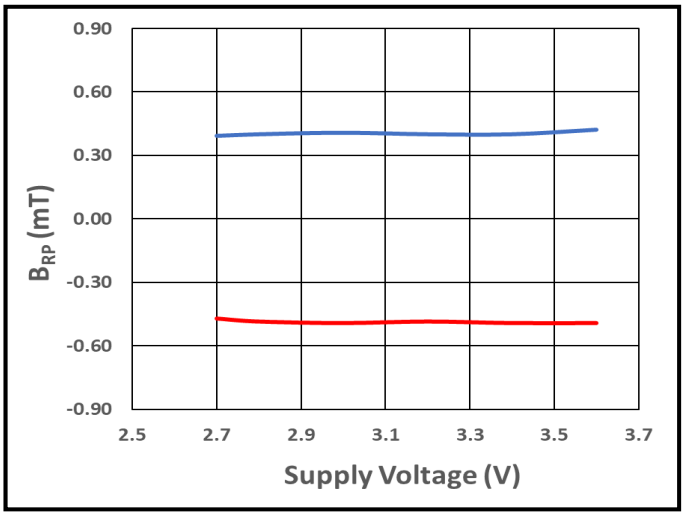


Figure 16. B_{RPN} (Red) and B_{RPS} (Blue) vs. Supply Voltage at +25°C

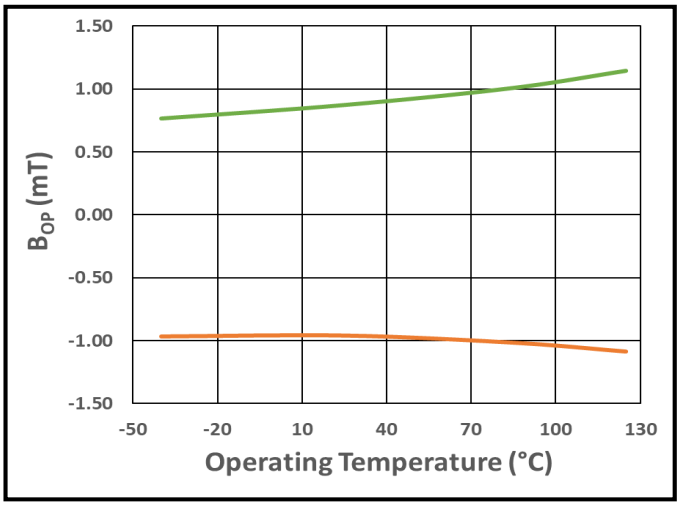


Figure 17. B_{OPN} (Orange) and B_{OPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

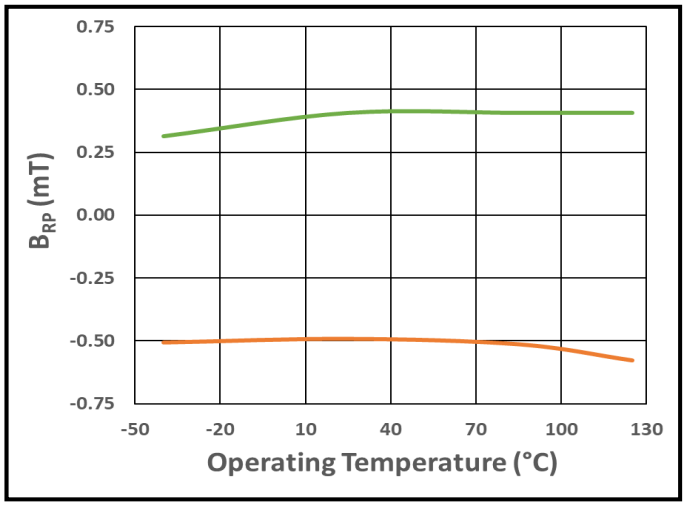


Figure 18. B_{RPN} (Orange) and B_{RPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

Table 10: Electrical & Magnetic Characteristics for CT832SL

Unless otherwise specified: V_{DD} = 2.7 V to 3.6 V, T_A = -40°C to +125°C. Typical values are V_{DD} = 3.0 V and T_A = +25°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Average Supply Current	$I_{DD(AVG)}$	t ≥ 10 s		1.2	2.5	µA
Sampling Frequency	f_S		165	250	300	Hz
Active Mode Time	t_{ACT}			1.4		µs
Idle Mode Time	t_{IDLE}		3.3	4.0	6.0	ms
Operate Point	B_{OPS}		0.8	0.9	1.2	mT
Operate Point	B_{OPN}		-1.2	-0.9	-0.8	mT
Release point	B_{RPS}		0.3	0.5	0.7	mT
Release point	B_{RPN}		-0.7	-0.5	-0.3	mT
Hysteresis	B_{HYST}	$B_{HYST} = B_{OP} - B_{RP}$	0.3	0.4		mT

Table 11: Electrical & Magnetic Characteristics for CT832BL

Unless otherwise specified: V_{DD} = 2.7 V to 3.6 V, T_A = -40°C to +125°C. Typical values are V_{DD} = 3.0 V and T_A = +25°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Average Supply Current	$I_{DD(AVG)}$	t ≥ 10 s		1.2	2.5	µA
Sampling Frequency	f_S		165	250	300	Hz
Active Mode Time	t_{ACT}			1.4		µs
Idle Mode Time	t_{IDLE}		3.3	4.0	6.0	ms
Operate Point	B_{OPS}		2.7	3.0	3.8	mT
Operate Point	B_{OPN}		-3.8	-3.0	-2.7	mT
Release point	B_{RPS}		1.8	2.0	2.7	mT
Release point	B_{RPN}		-2.7	-2.0	-1.8	mT
Hysteresis	B_{HYST}	$B_{HYST} = B_{OP} - B_{RP}$	0.5	1.0		mT

