EV3332-C-00A

Dual channel, 1.5A/Ch Flash LED Driver With I²C Interface Evaluation Board

The Future of Analog IC Technology

DESCRIPTION

The MP3332 is a dual-channels flash LED driver with very compact package, high efficiency for high-resolution camera phones to improve image and video quality in low light environment. The synchronous boost converter operates in 1/2/3/4MHz to provide an optimized solution for smaller PCB space and higher efficiency.

The MP3332 features standard I²C interface, dual LED channels, rich protection modes and high power density and performances. The MP3332 supports flash/assist light/torch/indicator/5V DC modes.

The cathodes of the dual flash LED are referenced to GND for better layout to improve thermal performance. It is available in WLCSP16-1.65X1.65mm package.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	2.7-5.5	V
Output Voltage	Vout	<5.5	V
LED channel		2	
LED Current/Ch	I_{LED}	1500	mA

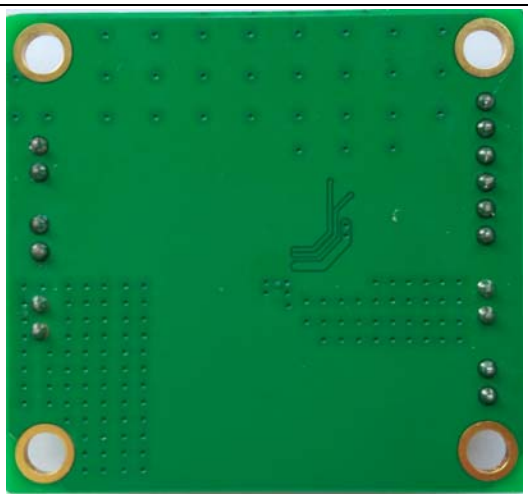
FEATURES

- 2.7V~5.5V input voltage
- Dual-channels, 1.5A/ch flash current with +/-7% accuracy
- 1/2/3/4MHz selectable switching frequency and switching frequency fold-back function
- 400kHz I²C compatible interface
- Standby/Flash/Assist/Torch/Indicator/5V DC modes
  Flash Mode:
  Up to 1.5A programmable current with +/-7% accuracy for each LED
  Assist/Torch Mode:
  Up to 500mA/ch programmable current with +/-7% accuracy
  Indicator Mode:
  Work in 31.5kHz PWM operation with 2/16, 3/16, 4/16, 5/16 duty cycle
  128ms/256ms/512ms selectable blinking time
  5V DC Mode:
  Constant 5V DC Output
- External Torch/Strobe Pin
- LED forward voltage balance to improve efficiency
- 1A to 4.2A programmable input DC current limit protection
- Low battery voltage protection
- LED short/open protection
- Over voltage protection
- Over temperature protection
- Input under voltage lockout protection
- Available in WLCSP16-1.65X1.65mm

APPLICATIONS

- LED Flash Application For Smart Phone
- Camera For Tablets
- Digital Still Camera

