MOTOROLA

Programmable Precision References

TL431, A, B Series

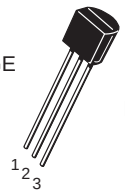
PROGRAMMABLE PRECISION REFERENCES

SEMICONDUCTOR TECHNICAL DATA

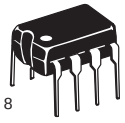
The TL431, A, B integrated circuits are three–terminal programmable shunt regulator diodes. These monolithic IC voltage references operate as a low temperature coefficient zener which is programmable from V_{ref} to 36 V with two external resistors. These devices exhibit a wide operating current range of 1.0 mA to 100 mA with a typical dynamic impedance of 0.22 Ω. The characteristics of these references make them excellent replacements for zener diodes in many applications such as digital voltmeters, power supplies, and op amp circuitry. The 2.5 V reference makes it convenient to obtain a stable reference from 5.0 V logic supplies, and since the TL431, A, B operates as a shunt regulator, it can be used as either a positive or negative voltage reference.

- Programmable Output Voltage to 36 V
- Voltage Reference Tolerance: ±0.4%, Typ @ 25°C (TL431B)
- Low Dynamic Output Impedance, 0.22 Ω Typical
- Sink Current Capability of 1.0 mA to 100 mA
- Equivalent Full–Range Temperature Coefficient of 50 ppm/°C Typical
- Temperature Compensated for Operation over Full Rated Operating Temperature Range
- Low Output Noise Voltage

LP SUFFIX
PLASTIC PACKAGE
CASE 29
(TO–92)

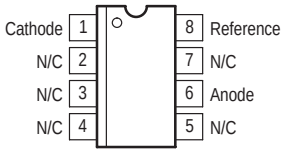


Pin 1. Reference
2. Anode
3. Cathode



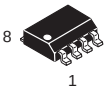
P SUFFIX
PLASTIC PACKAGE
CASE 626

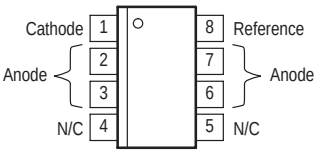
DM SUFFIX
PLASTIC PACKAGE
CASE 846A
(Micro–8)



(Top View)

D SUFFIX
PLASTIC PACKAGE
CASE 751
(SOP–8)





(Top View)

SOP–8 is an internally modified SO–8 package. Pins 2, 3, 6 and 7 are electrically common to the die attach flag. This internal lead frame modification decreases power dissipation capability when appropriately mounted on a printed circuit board. SOP–8 conforms to all external dimensions of the standard SO–8 package.

ORDERING INFORMATION

Device	Operating Temperature Range	Package
TL431CLP, ACLP, BCLP	T_A = 0° to +70°C	TO–92
TL431CP, ACP, BCP		Plastic
TL431CDM, ACDM, BCDM		Micro–8
TL431CD, ACD, BCD		SOP–8
TL431ILP, AILP, BILP	T_A = –40° to +85°C	TO–92
TL431IP, AIP, BIP		Plastic
TL431IDM, AIDM, BIDM		Micro–8
TL431ID, AID, BID		SOP–8