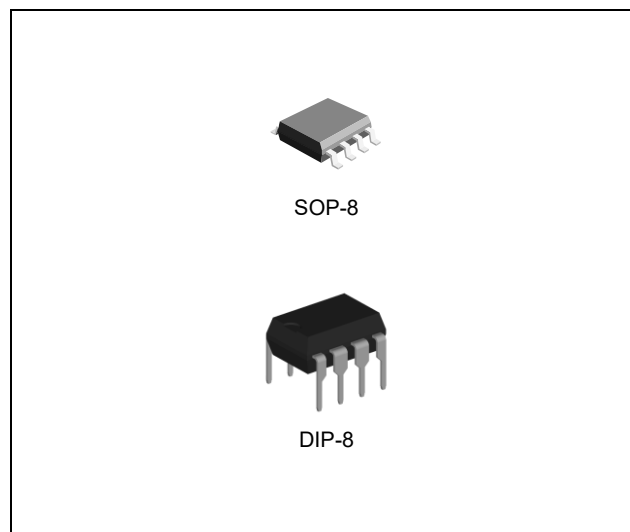


FEATURES

- Low Power Consumption ($P_D=5\text{mW}$ Typ.)
- Common Built-In Voltage Regulator
- High Gain Differential Amplifier
- High Input Sensitivity
- Minimum External Parts
- Large Surge Margin
- Wide Operating Temperature Range
- High Noise Immunity

APPLICATIONS

- High Speed Earth Leakage Circuit Breaker

**ORDERING INFORMATION**

Device	Package
GL7101SD	SOP-8
GL7101SN	DIP-8

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, and latch circuit. The input in the differential amplifier is connected to the secondary node of zero current transformer. The level comparator generates high level when earth leakage current is greater than some level.

ABSOLUTE MAXIMUM RATINGS (Note 1)

CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT
Power Supply Voltage	V_S	-	20	V
Power Supply Current	I_S	-	8	mA

Note1. Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS (Note 2)

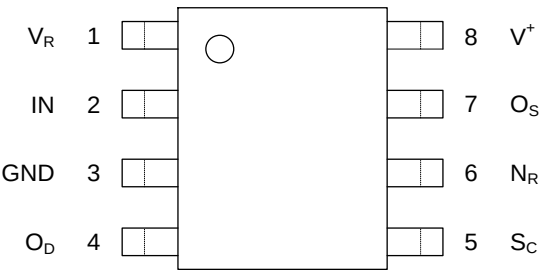
CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT
Power Supply Voltage	V_S	12	-	V
V_S -GND Capacitor	C_{VS}	1	-	μF
O_S -GND Capacitor	C_{OS}	-	1	μF
Operating Ambient Temperature Range	T_A	-30	85	$^{\circ}C$

Note 2. The device is not guaranteed to function outside its operating ratings.

ORDERING INFORMATION

Order No.	Package	Description	Supplied As	Status
GL7101SD	SOP-8	Trip Voltage: 11.5mV to 13.86mV	Reel & Tape	Active
GL7101SN	DIP-8	Trip Voltage: 11.5mV to 13.86mV	Tube	Active