Typical Electrical Characteristics for CT832SL and CT832BL

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

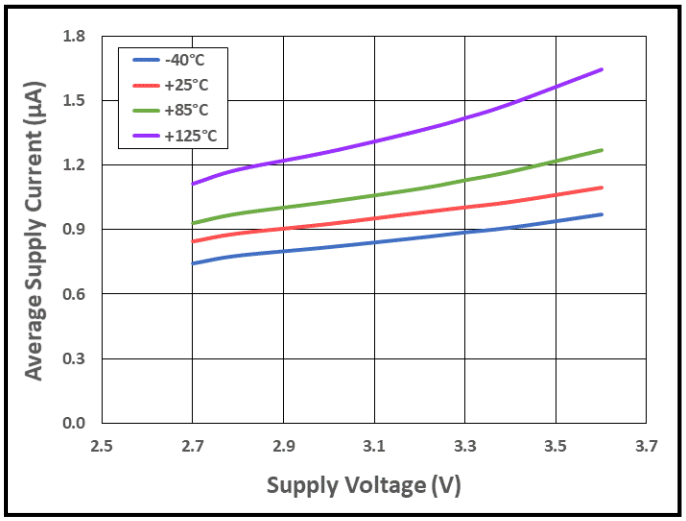


Figure 19. Average Supply Current vs. Supply Voltage vs. Temperature

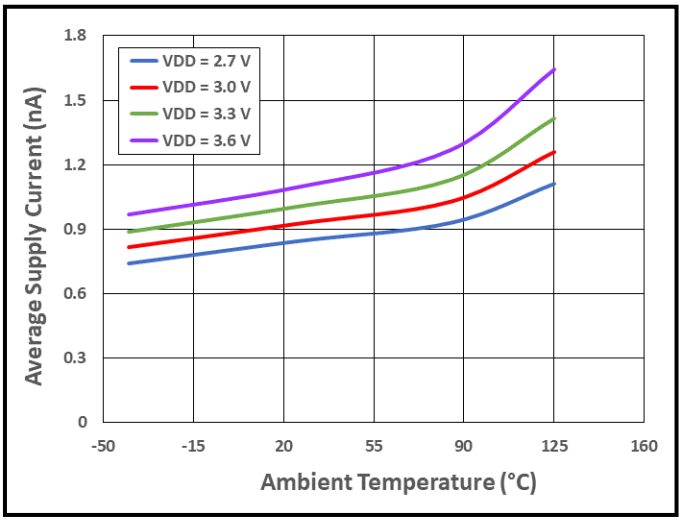


Figure 20. Average Supply Current vs. Temperature vs. Supply Voltage

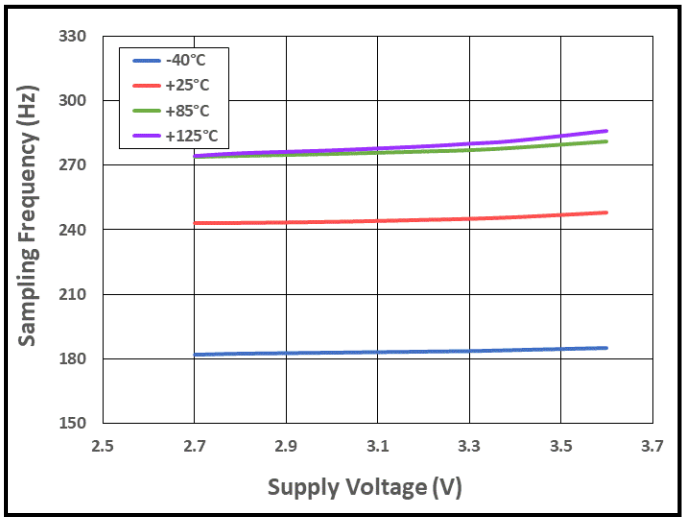


Figure 21. Sampling Frequency vs. Supply Voltage vs. Temperature

Typical Magnetic Characteristics for CT832SL

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

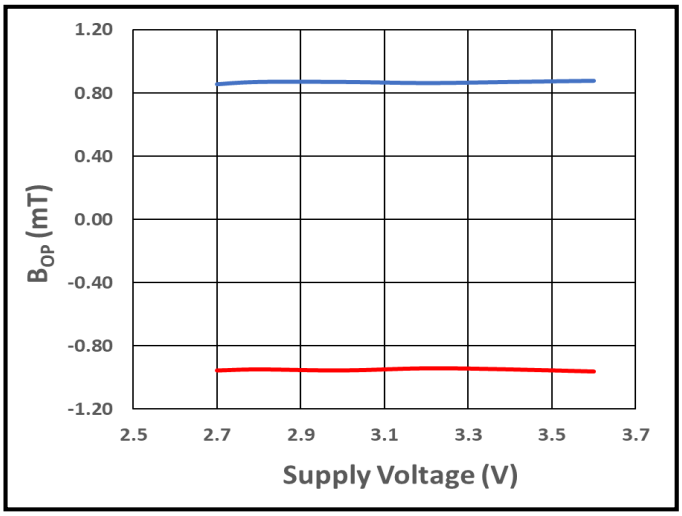


Figure 22. B_{OPN} (Red) and B_{OPS} (Blue) vs. Supply Voltage at +25°C

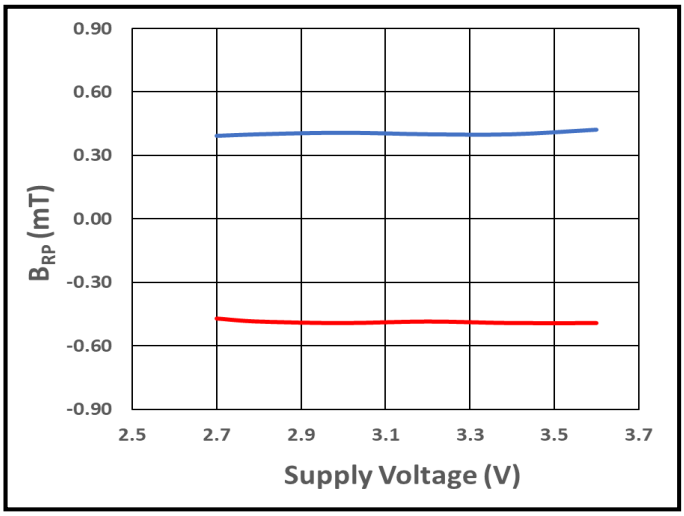


Figure 23. B_{RPN} (Red) and B_{RPS} (Blue) vs. Supply Voltage at +25°C

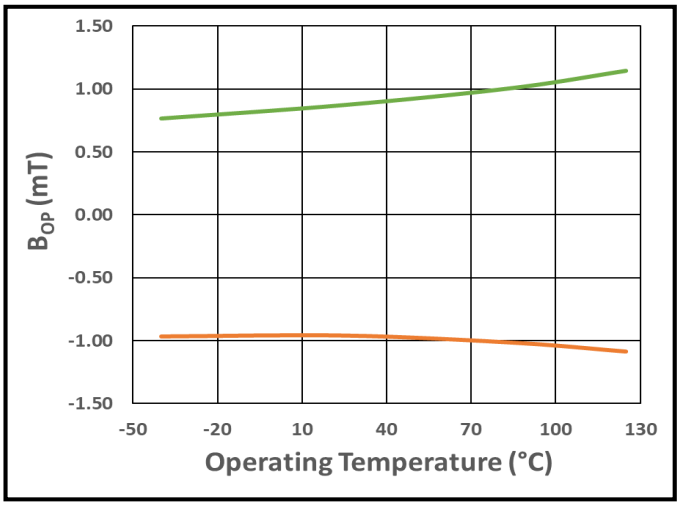


Figure 24. B_{OPN} (Orange) and B_{OPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

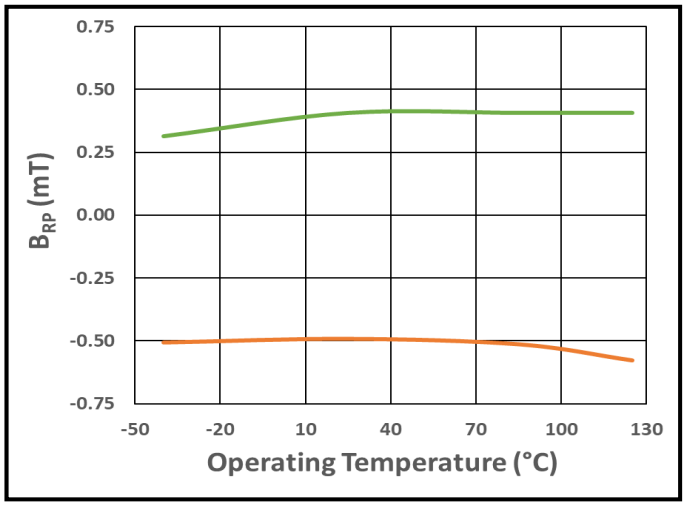


Figure 25. B_{RPN} (Orange) and B_{RPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

Typical Magnetic Characteristics for CT832BL

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

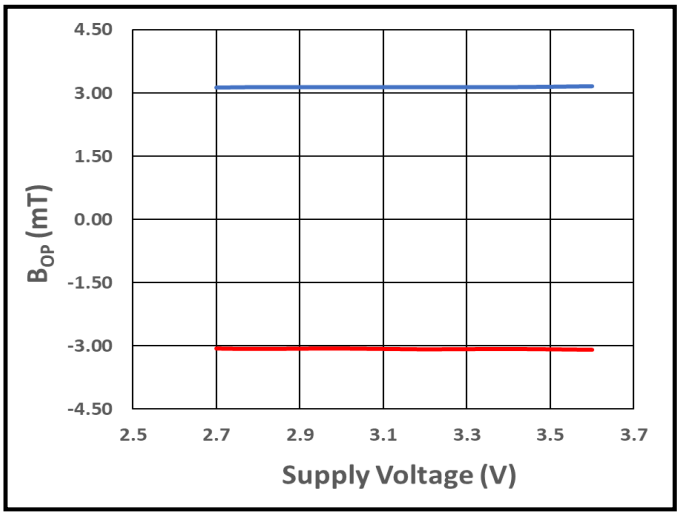


Figure 26. B_{OPN} (Red) and B_{OPS} (Blue) vs. Supply Voltage at +25°C

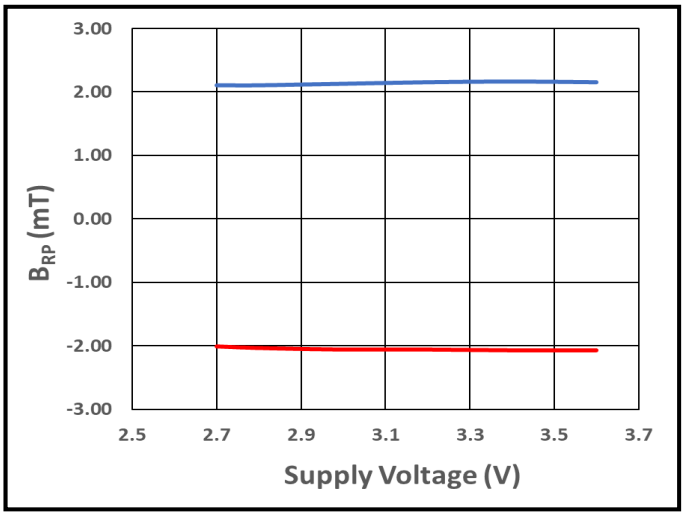


Figure 27. B_{RPN} (Red) and B_{RPS} (Blue) vs. Supply Voltage at +25°C

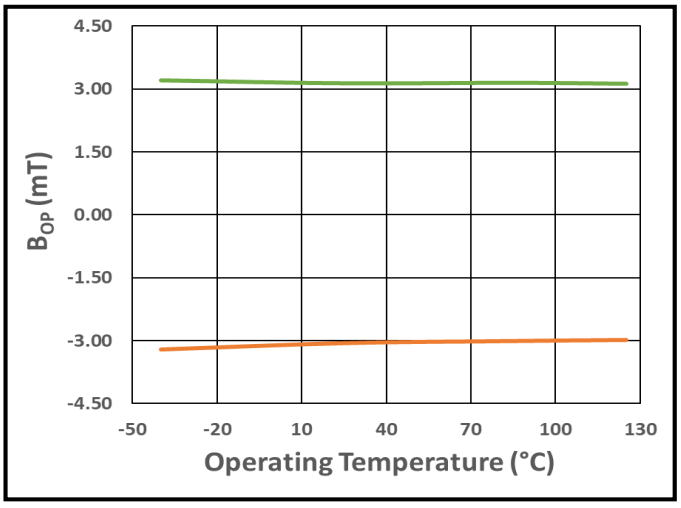


Figure 28. B_{OPN} (Orange) and B_{OPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

