



# CAT3224

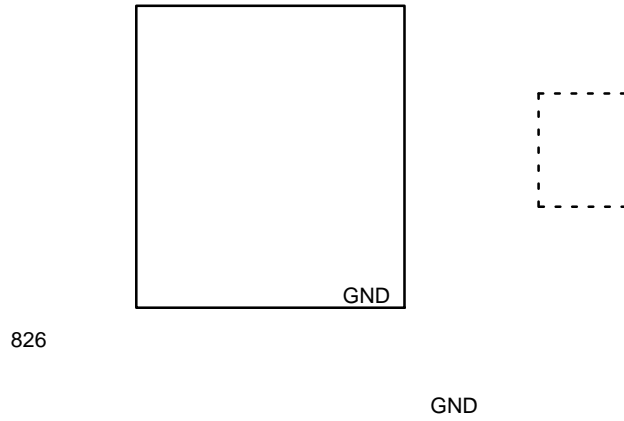


Figure 1. Typical Application Circuit



**CAP VOLTAGE AND FLAG OUTPUT**

The timing diagram in Figure 2 shows the CAP output voltage and the FLAG output in charge mode (with CHRG input high).

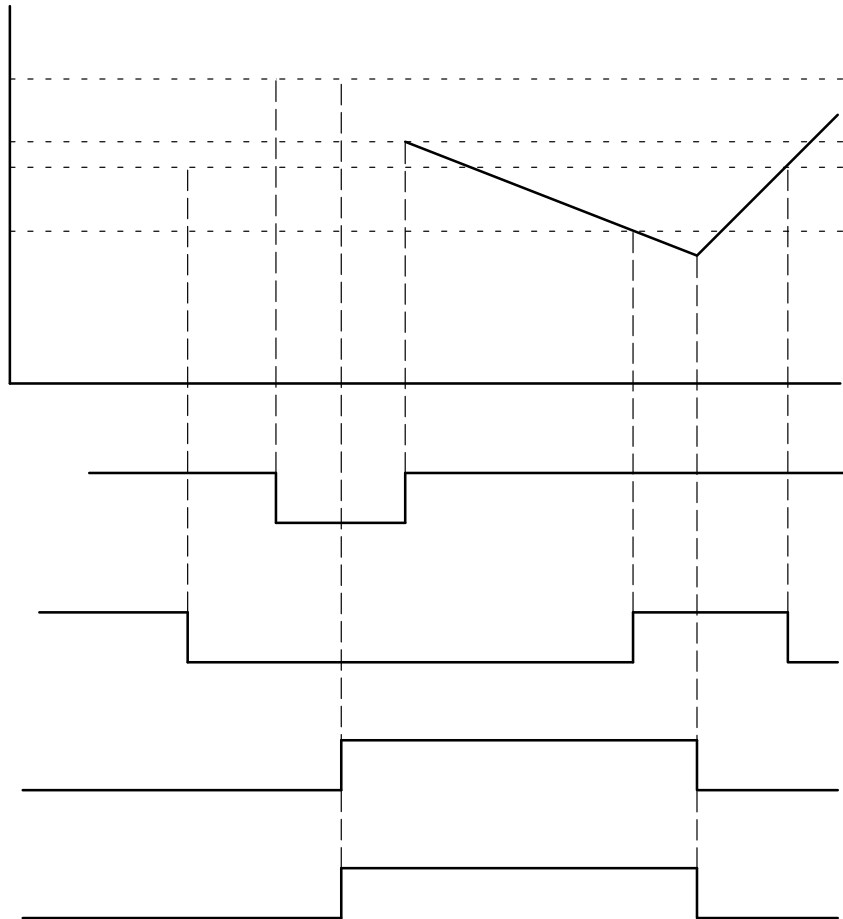


Figure 2. Supercapacitor Charge Timing Diagram



# CAT3224

## TYPICAL CHARACTERISTICS

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## TYPICAL CHARACTERISTICS

(VIN = 3.6 V, C = 0.55 F, T<sub>AMB</sub> = 25 C, typical application circuit unless otherwise specified.)