PIN CONFIGURATION

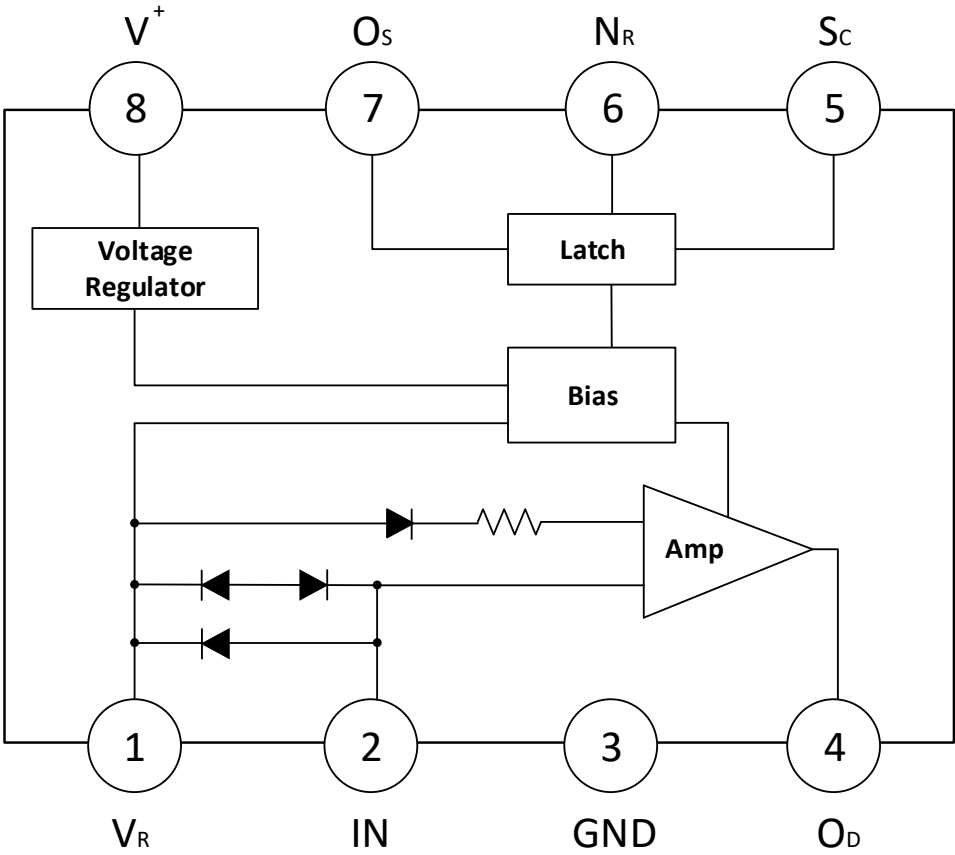


SOP-8 / DIP-8

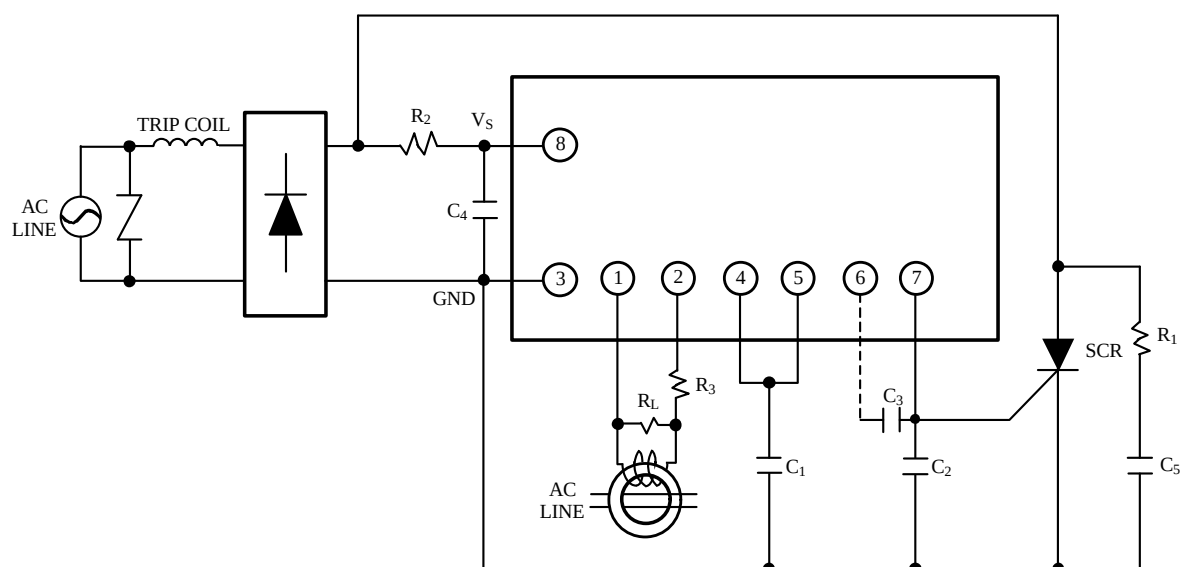
PIN DESCRIPTION

Pin No.		Pin Name	Pin Function
SOP-8	DIP-8		
1	1	V _R	Reference Voltage
2	2	IN	Input
3	3	GND	Ground
4	4	O _D	Differential Amplifier Output
5	5	S _C	Latch Input
6	6	N _R	Terminal for Noise Absorption
