

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A = 25^\circ\text{C}$, $I_{IN} + I_{VZ} = 4\text{mA}$ with V_{IN} Connected to V_Z . (Note 2)

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS	
Drain Monitor								
$V_{D,PG(TH)}$	DRAIN Input Threshold for Power Good	DRAIN Falling	●	2	2.05	2.1	V	
$\Delta V_{D,PG(HYST)}$	DRAIN Input Hysteresis for Power Good				20		mV	
$V_{D,FET(TH)}$	DRAIN Input Threshold for FET Bad Timer and TMR Pull-Up Current (Table 11)	DRAIN Rising, $V_{DTH} = 00b - 11b$	●			± 10	%	
$\Delta V_{D,FET(HYST)}$	DRAIN Input Hysteresis with $V_{D,FET(TH)}$				10		mV	
I_{DRAIN}	DRAIN Input Current	$V_{DRAIN} = 200\text{mV}$	●		0	± 0.1	μA	
		$V_{DRAIN} = 2\text{V}$	●		0	± 1	μA	
Current Limit								
V_{ILIM}	Current Limit Voltage DAC Zero-Scale	$ILIM = 0000b$, 0 Grade (Note 6)	●	14.7	15	15.3	mV	
		$ILIM = 0000b$, L, H Grade	●	14.5	15	15.5	mV	
	Current Limit Voltage DAC Full-Scale	$ILIM = 1111b$, C Grade (Note 6)	●	29.4	30	30.6	mV	
		$ILIM = 1111b$, L, H Grade	●	29	30	31	mV	
	Current Limit Voltage DAC INL		●		0	± 50	μV	
$\alpha_{STARTUP}$	Current Limit Foldback Factor at Startup	RTNS = 1.8V, DRNS = 0, 1.8V	FB = 01b	●	45	50	55	%
			FB = 10b	●	16	20	24	%
			FB = 11b	●	7	10	13	%
α_{NORMAL}	Current Limit Foldback Factor in Normal Operation	RTNS = DRNS = 1.8V	FB = 01b	●	45	50	55	%
			FB = 10b	●	15	20	26	%
			FB = 11b	●	6	10	16	%
$V_{ILIM(FAST)}$	Fast Pull-Down Sense Threshold Voltage	$ILIM = 0000b$	●	20	30	40	mV	
		$ILIM = 1111b$	●	47	60	70	mV	
I_{SENSE^+}	SENSE+ Input Current	SENSE+ = 33mV	●		0	± 1	μA	
I_{SENSE^-}	SENSE- Input Current	SENSE- = SENSE+ = 0	●	-8	-17	-35	μA	
TMR Pin Function - Circuit Breaker/SOA Timer								
$I_{TMR(UP)}$	TMR Pull-Up Current in Current Limit	Onset	DRNS = 0V, TMR = 1V	●	-1.5	-2	-2.5	μA
		Startup in Foldback	dV/dt Control Disabled, DRNS = 1.8V, TMR = 1V	FB = 00b	●	-192	-202	-212
	FB = 01b			●	-96	-102	-108	μA
	FB = 10b			●	-39	-42	-45	μA
	FB = 11b			●	-20	-22	-24	μA
	Startup in dV/dt	dV/dt Control Enabled, DRNS = 1.8V, TMR = 1V	●	-192	-202	-212	μA	
Hard Short in Normal Operation	DRNS = 1.8V, TMR = 1V	●	-192	-202	-212	μA		
$I_{TMR(DN)}$	TMR Pull-Down Current	DRAIN < $V_{D,FET(TH)}$ or Start into dV/dt Control, THERM_TMR = 0, TMR = 1V	●	1.6	2	2.3	μA	
$I_{TMR(RST)}$	TMR Reset Current	EN# = High, TMR = 1V	●	3	5	8	mA	
$V_{TMRH(TH)}$	TMR Fault Threshold	TMR Rising	●	2.028	2.048	2.068	V	
$V_{TMRH(HYST)}$	TMR Fault Hysteresis				20		mV	
$V_{TMRL(TH)}$	TMR Low Status Threshold	TMR Falling	●	80	100	120	mV	
$V_{TMRL(HYST)}$	TMR Low Hysteresis				20		mV	

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SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS		
V_{FS}	Full-Scale Voltage	Single-Ended Inputs		2.048		V		
		Differential Inputs		32.768		mV		
LSB	LSB Step Voltage	RTNS, ADIN1-4, ADIO1-4, DRNS, DRAIN	ADC = 000b		8		mV	
			ADC = 010b		2		mV	
			ADC = 100b		0.5		mV	
			ADC = 110b		0.125		mV	
			ADC = xx1b		0.03125		mV	
		SENSE ⁺ – SENSE ⁻	ADC = 000b			128		μV
			ADC = 010b			32		μV
			ADC = 100b			8		μV
			ADC = 110b			2		μV
			ADC = xx1b			0.5		μV
		ADIN2 – ADIN1, ADIN4 – ADIN3, ADIO2 – ADIO1, ADIO4 – ADIO3	ADC = 000b			256		μV
			ADC = 010b			64		μV
			ADC = 100b			16		μV
			ADC = 110b			4		μV
ADC = xx1b				1		μV		
V_{OS}	Offset Error (Note 7)	Single-Ended Inputs	●	0	± 0.125	% V_{FS}		
		Differential Inputs	●	0	± 0.25	% V_{FS}		
INL	Integral Nonlinearity (Note 7)	ADIN1-4, ADIO1-4, RTNS, DRNS, DRAIN, SENSE ⁺ – SENSE ⁻	●	± 0.01	± 0.06	% V_{FS}		
		ADIN2 – ADIN1, ADIN4 – ADIN3, ADIO2 – ADIO1, ADIO4 – ADIO3	●	± 0.02	± 0.12	% V_{FS}		
FSE	Full-Scale Error (Note 7)	Single-Ended Inputs, C-Grade (Note 6)	●		± 0.5	%		
		Single-Ended Inputs, L, H-Grade	●		± 0.7	%		
		Differential Inputs, C-Grade (Note 6)	●		± 1	%		
		Differential Inputs, L, H-Grade	●		± 1.2	%		
		Power, C-Grade (Note 6)	●		± 1	%		
		Power, L, H-Grade	●		± 1.2	± 1.5 %		
f_{CONV}	Refresh Rate in Continuous Mode (Table 12)		●		± 5	%		
			●		± 5	%		
$R_{ADIN(SE)}$	ADIN1-4, ADIO1-4 Input Impedance, Single-Ended	$V = 3\text{V}$	●	3		$\text{M}\Omega$		
$I_{ADIN(SE)}$	ADIN1-4, ADIO1-4 Input Current, Single-Ended	$V = 3\text{V}$	●	0	± 1	μA		
$I_{ADIN(DIFF)}$	ADIN1, ADIN3, ADIO1, ADIO3 Input Current, Differential Mode	ADIN1, ADIN3, ADIO1, ADIO3 = 0, ADIN2, ADIN4, ADIO2, ADIO4 = 0	●	-3	-7	μA		
	ADIN2, ADIN4, ADIO2, ADIO4 Input Current, Differential Mode	ADIN2, ADIN4, ADIO2, ADIO4 = 33mV	●	0	± 1	μA		