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*Embedded in Life*

An  IXYS Company

**Z8051 Series 8-Bit Microcontrollers**

# **ZGFI7101 Earth Leakage Detector**

**Product Specification**

PS030402-0212

PRELIMINARY





**Warning:** DO NOT USE THIS PRODUCT IN LIFE SUPPORT SYSTEMS.

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# Revision History

Each instance in this document's revision history reflects a change from its previous edition. For more details, refer to the corresponding page(s) or appropriate links furnished in the table below.

<b>Date</b>	<b>Revision Level</b>	<b>Description</b>	<b>Page</b>
Feb 2012	02	Removed references to wafer sale product option.	All
Jan 2012	01	Original Zilog issue.	All



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## 1. General Description

The ZGFI7101 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 connected to the secondary node of zero current transformer. The level comparator generates high level when earth leakage current is greater than some level.

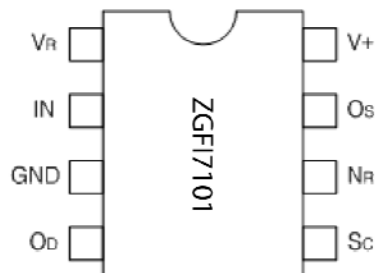
## 2. Features

- Low Power consumption (PD = 5mW) 100V/ 200V
- 100V/200V Common Built-in Voltage Regulator
- High Gain Differential Amplifier
- High Input Sensitivity (VT = 13.5mV Typ.)
- Minimum External Parts
- Large Surge Margin
- Wide Operating Temperature Range (T<sub>A</sub> = -30 to 85°C)
- High Noise Immunity
- GL7101,M54122 pin compatible

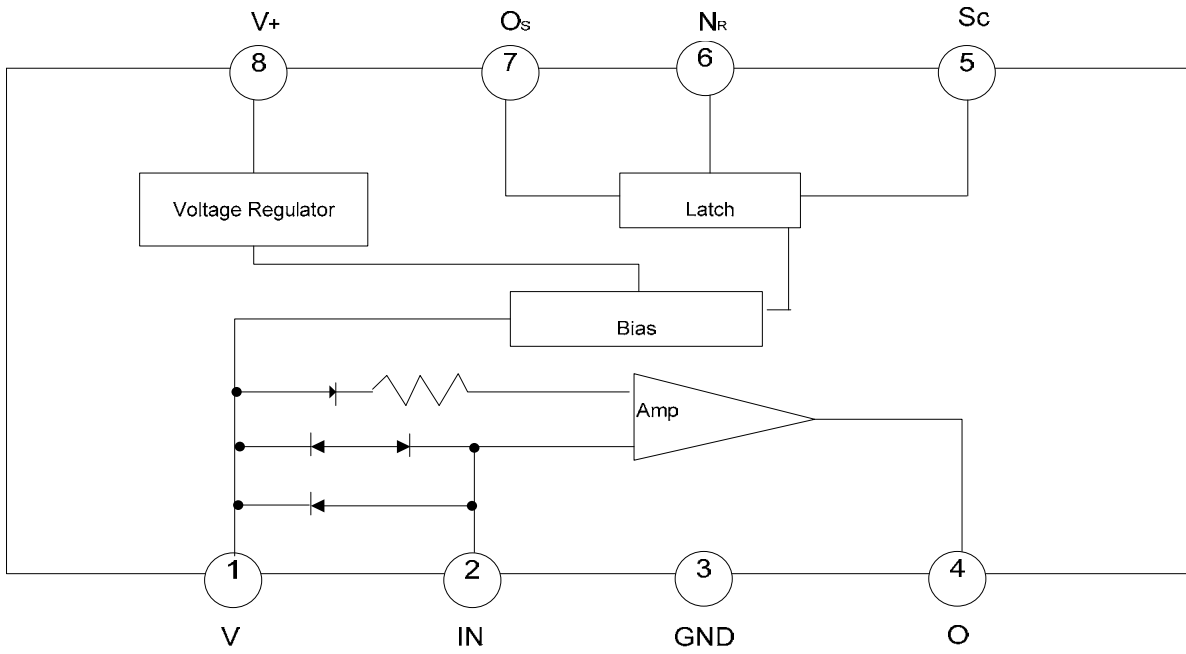
## 3. Ordering Information

Device Name	Package
ZGFI7101JBT	8_SOP
ZGFI7101PBT	8_PDIP

## 4. Pin Assignment



## 5. Block Diagram





## 6. Absolute Maximum Rating (TA = 25°C)

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

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## 7. Recommended Operating Condition : Ta = -30°C to 85°C

