

Features and Benefits

- Chopper Stabilized Amplifier Stage
- New Miniature Package/Thin, High Reliability Package
- CMOS for Optimum Stability, Quality and Cost
- Low Power Consumption
- On Chip Duty Cycle Controller

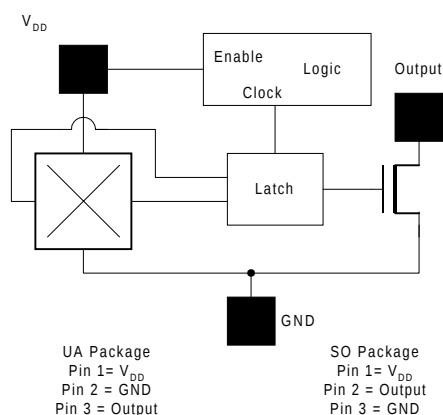
Applications

- Battery Powered Operations
- Solid State Switch

Ordering Information

Part No.	Temperature Suffix	Package	Temperature Range
MLX90222	E	UA	-40°C to 85°C Extended
MLX90222	E	SO	-40°C to 85°C Extended

Functional Diagram



Description

The MLX90222 normally operates with a microcontroller or another form of control chip which reacts to the B_{OP}/B_{RP} state of the Hall IC. In order to reduce the average current consumption in a battery operated system, the Hall effect switch operates in two modes, Awake and Sleep, controlled by an on-chip duty cycle controller.

In the Awake mode, the Hall switch operates in a normal manner. In the Sleep mode, the major current consuming components are switched off and the previous B_{OP} or B_{RP} state is stored in a latch until the next awake cycle. Current consumption in the Sleep mode is a “few” microamperes. While supply current in the awake mode is typically 1.0mA. The ~ 1000:1 duty cycle results in an average current of about 10μA.

In order to minimize supply current the Hall IC load resistor should be made as large as possible within noise considerations. R₁ and C₁ may be required to meet EMC Specifications (see application examples).

Note that the SOT switches with South (+) field to the marked face and the UA switches with North (-) field to the marked face.

Note: Static sensitive device, please observe ESD precautions.

MLX90222 Electrical Specifications

DC Operating Parameters $T_A = -40^{\circ}\text{C}$ to 85°C , $V_{DD} = 2.5\text{V}$ to 6.0V (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	V_{DD}	Operating	2.5		6.0	V
Supply Current	I_{DD}	Awake		0.7	2.0	mA
Supply Current	I_{DD}	Sleep		10	25	mA
Output Current	I_{OUT}	Awake, B_{OP}			1.0	mA
Output Leakage Current	I_{LEAK}	Awake, B_{RP}		1.0		μA
Output Voltage	V_{OUT}	Awake, B_{OP}			6.0	V
Saturation Voltage	V_{SAT}	$I_{OUT} = 1.0\text{ mA}$			0.3	V

