

DATASHEET 4062
PART NUMBER: UC1625L REV. ENG.

BRUSHLESS DC MOTOR CONTROLLER

DESCRIPTION: INTEGRATED CIRCUIT ELECTRICALLY EQUIVALENT TO Unitrode UC1625L

PACKAGE: HERMETIC CERAMIC 28 PIN LEADLESS CHIP CARRIER

ABSOLUTE MAXIMUM RATINGS

Vcc Supply Voltage +20V
 Pwr Vcc Supply Voltage +20V
 PWM In -0.3 to 6V
 E/A IN(+), E/A IN(-) -0.3 to 12V
 ISENSE1, ISENSE2 -1.3 to 6V
 OV-Coast, Dir, Speed-In, SSTART, Quad Sel -0.3 to 8V
 H1, H2, H3 -0.3 to 12V
 PU Output Voltage -0.3 to 50V
 PU Output Current +200 mA continuous
 PD Output Current ±200 mA continuous
 E/A Output Current ±10 mA
 ISENSE Output Current -10 mA
 Tach Out Output Current ±10 mA
 VREF Output Current -50 mA continuous
 Operating Temperature Range -55°C to 110°C

PINOUT

1	E/A In (+)	15	E/A In (-)
2	Vref	16	E/A Out
3	Isense	17	PWM In
4	Isense 1	18	RC-Osc
5	Isense 2	19	Sstart
6	Dir	20	OV-Coast
7	Speed-In	21	Quad Sel
8	H1	22	RC-Brake
9	H2	23	Tach-Out
10	H3	24	Vcc
11	PWR Vcc	25	PUA
12	PDC	26	PUB

ELECTRICAL CHARACTERISTICS: Unless otherwise stated, these specifications apply for: TA = 25°C; Pwr Vcc = Vcc = 12V; ROSC = 20k to VREF; COSC = 2nF; RTACH = 33k; CTACH = 10nF; and all outputs unloaded. TA = TJ.

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Overall					
Supply current	Over Operating Range		14.5	30.0	mA
Vcc Turn-On Threshold	Over Operating Range	8.65	8.95	9.45	V
Vcc Turn-Off Threshold	Over Operating Range	7.75	8.05	8.55	V
Overvoltage/Coast					
OV-Coast Inhibit Threshold	Over Operating Range	1.65	1.75	1.85	V
OV-Coast Restart Threshold		1.55	1.65	1.75	V
OV-Coast Hysteresis		0.05	0.10	0.15	V
OV-Coast Input Current		-10	-1	0	μA
Logic Inputs					
H1, H2, H3 Low Threshold	Over Operating Range	0.8	1.0	1.2	V
H1, H2, H3 High Threshold	Over Operating Range	1.6	1.9	2.0	V
H1, H2, H3 Input Current	Over Operating Range, to 0V	-400	-250	-120	μA
Quad Sel, Dir Thresholds	Over Operating Range	0.8	1.4	2.0	V
Quad Sel Hysteresis			70		mV
Dir Hysteresis			0.6		V
Quad Sel Input Current		30	50	150	μA
Dir Input Current		30	-1	30	μA
PWM Amp/Comparator					
E/A In(+), E/A In(-) Input Current	To 2.5V	-5.0	-0.1	5.0	μA
PWM In Input Current	To 2.5V	0	3	30	μA
Error Amp Input Offset	0V < VCOMMON-MODE < 3V	-10		10	mV
Error Amp Voltage Gain		70	90		dB
E/A Out Range		0.25		3.50	V
SSTART Pull-up Current	To 0V	-16	-10	-5	μA

SSTART Discharge Current	To 2.5V	0.1	0.4	3.0	mA
SSTART Restart Threshold		0.1	0.2	0.3	V
Current Amp					
Gain	ISENSE1 = .3V, ISENSE2 = .5V to .7V	1.75	1.95	2.15	V/V

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Level Shift	ISENSE1 = .3V, ISENSE2 = .3V	2.4	2.5	2.65	V
Peak Current Threshold	ISENSE1 = 0V, Force ISENSE2	0.14	0.20	0.26	V
Over Current Threshold	ISENSE1 = 0V, Force ISENSE2	0.26	0.30	0.36	V
ISENSE1, ISENSE2 Input Current	To 0V		320	0	μA
ISENSE1, ISENSE2 Offset Current	To 0V		±2	±12	μA
Range ISENSE1, ISENSE2		-1		2	V
Tachometer/Brake					
Tach-Out High Level	Over Operating Range, 10k to 2.5V	4.7	5	5.3	V
Tach-Out Low Level	Over Operating Range, 10k to 2.5V			0.2	V
On Time		170	220	280	μs
On Time Change With Temp	Over Operating Range		0.1		%
RC-Brake Input Current	To 0V	-4.0	-1.9		mA
Threshold to Brake, RC-Brake	Over Operating Range	0.8	1.0		V
Brake Hysteresis, RC-Brake			0.09		V
Speed-In Threshold	Over Operating Range	220	257		mV
Speed-In Input Current		-30	-5		μA
Low-Side Drivers					
Voh, -1mA, Down From Vcc	Over Operating Range		1.60	2.1	V
V Voh, -50mA, Down From Vcc	Over Operating Range		1.75	2.2	V
Vol, 1mA	Over Operating Range		0.05	0.4	V
Vol, 50mA	Over Operating Range		0.36	0.8	V
Rise/Fall Time	10% to 90% Slew Time, into 1nF		50		ns
High-Side Drivers					
Vol, 1mA	Over Operating Range		0.1	0.4	V
Vol, 50mA	Over Operating Range		1.0	1.8	V
Leakage Current	Output Voltage = 50V			25	μA
Fall Time	10% to 90% Slew Time, 50mA Load		50		ns
Oscillator					
Frequency		40	50	60	kHz
Frequency	Over Operating Range	35		65	kHz
Reference					
Output Voltage		4.9	5.0	5.1	V
Output Voltage	Over Operating Range	4.7	5.0	5.3	V
Load Regulation	0mA to -20mA Load	-40	-5		mV
Line Regulation	10V to 18V Vcc	-10	-1	10	mV
Short Circuit Current	Over Operating Range	50	100	150	mA
Miscellaneous					
Output Turn-On Delay			1		μs
Output Turn-Off Delay			1		μs

MECHANICAL DRAWING – CERAMIC LCC28 (inches)