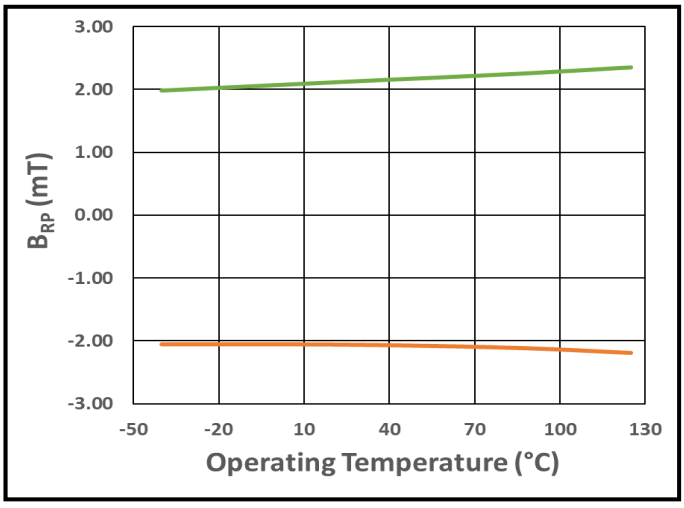


Figure 29. B_{RPN} (Orange) and B_{RPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

Table 12: Electrical & Magnetic Characteristics for CT832DM

Unless otherwise specified: V_{DD} = 2.7 V to 3.6 V, T_A = -40°C to +125°C. Typical values are V_{DD} = 3.0 V and T_A = +25°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Average Supply Current	$I_{DD(AVG)}$	t ≥ 10 s		8.0	13.0	µA
Sampling Frequency	f_S		1.63	2.50	3.25	kHz
Active Mode Time	t_{ACT}			1.4		µs
Idle Mode Time	t_{IDLE}		308	400	614	µs
Operate Point	B_{OPS}		1.3	1.5	1.8	mT
Operate Point	B_{OPN}		-1.8	-1.5	-1.3	mT
Release point	B_{RPS}		0.8	1.0	1.3	mT
Release point	B_{RPN}		-1.3	-1.0	-0.8	mT
Hysteresis	B_{HYST}	$B_{HYST} = B_{OP} - B_{RP}$	0.3	0.5		mT