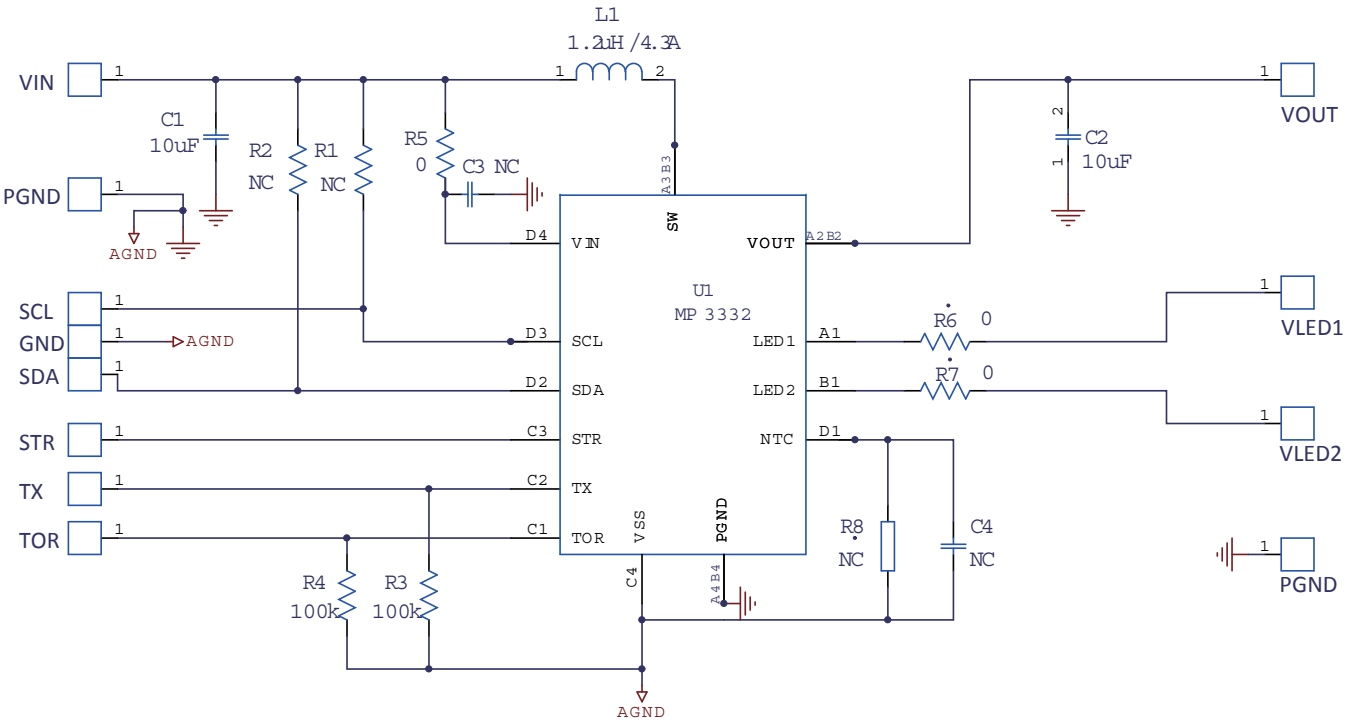
EV3332-C-00A EVALUATION BOARD



(L x W x H) 5.0cm x 4.6cm x 3.0cm

Board Number	MPS IC Number
EV3332-C-00A	MP3332GC

EVALUATION BOARD SCHEMATIC



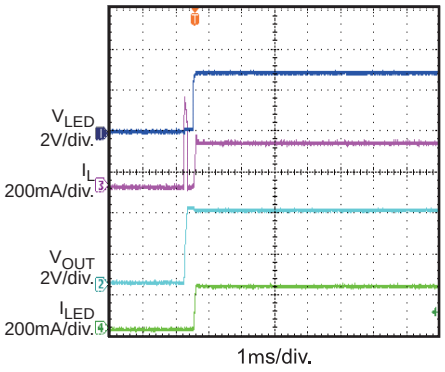
EV3332-C-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
2	R3,R4	100k	res,5%	0603	Yageo	RC0603JR-07100KL
3	R6,R7,R5	0	res,1%	0603	Yageo	RC0603FR-070RL
3	R1,R2, R8	NC		0603		
2	C1,C2	10uF	Ceramic Capacitor,10V,X5R	0805	muRata	GRM21BR61A106KE19L
2	C3, C4	NC				
1	L1	1.2uH	Inductor, DCR=25m,IDC=4.3A	SMD	TDK	LTF-5022T-1R2N4R2
1	U1			CSP16/1.65*1.65	MPS	MP3332

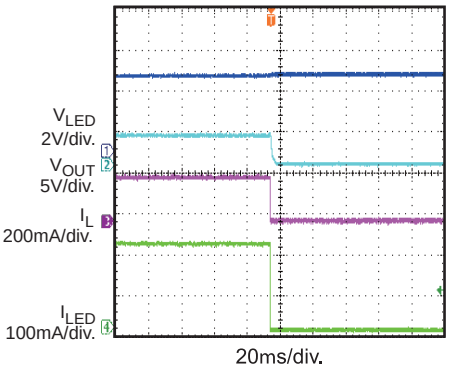
EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.
V_{IN} = 3.6V, 1*LEDs, FL_TIM=100ms, L = 1.2μH, T_A = 25°C, unless otherwise noted.

