

## Features and Benefits

- Small package (SOT-89)
- Low dropout voltage (typical 30mV)
- Large temperature range
- Overtoltage protection
- Reverse polarity protection
- Low supply current

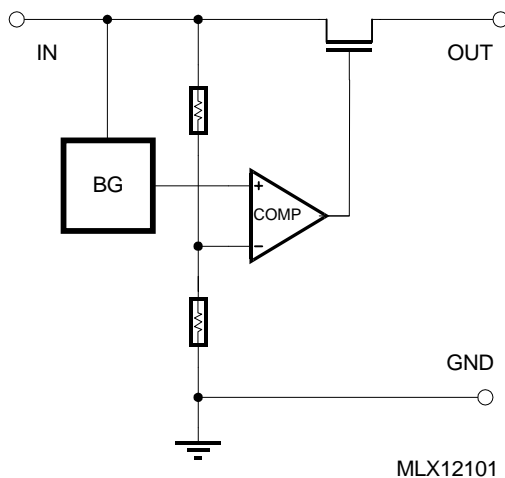
## Applications

- Sensor Overtoltage Protection
- Sensor Reverse Polarity Protection

## Ordering Information

Part No.	Temperature Suffix	Package	Option	Temperature Range
MLX12101	E	SA	N/A	-40C to 85C Extended

## Functional Diagram



## Description

The MLX12101 serves as a protection circuit where sensible 5V IC's are supplied by long wires that can be short-circuited to the wiring harness of a car.

The IC is to be connected between a 5V supply, and a 5V powered remote application. The IC is set on the remote application side, its input receiving the 5V supply through the car wiring, and its output delivering the 5V protected supply to the local application.

When the input is below 5.5 Volt, the switch between 5V input and 5V output is closed and the application is powered. When the 5V input goes above 6.8 Volt (This case occurs when the supply wire is short-circuited to battery plus), the output is shut off. When the chip input goes negative ( this is the case when the battery is reversed), a reverse polarity diode prevents the output of going negative.

## MLX12101 Electrical Specifications

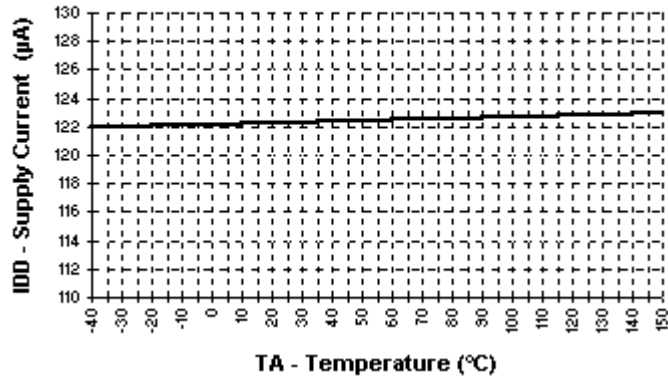
DC Operating Parameters  $T_A = -40^{\circ}\text{C}$  to  $135^{\circ}\text{C}$ ,  $V_{DD} = 5\text{V}$  (unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Recommended Operating Conditions</b>						
Input Voltage			4.5	5.0	5.5	V
Output Current				8		mA
<b>Output Signal Specifications</b>						
Switch-Off Time ( $V_{out} < 5\text{V}$ )		$V_{in}$ jump from 5V to 12V		150	1000	$\mu\text{s}$
Reverse Current		Through $V_{out}$ with $V_{DD}$ and $V_{SS}$ connected			5	mA
Reverse Output Voltage					$V_{SS}-1$	V
Voltage drop-out, $V_{out}-V_{in}$		$V_{in} = 4.5\text{V}$ $I_{out} = 8\text{mA}$			55	mV
<b>General Specifications</b>						
Overall Supply Current		No Load			500	$\mu\text{A}$
		$V_{in} = 5\text{V}$ $R_{load} \text{ Pin} = 22\text{R}$		190		mA
Switching Voltage	$V_t$		5.5		6.8	V