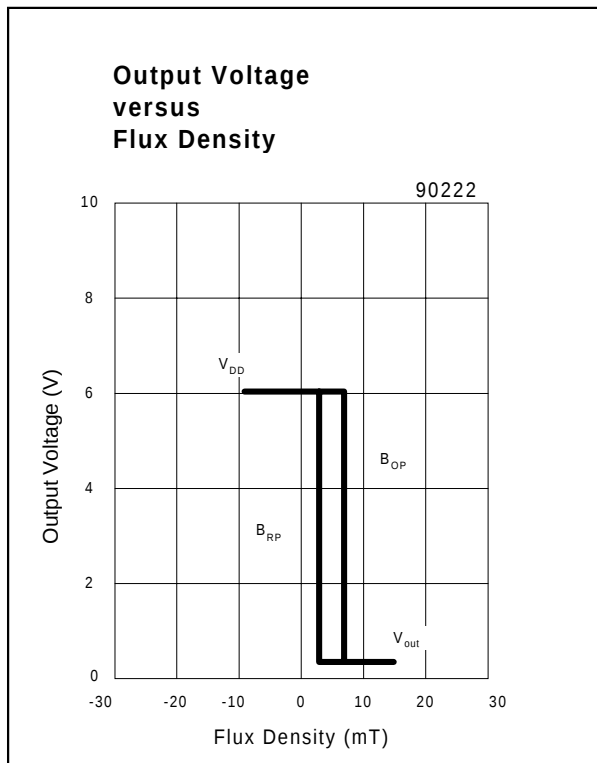
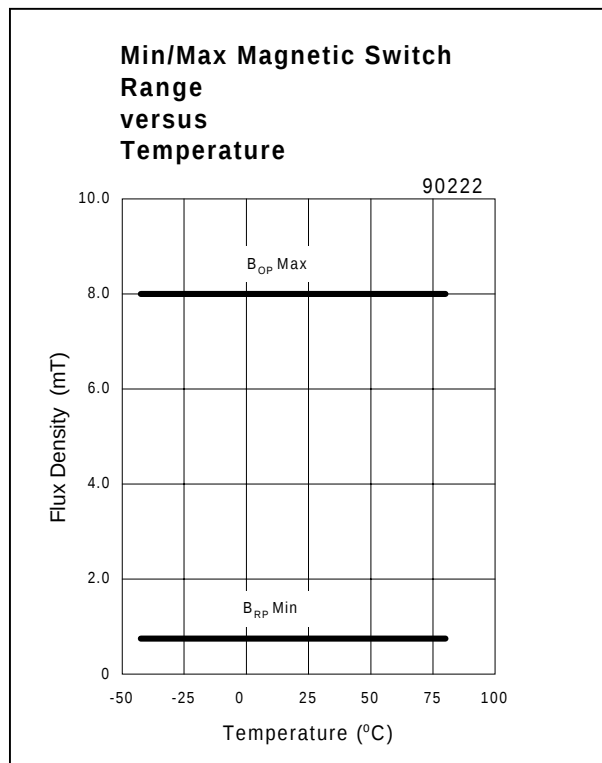
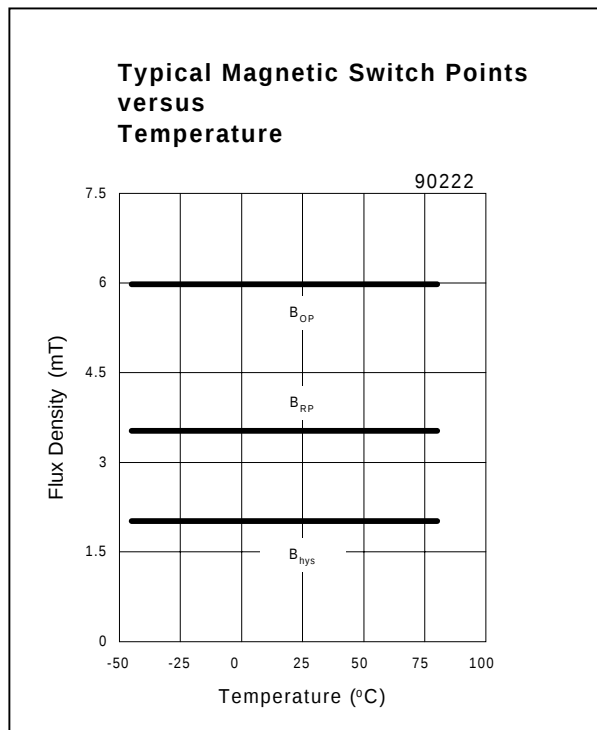
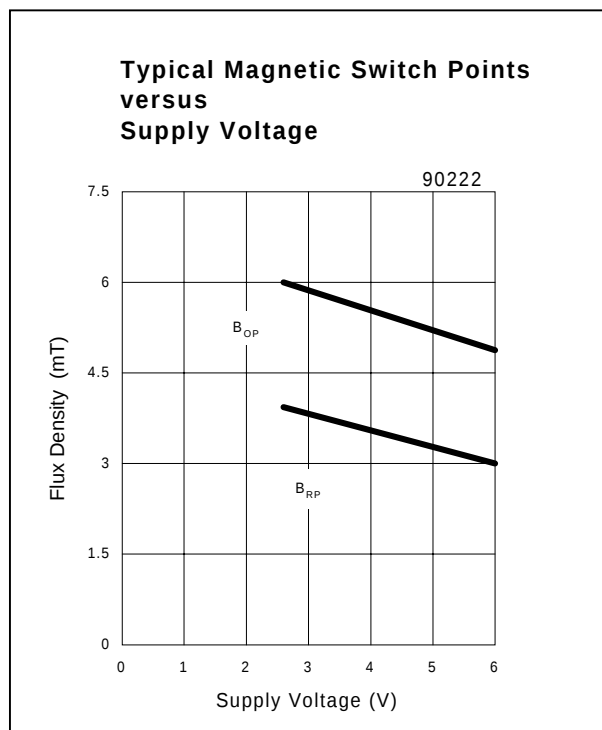
MLX90222 Magnetic Specifications