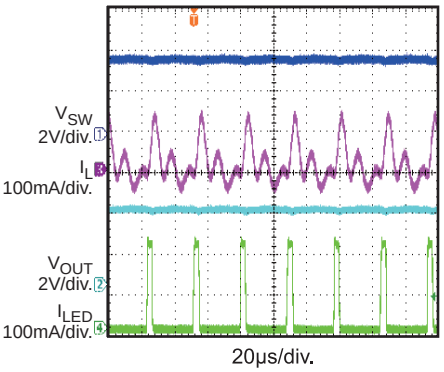
Torch/Assist Mode
LED_EN enable



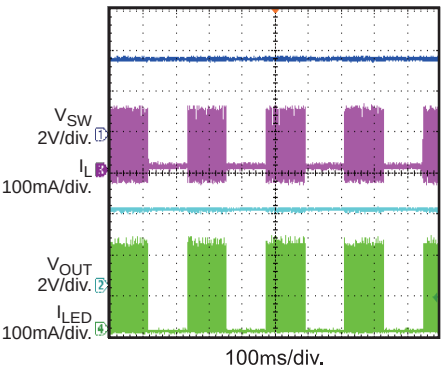
Torch/Assist Mode
LED_EN disable



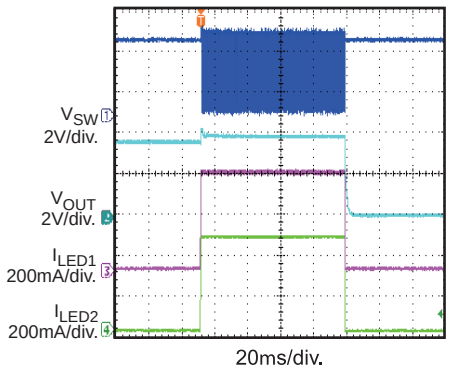
Indicator Mode
ILED Duty=2/16



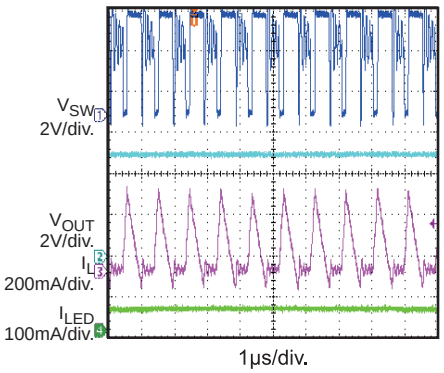
Bliking Mode and Indicator Mode
Bliking Time=128ms



