



## RE46C117

DC to DC Converter and Piezoelectric Horn Driver  
Product Specification

### General Description

The RE46C117 is intended for use in 3V or 4.5V battery or battery-backed applications. The circuit features a DC-to-DC up-converter and driver circuit suitable for driving a piezoelectric horn

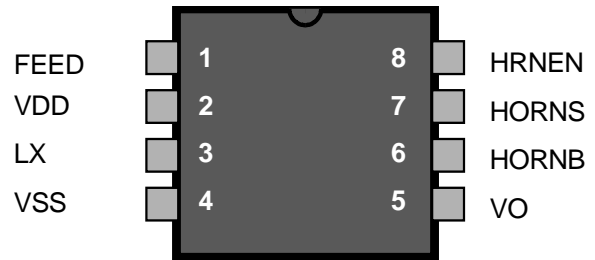
### Applications

Smoke detectors  
CO Detectors  
Personal Security Products  
Electronic Toys

### Features

- Low Quiescent Current
- 10V Up Converter
- Low Horn Driver Ron
- Available in Standard Packaging or RoHS Compliant Pb Free Packaging

### Pin Configuration



### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNITS
Supply Voltage	$V_{DD}$	5	V
	$V_{OUT}$	12	V
Input Voltage Range Except FEED	$V_{in}$	-0.3 to $V_{dd} + 0.3$	V
FEED Input Voltage Range	$V_{infd}$	-10 to +22	V
Input Current except FEED	$I_{in}$	10	mA
Operating Temperature	$T_A$	0 to 50	°C
Storage Temperature	$T_{STG}$	-55 to 125	°C
Continuous Operating Current (HornS, HornB, VO)	$I_O$	40	mA

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only and operation at these conditions for extended periods may affect device reliability.

This product utilizes CMOS technology with static protection; however proper ESD prevention procedures should be used when handling this product. Damage can occur when exposed to extremely high static electrical charge

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## Electrical Characteristics

Limits apply at  $V_{dd}=3V$ ,  $V_{ss}=0V$ ,  $C_{vo}=10\mu F$ ,  $T_A=0^{\circ}C$  to  $50^{\circ}C$ , unless otherwise noted.  
Typical values are at  $T_A=27^{\circ}C$ .

Parameter	Symbol	Test Conditions	Limits			Units
			Min	Typ	Max	
Supply Voltage	Vdd	Operating	2.0		5.0	V
Standby Supply Current	Iddstby	HRNEN low; No loads; DC-DC Running		20		$\mu A$
Quiescent Supply Current	Iddq	HRNEN low; No loads; $V_O=5V$ ; $V_{Ix}=0.5V$		7		$\mu A$
Quiescent Ivo	Ivoq	Same conditions as above for Iddq		7		$\mu A$
Input Leakage	Iin	HRNEN Input, $V_{in}=V_{DD}$ or $V_{SS}$	-100		100	nA
	Iihf	FEED=+22V; $V_O=10V$		20	50	$\mu A$
	Iilf	FEED=-10V; $V_O=10V$	-50	-15		$\mu A$
Input Voltage Low	Vil	HRNEN Input			1	V
Input Voltage High	Vih	HRNEN Input	2.3			V
Output Low Voltage	Vol1	HORNB or HORNS; $I_{out}=16mA$ ; $V_{dd}=3V$		.3	.5	V
Output High Voltage	Voh1	HORNB or HORNS; $V_O=10V$ ; $I_{out}=-16mA$ ; $V_{dd}=HRNEN=3V$	9.5	9.7		V
VO Output Voltage	Vvo1	$V_{dd}=3V$ ; $HRNEN=3V$ ; $I_{out}=10mA$		10		V
	Vvo2	$V_{dd}=3V$ ; $HRNEN=0V$ ; $I_{out}=10mA$		4		V
VO Efficiency	Voeff1	$I_{load}=10mA$ , $V_{dd}=3V$ ; $HRNEN=0V$		85		%
	Voeff2	$I_{load}=100\mu A$ ; $V_{dd}=3V$ ; $HRNEN=0V$		75		%
Brownout Threshold	Vobvt	Falling edge of VO		3.6		V

### Notes:

1/ The brown-out threshold voltage is the VO voltage at which the horn will be disabled.

2/ The limits shown are 100% tested at 25C only. Test limits are guard-banded based on temperature characterization to guarantee compliance at temperature extremes.

