

Features

- **Guaranteed 0.4% Initial Voltage Tolerance**
- **0.1Ω Typical Dynamic Output Impedance**
- Fast Turn On
- Sink Current Capability, 1mA to 100mA
- Low Reference Pin Current
- Available in N8, S8 or 3-Lead TO-92 Z Packages

Application

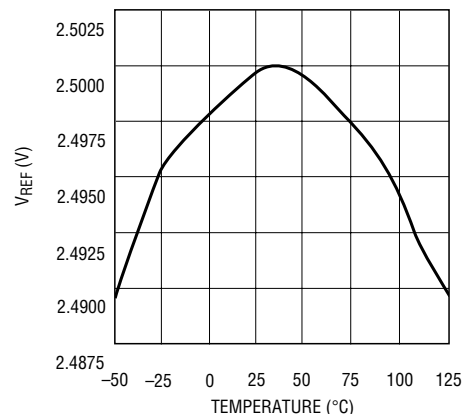
- Linear Regulators
- Adjustable Power Supplies
- Switching Power Supplies

Description

The FT1431 is an adjustable shunt voltage regulator with 100mA sink capability, 0.4% initial reference voltage tolerance and 0.3% typical temperature stability. On-chip divider resistors allow the FT1431 to be configured as a 5V shunt regulator, with 1% initial voltage tolerance and requiring no additional external components. By adding two external resistors, the output voltage may be set to any value between 2.5V and 36V. The nominal internal current limit of 100mA may be decreased by including one external resistor.

A simplified 3-pin version, the FT1431CZ/FT1431IZ, is available for applications as an adjustable reference and is pin compatible with the FT431.

V_{REF} vs Temperature



Absolute Maximum Ratings (Note 1)

V^+ , $V_{COLLECTOR}$	36V	Junction Temperature Range	FT1431M	-55°C to 150°C	
V_{COMP} , R_{TOP} , R_{MID} , V_{REF}	6V		FT1431I	-40°C to 100°C	
GND-F to GND-S	0.7V		FT1431C	0°C to 100°C	
Ambient Temperature Range		Storage Temperature Range		-65°C to 150°C	
FT1431M	-55°C to 125°C		Lead Temperature (Soldering, 10 sec).....		300°C
FT1431I	-40°C to 85°C				
FT1431C	0°C TO 70°C				

Package/Order Information

<p>N8 PACKAGE 8-LEAD PDIP S8 PACKAGE 8-LEAD PLASTIC SO</p> <p>$T_J \text{ MAX} = 100^\circ\text{C}, \theta_{JA} = 130^\circ\text{C/W (N)}$ $T_J \text{ MAX} = 100^\circ\text{C}, \theta_{JA} = 170^\circ\text{C/W (S)}$</p> <p>$T_J \text{ MAX} = 150^\circ\text{C}, \theta_{JA} = 100^\circ\text{C/W (J)}$</p>	ORDER PART NUMBER	<p>Z PACKAGE 3-LEAD TO-92 PLASTIC $T_J \text{ MAX} = 100^\circ\text{C}, \theta_{JA} = 150^\circ\text{C/W}$</p>	ORDER PART NUMBER
	FT1431CN8 FT1431IN8 FT1431CS8 FT1431IS8		FT1431CZ FT1431IZ
	S8 PART MARKING		
	1431 1431I FT1431MJ8		

Electrical Characteristics

The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A = 25^\circ\text{C}$. $I_K = 10\text{mA}$ unless otherwise specified (Note 2)

SYMBOL	PARAMETER	CONDITIONS	FT1431M/I			FT1431C			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
V_{REF}	Reference Voltage	$V_{KA} = 5\text{V}, I_K = 2\text{mA}, (\text{Note } 3)$	2.490	2.500	2.510	2.490	2.500	2.510	V
			● 2.465		2.535	2.480		2.520	V
$\Delta V_{REF}/\Delta T$	Reference Drift	$V_{KA} = 5\text{V}, I_K = 2\text{mA}$	●	50		30		ppm/°C	
$\Delta V_{REF}/\Delta V_{KA}$	Voltage Ratio, Reference to Cathode (Open-Loop Gain)	$I_K = 2\text{mA}, V_{KA} = 3\text{V to } 36\text{V}$	●	0.2	0.5	0.2	0.5	mV/V	
$ I_{REF} $	Reference Input Current	$V_{KA} = 5\text{V}, T_A = 25^\circ\text{C}$	●	0.2	1.0	0.2	1.0	μA	
					1.5	1.2	μA		
I_{MIN}	Minimum Operating Current	$V_{KA} = V_{REF} \text{ to } 36\text{V}$		0.6	1.0	0.6	1.0	mA	
$ I_{OFF} $	Off-State Cathode Current	$V_{KA} = 36\text{V}, V_{REF} = 0\text{V}$	●		1	1	μA		
					15	2	μA		
$ I_{LEAK} $	Off-State Collector Leakage Current	$V_{COLL} = 36\text{V}, V^+ = 5\text{V}, V_{REF} = 2.4\text{V}$	●		1	1	μA		
					5	2	μA		
$ Z_{KA} $	Dynamic Impedance	$V_{KA} = V_{REF}, I_K = 1\text{mA to } 100\text{mA}, f \leq 1\text{kHz}$			0.2	0.2	Ω		
I_{LIM}	Collector Current Limit	$V_{KA} = V_{REF} + 50\text{mV}$	●	80	360	100	260	mA	
	5V Reference Output	Internal Divider Used, $I_K = 2\text{mA}$		4.950	5.000	5.050	4.950	5.000	5.050



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