Typical Electrical Characteristics for CT832DM

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

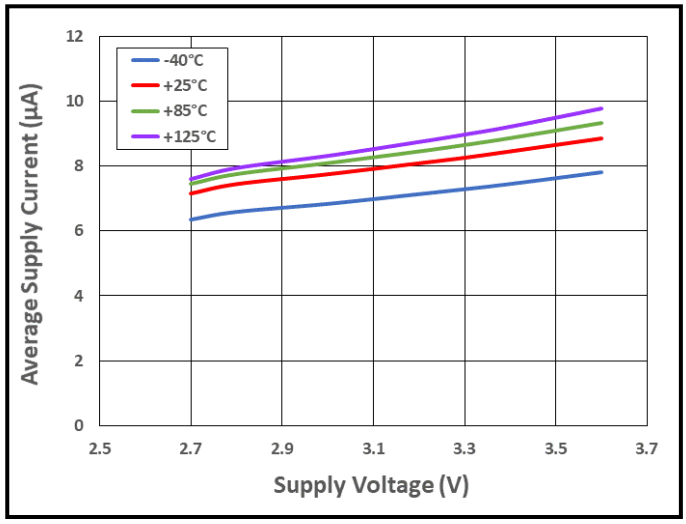


Figure 30. Average Supply Current vs. Supply Voltage vs. Temperature

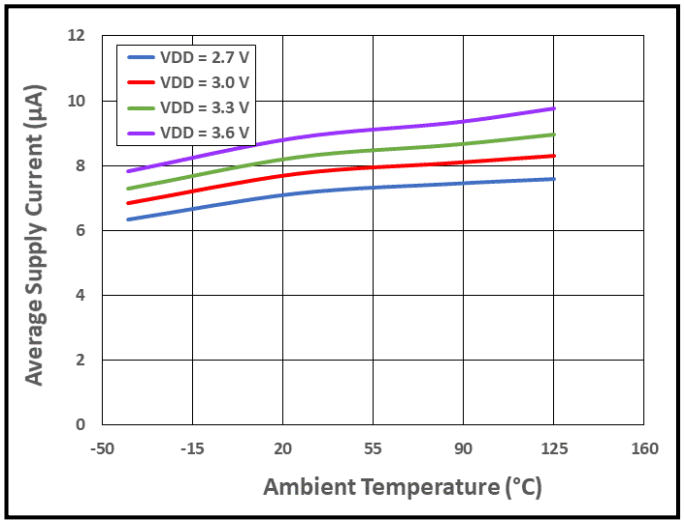


Figure 31. Average Supply Current vs. Temperature vs. Supply Voltage

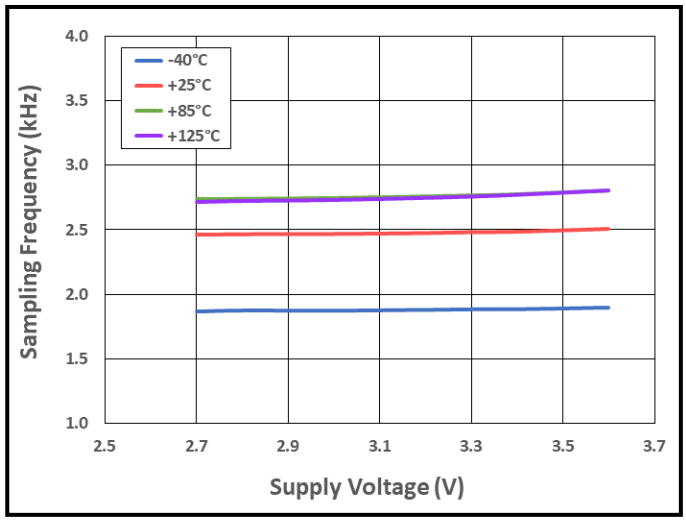


Figure 32. Sampling Frequency vs. Supply Voltage vs. Temperature

Typical Magnetic Characteristics for CT832DM

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

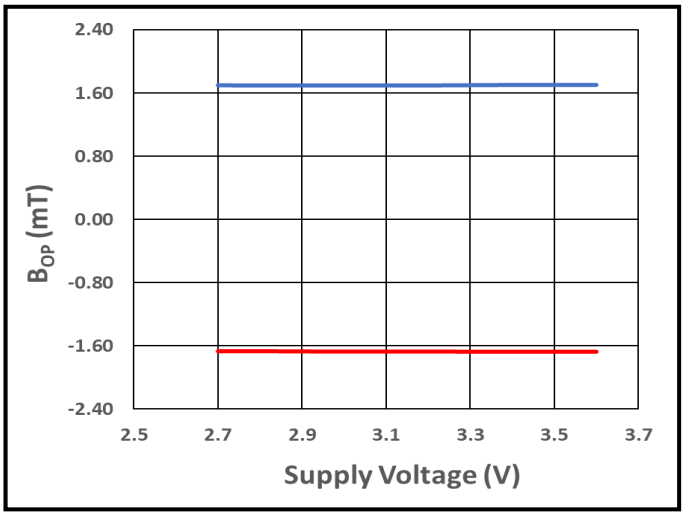


Figure 33. B_{OPN} (Red) and B_{OPS} (Blue) vs. Supply Voltage at +25°C

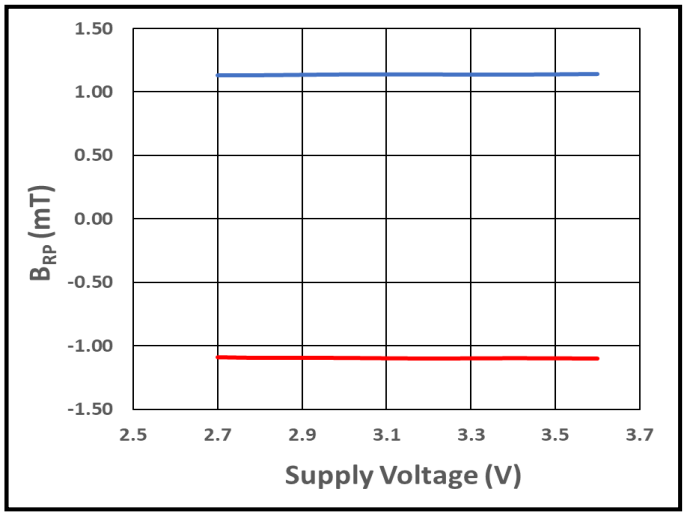


Figure 34. B_{RPN} (Red) and B_{RPS} (Blue) vs. Supply Voltage at +25°C

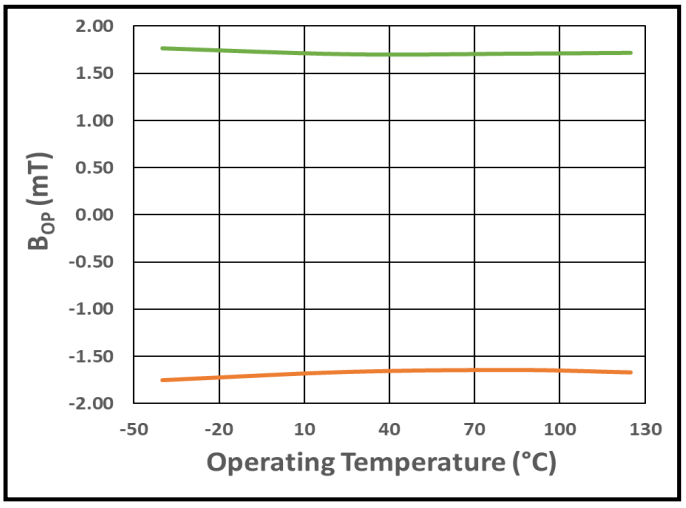


Figure 35. B_{OPN} (Orange) and B_{OPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

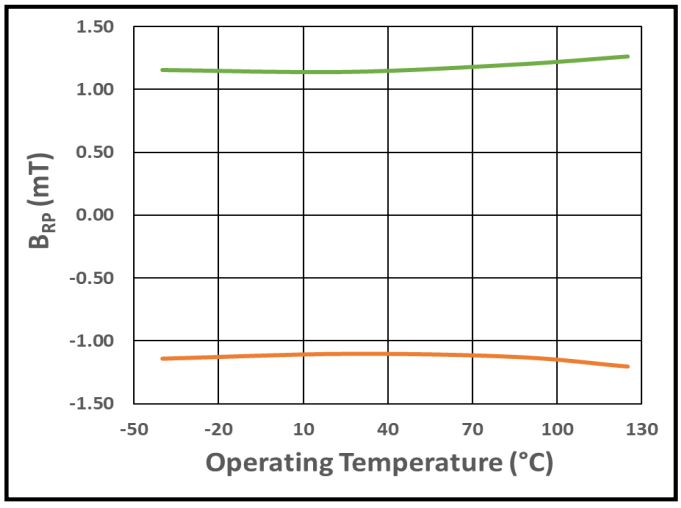


Figure 36. B_{RPN} (Orange) and B_{RPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

Table 13: Electrical & Magnetic Characteristics for CT832BH

Unless otherwise specified: V_{DD} = 2.7 V to 3.6 V, T_A = -40°C to +125°C. Typical values are V_{DD} = 3.0 V and T_A = +25°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Average Supply Current	$I_{DD(AVG)}$	t ≥ 10 s		36		µA
Sampling Frequency	f_S		7	10	13	kHz
Active Mode Time	t_{ACT}			1.4		µs
Idle Mode Time	t_{IDLE}		77	100	143	µs
Operate Point	B_{OPS}		2.7	3.0	3.8	mT
Operate Point	B_{OPN}		-3.8	-3.0	-2.7	mT
Release Point	B_{RPS}		1.8	2.0	2.7	mT
Release Point	B_{RPN}		-2.7	-2.0	-1.8	mT
Hysteresis	B_{HYST}	$B_{HYST} = B_{OP} - B_{RP}$	0.5	1.0		mT

