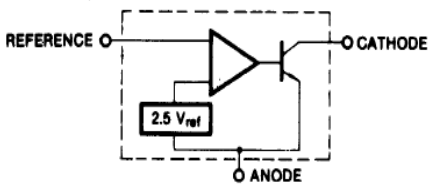
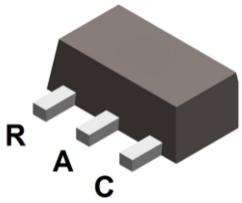
LGE431H

Programmable Shunt Regulator

Features

- Programmable output voltage to 36 volts
- Low dynamic output impedance 0.20 typical
- Sink current capability of 1.0 to 100mA
- Equivalent full-range temperature coefficient of 50ppm/°C typical
- Temperature compensated for operation over full rated operating temperature range
- Low output noise voltage
- Fast turn-on response





SOT-89

Mechanical Data

- Case: SOT-89
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
LGE431H	SOT-89	1000 pcs / Tape & Reel	431H

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Electrostatic discharge Human-body model(HBM),per ANSI/ESDA/JEDEC JS-001 *1	$V_{(ESD)}$	±2000	V
Electrostatic discharge Charged-device model(CDM), per JEDEC specification JESD22C101 *2		±1000	V
Cathode Voltage	V_{KA}	36	V
Cathode Current Range(Continuous)	I_{KA}	-100 ~ +150	mA
Reference Input Current Range	I_{REF}	-0.05 ~ +10	mA

Notes:

1. JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process. Manufacturing with less than 500-V HBM is possible with the necessary precautions.

2. JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process. Manufacturing with less than 250-V CDM is possible with the necessary precautions.

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation	P_D	830	mW
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	150	°C/W
Operating Temperature Range	T_{OPR}	-40 ~ +125	°C
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°C

Recommended Operating Condition

Parameter	Symbol	Min.	Typ.	Max.	Unit
Cathode Voltage	V_{KA}	V_{REF}	-	36	V
Cathode Current	I_{KA}	1.0	-	100	mA

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition		Min.	Typ.	Max.	Unit
Reference voltage	V_{REF}	$V_{KA} = V_{REF}$, I_{KA} = 10mA		2.45	2.5	2.55	V
Deviation of Reference Voltage Over Full Temperature Range	$\Delta V_{REF}/\Delta V_T$	$V_{KA} = V_{REF}$, I_{KA} = 10mA, $T_{MIN} \le T_A \le T_{MAX}$		-	8	17	mV
Ratio of Change in Reference Voltage to the Change in Cathode Voltage	$\Delta V_{REF}/\Delta V_{KA}$	I_{KA} =10mA	ΔV_{KA} = 10V-V_{REF}	-	-1.0	-2.7	mV/V
			ΔV_{KA} = 36V-10V	-	-0.5	-2.0	mV/V
Reference Current	I_{REF}	I_{KA} = 10mA, R_1 = 10KΩ, R_2 = ∞		-	1	4	μA
Deviation of Reference Current Over Full Temperature Range	ΔI_{REF}	I_{KA} = 10mA, R_1 = 10KΩ, R_2 = ∞ $T_{MIN} \le T_A \le T_{MAX}$		-	0.5	1.2	μA
Minimum Cathode Current for Regulation	$I_{KA(MIN)}$	$V_{KA} = V_{REF}$		-	0.4	1.0	mA
Off-state Cathode Current	$I_{KA(OFF)}$	V_{KA} = 36V, V_{REF} = 0		-	0.05	1.0	μA
Dynamic Impedance	Z_{KA}	$V_{KA} = V_{REF}$, f ≤ 1KHz I_{KA} =1 to 100mA		-	0.2	0.5	Ω

•T_{MIN} = -40°C, T_{MAX} = +125°C

Classification of V_{REF}

Rank	0.5%	1%	2%
Range	2.488-2.512	2.475-2.525	2.450-2.550

TYPICAL CHARACTERISTICS (@ T_A = 25°C unless otherwise specified)

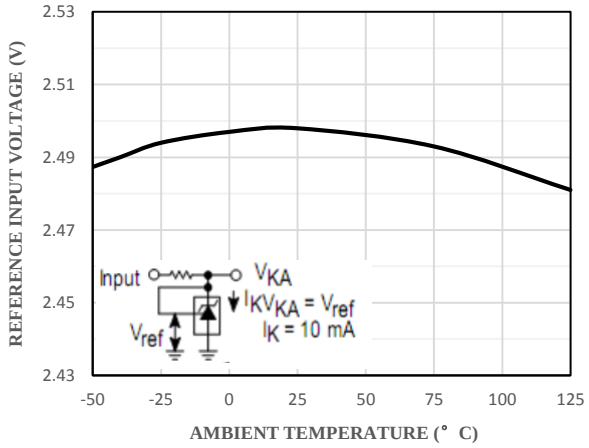


Fig 1 Reference Input Voltage vs. Temperature

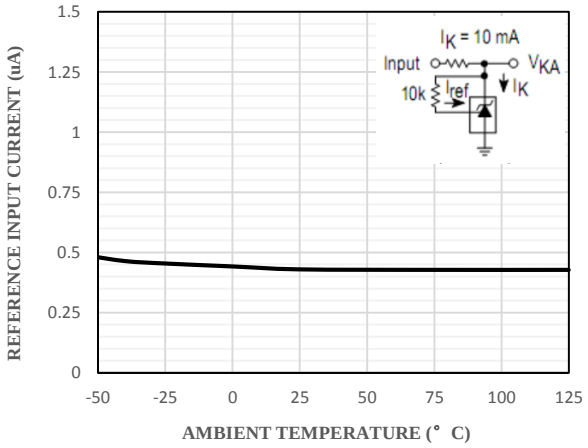


Fig 2 Reference Input Current vs. Temperature

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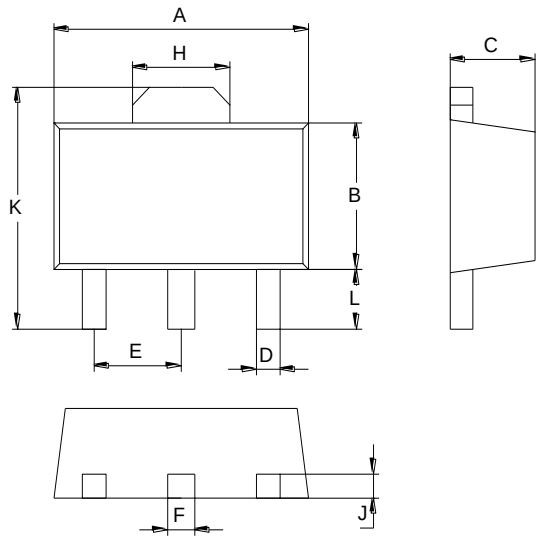
Package Outline Dimensions (Unit: mm)



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Dimension	**Min.**	**Max.**
A	4.30	4.70
B	2.25	2.65
C	1.30	1.70
D	0.30	0.50
E	1.40	1.60
F	0.38	0.58
H	1.60	1.80
J	0.30	0.50
L	0.90	1.10
K	3.95	4.35

Mounting Pad Layout (Unit: mm)

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