

# LZC3103A

## High-Performance Resonant Circuit Controller



### General Description

LZC3103A is a high performance, resonant mode double-ended controller specific for DCDC application using LLC half-bridge resonant converter. It provides 50% complementary duty cycle: the high-side switch and the low-side switch are driven on/off 180° out-of-phase for exactly the same time. The controller modulates the operation frequency to perform output voltage regulation. A novel method of MOSFETS zero voltage detection and adaptive deadtime inserted between the turn-off of either MOSFET and the turn-on of the other one, which can guarantee the soft-switching, low EMI emissions and high efficiency. LZC3103A provides process of soft-start, which make the switching frequency starts from a preset maximum value and then decays to the steady-state value determined by the control loop, to prevent hard-switching

during start up. Programmable burst-mode control with no or very light load, which can minimizing magnetizing current losses and frequency-related losses, to realized energy saving specifications. The special function of current foldback with temperature is to keep the system working in high temperature environment. This highly integrated controller implements frequency modulation control with SOP16 package, it simplifies the system design. The internal oscillator supports the switching frequencies from 40kHz to 400kHz. The LZC3103A provides complete system protection functions including capacitive-mode detection, half-bridge line under voltage protection, load over current protection (OCP), VCC under voltage lock-out(UVLO), VCC over voltage protection, and over temperature protection.

### Main Features

- High accuracy oscillator
- Adaptive dead-time for best efficiency
- Programmable soft-start
- Programmable minimum and maximum work frequency
- Primary-side constant current mode
- Capacitive-mode detection
- Burst-mode for light load
- Programmable current foldback function
- Protection functions:
  - Input under voltage protection
  - VDD over voltage protection
  - Output over voltage protection
  - Output short circuit protection
  - Capacitance mode protection
  - High-side gate driver under voltage protection
  - Over temperature protection

### Application

- ◆ 100-W to 1-kW Power Supplies
- ◆ LCD supplies
- ◆ LED lighting
- ◆ High power battery charger.

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### Typical Application

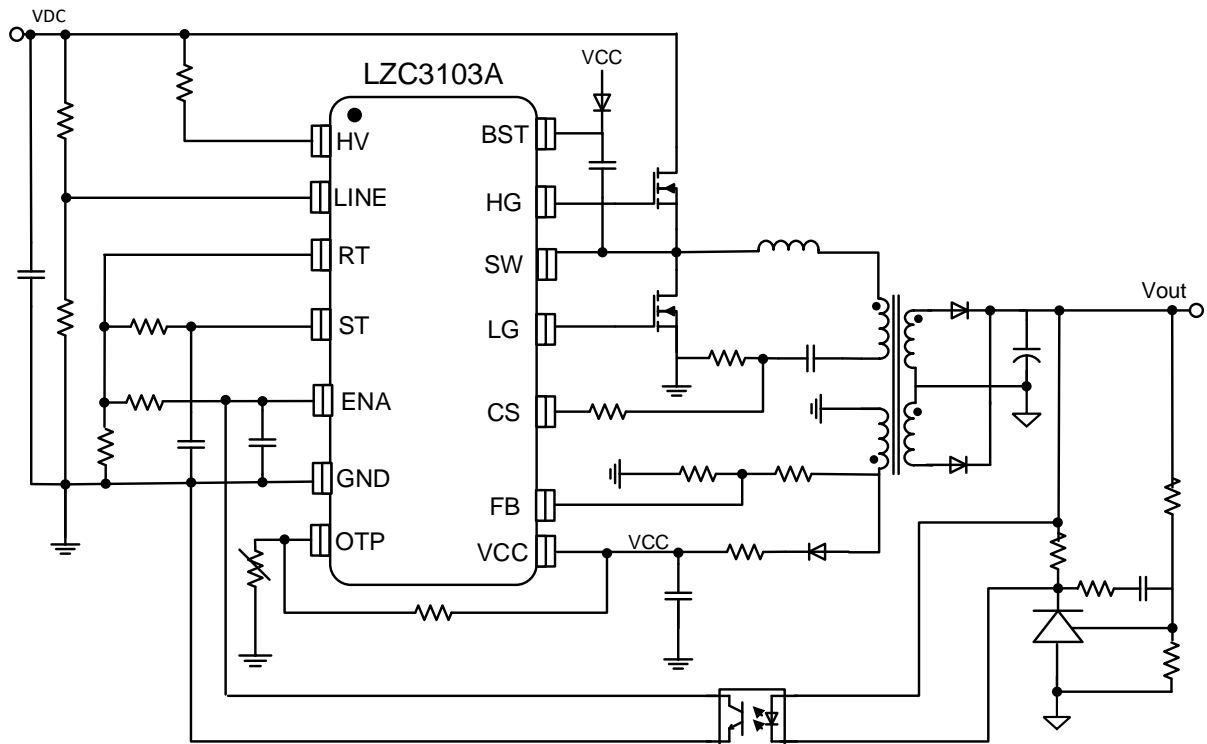
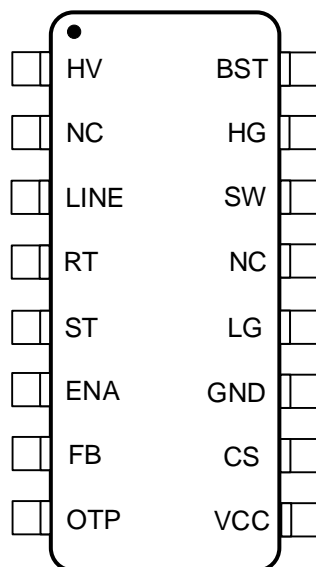