Typical Electrical Characteristics for CT832BH

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

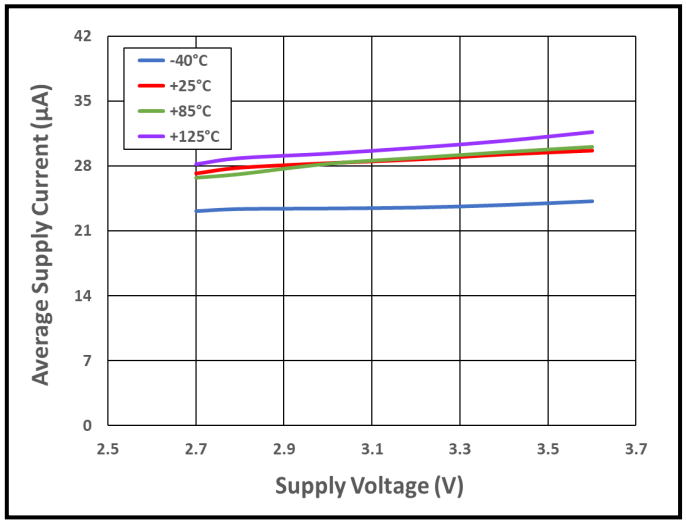


Figure 37. Average Supply Current vs. Supply Voltage vs. Temperature

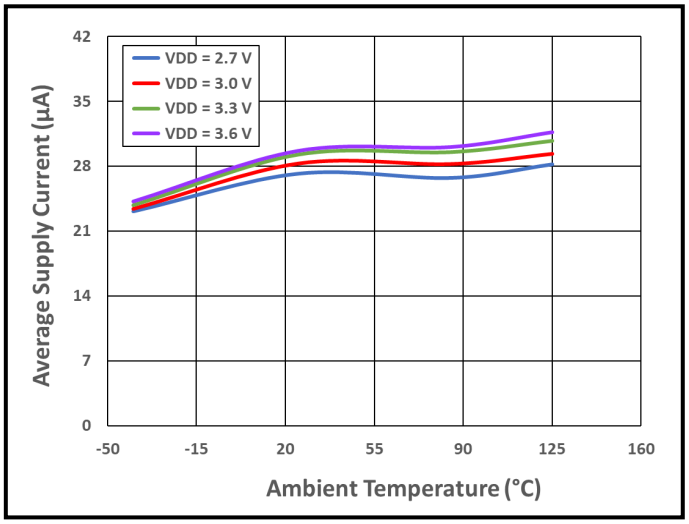


Figure 38. Average Supply Current vs. Temperature vs. Supply Voltage

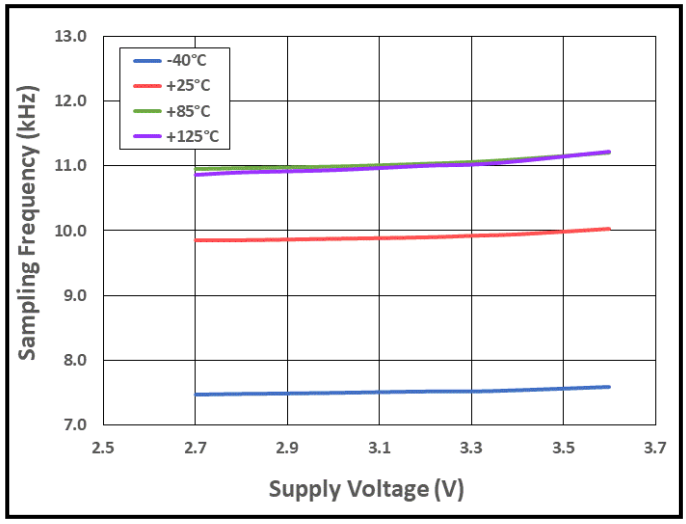


Figure 39. Sampling Frequency vs. Supply Voltage vs. Temperature

Typical Magnetic Characteristics for CT832BH

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

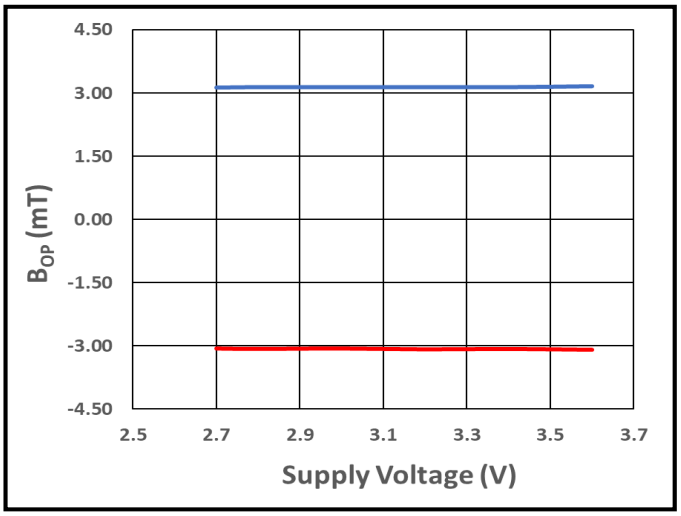


Figure 40. B_{OPN} (Red) and B_{OPS} (Blue) vs. Supply Voltage at +25°C

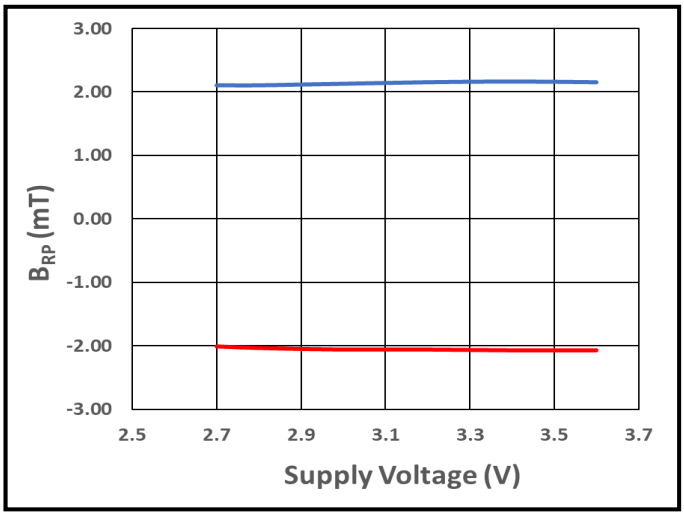


Figure 41. B_{RPN} (Red) and B_{RPS} (Blue) vs. Supply Voltage at +25°C

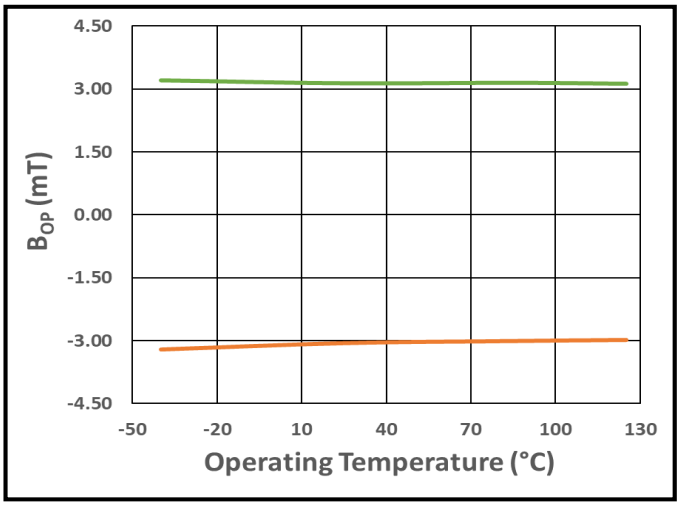


Figure 42. B_{OPN} (Orange) and B_{OPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

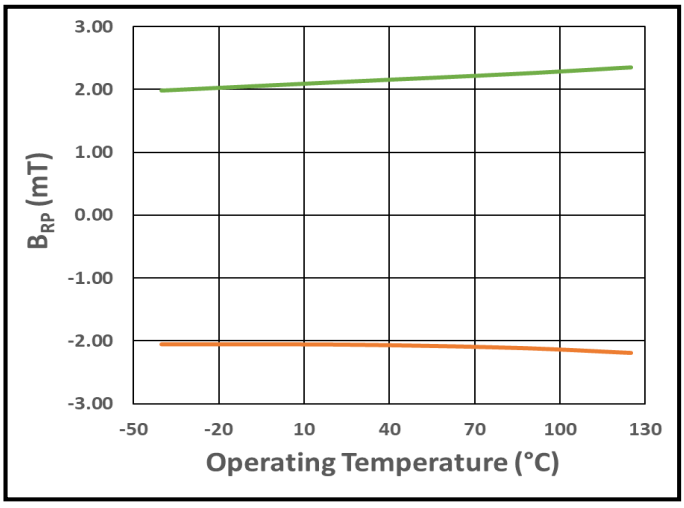


Figure 43. B_{RPN} (Orange) and B_{RPS} (Green) vs. Operating Temperature at V_{DD} = 3.0 V

Table 14: Electrical & Magnetic Characteristics for CT834DR

Unless otherwise specified: V_{DD} = 2.7 V to 3.6 V, T_A = -40°C to +85°C. Typical values are V_{DD} = 3.0 V and T_A = +25°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Operating Temperature	T_A		-40	+25	+85	°C
Average Supply Current	$I_{DD(AVG)}$	t ≥ 10 s		1.5	2.7	mA
Maximum Drive Capability	$I_{DRV(MAX)}$	V_{ANA} covers 19% V_{DD} to 81% V_{DD} span	-10		+10	µA
Output Capacitive Load	C_L				10	pF
Analog Output Magnetic Field Range	B_{ANA}		±1.0	±1.5		mT
Analog Output Voltage, High	V_{ANA_HIGH}			0.81 × V_{DD}		V
Analog Output Voltage, Low	V_{ANA_LOW}			0.19 × V_{DD}		V
Voltage Output Quiescent	V_{OQ}		45	50	55	% V_{DD}
Sensitivity @ T = +25°C	$S_{T=25}$	T_A = +25°C	176	200	224	mV/V/mT
Sensitivity @ Full Temperature Range	S_{FULL_RANGE}	T_A = -40°C to +85°C	140	200	260	mV/V/mT

Typical Characteristics for CT834DR

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

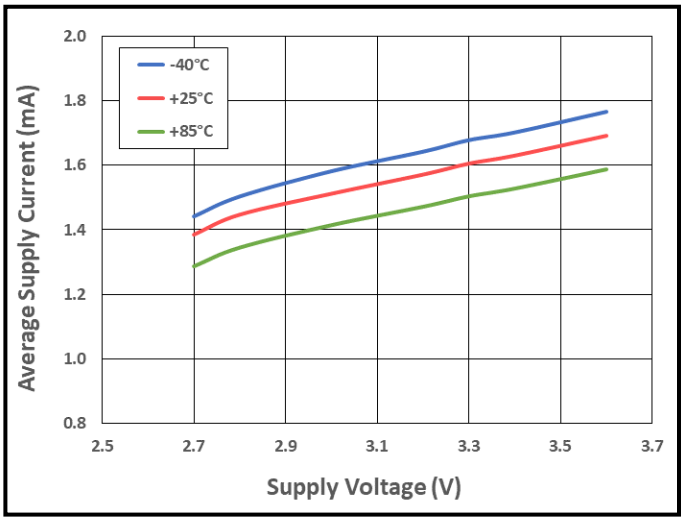


Figure 44. Average Supply Current vs. Supply Voltage vs. Temperature

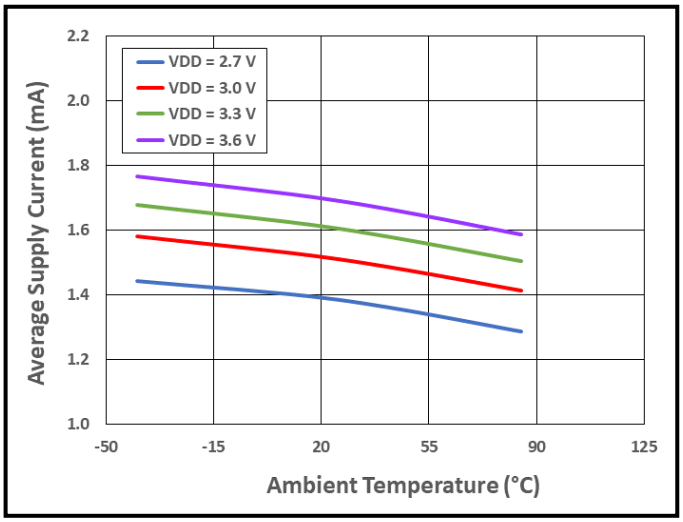


Figure 45. Average Supply Current vs. Temperature vs. Supply Voltage

Typical Magnetic Characteristics for CT834DR

V_{DD} = 3.0 V and T_A = +25°C, C_{DD} = 1.0 µF (unless otherwise specified).

