

LT3573

Isolated Monolithic Flyback Converter

DESCRIPTION

Demonstration circuit 1228A is an isolated flyback converter featuring the LT[®]3573. This demo circuit is designed for a 5.0V output from a 10V to 30V input. The maximum output current is 1A when the input voltage is higher than 20V. No third winding or opto-isolator is required for regulation. The part senses the isolated output voltage directly from the primary-side flyback waveform.

The LT3573 operates with input supply voltages from 3V to 40V, and can deliver an output power up to 7W with no external power devices. The LT3573 utilizes boundary mode operation to provide a small magnetic solution

with improved load regulation. The LT3573 can be used in industrial, automotive and medical applications where an isolated output is required.

The LT3573 data sheet gives a complete description of the part, operation and application information. The data sheet must be read in conjunction with this quick start guide for demonstration circuit 1228A.

Design files for this circuit board are available at <http://www.linear.com/demo/DC1228A>

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PERFORMANCE SUMMARY Specifications are at T_A = 25°C

PARAMETER	CONDITION	MIN	TYP	MAX	UNITS
Input Voltage Range		10		30	V
Output Voltage V _{OUT}	V _{IN} = 10V to 30V	4.75	5	5.25	V
Maximum Output Current I _{OUT}	V _{IN} = 10V to 20V	0.7			A
	V _{IN} = 20V to 30V	1.0			A
Switching Frequency	V _{IN} = 12V, I _{OUT} = 0.7A		169		kHz
	V _{IN} = 24V, I _{OUT} = 1A		238		kHz
Voltage Ripple V _{OUT}	V _{IN} = 24V, I _{OUT} = 1A		100		mV
Efficiency	V _{IN} = 24V, I _{OUT} = 1A		84		%

QUICK START PROCEDURE

Demonstration circuit 1228A is easy to set up to evaluate the performance of the LT3573. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

NOTE: When measuring the input or output voltage ripple, care must be taken to avoid a long ground lead on the oscilloscope probe. See Figure 2 for proper scope probe technique.

1. With power off, connect the input power supply to V_{IN} and GND.

2. Turn on the power at the input.

NOTE: Make sure that the input voltage does not exceed 30V.

3. Check for the proper output voltages.

NOTE: If there is no output, temporarily disconnect the load to make sure that the load current is not set too high.

4. Once the proper output voltage is established, adjust the load current within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