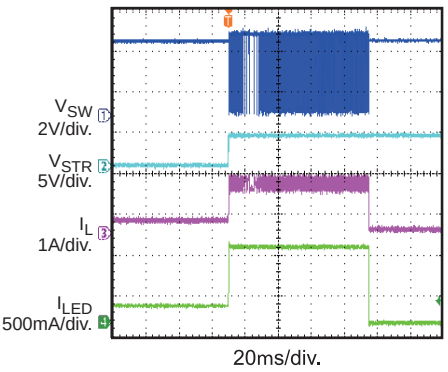
Flash Mode
flash time=100ms



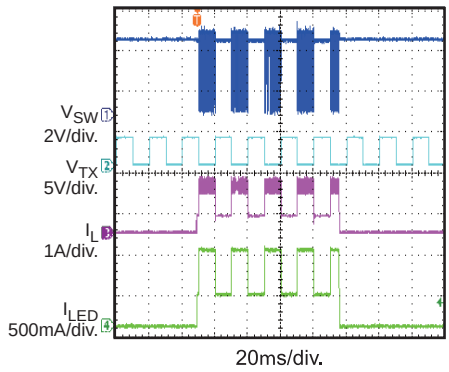
5V_DC Mode
With light load



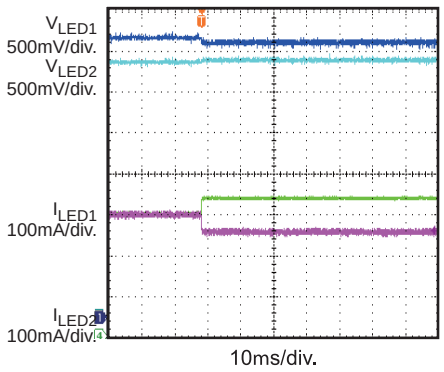
Torch/Assist Mode to Flash Mode



TX pin is high
In flash Mode



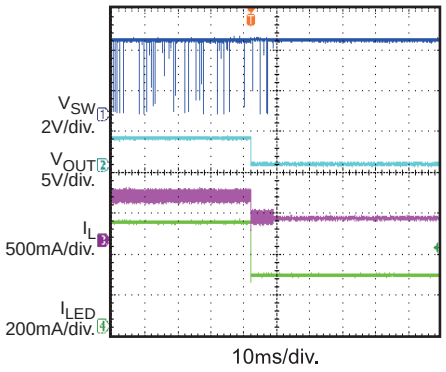
Load Balancing
from disable this function to enable



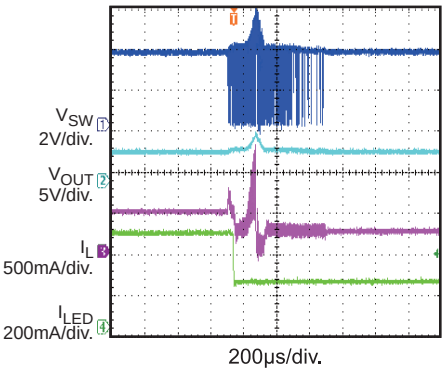
EVB TEST RESULTS *(continued)*

V_{IN} = 3.6V, 1*LEDs, FL_TIM=100ms, L = 1.2μH, T_A = 25°C, unless otherwise noted.