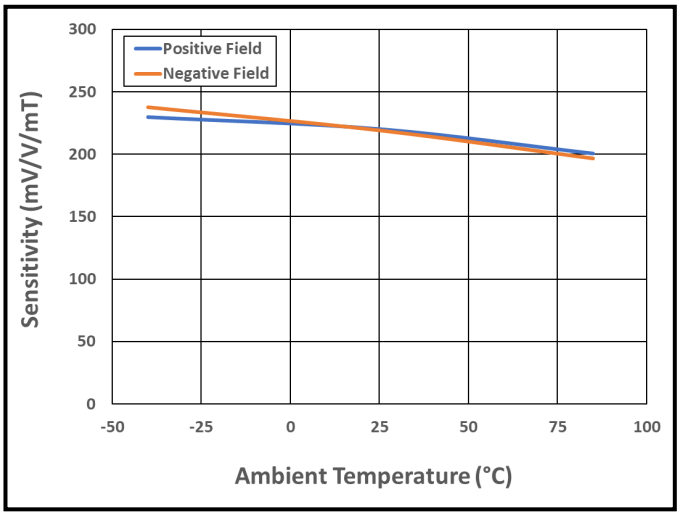


Figure 46. Magnetic Sensitivity vs. Temperature for Positive and Negative Fields

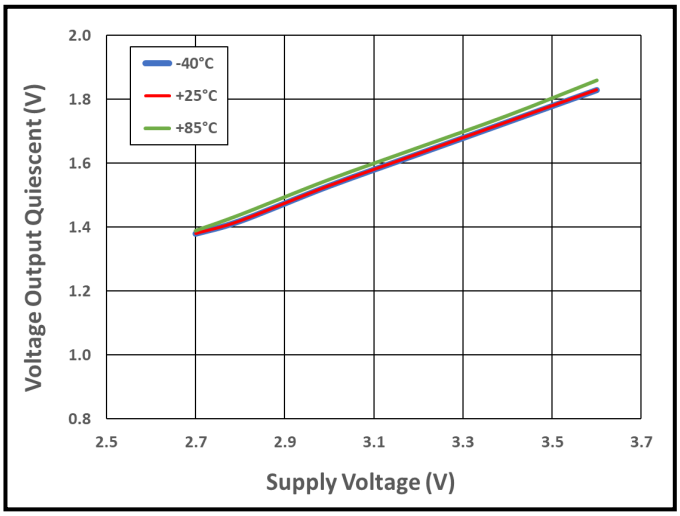


Figure 47. Voltage Output Quiescent (V_{OQ}) vs. Supply Voltage vs. Temperature

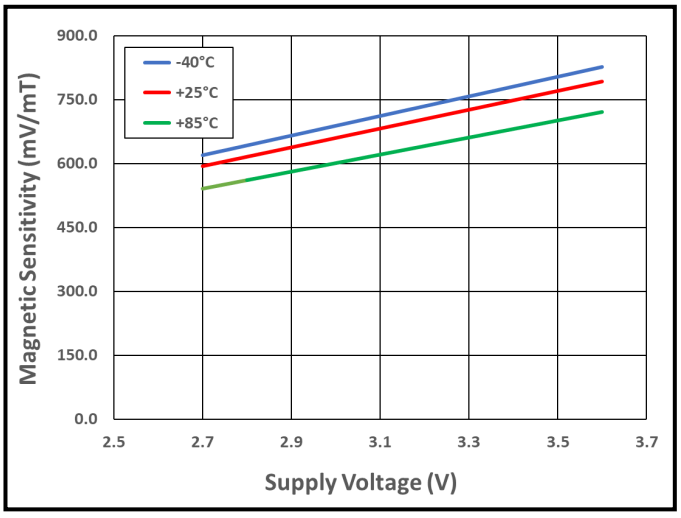


Figure 48. Magnetic Sensitivity vs. Supply Voltage vs. Temperature for Positive Field

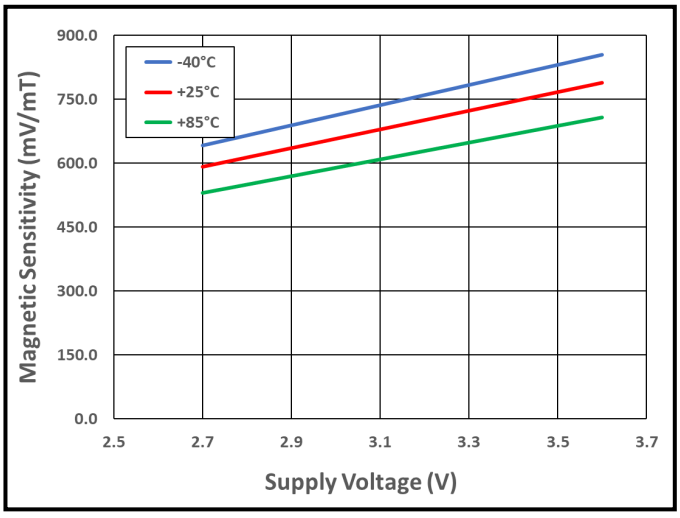
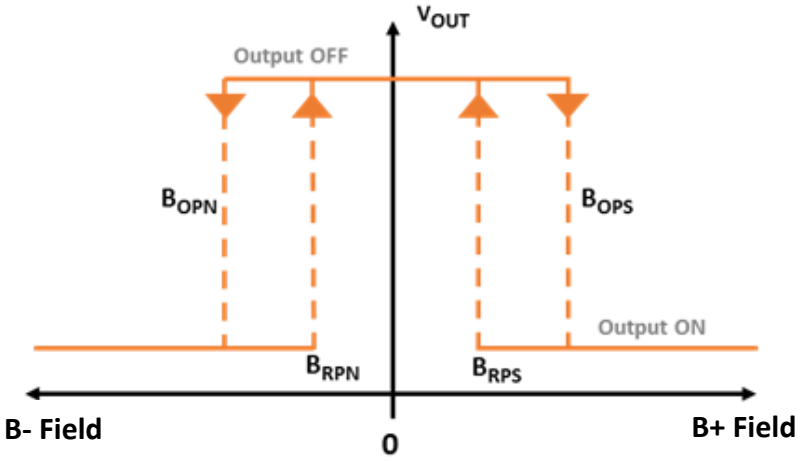


Figure 49. Magnetic Sensitivity vs. Supply Voltage vs. Temperature for Negative Field

Figure 50: Omnipolar Magnetic Flux



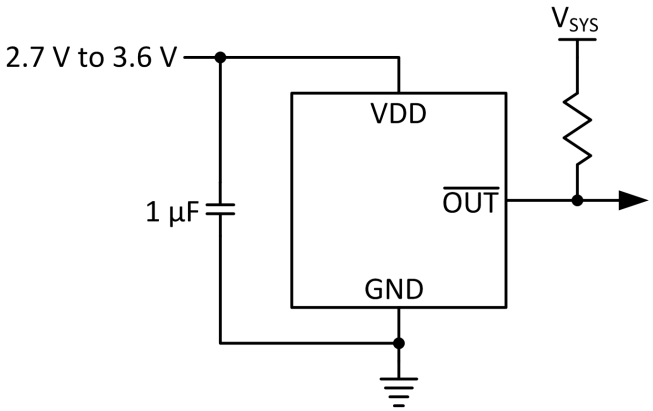
Output Behavior vs. Magnetic Field

Characteristic	Conditions	Output
Positive Field	$B > B_{OPS}$	Low (ON)
	$0 < B < B_{RPS}$	High (OFF)
Negative Field	$B < B_{OPN}$	Low (ON)
	$0 > B > B_{RPN}$	High (OFF)

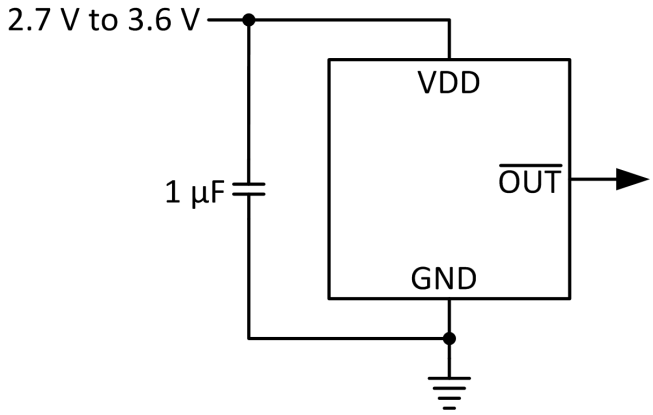
Figure 51: Application Circuits

A decoupling capacitor (C_{DD}) between the supply voltage and ground is required with placement close to the magnetic switch. A typical capacitor value of 1 µF (Ceramic) will suffice. For the open drain output, maximum V_{SYS} should not exceed 5.5 V.

CT831 Open Drain Output



CT832 Digital Output



For the analog output, a simple RC filter is recommended on the ANA output as shown below:

CT834 Analog Output

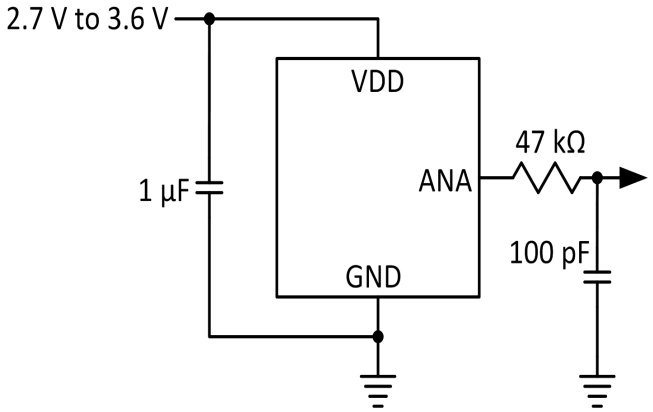
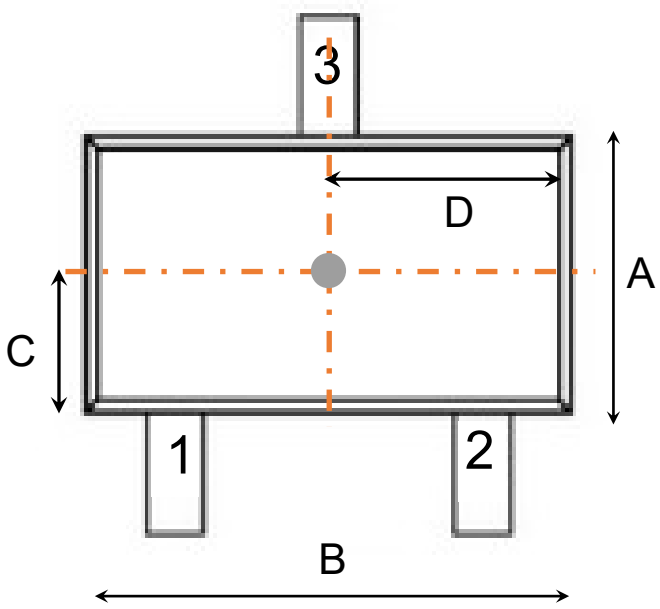
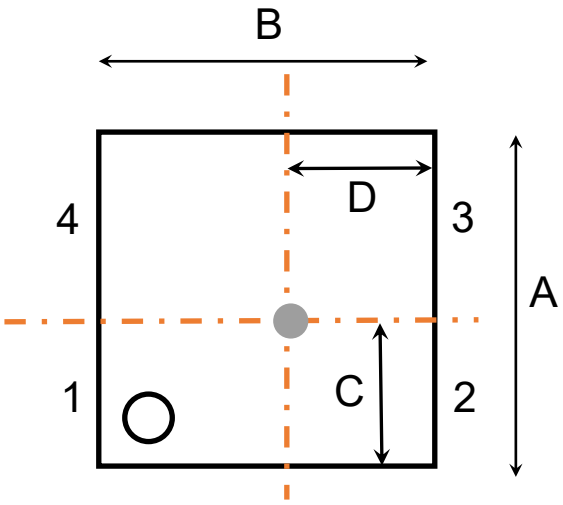