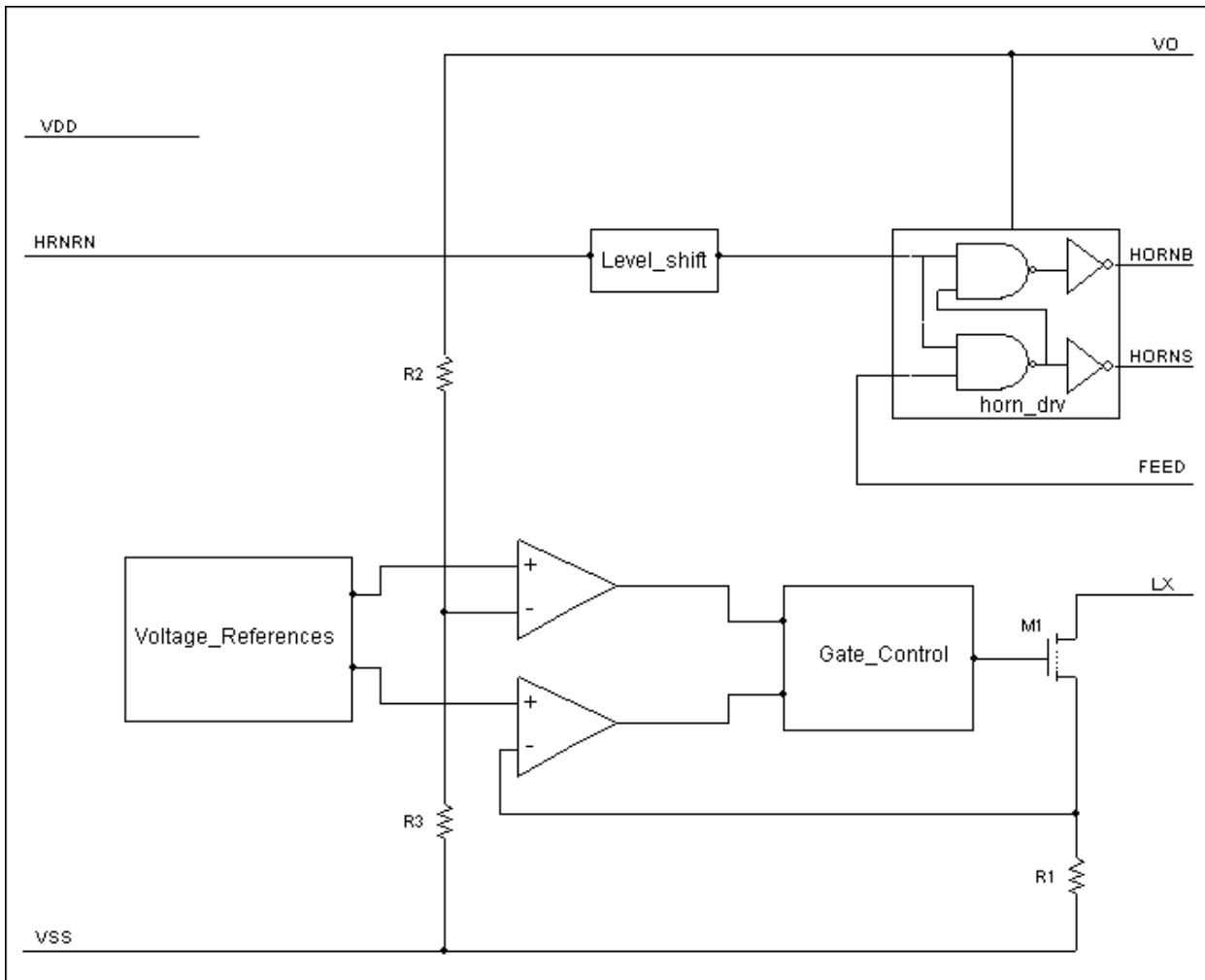
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## Functional Block Diagram



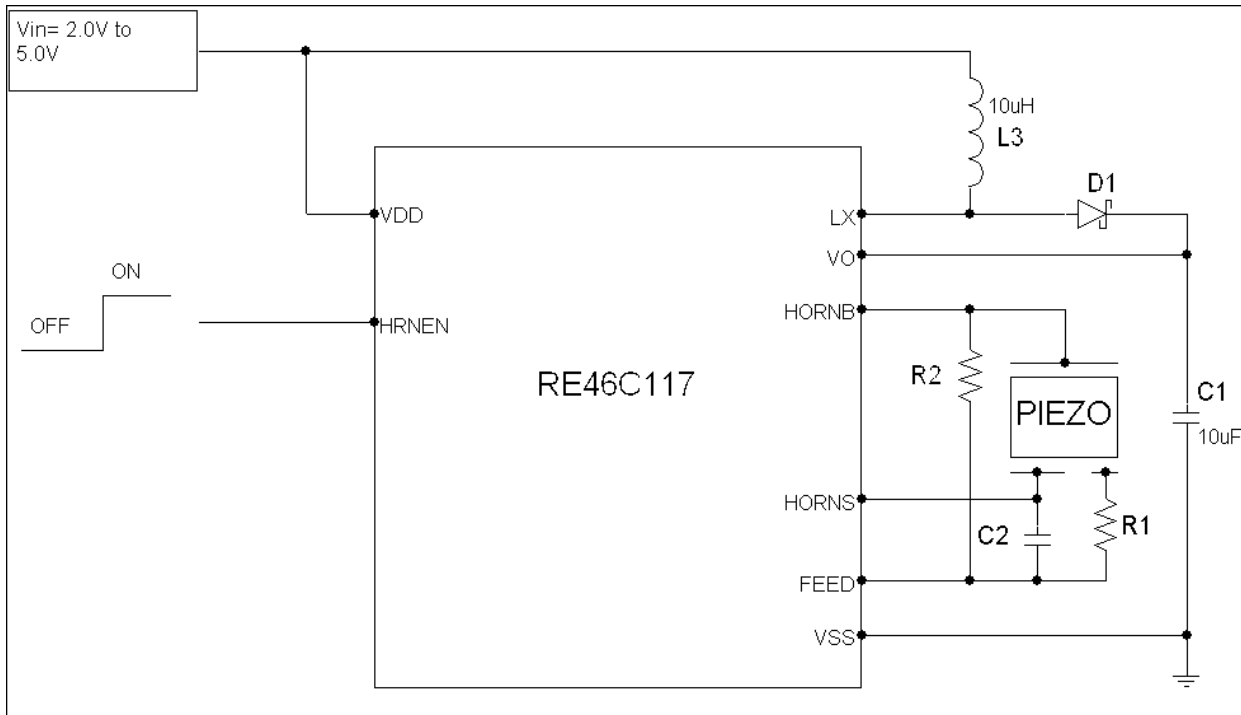
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## Typical Application Circuit



### Notes:

1/ Schottky diode D1 must have maximum peak current rating of at least 1.5A and for best results should have forward voltage spec of less than 0.5V at 1 Amp.

2/ Inductor L3 must have maximum peak current rating of at least 1.5A and for best results should have DC resistance of less than 0.5 ohm.

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