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V+	12			V
Vs-GND Capacitor	Cvs	1			uF
Os-GND Capacitor	Cos			1	uF

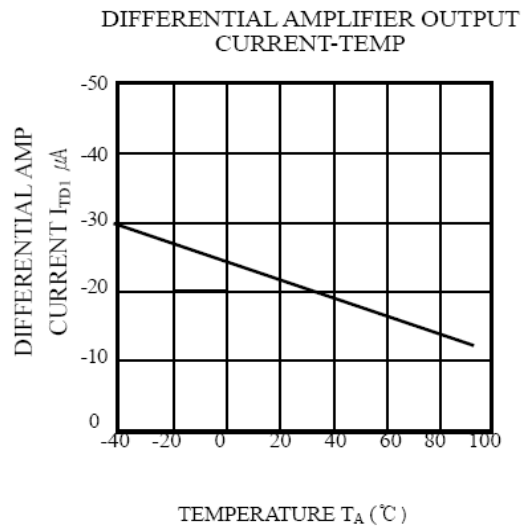
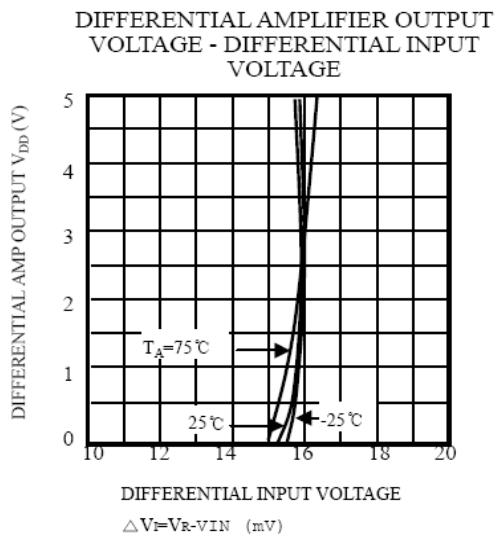
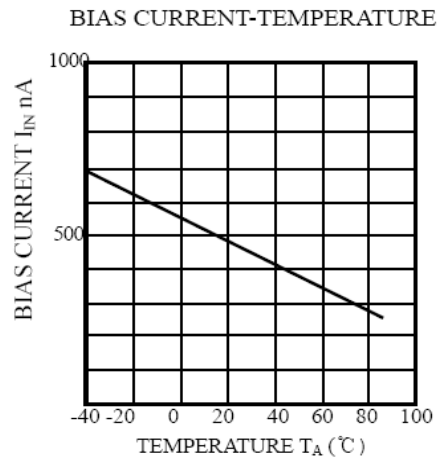
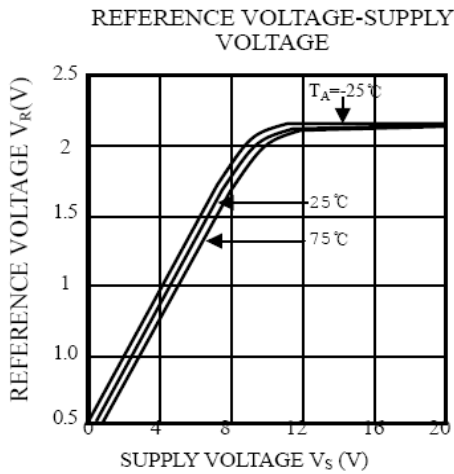
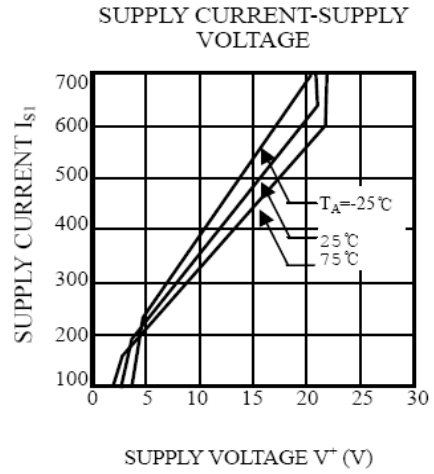
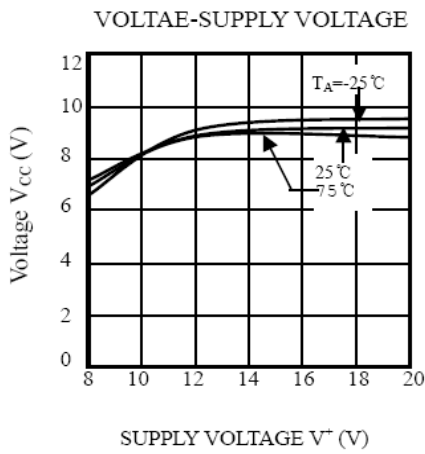
## 8. Electrical Characteristics