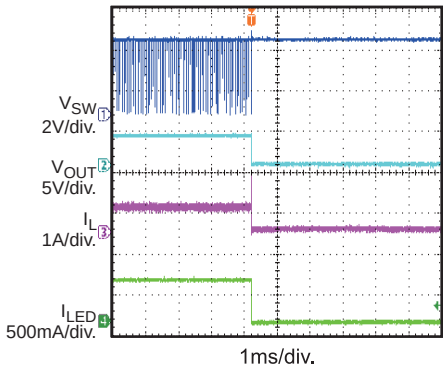
Short one channel
when working



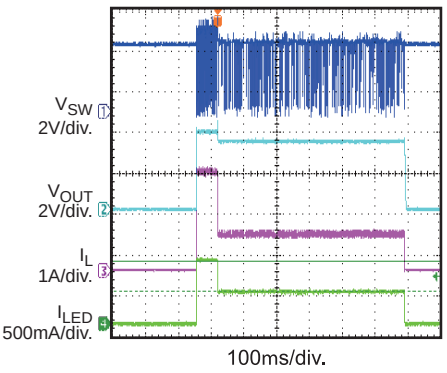
Open one string Protection
when working



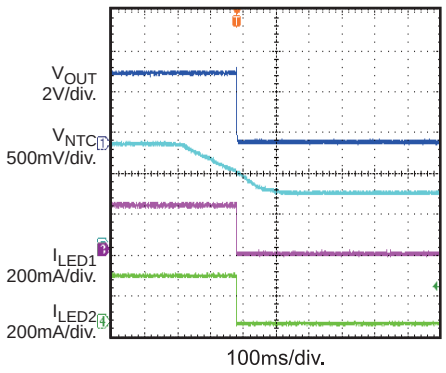
Vout to GND short Protection



Thermal Protection
In flash mode,
LED_OTAD=1



NTC Detection
Set NTC_WD=0.88V



PRINTED CIRCUIT BOARD LAYOUT

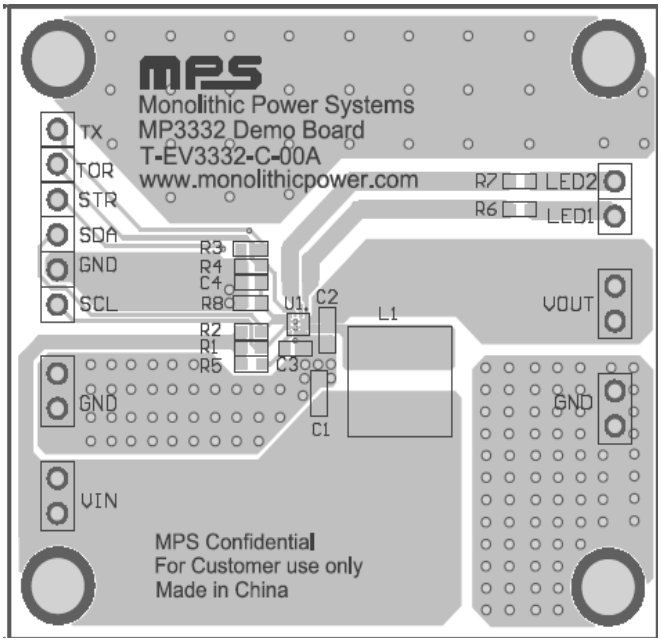


Figure 1—Top Layer

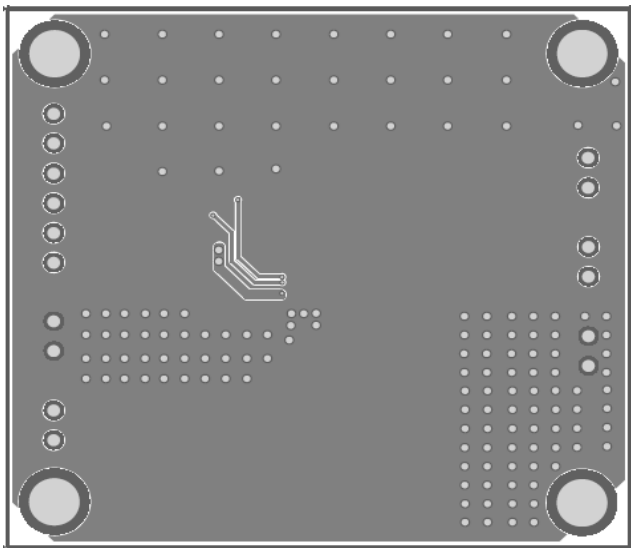
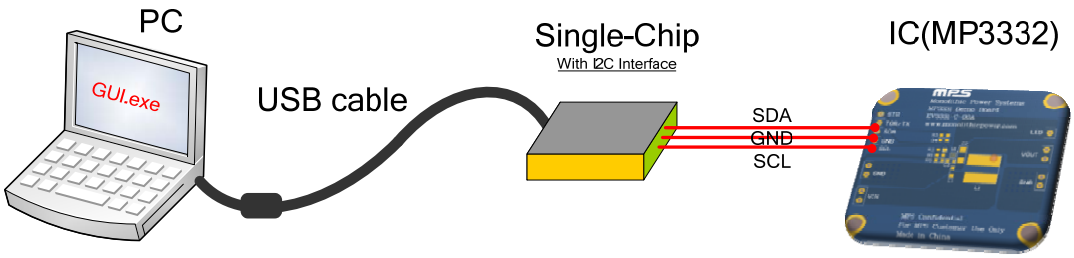


Figure 2—Bottom Layer

QUICK START GUIDE

1. Connect the positive and negative terminals of the power supply (2.7V ~ 5.5V) to the VIN and GND pins on the EV board, respectively.
2. Connect the positive and negative terminals of the LED to the LED terminal and GND on the EV board, respectively.
3. Please connect SCL, SDA and GND of EV board to SCL, SDA and GND of a programmable kit with I²C interface, respectively. I2C is active only when Vin powers on.



4. When work in Torch mode, please pull torch terminal to high. When work in flash mode with hardware level or edge sensitive, please give a level or pulse signal to STR pin. It is OK that STR is float or connected to a high/level if trigger flash with software.