Figure 52: MLU Sensor Location



SOT23 Package



LGA Package

Symbols	Nominal Dimensions (mm)
A	1.60
B	2.90
C	0.80
D	1.45

Symbols	Nominal Dimensions (mm)
A	1.40
B	1.40
C	0.50
D	0.50

Table 15: Order Guide for Omnipolar TMR Digital Latches/Analog Sensors

Part Number	Polarity	Output Type	B_{OP}	B_{RP}	$I_{DD(AVG)}$	f_S	Description
CT831BV-HS3 CT831BV-IS3	Omnipolar	Open Drain	±3.0 mT	±2.0 mT	200 nA	2 Hz	Omnipolar Magnetic Latch SOT-23 Package, Tape & Reel Packaging
CT832BV-HL1 CT832BV-IL1		Push-Pull					Omnipolar Magnetic Latch LGA Package, Tape & Reel Packaging
CT832BV-HS3 CT832BV-IS3							Omnipolar Magnetic Latch SOT-23 Package, Tape & Reel Packaging
CT832SK-HS3 CT832SK-IS3			±0.9 mT	±0.5 mT	230 nA	10 Hz	Omnipolar Magnetic Latch SOT-23Package, Tape & Reel Packaging
CT832SL-HS3 CT832SL-IS3			±0.9 mT	±0.5 mT	1.4 µA	250 Hz	Omnipolar Magnetic Latch SOT-23 Package, Tape & Reel Packaging
CT832BL-HS3 CT832BL-IS3			±3.0 mT	±2.0 mT	1.4 µA	250 Hz	Omnipolar Magnetic Latch SOT-23 Package, Tape & Reel Packaging
CT832DM-HS3 CT832DM-IS3			±1.5 mT	±1.0 mT	12 µA	2.5 kHz	Omnipolar Magnetic Latch SOT-23 Package, Tape & Reel Packaging
CT832BH-HL1 CT832BH-IL1			±3.0 mT	±2.0 mT	36 µA	10 kHz	Omnipolar Magnetic Latch LGA Package, Tape & Reel Packaging
CT832EK-HS3 CT832EK-IS3			±7.0 mT	±5.0 mT	230 nA	10 Hz	Omnipolar Magnetic Latch SOT-23 Packages, Tape & Reel Packaging
CT834DR-IL1		Analog	N/A	N/A	1.5 mA	Continuous	Omnipolar Magnetic Latch LGA Packages, Tape & Reel Packaging
CT834DR-IS3							Omnipolar Magnetic Latch SOT-23 Packages, Tape & Reel Packaging

Table 16. Packaging Information

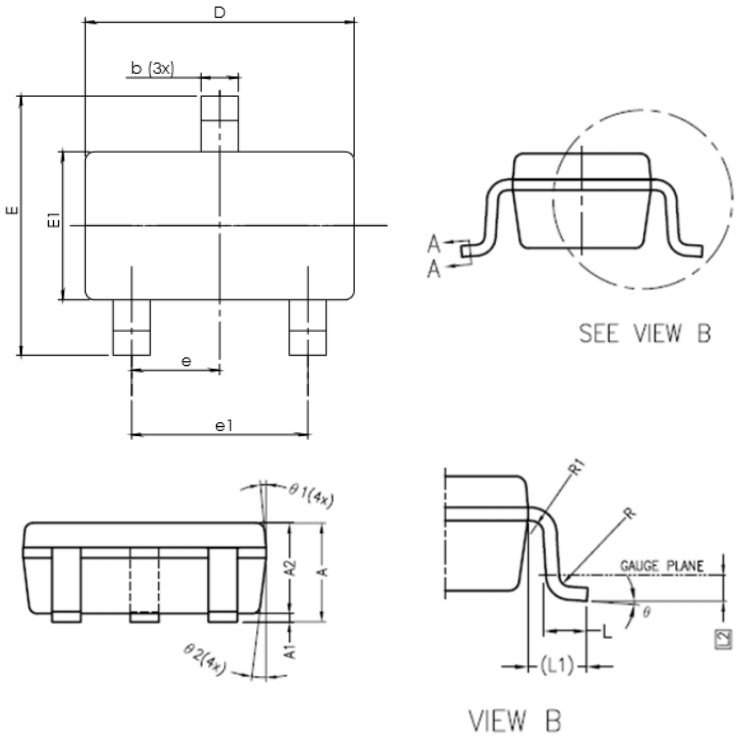
Orderable Part Number	Package Type	Pins	Package Quantity	Lead Finish	Eco Plan(1)	MSL Rating (2)	Operating Temperature	Device Marking (3)
CT831BV-HS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +125°C	JA YWWS
CT831BV-IS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +85°C	JA YWWS
CT832BV-HL1	LGA	4	3,000	Au	Green & RoHS	3	-40°C to +125°C	A YZ
CT832BV-IL1	LGA	4	3,000	Au	Green & RoHS	3	-40°C to +85°C	A YZ
CT832BV-HS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +125°C	HA YWWS
CT832BV-IS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +85°C	HA YWWS
CT832SK-HS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +125°C	HC YWWS
CT832SK-IS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +85°C	HC YWWS
CT832SL-HS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +125°C	HE YWWS
CT832SL-IS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +85°C	HE YWWS
CT832BL-HS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +125°C	HB YWWS
CT832BL-IS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +85°C	HB YWWS
CT832DM-HS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +125°C	HD YWWS
CT832DM-IS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +85°C	HD YWWS
CT832BH-HL1	LGA	4	3,000	Au	Green & RoHS	3	-40°C to +125°C	E YZ
CT832BH-IL1	LGA	4	3,000	Au	Green & RoHS	3	-40°C to +85°C	E YZ
CT832EK-HS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +125°C	HF YWWS
CT832EK-IS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +85°C	HF YWWS
CT834DR-IL1	LGA	4	3,000	Au	Green & RoHS	3	-40°C to +85°C	D YZ
CT834DR-IS3	SOT-23	3	3,000	Sn	Green & RoHS	1	-40°C to +85°C	HT YWWS

(1) RoHS is defined as semiconductor products that are compliant to the current EU RoHS requirements. It also will meet the requirement that RoHS substances do not exceed 0.1% by weight in homogeneous materials. Green is defined as the content of Chlorine (Cl), Bromine (Br) and Antimony Trioxide based flame retardants satisfy JS709B low halogen requirements of ≤ 1,000 ppm.

(2) MSL Rating = Moisture Sensitivity Level Rating as defined by JEDEC industry standard classifications.

