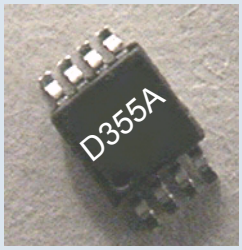
DUREL CORPORATION
AN AFFILIATE OF 3M AND ROGERS CORPORATION

Data Sheet D355A Electroluminescent Lamp Driver IC



MSOP-8

General Description:

The Durel® D355A Lamp Driver is part of a family of switch-mode IC drivers intended to reduce EL system cost, improve performance and to simplify the design, specification, and manufacture of EL backlighting systems. This driver is intended to provide adequate power for most watches, data banks and cellular phone backlighting applications.

Features

- High Efficiency
- Small Package Size
- Low Voltage Operation
- Adjustable Output Frequency
- High AC Voltage Output
- Drives up to 20in^2 EL Lamps

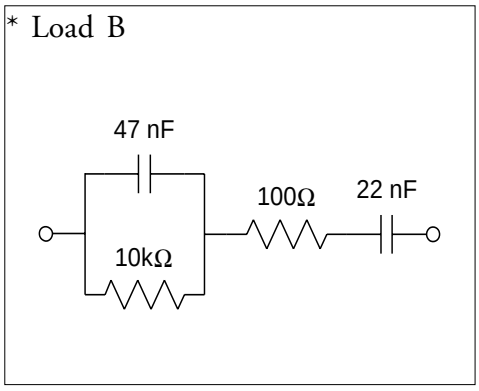
Applications

- Watches
- Cellular / PHS Phones
- Pagers
- Data Banks
- LCD Backlighting

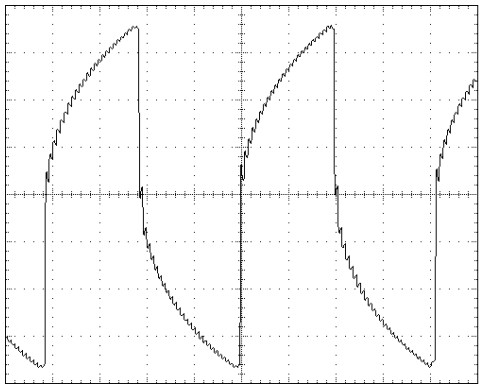
Lamp Driver Specifications:

(V+=3.0V, CLF=5.0nF, L=1.8mH/3Ω, E′=GND, Load B*, T_a=25°C, unless otherwise specified)

Parameter	*Symbol*	*Minimum*	*Typical*	*Maximum*	*Unit*	*Conditions*
Supply Current	I		23	30	mA	
Standby Current			10	1000	nA	E′ = 3.0V
Enable Current			-10	-35	µA	E′ = GND
Enable Voltage						
On	E′			0.2	V	
Off		2.6			V	
Lamp Frequency	LF	230	310	390	Hz	
Output Voltage	VOUT	110	135		Vpp	



Typical Waveform



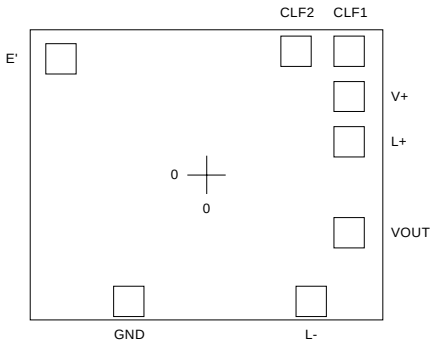
Absolute Maximum Ratings:

Parameter	*Symbol*	*Minimum*	*Maximum*	*Unit*	*Comments*
Supply voltage				V	
Operating range	V+	1.0	7.0		
Withstand range		-0.5	10.0		
Output Voltage	Vout		220	Vpp	Peak to peak voltage
Enable voltage	E′	-0.5	(V+) +0.5	V	
Operating temperature	T_a	-40	85	°C	
Storage temperature	T_s	-65	150	°C	
Solder Temperature		245	300	°C	5 second soak

Note: The absolute maximum ratings are stress ratings only. Functional operation of the device at these ratings or any other conditions above those indicated in the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect life of lamp or driver.