QUICK START PROCEDURE

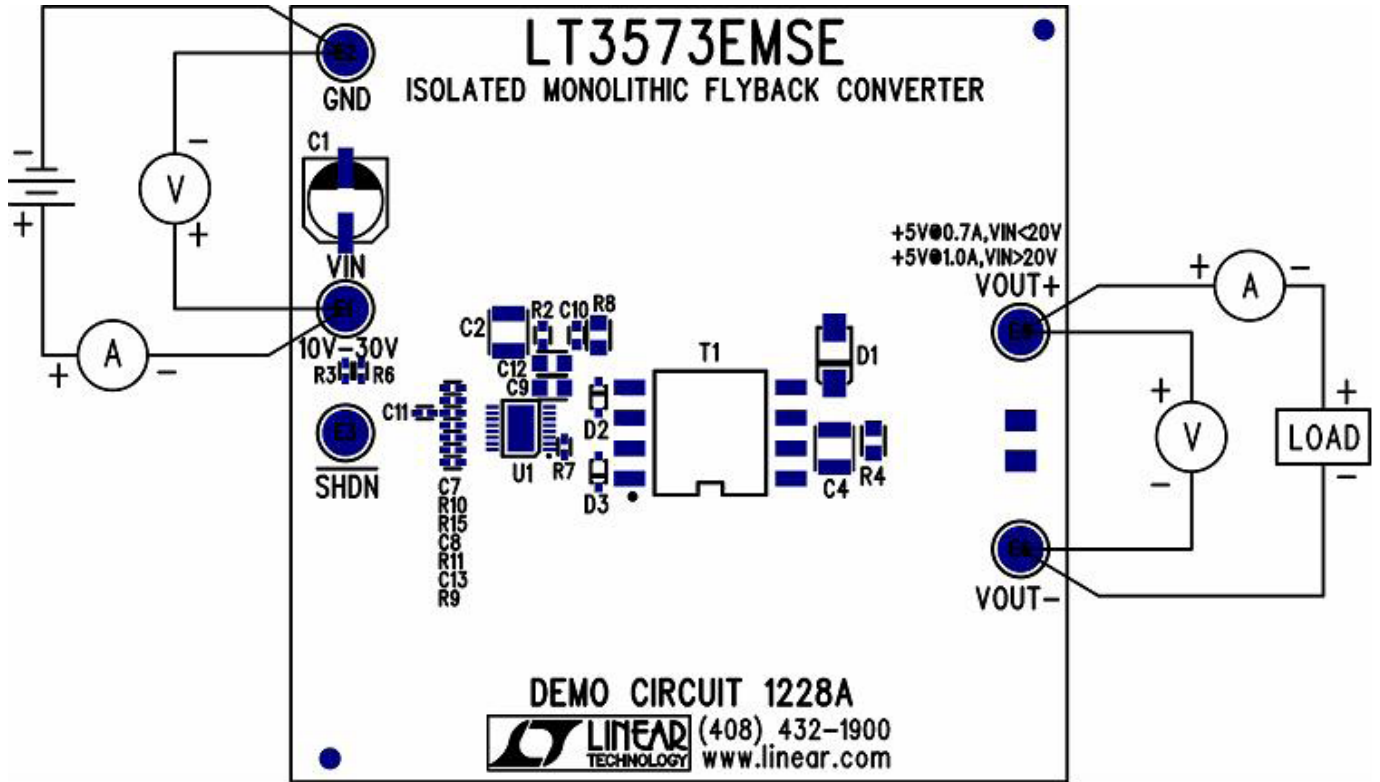


Figure 1. Proper Measurement Equipment Setup

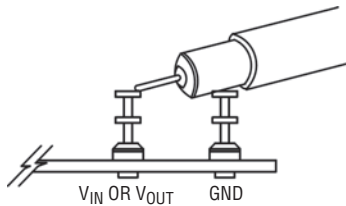


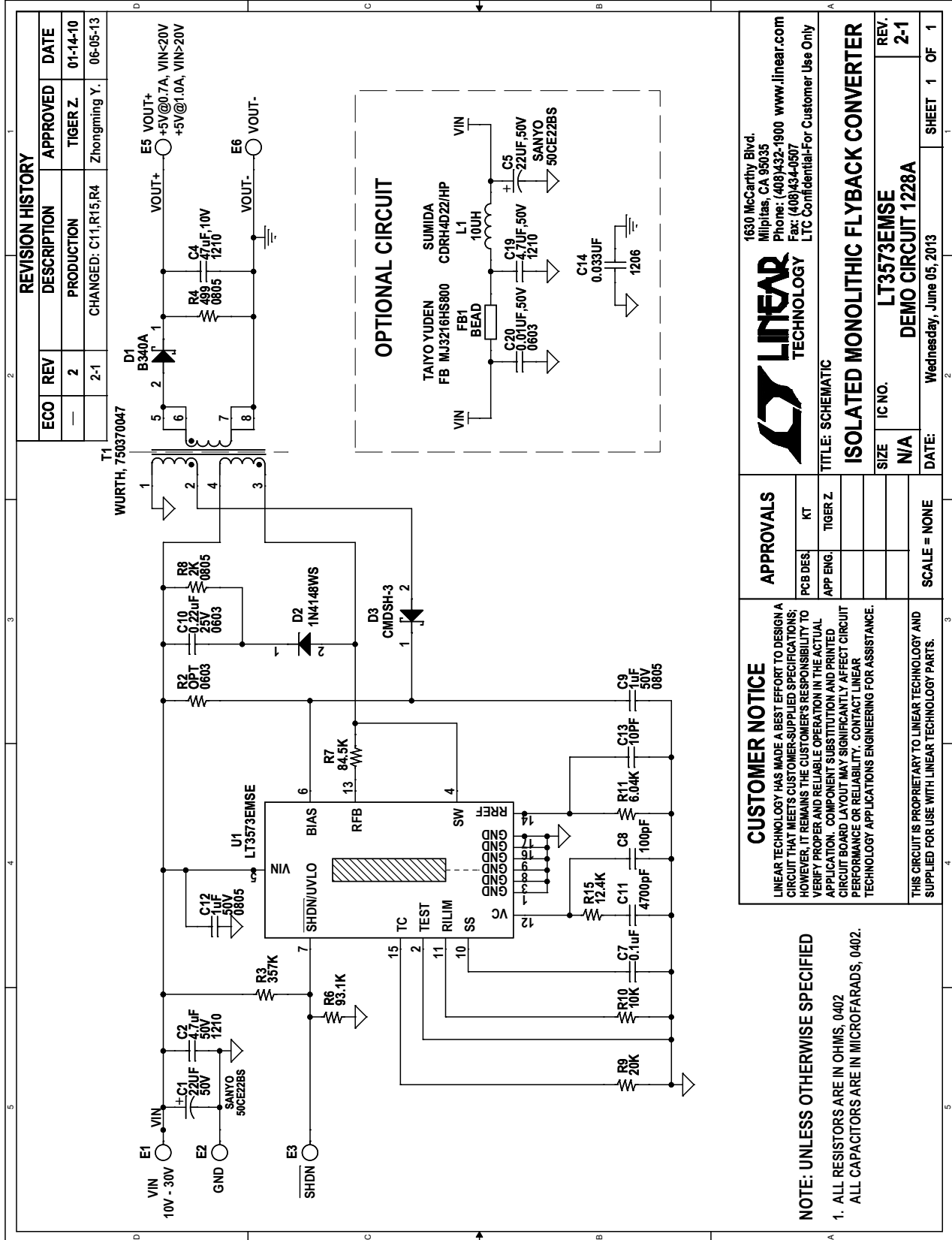
Figure 2. Measuring Input or Output Ripple

