

Features

- Trimmed Output $\pm 0.3\%$
- Low Drift— $5\text{ppm}/^\circ\text{C}$ Typ
- Low Noise— $3\text{ppm}_{(\text{P-P})}$
- High Line Rejection
- Temperature Output—FTREF-02
- Low Supply Current 1.4mA Max

Applications

- A/D and D/A Converters
- Precision Regulators
- Constant Current Sources
- V/F Converters
- Bridge Excitation

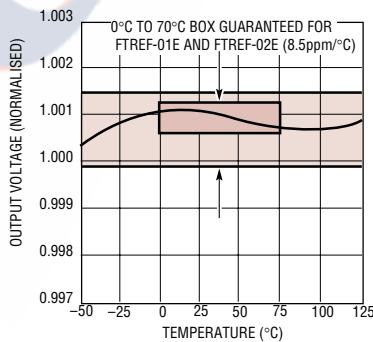
Description

FTREF-01/FTREF-02 are precision 10V and 5V bandgap references which provide stable output voltages over a wide range of operating conditions. Output voltage is accurate to $\pm 0.3\%$ with a low $5\text{ppm}/^\circ\text{C}$ typical temperature coefficient. The FTREF-01 and FTREF-02 are excellent choices for applications where low drift, moderate accuracy, low power consumption and low cost are considerations.

The FTREF-02 includes a temperature output pin which provides a linear voltage proportional to absolute temperature.

For lower drift and higher accuracy references, please see the FT1019 and FT1021 data sheets.

Output Voltage Temperature Drift

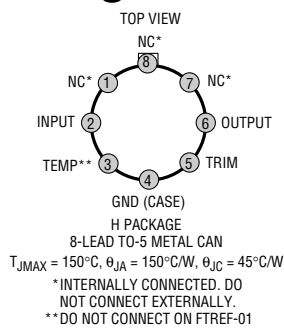


FULL TEMP RANGE BOX GUARANTEED FOR
FTREF-01A AND FTREF-02A ($8.5\text{ppm}/^\circ\text{C}$)

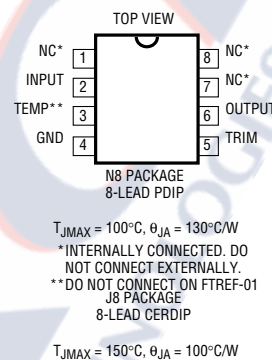
Absolute Maximum Rating

Storage Temperature Range –65°C to 150°C
 Operating Temperature
 FTREF-01/FTREF-02, FTREF-01A/FTREF-02A..–55°C to 125°C
 FTREF-01E/FTREF-02E, FTREF-01H/FTREF-02H,
 FTREF-01C/FTREF-02C, FTREF-01D/FTREF-02D.. 0°C to 70°C
 Lead Temperature (Soldering, 10 sec) 300°C

Package/Order Information



FTREF01AH FTREF02AH
 FTREF01H FTREF02H
 FTREF01EH FTREF02EH
 FTREF01HH FTREF02HH
 FTREF01CH FTREF02CH
 FTREF02DH



ORDER PART
NUMBER

FTREF01EN8 FTREF02EN8
 FTREF01HN8 FTREF02HN8
 FTREF01CN8 FTREF02CN8
 FTREF02DN8
 FTREF01EJ8 FTREF02EJ8
 FTREF01HJ8 FTREF02HJ8
 FTREF01CJ8 FTREF02CJ8
 FTREF02DJ8

Electrical Characteristics

$V_{IN} = 15V$, $T_A = 25^\circ C$ unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS	FTREF-01A/E, FTREF-02A			FTREF-01H, FTREF-02H			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
V_O	Output Voltage	$I_L = 0mA$	9.97	10	10.03	9.95	10	10.05	V
			4.985	5	5.015	4.975	5	5.025	V
	Output Adjustment Range	$R_P = 10k\Omega$	± 3	5, –27		± 3	5, –27		%
			± 3	5, –13		± 3	5, –13		%
e_{NP-P}	Output Voltage Noise	0.1Hz to 10Hz (Note 7)	20			20			μV_{P-P}
			10			10			μV_{P-P}
V_{IN}	Input Voltage Range		12		40	12		40	V
			7		40	7		40	V
$\frac{\Delta V_{OUT}}{\Delta V_{IN}}$	Line Regulation (Note 2)	$(V_{OUT} + 3V) \leq V_{IN} \leq 33V$		0.0001	0.010		0.0001	0.010	%/V
$\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$	Load Regulation (Note 2)	$I_L = 0mA$ to 10mA	0.0005			0.0005			%/mA
			0.0010			0.001			%/mA
I_Q	Quiescent Supply Current	No Load		0.65	1.4		0.65	1.4	mA
I_{OUT}	Load Current Sink Current		10	20		10	20		mA
			–0.3	–20		–0.3	–20		mA
I_{SC}	Short-Circuit Current	$V_O = 0V$		25			25		mA
V_T	Temperature Voltage Output	(Note 3)		620			620		mV



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