

GL7101

EARTH LEAKAGE CURRENT DETECTOR

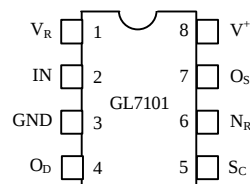
Description

The GL7101 is designed for use in earth leakage circuit interrupters for operation directly off the AC Line in breakers.

It contains pre regulator, main regulator, after regulator, differential amplifier, level comparator, latch circuit. The input in the differential amplifier is connect to the secondary node of zero current transformer.

The level comparator generates high level when earth leakage current is greater than some level.

(Top view)



Feature

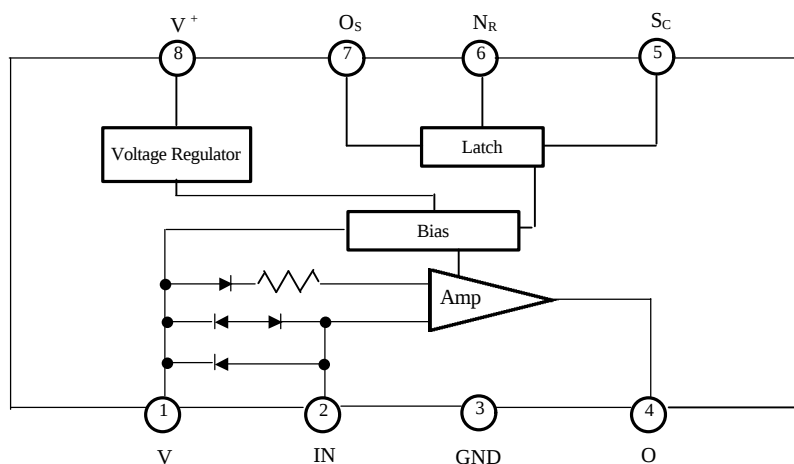
- Low Power consumption ($P_D = 5\text{mW}$) 100V/ 200V
- 100V/200V Common Built-in Voltage Regulator
- High Gain Differential Amplifier
- High Input Sensitivity
- Minimum External Parts
- Large Surge Margin
- Wide Operating Temperature Range ($T_A = -30$ to 85 °C)
- High Noise Immunity

Absolute Maximum Rating ($T_A = 25$ °C)

Supply voltage	20	V
Supply Current	8	mA
Power Dissipation	200	mW
Operating Temperature	-30 to 85	°C
Storage Temperature	-55 to 125	°C

Pin Configuration

Block diagram



Recommended Operating Condition : Ta = -30; Éto 80; É

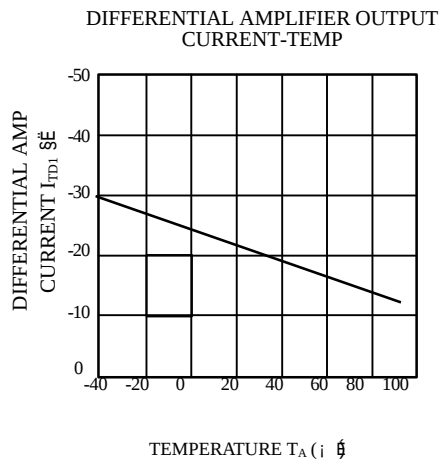
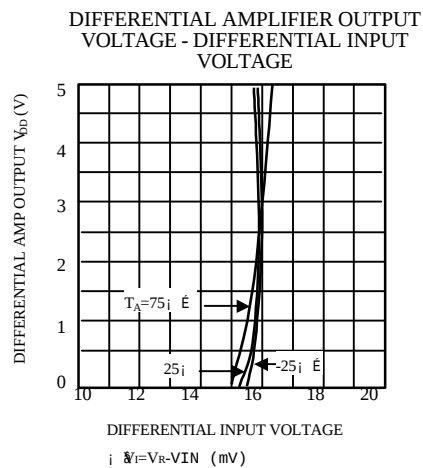
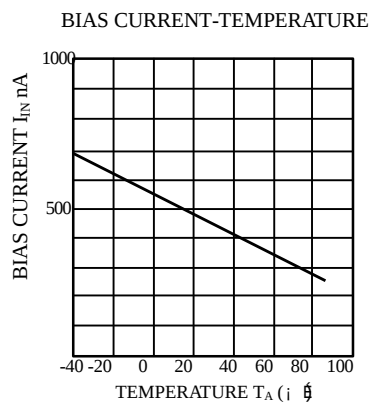
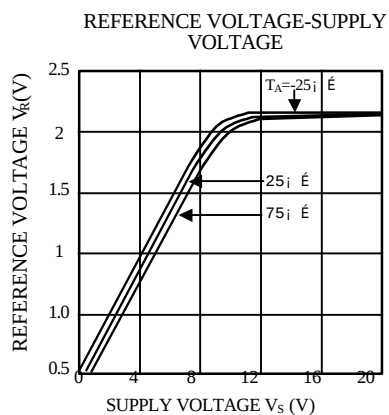
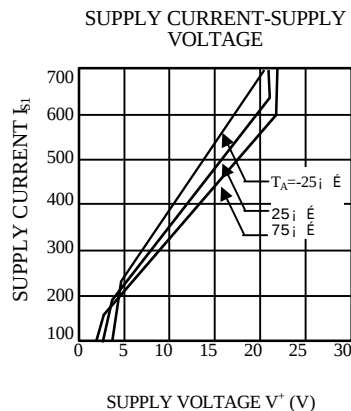
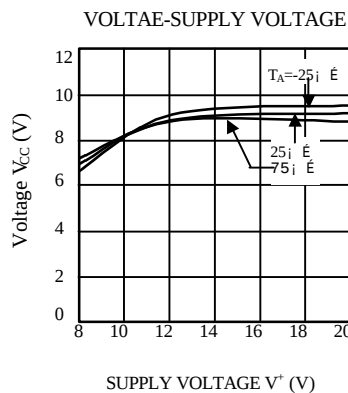
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V ⁺	12			V
V _S -GND Capacitor	C _{VS}	1			μF
O _S -GND Capacitor	C _{OS}			1	μF

