

REF01/REF02/REF03

REF02 SPECIFICATIONS

$V_{IN} = 15\text{ V}$, $T_A = 25^\circ\text{C}$, $I_{LOAD} = 0\text{ mA}$, all grades, unless otherwise noted. Nongraded refers to REF02Z.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
OUTPUT VOLTAGE	V_O	A and E grades	4.985	5.000	5.015	V
		H grade and nongraded	4.975	5.000	5.025	V
		C grade	4.950	5.000	5.050	V
OUTPUT ADJUSTMENT RANGE ¹	ΔV_{TRIM}	A, E, H grades and nongraded, POT = 10 k Ω	± 3.0	± 6.0		%
		C grade, POT = 10 k Ω	± 2.7	± 6.0		%
INITIAL ACCURACY	V_{OERR}	A and E grades			± 15	mV
					± 0.3	%
		H grade and nongraded			± 25	mV
					± 0.5	%
		C grade			± 50	mV
TEMPERATURE COEFFICIENT	TCV_O	A grade and non-graded, $-55^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$		3	8.5	ppm/ $^\circ\text{C}$
		E and H grades, $0^\circ\text{C} \leq T_A \leq +70^\circ\text{C}$		10	25	ppm/ $^\circ\text{C}$
		C grade, $0^\circ\text{C} \leq T_A \leq +70^\circ\text{C}$ (-J and -Z packages)		20	65	ppm/ $^\circ\text{C}$
		C grade, $-40 \leq T_A \leq +85^\circ\text{C}$ (-P and -S packages)		20	65	ppm/ $^\circ\text{C}$
LINE REGULATION ²	$\Delta V_O / \Delta V_{IN}$	A, E, H grades and nongraded, $V_{IN} = 8\text{ V to } 36\text{ V}$		60	100	ppm/V
		A, E, H grades and nongraded, $V_{IN} = 8\text{ V to } 36\text{ V}$, $0^\circ\text{C} \leq T_A \leq +70^\circ\text{C}$		70	120	ppm/V
		A, E, H grades and nongraded, $V_{IN} = 8\text{ V to } 36\text{ V}$, $-55^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$		90	150	ppm/V
		C grade, $V_{IN} = 8\text{ V to } 36\text{ V}$		90	150	ppm/V
		C grade, $V_{IN} = 8\text{ V to } 36\text{ V}$, $0^\circ\text{C} \leq T_A \leq +70^\circ\text{C}$ (-J and -Z packages)		110	180	ppm/V
		C grade, $V_{IN} = 8\text{ V to } 36\text{ V}$, $-40^\circ\text{C} \leq T_A \leq +85^\circ\text{C}$ (-P and -S packages)		110	180	ppm/V
LOAD REGULATION ²	$\Delta V_O / \Delta I_{LOAD}$	A and E grades, $I_{LOAD} = 0\text{ mA to } 10\text{ mA}$		60	100	ppm/mA
		A and E grades, $I_{LOAD} = 0\text{ mA to } 8\text{ mA}$, $0^\circ\text{C} \leq T_A \leq +70^\circ\text{C}$		60	100	ppm/mA
		A and E grades, $I_{LOAD} = 0\text{ mA to } 8\text{ mA}$, $-55^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$		70	120	ppm/mA
		H grade and nongraded, $I_{LOAD} = 0\text{ mA to } 10\text{ mA}$		60	100	ppm/mA
		H grade and nongraded, $I_{LOAD} = 0\text{ mA to } 8\text{ mA}$, $0^\circ\text{C} \leq T_A \leq +70^\circ\text{C}$		70	120	ppm/mA
		H grade and nongraded, $I_{LOAD} = 0\text{ mA to } 8\text{ mA}$, $-50^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$		90	150	ppm/mA
		C grade, $I_{LOAD} = 0\text{ mA to } 8\text{ mA}$		60	150	ppm/mA
		C grade, $I_{LOAD} = 0\text{ mA to } 5\text{ mA}$, $0^\circ\text{C} \leq T_A \leq +70^\circ\text{C}$ (-J and -Z packages)		80	180	ppm/mA
		C grade, $I_{LOAD} = 0\text{ mA to } 5\text{ mA}$, $-40^\circ\text{C} \leq T_A \leq +85^\circ\text{C}$ (-P and -S packages)		80	180	ppm/mA
DROPOUT VOLTAGE	V_{DO}				2	V
QUIESCENT CURRENT	I_{IN}	A, E, H grades and nongraded		1.0	1.4	mA
		C grade		1.0	1.6	mA
LOAD CURRENT	I_{LOAD}	A, E, H grades and nongraded			10	mA
					8	mA
		C grade			-0.3	mA
SHORT CIRCUIT TO GND	I_{SC}	$V_O = 0\text{ V}$		30		mA
VOLTAGE NOISE	$e_{N\text{ p-p}}$	0.1 Hz to 10.0 Hz (-S, -Z and -P packages)		15		$\mu\text{V p-p}$
		0.1 Hz to 10.0 Hz (-J package)		20		$\mu\text{V p-p}$
LONG-TERM STABILITY ³	ΔV_O	After 1000 hours of operation		50		ppm
TURN-ON SETTLING TIME	t_r	Output settling to within $\pm 0.1\%$ of final value		5		μs
TEMPERATURE SENSOR ⁴						
Voltage Output at TEMP Pin	V_{TEMP}			580		mV
Temperature Sensitivity	TCV_{TEMP}			1.96		mV/ $^\circ\text{C}$

¹ Refer to the Output Adjustment section.

² Specification includes the effects of self-heating.

³ Long-term stability is noncumulative; the drift in subsequent 1000-hour periods is significantly lower than in the first 1000-hour periods. Refer to Application Note [AN-713](#).

⁴ Refer to the Temperature Monitoring section.