Physical Data:

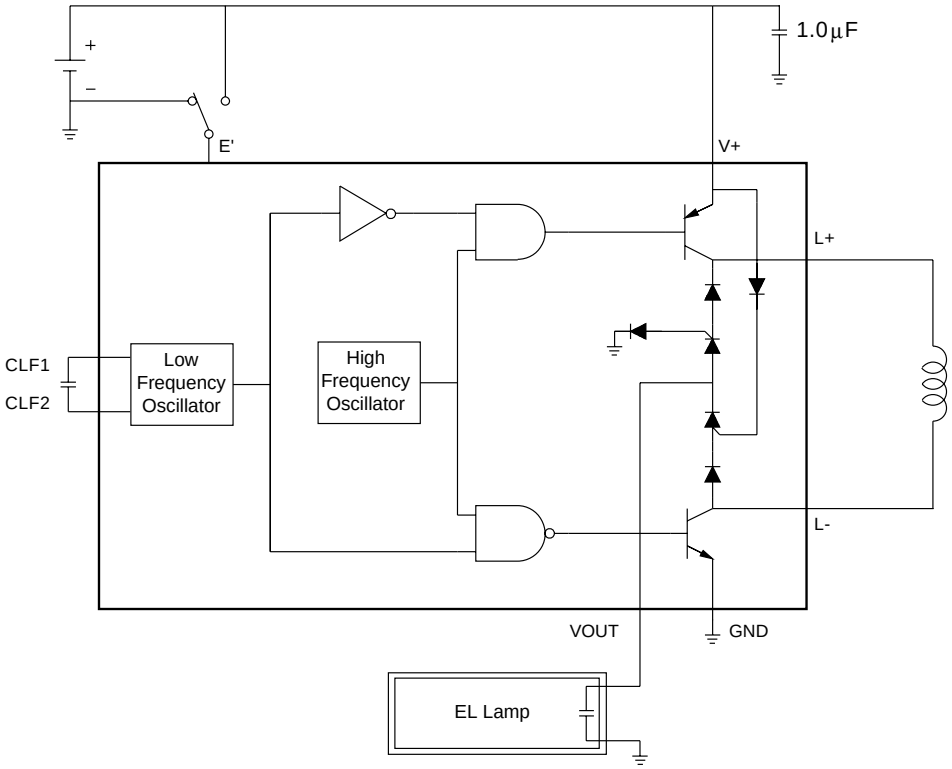
Pad Center Locations			*MSOP*	*Function*
Name	*Xμm*	*Yμm*	*Pin-outs*	
GND	-292	-497	1	Power Ground
L-	505	-497	2	Negative power connection to inductor
VOUT	647	-275	3	Output voltage to EL lamp
L+	647	8	4	Positive power connection to inductor
V+	647	178	5	System power input
CLF1	655	339	6	Capacitor input to low frequency oscillator
CLF2	461	342	7	Capacitor input to low frequency oscillator
E′	-569	327	8	System enable (Power Down Control)



Notes:

1. Dimensions are in microns, unless otherwise noted.
2. Bond pads are typically 100 x 100.
3. Die thickness is 330 +/- 25 (13 +/- 1 mil).
4. Pad center coordinates are relative to origin on center of die.
5. Die size is 1170 x 1560.
6. Base of die should be grounded.

