

**ELECTRICAL CHARACTERISTICS** The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at  $T_A = 25^\circ\text{C}$ .

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Reference Current RMS Output Noise (Notes 9, 12)	BW = 10Hz to 100kHz		8		nA <sub>RMS</sub>
Ripple Rejection $-18\text{V} \leq V_{\text{OUT}} \leq -1.5\text{V}$ $V_{\text{IN}} - V_{\text{OUT}} = 2\text{V}$ (Avg) (Notes 9, 12)	$V_{\text{RIPPLE}} = 500\text{mV}_{\text{P-P}}$ , $f_{\text{RIPPLE}} = 120\text{Hz}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{OUT}} = 10\mu\text{F}$ , $C_{\text{SET}} = 4.7\mu\text{F}$ $V_{\text{RIPPLE}} = 500\text{mV}_{\text{P-P}}$ , $f_{\text{RIPPLE}} = 10\text{kHz}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{OUT}} = 10\mu\text{F}$ , $C_{\text{SET}} = 0.47\mu\text{F}$ $V_{\text{RIPPLE}} = 500\text{mV}_{\text{P-P}}$ , $f_{\text{RIPPLE}} = 100\text{kHz}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{OUT}} = 10\mu\text{F}$ , $C_{\text{SET}} = 0.47\mu\text{F}$ $V_{\text{RIPPLE}} = 500\text{mV}_{\text{P-P}}$ , $f_{\text{RIPPLE}} = 1\text{MHz}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{OUT}} = 10\mu\text{F}$ , $C_{\text{SET}} = 0.47\mu\text{F}$ $V_{\text{RIPPLE}} = 500\text{mV}_{\text{P-P}}$ , $f_{\text{RIPPLE}} = 10\text{MHz}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{OUT}} = 10\mu\text{F}$ , $C_{\text{SET}} = 0.47\mu\text{F}$		108 94 75 74 28		dB dB dB dB dB
Ripple Rejection $-1.5\text{V} \leq V_{\text{OUT}} \leq 0\text{V}$ $V_{\text{IN}} - V_{\text{OUT}} = 2\text{V}$ (Avg) (Notes 9, 12)	$V_{\text{RIPPLE}} = 500\text{mV}_{\text{P-P}}$ , $f_{\text{RIPPLE}} = 120\text{Hz}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{OUT}} = 10\mu\text{F}$ , $C_{\text{SET}} = 4.7\mu\text{F}$ $V_{\text{RIPPLE}} = 500\text{mV}_{\text{P-P}}$ , $f_{\text{RIPPLE}} = 10\text{kHz}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{OUT}} = 10\mu\text{F}$ , $C_{\text{SET}} = 0.47\mu\text{F}$ $V_{\text{RIPPLE}} = 500\text{mV}_{\text{P-P}}$ , $f_{\text{RIPPLE}} = 100\text{kHz}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{OUT}} = 10\mu\text{F}$ , $C_{\text{SET}} = 0.47\mu\text{F}$ $V_{\text{RIPPLE}} = 500\text{mV}_{\text{P-P}}$ , $f_{\text{RIPPLE}} = 1\text{MHz}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{OUT}} = 10\mu\text{F}$ , $C_{\text{SET}} = 0.47\mu\text{F}$ $V_{\text{RIPPLE}} = 500\text{mV}_{\text{P-P}}$ , $f_{\text{RIPPLE}} = 10\text{MHz}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{OUT}} = 10\mu\text{F}$ , $C_{\text{SET}} = 0.47\mu\text{F}$		108 90 72 78 30		dB dB dB dB dB
EN/UV Pin Threshold	Positive EN/UV Trip Point Rising (Turn-On), $V_{\text{IN}} = -2.3\text{V}$ Negative EN/UV Trip Point Rising (Turn-On), $V_{\text{IN}} = -2.3\text{V}$	● 1.20 ● -1.33	1.26 -1.26	1.33 -1.20	V V
EN/UV Pin Hysteresis	Positive EN/UV Trip Point Hysteresis, $V_{\text{IN}} = -2.3\text{V}$ Negative EN/UV Trip Point Hysteresis, $V_{\text{IN}} = -2.3\text{V}$		200 215		mV mV