Electrical Characteristics

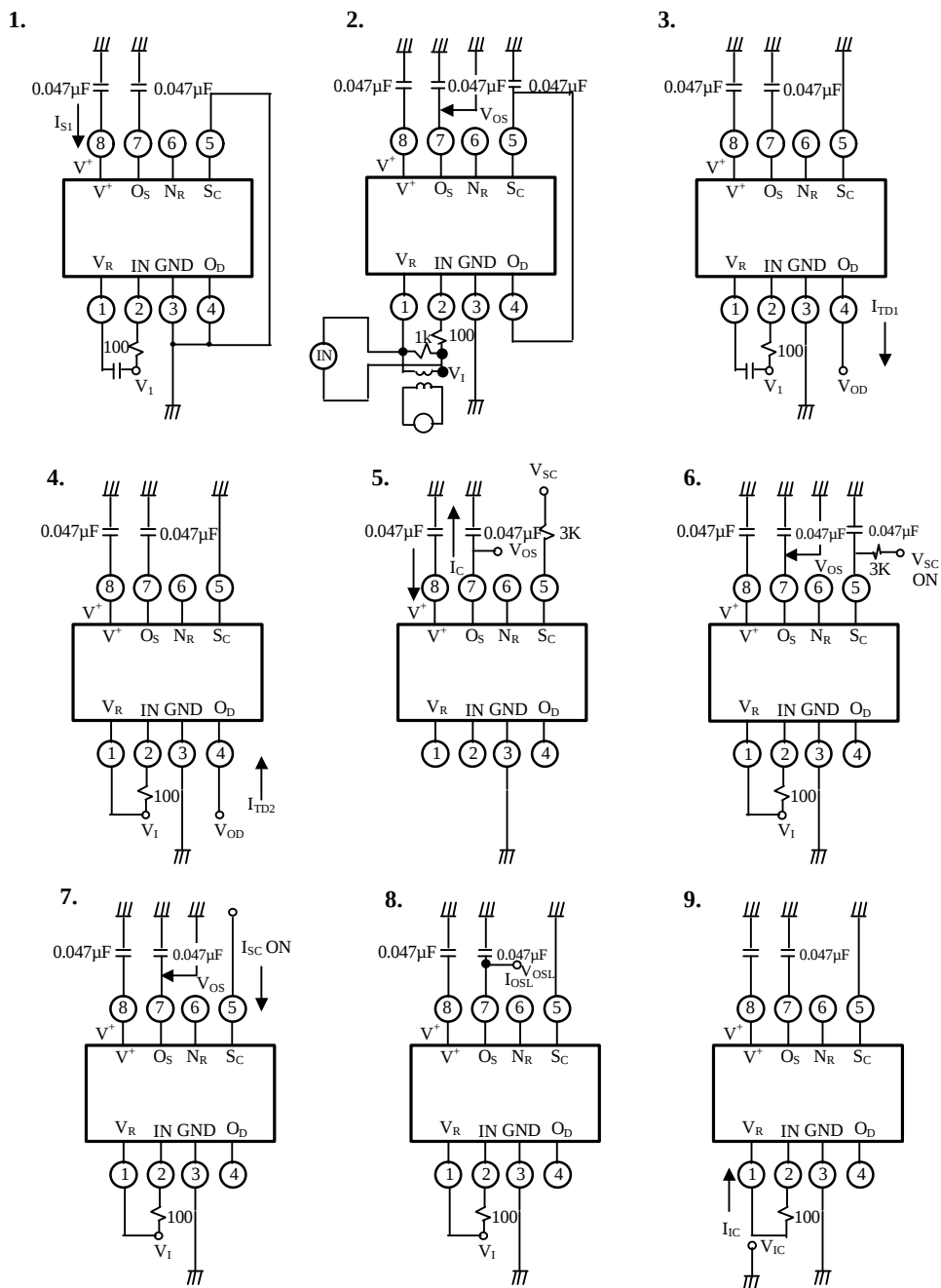
PARAMETER	SYMBOL	CONDITIONS	TEMP (i É	MIN.	TYP.	MAX.	UNIT	TEST CIRCUIT
Supply Current 1	I _{S1}	V ⁺ =12V, V _R -V _I =30mV	-30	-	-	580	μA	1
			25	-	400	530		
			85	-	-	480		
* Trip Voltage	V _T	V ⁺ =16V, V _R -V _I =X	-30 85	9	13.5	18	mV(rms)	2
Differential Amplifier Output Current 1	I _{TD1}	V ⁺ =16V, V _R -V _I =30mV V _{OD} =1.2V	25	-12	-	-30	μA	3
Differential Amplifier Output Current 2	I _{TD2}	V ⁺ =6V, V _R -V _I =short V _{OD} =0.8V	25	17	-	37	μA	4
Output Current	I _O	V _{SC} =1.4V V _{OS} =0.8V	I _{SI} =580 μA	-30	-200	-	μA	5
			I _{SI} =530 μA	25	-100	-		
			I _{SI} =480 μA	85	-75	-		
S _C On Voltage	V _{SC ON}	V ⁺ =16V	25	0.7	-	1.4	V	6
S _C Input Current	I _{SC ON}	V ⁺ =12V	25	-	-	5	μA	7
Output "L" Current	I _{OSL}	V ⁺ =12V, V _{OST} =0.2V	-30 85	200	-	-	μA	8
Input Clamp Voltage	V _{IC}	V ⁺ =12V, V _{IC} =20mA	-30 85	4.3	-	6.7	V	9
Differential Input Clamp Voltage	V _{IDC}	I _{IDC} =100mV	-30 85	0.4	-	2	V	10
Max. Current voltage	V _{SM}	I _{SM} =7mA	25	20	-	28	V	11
Supply Current 2	I _{S2}	V _{OS} =0.5V, V _R -V _I =X	-30 85	-	-	900	μA	12
Latch Circuit Off Supply Voltage	V _{OFF}		25	0.5	-		V	13
Response Time	T _{ON}	V ⁺ =16V, V _R -V _I =0.3V	25	1	-	4	ms	14