PARAMETER	SYMBOL	CONDITONS	TEMP (°C)	MIN.	TYP.	MAX.	UNIT	TEST CIRCUT
SupplyCurrent1	IS1	V+=12V, VR-VI=30mV	-30	-	-	580	uA	1
			25	-	400	530		
			85	-	-	480		
*Trip Voltage	VT	V+=16V. VR-VI=X	-30~85	9	13.5	18	mV(rms)	2
Differential Amplifier Output Current1	ITD1	V+=16V, VR-VI=30mV VOD=1.2V	25	-12	-	-30	uA	3
Differential Amplifier Output Current2	ITD2	V+=16V, VR-VI=short VOD=0.8V	25	17	-	37	uA	4
Output Current	Io	VSC=1.4V VOS=0.8V	IS1=580 uA	-30	-200	-	uA	5
			IS1=530 uA	25	-100	-		
			IS1=480 uA	85	-75	-		
Sc On Voltage	Vsc ON	V+=16V	25	0.7	-	1.4	V	6
Sc Input Current	Isc ON	V+=12V	25	-	-	5	uA	7
Output "L" Current	IosL	V+12V, VosL =0.2V	-30~85	200	-	-	uA	8
Input Clamp Voltage	Vic	V+=12V, Vic=20mA	-30~85	4.3	-	6.7	V	9
Differential Input Clamp Voltage	VIDC	IidC = 100mV	-30~85	0.4	-	2	V	10
Max Current voltage	VSM	ISM=7mA	25	20	-	28	V	11
Supply Current 2	IS2	VOS=0.5V, VR-VI=X	-30~85	-	-	900	uA	12
Latch Circuit Off Supply Voltage	V+OFF		25	0.5	-		V	13
Response Time	TON	V+=16V, VR-VI=0.3V	25	1	-	4	ms	14