7	7	O _S	Output
8	8	V ⁺	Power Supply (V _S)

BLOCK DIAGRAM



TYPICAL APPLICATION CIRCUIT

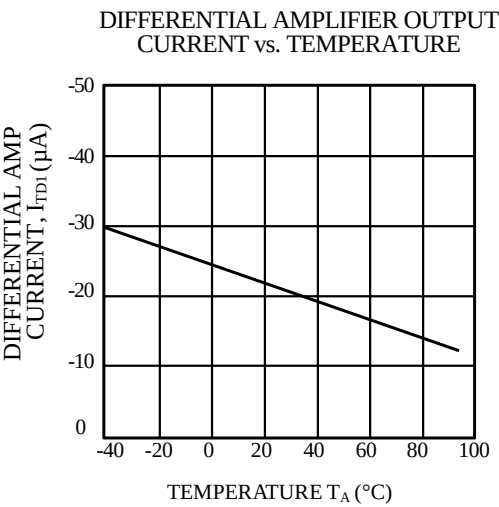
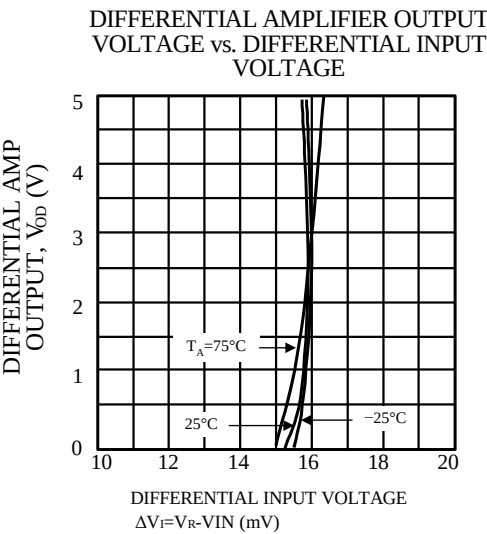
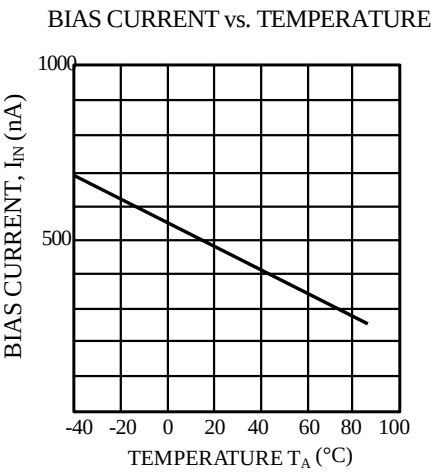
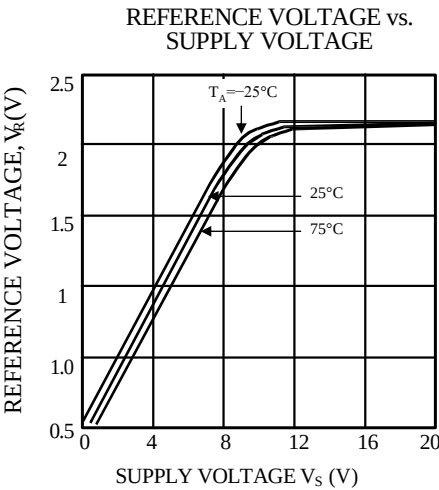
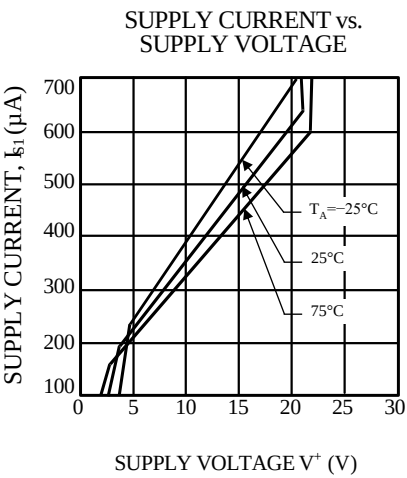
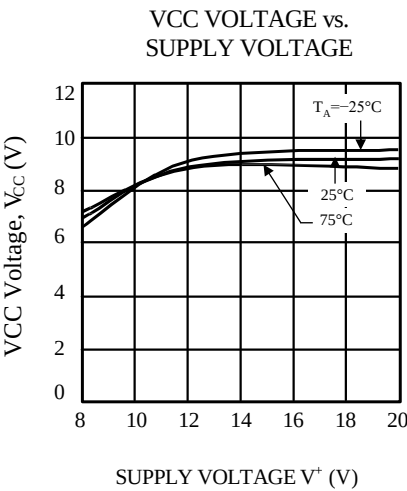