DC Operating Parameters $T_A = -40^{\circ}\text{C}$ to 85°C , $V_{DD} = 2.5\text{V}$ to 6.0V (unless otherwise specified)

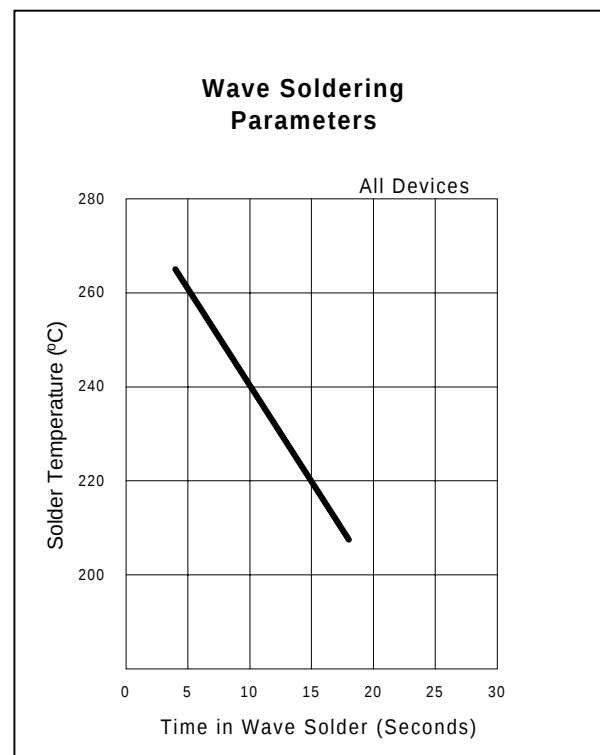
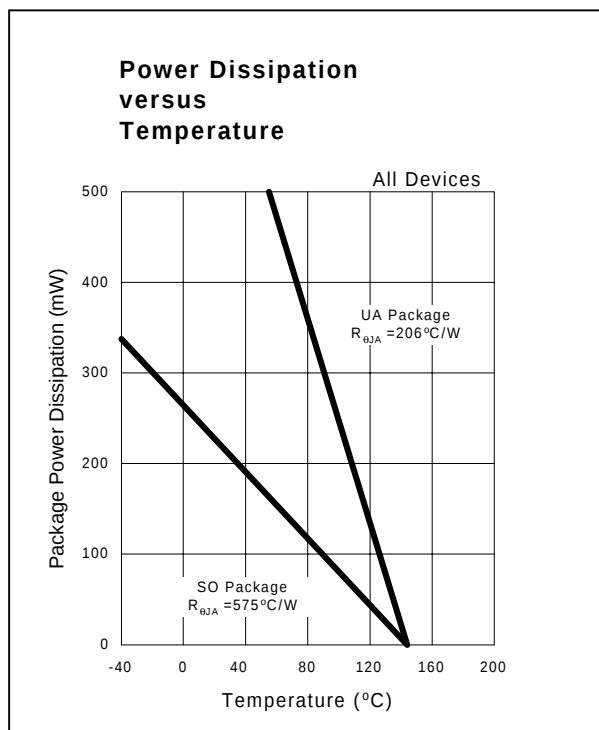
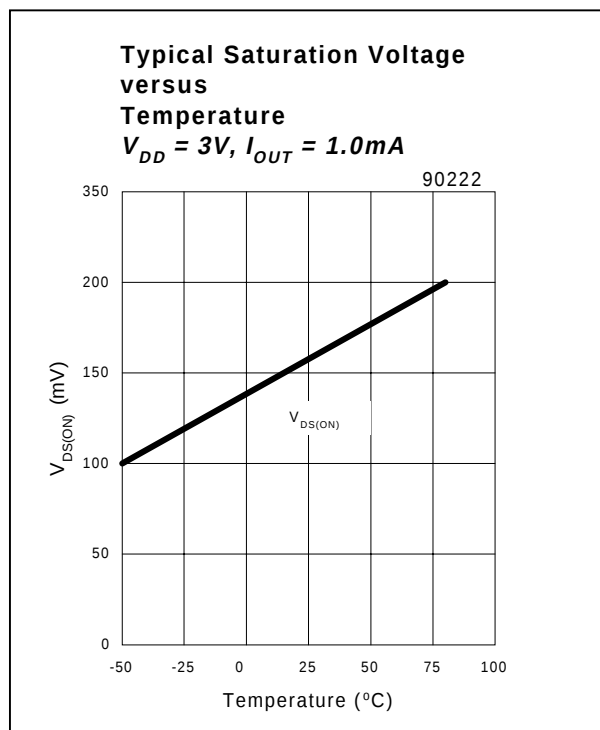
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Operate Point	B_{OP}	Awake		6.0	8.0	mT
Release Point	B_{RP}	Awake	0.8	3.5		mT
Hysteresis	B_{hys}	Awake		2.0	3.0	mT
Awake Mode (Time)		Operating	30	60	80	μs
Sleep Mode (Period)		Operating	30	40	80	ms
Output Rise Time	t_r			15		ms
Output Fall Time	t_f			15		ms