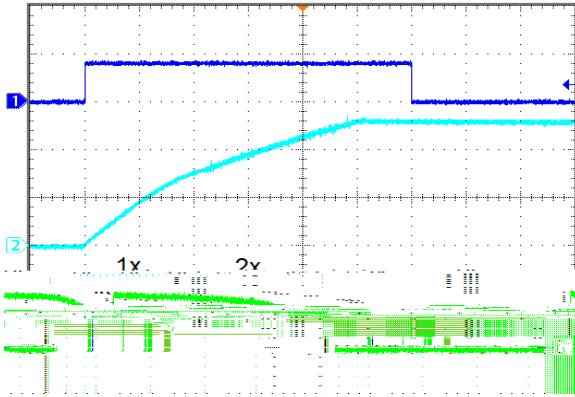


Figure 13. Charge Cycle, 1 A Input Current

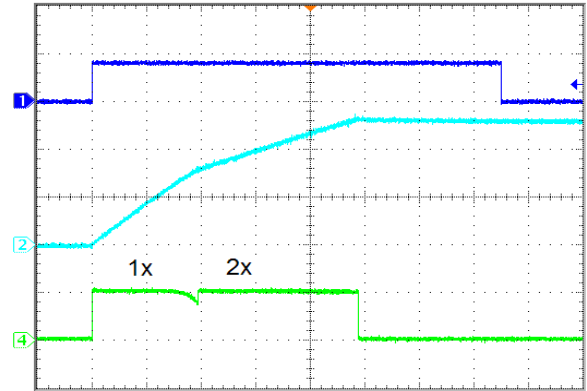


Figure 14. Charge Cycle, 500 mA Input Current

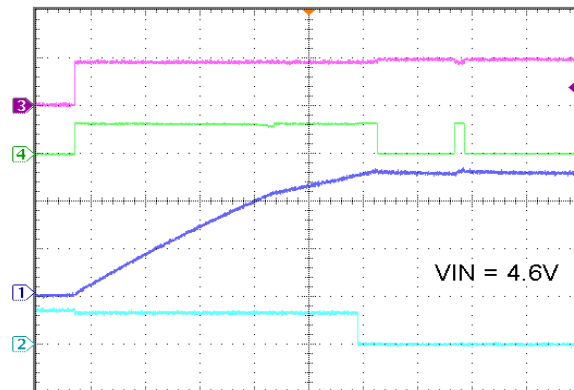
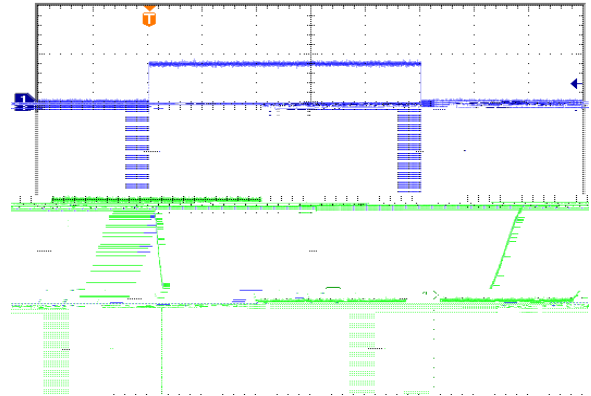
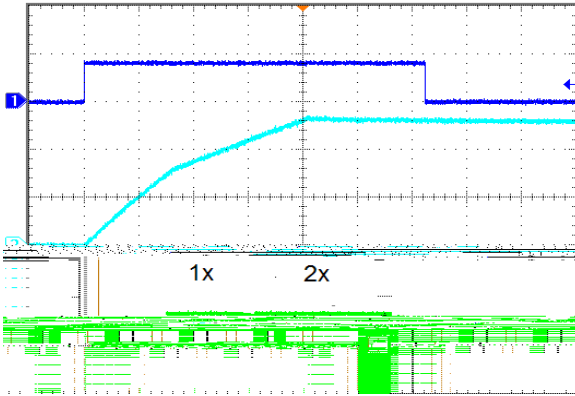