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

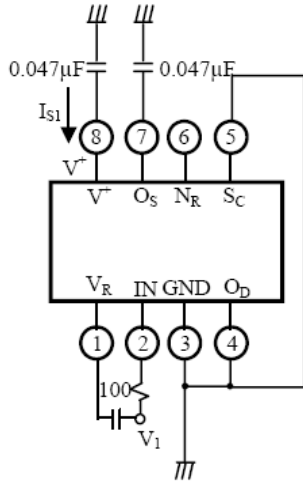


## 9. Typical Performance Curves

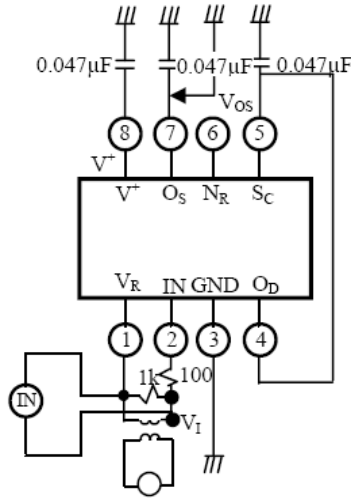


## 10. Test Circuit

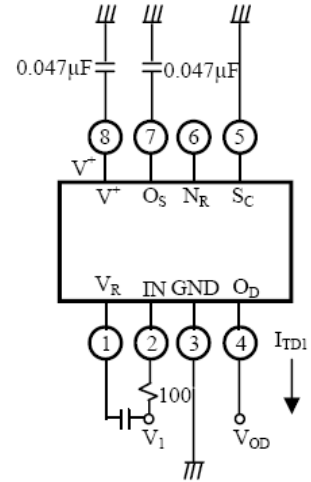
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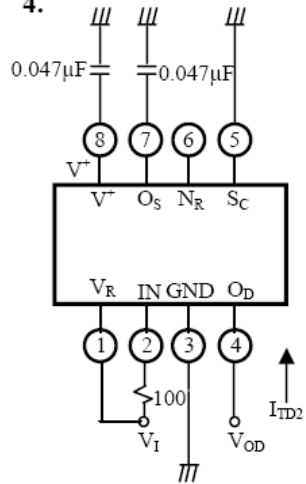
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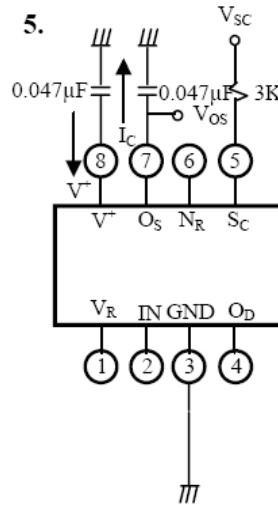
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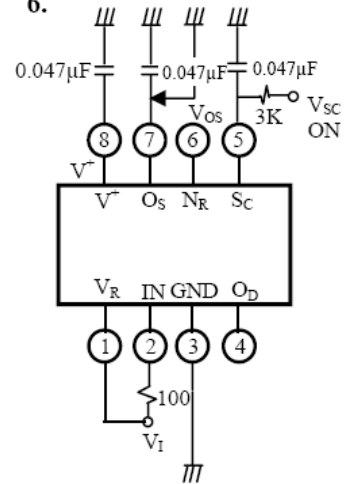