EN/UV Pin Current	$V_{\text{EN/UV}} = 0\text{V}$ , $V_{\text{IN}} = -20\text{V}$ $V_{\text{EN/UV}} = -1.5\text{V}$ , $V_{\text{IN}} = -20\text{V}$ $V_{\text{EN/UV}} = -20\text{V}$ , $V_{\text{IN}} = -20\text{V}$ $V_{\text{EN/UV}} = 1.5\text{V}$ , $V_{\text{IN}} = -20\text{V}$ $V_{\text{EN/UV}} = 20\text{V}$ , $V_{\text{IN}} = 0\text{V}$	● ● ●	-1 -0.5 -35 8 25	1  18.5 45	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
Quiescent Current in Shutdown ( $V_{\text{EN/UV}} = 0\text{V}$ )	$V_{\text{IN}} = -6\text{V}$ , $V_{\text{PG}} = \text{Open}$	●	3	8 10	$\mu\text{A}$ $\mu\text{A}$
Internal Current Limit (Note 14)	$V_{\text{IN}} = -2.3\text{V}$ , $V_{\text{OUT}} = 0\text{V}$ $V_{\text{IN}} = -12\text{V}$ , $V_{\text{OUT}} = 0\text{V}$ $V_{\text{IN}} = -20\text{V}$ , $V_{\text{OUT}} = 0\text{V}$	● ●	550 40	750 425 85 160	mA mA mA
Programmable Current Limit	Programming Scale Factor: $-20\text{V} < V_{\text{IN}} < -2.3\text{V}$ (Note 13) $V_{\text{IN}} = -2.3\text{V}$ , $V_{\text{OUT}} = 0\text{V}$ , $R_{\text{ILIM}} = 7.5\text{k}\Omega$ $V_{\text{IN}} = -2.3\text{V}$ , $V_{\text{OUT}} = 0\text{V}$ , $R_{\text{ILIM}} = 37.5\text{k}\Omega$	● ●	450 90	3.75 500 105 560 120	A • k $\Omega$ mA mA
PGFB Trip Point	PGFB Trip Point Rising	●	288	300 312	mV
PGFB Hysteresis	PGFB Trip Point Hysteresis			7	mV
PGFB Pin Current	$V_{\text{IN}} = -2.3\text{V}$ , $V_{\text{PGFB}} = -300\text{mV}$			30 100	nA
PG Output Low Voltage	$I_{\text{PG}} = 100\mu\text{A}$	●		17 50	mV
PG Leakage Current	$V_{\text{PG}} = 20\text{V}$	●		1	$\mu\text{A}$
VI OC Amplifier Gain	$-20\text{V} \leq V_{\text{IN}} \leq -2.3\text{V}$ , $V_{\text{OUT}} \leq -1.5\text{V}$			1	V/V
VI OC Maximum Output Voltage Swing	$V_{\text{IN}} - V_{\text{OUT}} = -2\text{V}$ , $V_{\text{OUT}} \leq -1.5\text{V}$	●		-1.35 -1.2	V
VI OC Sink Current	$V_{\text{IN}} - V_{\text{OUT}} = -2\text{V}$ , $V_{\text{VI OC}} = -1\text{V}$	●	100		$\mu\text{A}$
VI OC Voltage for Low Output Voltages (Note 15)	$V_{\text{IN}} = -2.3\text{V}$ , $V_{\text{OUT}} > -1.5\text{V}$			-0.8	V
Minimum Load Current (Note 16)	$V_{\text{OUT}} > -1.5\text{V}$	●		10	$\mu\text{A}$
Thermal Shutdown	$T_{\text{J}}$ Rising Hysteresis			167 8	$^\circ\text{C}$ $^\circ\text{C}$
Start-Up Time	$R_{\text{SET}} = 49.9\text{k}\Omega$ , $V_{\text{OUT(NOM)}} = -5\text{V}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{SET}} = 0.47\mu\text{F}$ , $V_{\text{IN}} = -6\text{V}$ , $V_{\text{PGFB}} = -6\text{V}$ $R_{\text{SET}} = 49.9\text{k}\Omega$ , $V_{\text{OUT(NOM)}} = -5\text{V}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{SET}} = 4.7\mu\text{F}$ , $V_{\text{IN}} = -6\text{V}$ , $V_{\text{PGFB}} = -6\text{V}$ $R_{\text{SET}} = 49.9\text{k}\Omega$ , $V_{\text{OUT(NOM)}} = -5\text{V}$ , $I_{\text{LOAD}} = 500\text{mA}$ , $C_{\text{SET}} = 4.7\mu\text{F}$ , $V_{\text{IN}} = -6\text{V}$ , $R_{\text{PG1}} = 50\text{k}\Omega$ , $R_{\text{PG2}} = 700\text{k}\Omega$ (with Fast Start-Up to 90% of $V_{\text{OUT}}$ )			55 550 10	ms ms ms
Thermal Regulation	10ms Pulse			-0.01	%/W

1.35