Figure 1 Typical application schematic

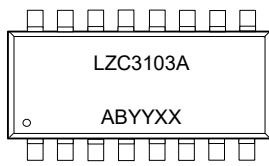
### Pin Diagram (SOP16)



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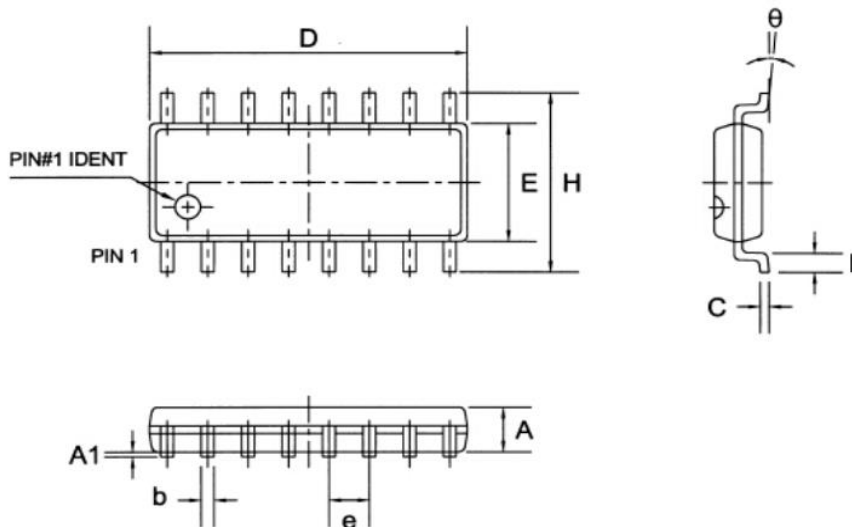
## High-Performance Resonant Circuit Controller

**Product Name: LZC3103A for SOP16**



LZC3103A  
ABYYXX: AB product information, YYXX is production time

### Package Information



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min	Nom	Max	Min	Nom	Max
A	1.30	1.50	1.70	0.051	0.059	0.067
A1	0.06	0.16	0.26	0.002	0.006	0.010
b	0.30	0.40	0.55	0.012	0.016	0.022
C	0.15	0.25	0.35	0.006	0.010	0.014
D	9.70	10.00	10.30	0.382	0.394	0.406
E	3.75	3.95	4.15	0.148	0.156	0.163
e	—	1.27	—	—	0.050	—
H	5.70	6.00	6.30	0.224	0.236	0.248
L	0.45	0.65	0.85	0.018	0.026	0.033
$\theta$	0°	—	8°	0°	—	8°