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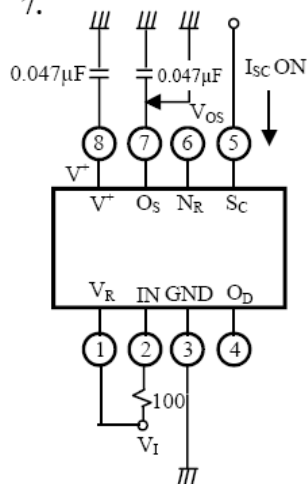
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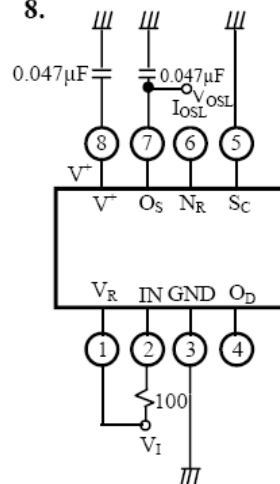
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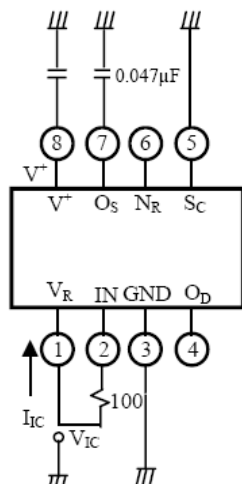
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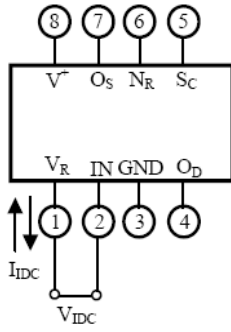
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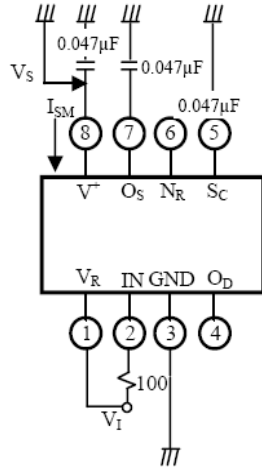
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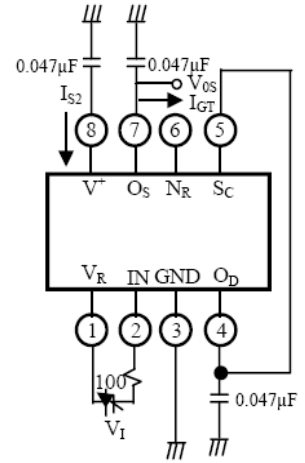