* A: 9 ~ 12.55 B: 11.5 ~ 15.5 C: 14.5 ~ 18

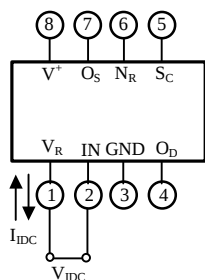
Typical Performance Curves



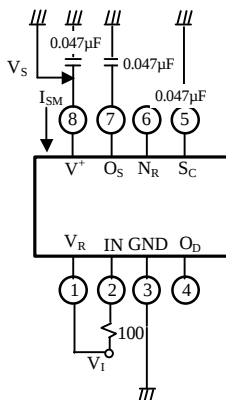
Test Circuit



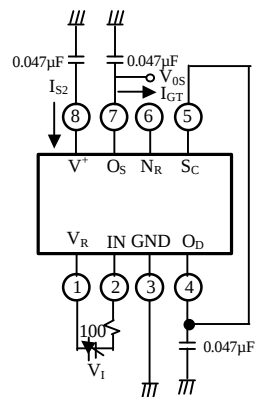
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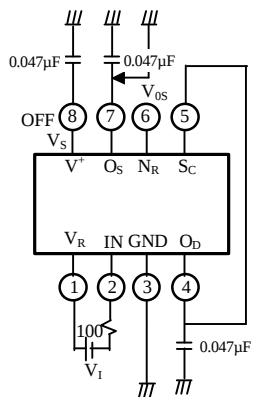
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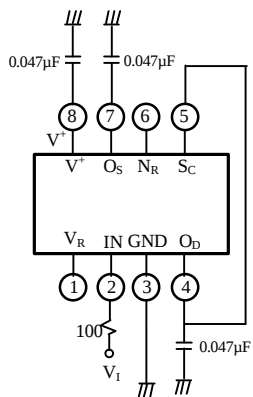
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Typical Application