Block Diagram of the Inverter Circuitry:

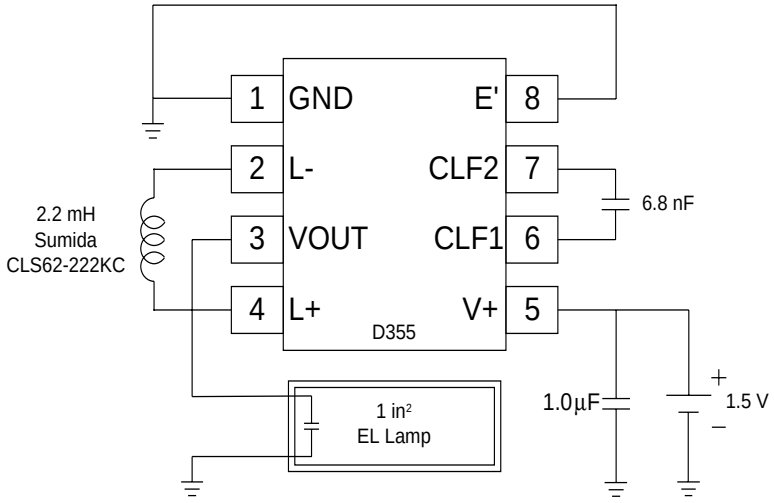


Typical D355A EL Driver Configuration:

1.5 V Analog Watch

Typical Output

Brightness = 2.6 fL (8.9 Cd/m^2)
Lamp Frequency = 220 Hz
Supply Current = 11mA
Vpp = 160
Load = 1in^2 Durel 3 Blue-green EL

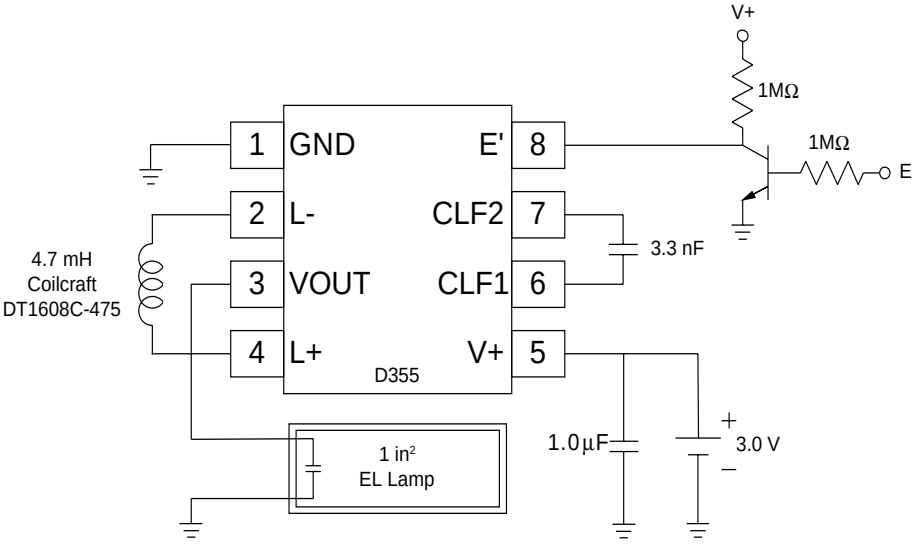


3.0 V Cellular LCD/Digital Watch

Typical Output

Brightness = 7.5 fL (25.6 Cd/m^2)
Lamp Frequency = 475 Hz
Supply Current = 13mA
Vpp = 200
Load = 1in^2 Durel 3 Blue-green EL

A voltage greater than 0.8 at E will enable the circuit.
A voltage less than 0.3 will disable the circuit.