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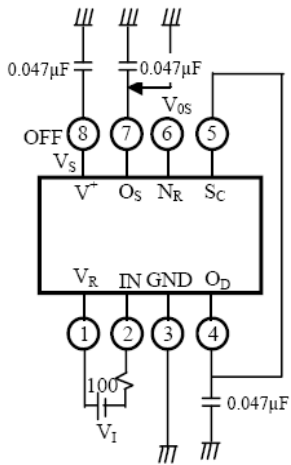
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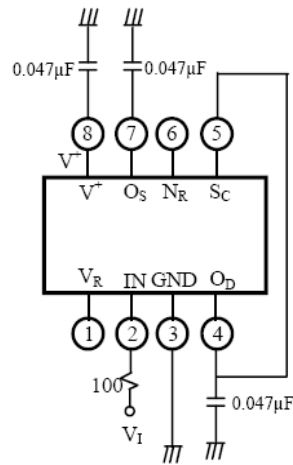
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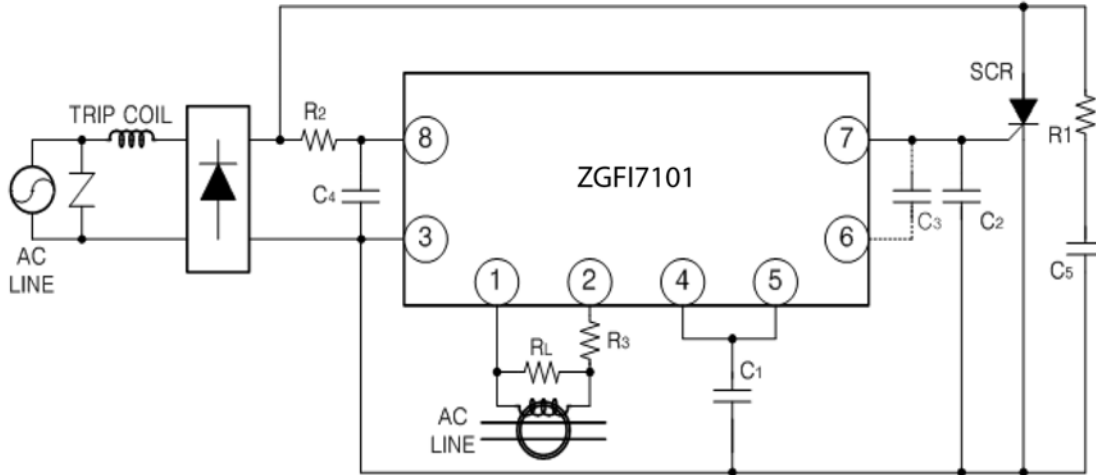
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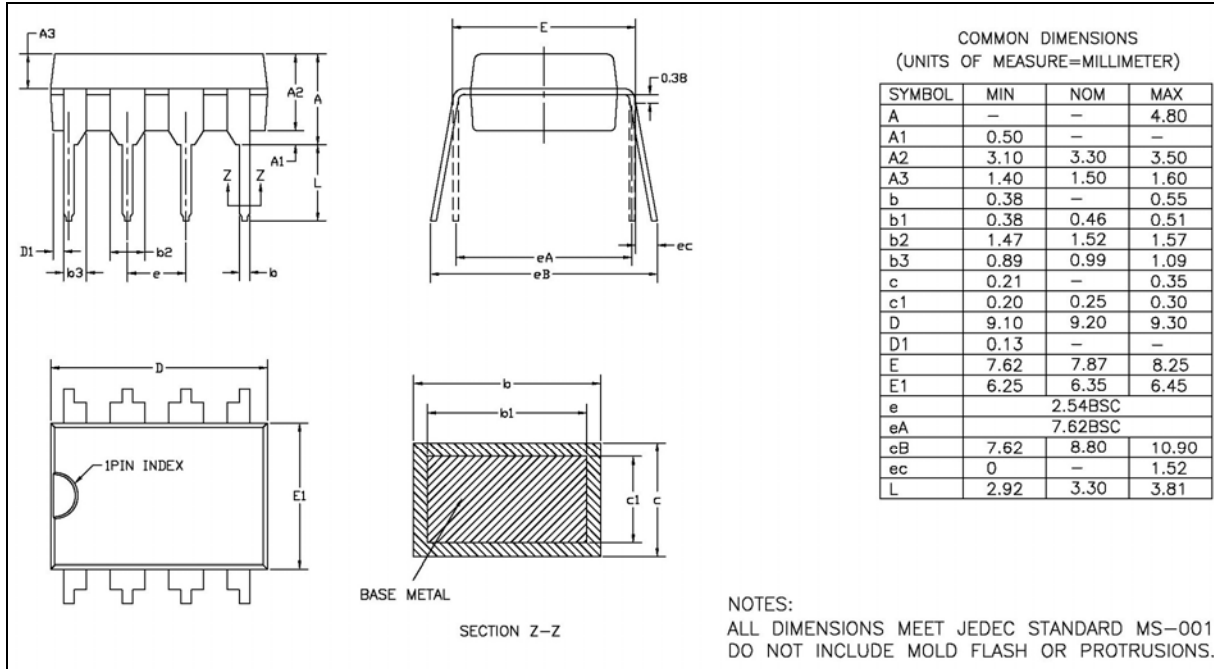
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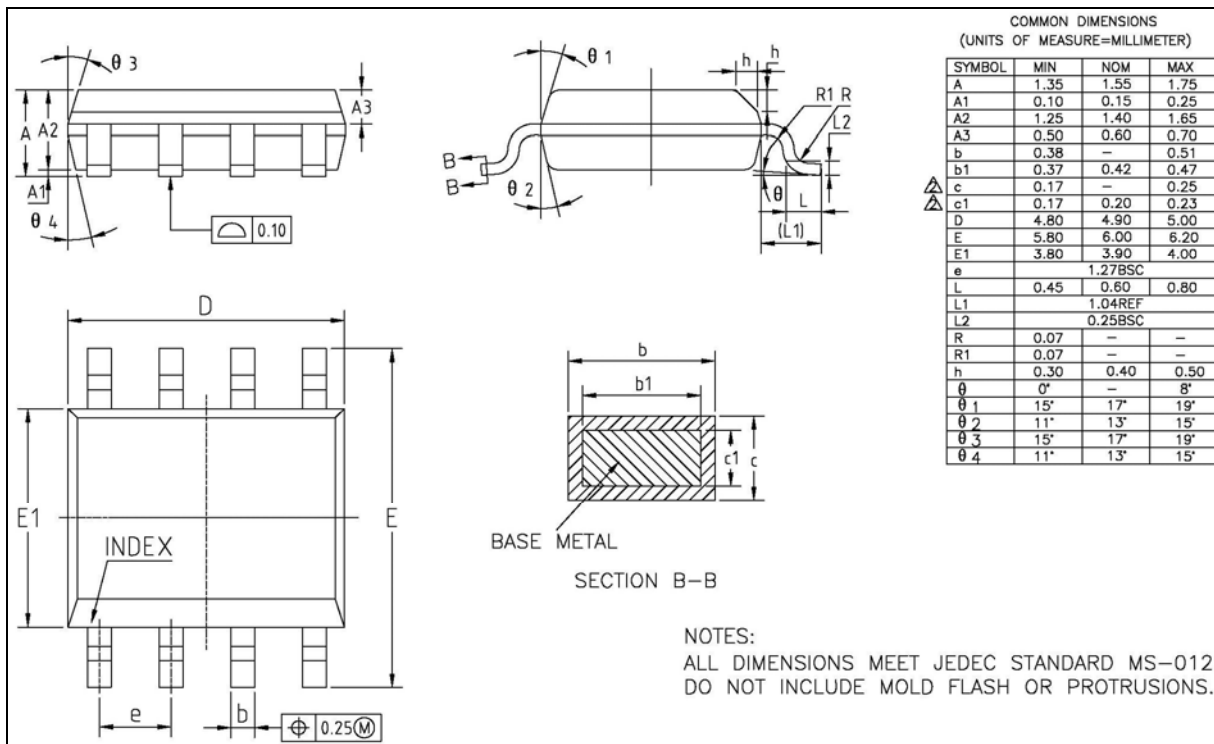
## 11. Typical Application



## 12. Package Dimensions 8DIP



## 8SOP



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