ELECTRICAL CHARACTERISTICS

Specifications with standard typeface are for $T_A = 25^\circ\text{C}$, and specifications in **boldface type** apply over **full operating temperature range** ($T_A = -30^\circ\text{C}$ to 85°C) unless otherwise noted.

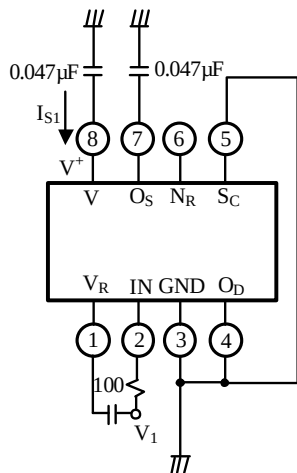
SYMBOL	PARAMETER	TEST CONDITION		TEST CIRCUIT	MIN	TYP	MAX	UNIT
I_{S1}	Supply Current 1	$V_S=12\text{V}$, $V_R-V_I=30\text{mV}$	$T_A=-30^\circ\text{C}$	1	-	-	580	μA
			$T_A=25^\circ\text{C}$		-	400	530	
			$T_A=85^\circ\text{C}$		-	-	480	
V_T	Trip Voltage	$V_S=16\text{V}$, $V_R-V_I=X$	S Version	2	11.50	-	13.86	mVrms
I_{TD1}	Differential Amplifier Output Current 1	$V_S=16\text{V}$, $V_R-V_I=30\text{mV}$, $V_{OD}=1.2\text{V}$		3	-12	-	-30	μA
I_{TD2}	Differential Amplifier Output Current 2	$V_S=6\text{V}$, $V_R-V_I=\text{short}$, $V_{OD}=0.8\text{V}$		4	17	-	37	μA
I_O	Output Current	$V_{SC}=1.4\text{V}$, $V_{OS}=0.8\text{V}$	$I_{S1}=580\mu\text{A}$, $T_A=-30^\circ\text{C}$	5	-200	-	-	μA
			$I_{S1}=530\mu\text{A}$, $T_A=25^\circ\text{C}$		-100	-	-	
			$I_{S1}=480\mu\text{A}$, $T_A=85^\circ\text{C}$		-75	-	-	
V_{SCON}	SC On Voltage	$V_S=16\text{V}$		6	0.7	-	1.4	V
I_{SCON}	SC Input Current	$V_S=12\text{V}$		7	-	-	5	μA
I_{SOL}	Output L Current	$V_S=12\text{V}$, $V_{OSL}=0.2\text{V}$		8	200	-	-	μA
V_{IC}	Input Clamp Voltage	$V_S=12\text{V}$, $I_{IC}=20\text{mA}$		9	4.3	-	7.1	V
V_{IDC}	Differential Input Clamp Voltage	$I_{IDC}=100\text{mA}$		10	0.4	-	2	V
V_{SM}	Max. Current Voltage	$I_{SM}=7\text{mA}$		11	19	-	28	V
I_{S2}	Supply Current 2	$V_{OS}=0.5\text{V}$, $V_R-V_I=X$		12	-	-	1200	μA
V_{SOFF}	Latch Circuit Off Supply Voltage			13	0.5	-	-	V
t_{ON}	Response Time	$V_S=16\text{V}$, $V_R-V_I=0.3\text{V}$		14	1		4	ms