## MLX12101 Absolute Maximum Ratings

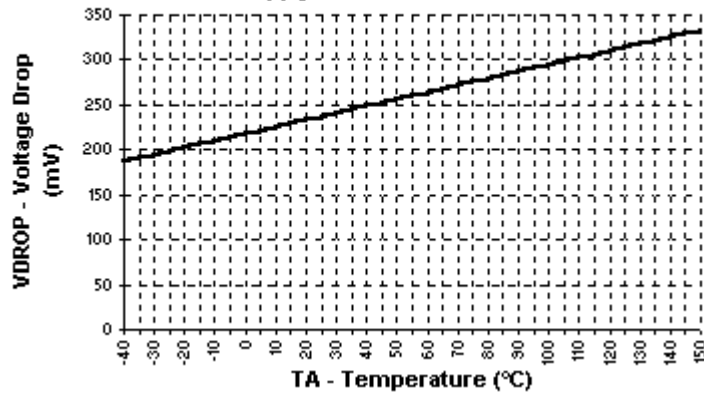
Parameter	Value	Unit	Comment
Max Operating Voltage Range	-14 to 16	V	
Max Output Current	100	mA	
Supply Current	0.5	mA	
Operating temperature	-40 to 150	$^{\circ}\text{C}$	
Max junction temperature	150	$^{\circ}\text{C}$	

**SUPPLY CURRENT CHARACTERISTIC**



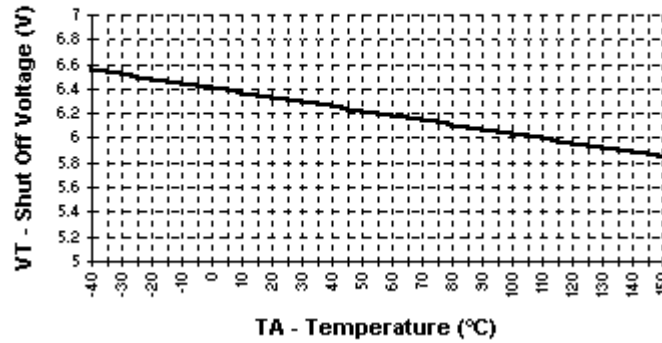
**Figure 2**

**VOLTAGE DROP CHARACTERISTIC**  
with supply current = 50 mA



**Figure 3**

**OUTPUT SHUT OFF VOLTAGE CHARACTERISTIC**

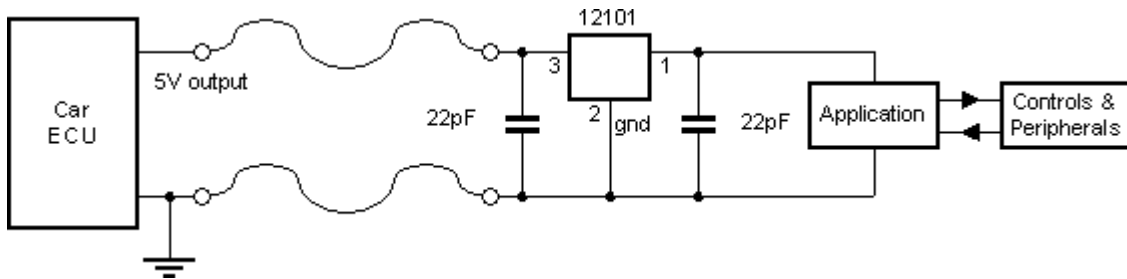


**Figure 4**

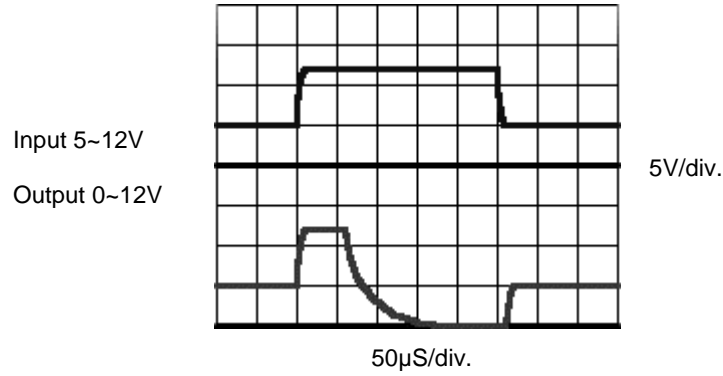
**Typical Circuit Diagram**

The 12101 is designed for EMC protection in automotive applications.

**Figure 5**



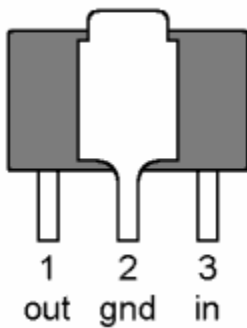
**MLX12101 Overshoot Switch-off Timing**



**MLX12101 Pinout - SA (SOT-89A) Package**

Pin number	Description
1	5V output
2	Ground
3	5V input

SOT-89 rear view



SOT-89A - Rear View

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