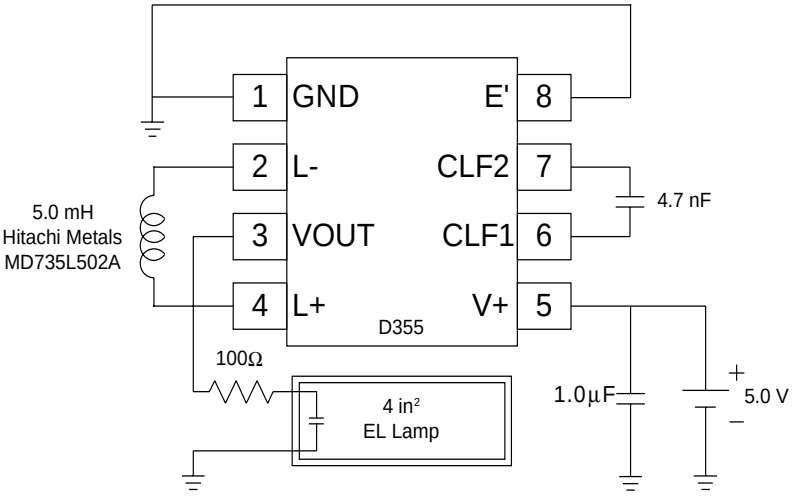


5.0 V PDA

Typical Output

Brightness = 6.1fL (20.8 Cd/m^2)
Lamp Frequency = 360 Hz
Supply Current = 18mA
Vpp = 190
Load = 4in^2 Durel 3 Blue-green EL

A 100Ω resistor in series with the lamp may be necessary to reduce electrical noise.

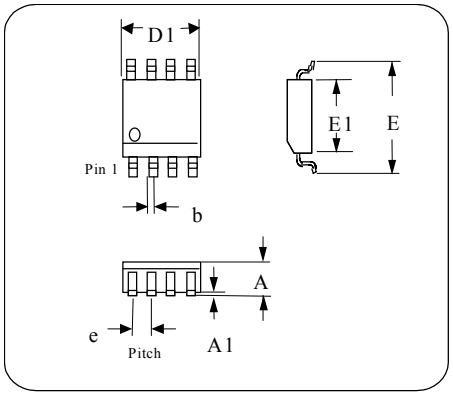


Ordering Information:

The D355A inverter is available as bare die in probed wafer form or in die trays, and in a standard MSOP-8 plastic package per tube or per tape and reel. A Durel D355A Designer's Kit is available for evaluating and identifying the optimum component values for your application.

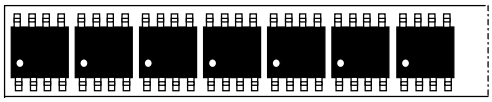
	MSOP-8					
	Min.		Typical		Max.	
Description	mm.	in.	mm.	in.	mm.	in.
A	0.94	0.037	1.02	0.040	1.09	0.043
A1	0.05	0.002	0.10	0.004	0.15	0.006
b	0.20	0.008	0.33	0.013	0.46	0.018
D1	2.84	0.112	3.00	0.118	3.15	0.124
e	0.43	0.017	0.65	0.026	0.83	0.033
E	4.70	0.185	4.90	0.193	5.11	0.201
E1	2.84	0.112	3.00	0.118	3.25	0.128

MSOPs are marked with direct logo part number (355A) and wafer lot number. Marking orientation is bottom closest to pin 1 side.



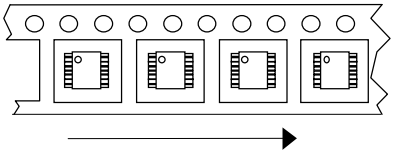
MSOPs in Tubes: 1DDD355AA-M01

Tube-length = 320 mm (12.6 in). 100 units per tube.

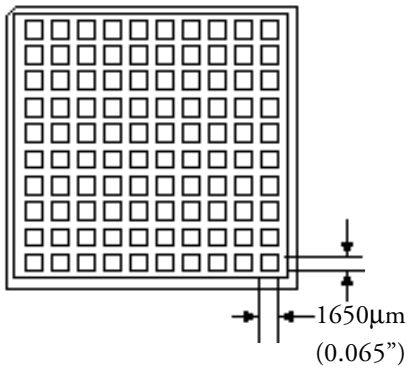


MSOPs in Tape & Reel: 1DDD355AA-M02

Embossed tape on 360 mm diameter reel per EIA-481-2. 2500 units per reel. Quantity marked on reel label.



Die in Trays: 1DDD355AA-B02



- Die tray size: 2 inch square
- Total number of pockets: 100
- Pocket depth: 610µm (0.024")

ISO 9001 Certified

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