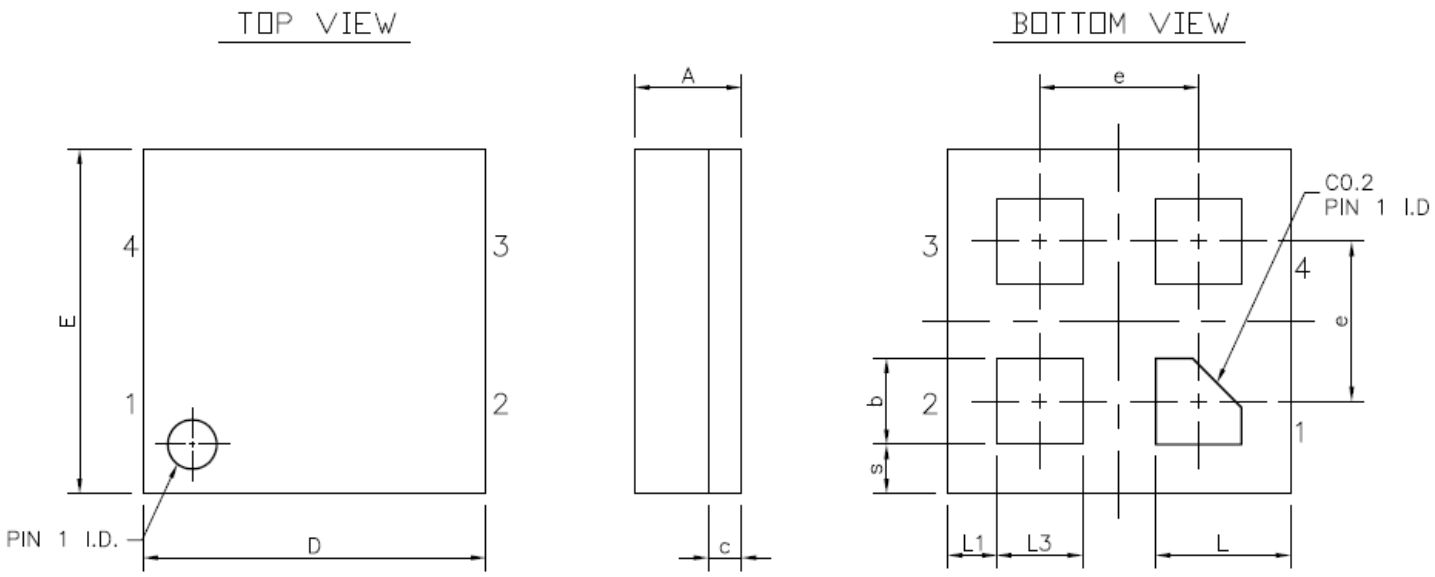
(3) Device Marking for SOT23 is defined as XZ YWWS where XZ = part number, Y = year, WW = work week and S = sequential number. LGA is defined as X where X = part number and YZ = date code information.

Figure 53: 3-Lead SOT-23 Package Dimensions



SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	1.05	1.20	1.35
A1	0.00	0.10	0.15
A2	1.00	1.10	1.20
b	0.30	———	0.50
b1	0.30	0.35	0.45
c	0.08	———	0.22
c1	0.08	0.13	0.20
D	2.80	2.90	3.00
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
e	0.95 BSC		
e1	1.90 BSC		
L	0.35	0.43	0.60
L1	0.60 REF		
L2	0.25 BSC.		
R	0.10	———	———
R1	0.10	———	0.25
θ	0°	4°	8°
θ1	5°	6°	15°
θ2	5°	8°	15°

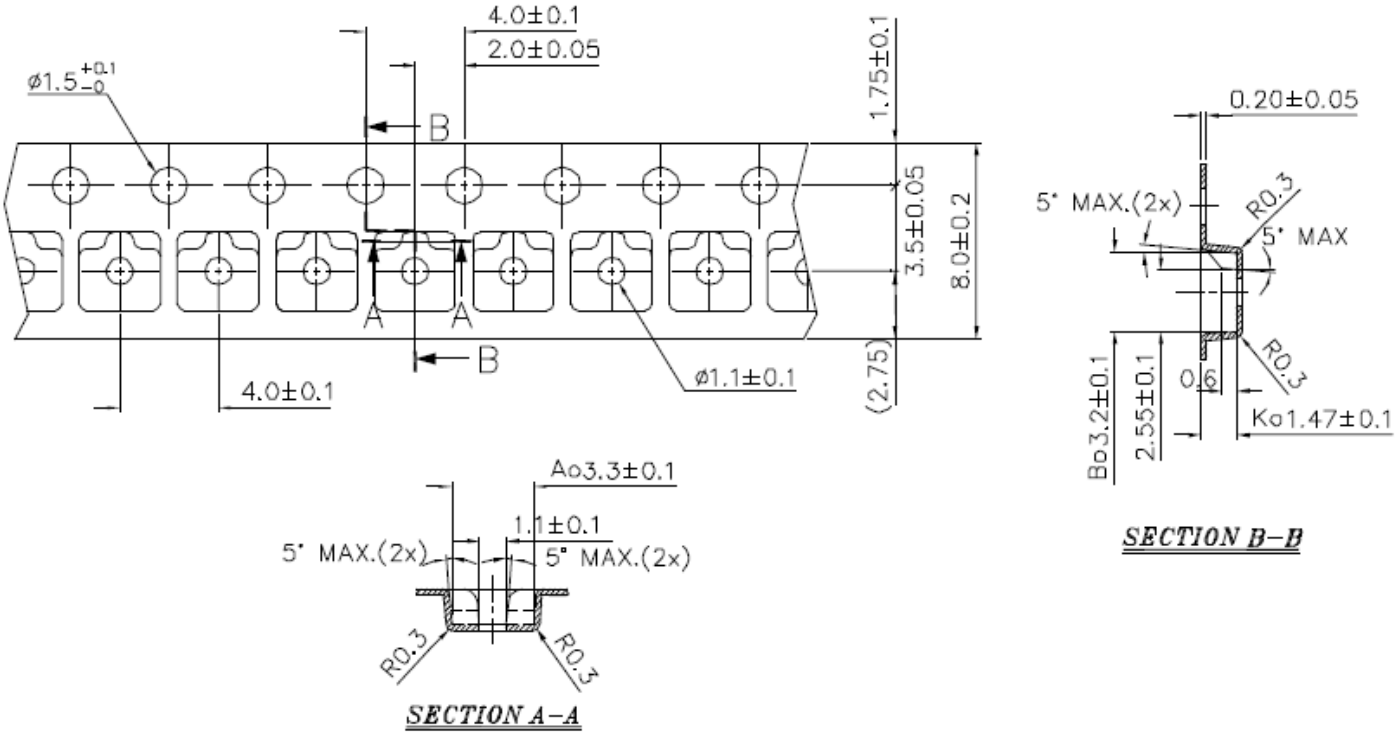
Figure 54: 4-Lead LGA Package Dimensions



NOTE: ALL DIMENSIONS ARE IN MILLIMETERS.

SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.386	0.436	0.486
b	0.30	0.35	0.40
c	---	0.136 REF.	---
D	1.35	1.40	1.45
E	1.35	1.40	1.45
e	---	0.65	---
L	0.50	0.55	0.60
L1	0.15	0.20	0.25
L3	0.30	0.35	0.40
s	0.15	0.20	0.25

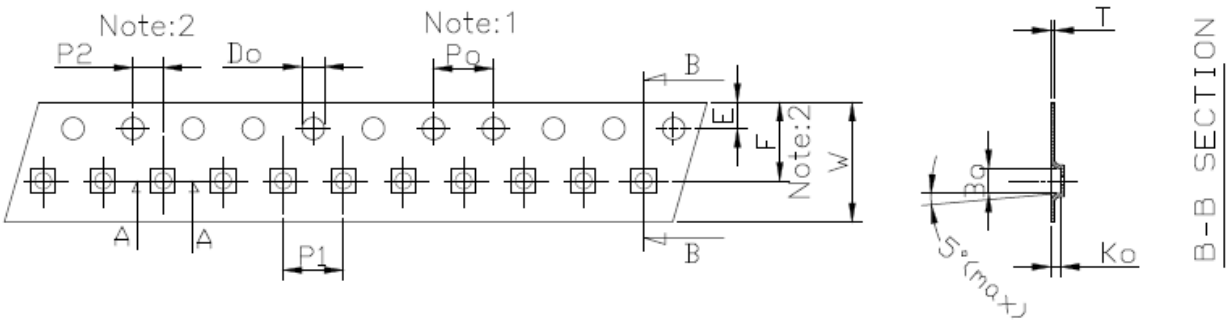
Figure 55: Tape & Pocket Dimensions for SOT23 Package

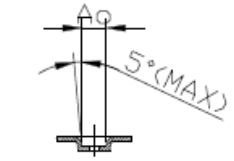


Notes:

1. Material: Conductive Polystyrene
2. Dimensions in mm.
3. 10 sprocket hole pitch cumulative tolerance ±0.2.
4. Camber not to exceed 1 mm in 100 mm.
5. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.
6. (S.R. Ω/sq) means surface electric resistivity of the carrier tape.

Figure 56: Tape & Pocket Dimensions for LGA Package





A–A SECTION

Ao= 1.65±0.05 mm

Bo= 1.65±0.05 mm

Ko= 0.65±0.05 mm

Unit: mm

Symbol	Spec.
Po	4.0±0.10
P1	4.0±0.10
P2	2.0±0.05
Do	$1.50^{+0.1}_{+0}$
D1	1.10±0.05
E	1.75±0.10
F	3.50±0.05
10Po	40.0±0.10
W	8.0±0.20
T	0.25±0.02

Notice:

1. 10 Sprocket hole pitch cumulative tolerance is ±0.1mm
2. Pocket position relative to sprocket hole measured as true position of pocket not pocket hole.
3. Ao & Bo measured on a place 0.3mm above the bottom of the pocket to top surface of the carrier.
4. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
5. Carrier camber shall be not than 1mm per 100mm through a length of 250mm.

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