TYPICAL OPERATING CHARACTERISTICS

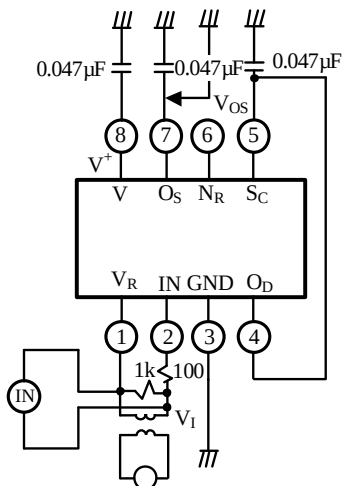


TEST CIRCUITS

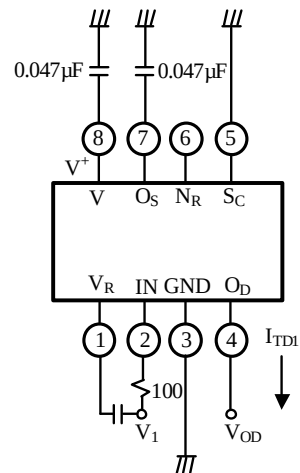
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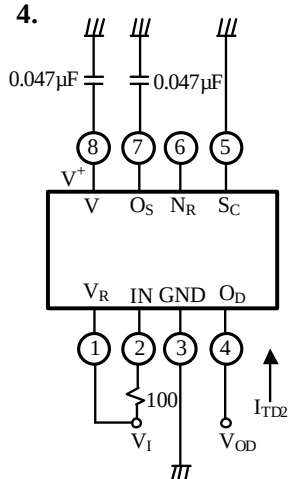
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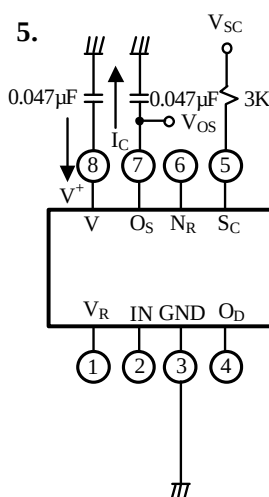
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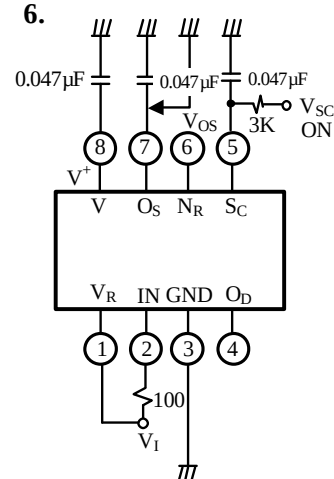
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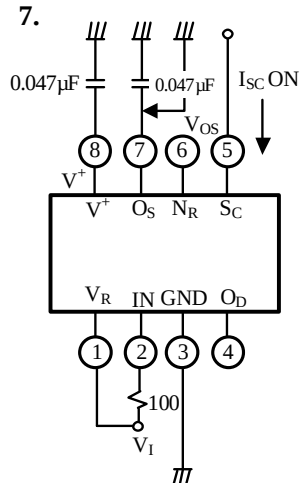
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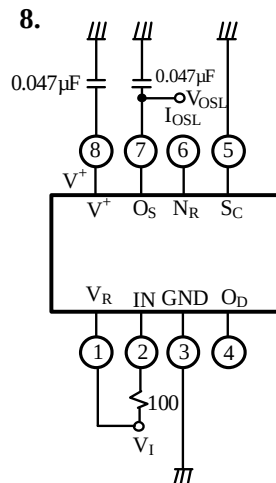
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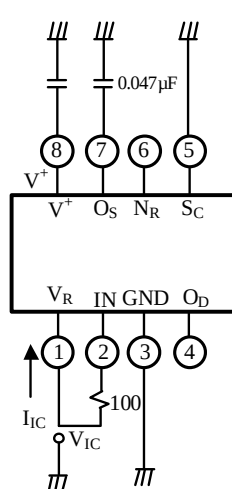