Notes: 1 mT = 10 Gauss

Performance Graphs

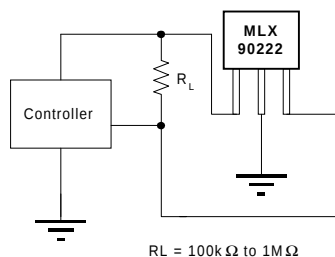


Performance Graphs

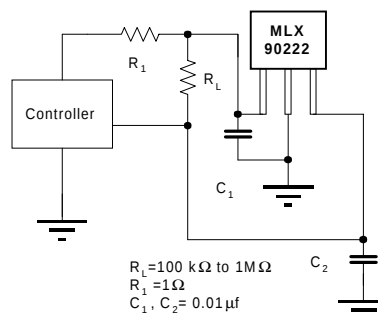


Applications Examples

Typical Microcontroller Application Schematic



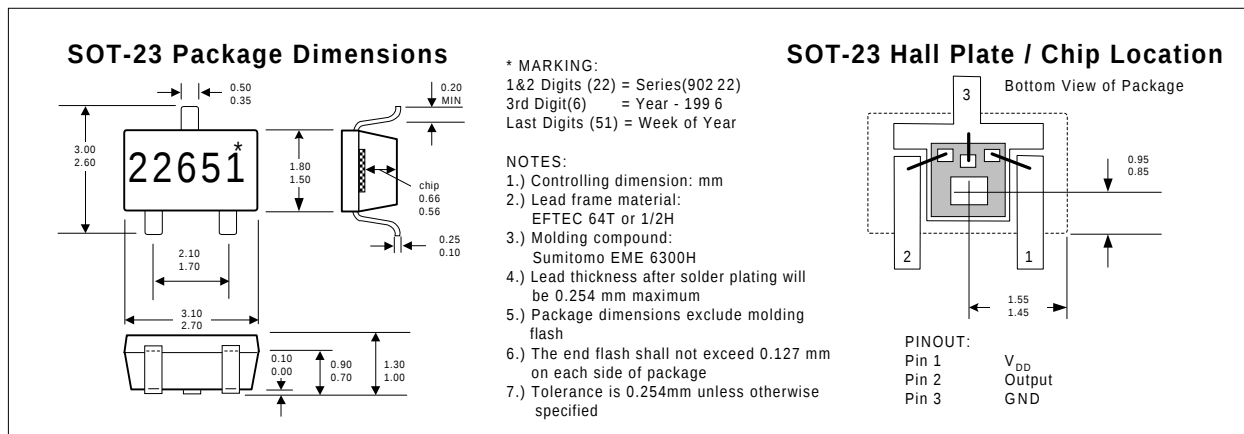
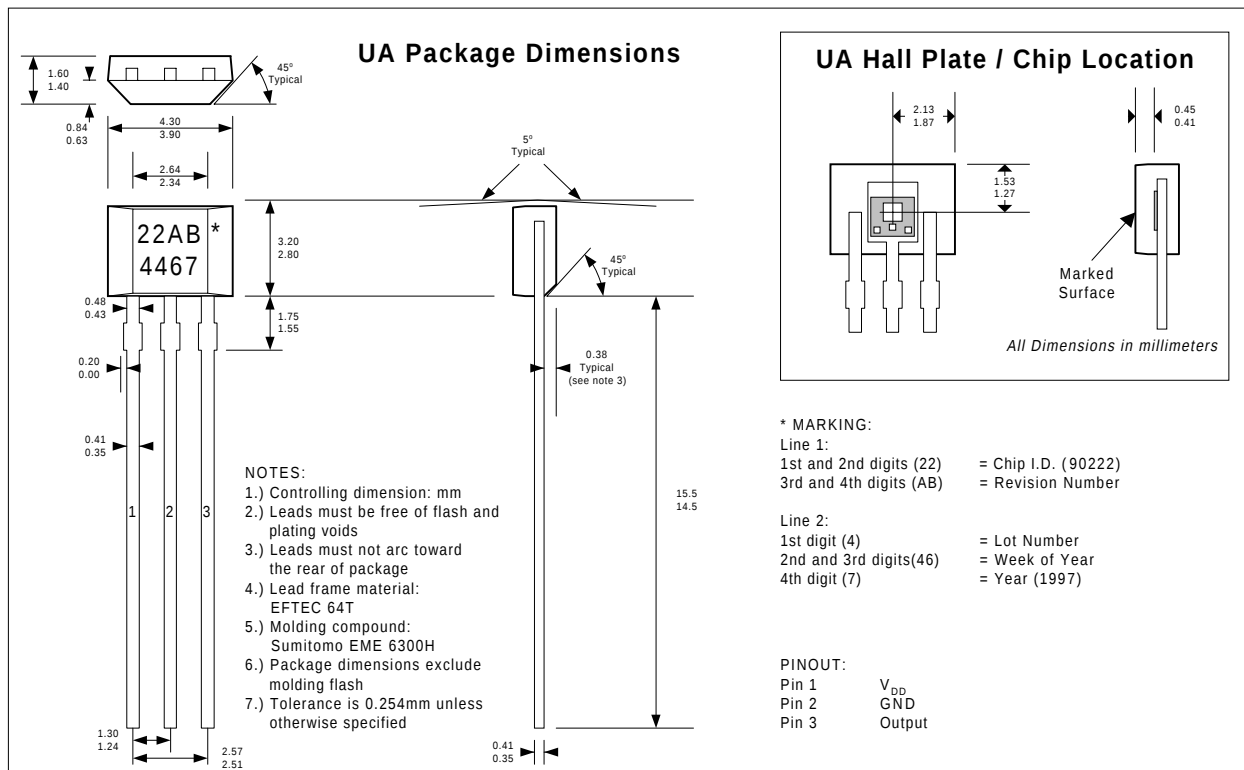
Microcontroller Application Schematic with EMC Protection



Absolute Maximum Ratings

Supply Voltage, V_{DD}	10V
Supply Current, I_{DD}	5.0mA
Power Dissipation, P_D	100mW
Output Voltage, V_{OUT}	10V
Output Current, I_{OUT}	5.0mA
Operating Temperature Range, T_A	-40°C to 85°C
Storage Temperature Range, T_S	-65°C to 150°C
Maximum Junction Temp, T_J	-175°C
ESD Sensitivity	+/-4KV

Physical Characteristics



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