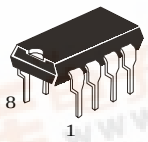
IL7101N
EARTH LEAKAGE CURRENT DETECTOR

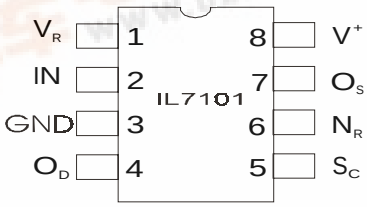
Description

The IL7101N is designed for use in earth leakage circuit interrupters for operation directly oft 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.



N SUFFIX
PLASTIC

Pin Configuration
(Top View)



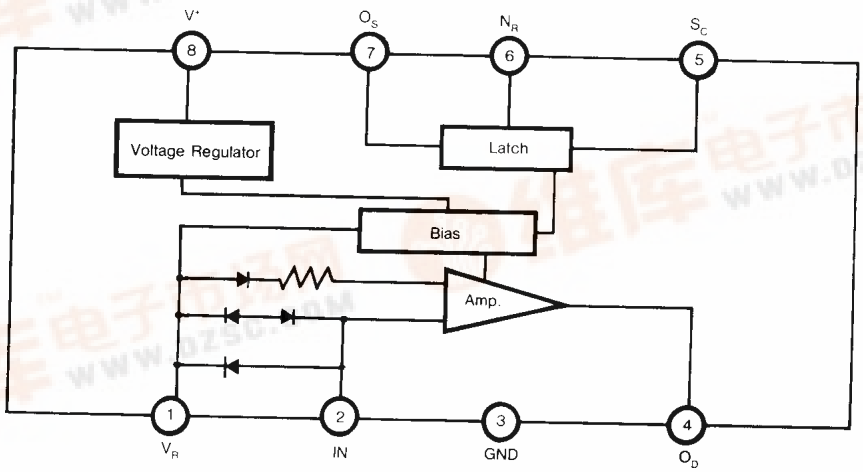
Feature

- Low Power Consumption (P_D=5mW) 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 Ratings

▪ Supply Voltage	20V
▪ Supply Current	8mA
▪ Power Dissipation	200m W
▪ Operating Temperature	- 30 to 85°C
▪ Storage Temperature	- 55 to 125°C

Block Diagram



Recomended Operating Condition: T_A=-30°C to 80°C

PARAMETER	SYMBOL	MIN.	TYP.	MAX	UNIT
Supply Voltage	V^+	12			V
Vs-GND Capacitor	Cvs	1			μF
O_S-GND Capacitor	Cos			1	μF

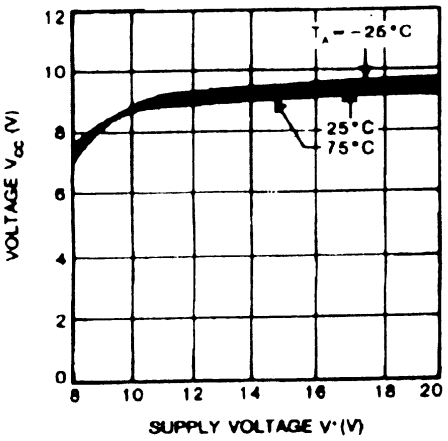
Electrical Characteristics

PARAMETER	SYMBOL	CONDTIONS		TEMP. (°C)	MIN.	TYP.	MAX.	UNIT
Supply Current 1	I_{S1}	V^+=12V, V_R - V_I = 30 mV		-30	-	-	580	μA
				25	-	400	530	
				85	-	-	480	
* Trip Voltage	V_T	V^+ = 16V, V_R - V_I = X		-30 85	9	13.5	18	mV (rms)
Differential Amplifier Output Current 1	I_{TD1}	V^+ = 16 V, V_R - V_I = 30 mV V_{OD} = 1.2 V		25	-12	-	-30	μA
Differential Amplifier Output current 2	I_{TD2}	V^+ = 16 V, V_R - V_I = short V_{OD} = 0.8 V		25	17	-	37	μA
Output Current	I_O	V_{SC} = 1.4 V V_{OS} = 0.8 V	I_{SI} = 580μA	-30	-200	-		μA
			I_{SI} = 530μA	25	-100	-		
			I_{SI} = 480μA	85	-75	-		
S_C ON Voltage	V_{SC} ON	V^+ = 16 V		25	0.7	-	1.4	V
S_C Input Current	I_{SC} ON	V^+ = I2V		25	-	-	5	μA
Output "L" Current	I_{OSL}	V^+ = 12 V, V_{OSL} = 0.2 V		-30 85	200	-	-	μA
Input Clamp Voltage	V_{IC}	V^+ = 12 V, I_{IC} = 20 mA		-30 85	4.3	-	6.7	V
Differential Input Clamp Voltaqe	V_{IDC}	I_{IDC} = 100mA		-30 85	0.4	-	2	V
Max. Current Voltage	V_{SM}	I_{SM} = 7 mA		25	20	-	28	V
Supply Current 2	I_{S2}	V_{OS} = 0.5 V, V_R - V_I = X		-30 85	-	-	1200	μA
Latch Circuit Off Supply Votaqe	V+ OFF			25	0.5			V
Response Time	T_{ON}	V^+ = 16 V, V_R - V_I = 0.3 V		25	1	-	4	ms