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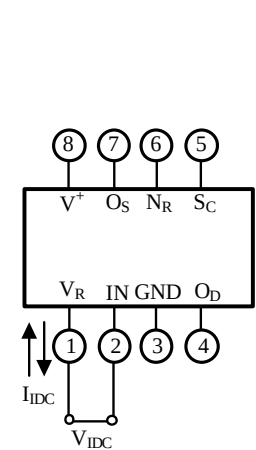
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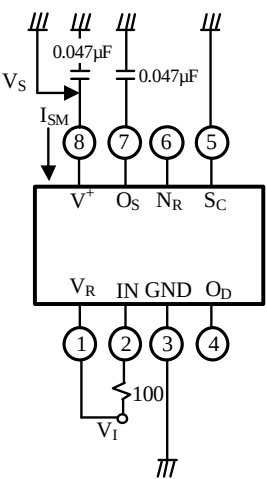
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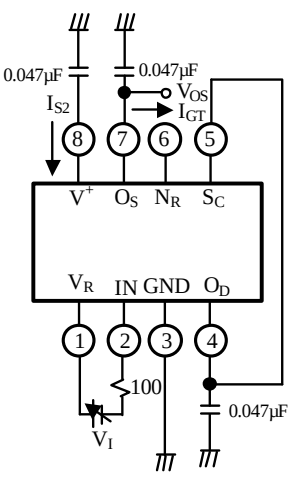
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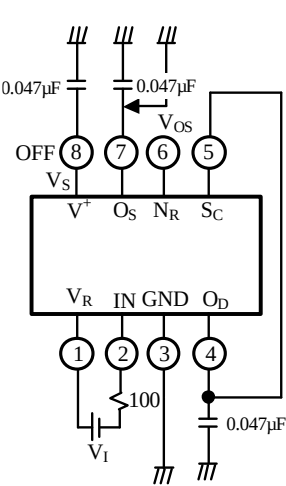
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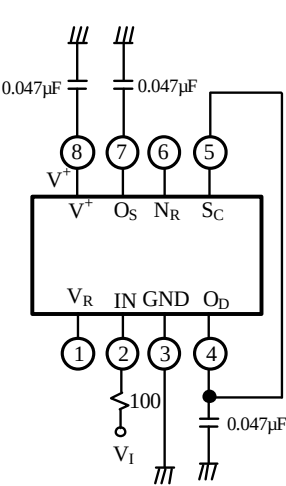
12.



13.



14.



APPLICATION INFORMATION

T.B.D.

REVISION NOTICE

The description in this datasheet is subject to change without any notice to describe its electrical characteristics properly.