DEMO MANUAL DC1228A

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	C2	CAP., X7R, 4.7µF 50V, 1210	MURATA, GRM32ER71H475K
2	1	C4	CAP., X7R, 47µF 10V, 1210	MURATA, GRM32ER71A476K
3	1	C7	CAP., X7R, 0.1µF 16V, 0402	TDK, C1005X7R1C104MT
4	1	C8	CAP., NPO, 100pF 50V,0402	AVX, 04025A101JAT2A
5	2	C12, C9	CAP., X7R, 1µF 50V, 0805	MURATA, GRM21BR71H105K
6	1	C10	CAP., X7R, 0.22µF 25V, 0603	MURATE, GRM188R71E224K
7	1	C11	CAP., X7R, 4700pF 25V, 0402	AVX, 04023C472KAT2A
8	1	C13	CAP., NPO, 10pF 50V, 0402	AVX, 04025A100JAT2A
9	1	D1	DIODE, SCHOTTKY BARRIER RECTIFIER 3.0A	DIODES INC., B340A-13-F
10	1	D2	DIODE, SWITCHING, SOD323	DIODES INC., 1N4148WS-7-F
11	1	D3	DIODE, SCHOTTKY MINI, SOD323	CENTRAL SEMI., CMDSH-3
12	1	R3	RES., CHIP 357k 1/16W 1%, 0402	VISHAY, CRCW0402357KFKED
13	1	R6	RES., CHIP 93.1k 1/16W 1%, 0402	VISHAY, CRCW040293K1FKED
14	1	R7	RES., CHIP 84.5k 1/16W 1%, 0402	VISHAY, CRCW040284K5FKED
15	1	R8	RES., CHIP 2k 1/10W 1%, 0805	VISHAY, CRCW08052K00FKEA
16	1	R9	RES., CHIP 20k 1/16W 1%, 0402	VISHAY, CRCW040220K0FKED
17	1	R10	RES., CHIP 10k 1/16W 1%, 0402	VISHAY, CRCW040210K0FKED
18	1	R11	RES., CHIP 6.04k 1/16W 1%, 0402	VISHAY, CRCW04026K04FKED
19	1	R15	RES., CHIP 12.4k 1/16W 1%, 0402	VISHAY, CRCW040212K4FKED
20	1	T1	XFMR, 750370047	WÜRTH, 750370047
21	1	U1	IC., LT3573EMSE, MSE16	LINEAR TECH., LT3573EMSE
Additional Demo Board Circuit Components				
1	1	C1	CAP., ELECTROLYTIC, 22µF 50V, C-SANYO-CE-BS-6.3X6.0	SANYO, 50CE22BS
2	0	C5	CAP., 22µF 50V, C-SANYO-CE-BS-6.3X6.0 OPT	SANYO, 50CE22BS
3	0	C14	CAP., 1206 OPT	OPT
4	0	C19	CAP., X7R, 4.7µF 50V, 1210 OPT	MURATA, GRM32ER71H475K
5	0	C20	CAP., X7R, 0.01µF 50V, 0603 OPT	AVX, 06035C103KAT
6	0	FB1	BEAD, 1206 OPT	TAIYO YUDEN, FB MJ3216HS800
7	0	L1	IND, PWR, L-CDRH4D22/HP OPT	SUMIDA, CDRH4D22HPNP-100MC
8	0	R2	RES., 0603 OPT	OPT
9	1	R4	RES., CHIP 499Ω 1/10W 1%, 0805	VISHAY, CRCW0805499RFKEA
Hardware: For Demo Board Only				
1	5	E1, E2, E3, E5, E6	TP, TURRET, 0.094"	MILL-MAX, 2501-2-00-80-00-00-07-0

SCHEMATIC DIAGRAM



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ISOLATED MONOLITHIC FLYBACK CONVERTER

SIZE: N/A IC NO.: LT3573EMSE
REV.: 2-1
DATE: Wednesday, June 05, 2013
SHEET 1 OF 1

APPROVALS

PCB DES	KT
APP ENG	TIGER Z
SCALE	NONE

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This notice contains important safety information about temperatures and voltages. For further safety concerns, please contact a LTC application engineer.

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