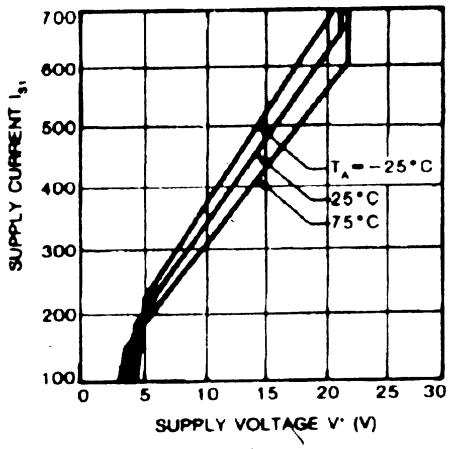
* A: 9 ~12.5 B: 11.5~15.5 C: 14.5~18

Typical Performance Curves

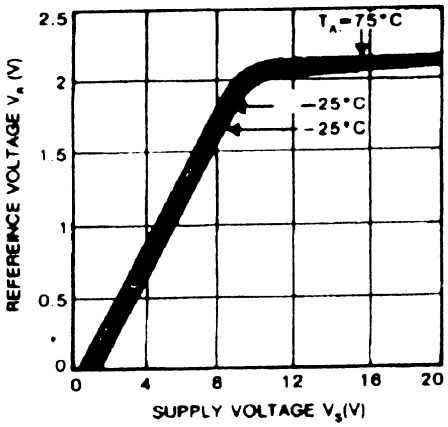
VOLTAE-SUPPLY VOLTAGE



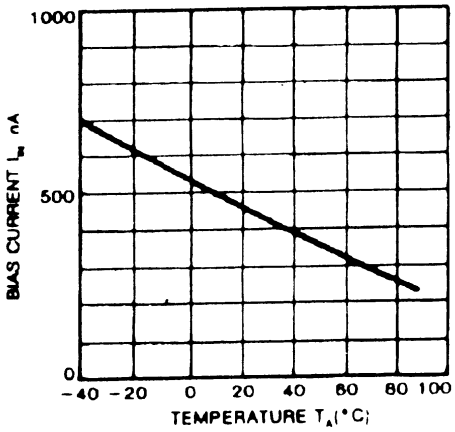
SUPPLY CURRENT-SUPPLY VOLTAGE



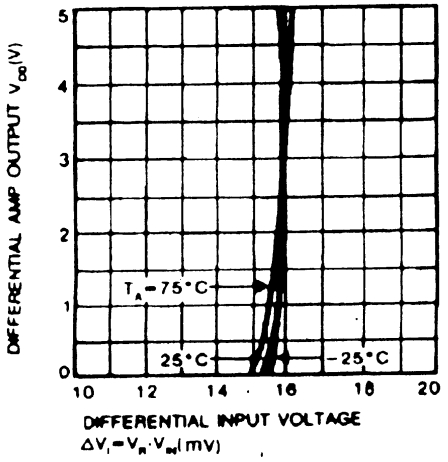
REFERENCE VOLTAGE-SUPPLY VOLTAGE



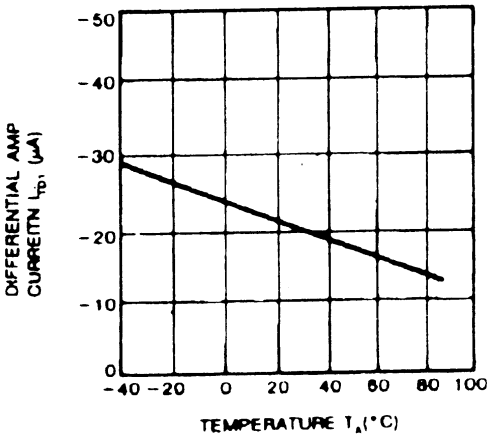
BIAS CURRENT-TEMPERATURE



DIFFERENTIAL AMPLIFIER OUTPUT VOLTAGE—DIFFERENTIAL INPUT VOLTAGE



DIFFERENTIAL AMPLIFIER OUTPUT CURRENT-TEMP



Typical Application