Table 6. PIN DESCRIPTION

Pin #	Name	Function
1	RF	Flash Current Setting Resistor terminal
2	BAL	Active Supercapacitor Balance Control
3, 4	CAP	Supercapacitor Positive Connection
5	CHRG	Charge Supercapacitor Enable
6	FLASH	Flash Enable
7	TORCH	Torch Enable
8	FLAG	Flash Ready Flag output, Open drain (Active low)
9	LEDB	LED B channel anode (+) connection
10	LEDA	LED A channel anode (+) connection
11	RC	Charge Current Setting Resistor terminal
12	RT	Torch Current Setting Resistor terminal
13	VIN	Positive supply connection to battery
14	CP	Bucket capacitor Positive terminal
15	CN	Bucket capacitor Negative terminal
16	GND	Device ground connection
TAB	TAB	Connect to GND on the PCB

### PIN FUNCTION

**VIN** is the supply pin for the device and for the supercapacitor charger circuit. A small 1  $\mu$ F ceramic bypass capacitor is required between the VIN pin and ground near the device.

**GND** is the ground reference for the charge pump. This pin must be connected to the ground plane on the PCB.

**TAB** is the exposed pad underneath the package. For best thermal performance, the tab should be soldered to the PCB and connected to the ground plane.

**CAP** is the positive connection to the supercapacitor. Current sinks or sources from this pin to the capacitor depending on the mode of operation.

**CP, CN** pins are connected to each side of the ceramic bucket capacitor used in the 2x charge pump mode.

**LEDA, LEDB** are connected internally to the current sources and must be connected to the LED anodes. Each output is independently current regulated. These pins enter a high impedance ‘zero’ current state whenever the device is placed in shutdown mode or FLASH and TORCH are low.

**BAL** is connected to the center point between the two supercapacitor cells. An active circuit forces the BAL pin to



BLOCK DIAGRAM

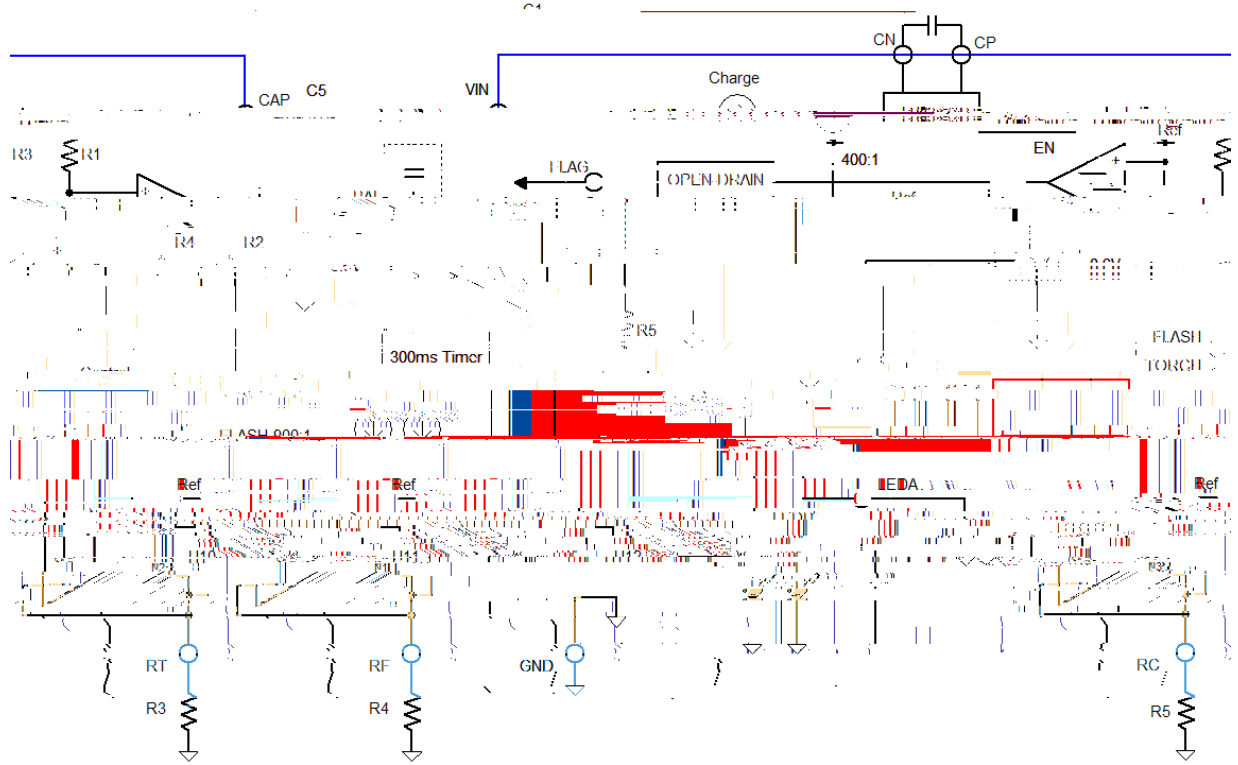
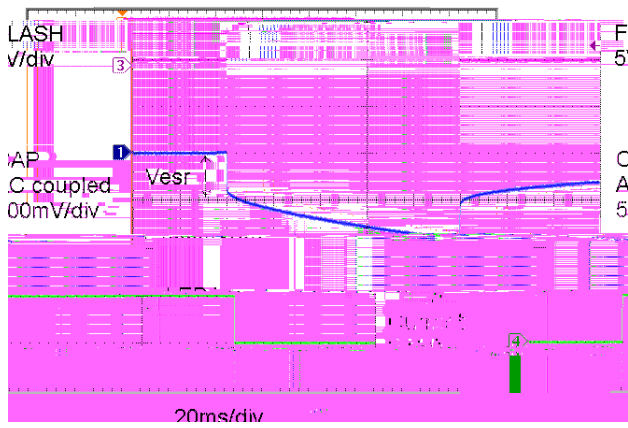


Figure 18. Functional Block Diagram





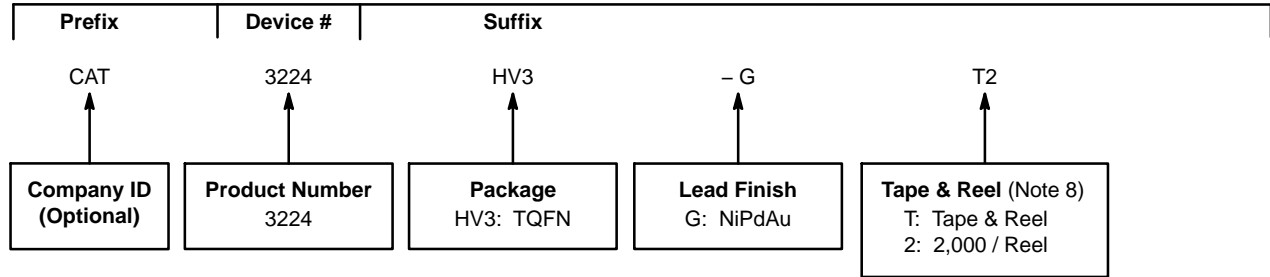
**Figure 19. CAP Output Transient during 4 A Flash**

**Flash Rate**

Between two consecutive flash pulses, the supercapacitor needs some time to recharge. The supercapacitor time needed to fully recharge after a flash pulse is a function of the flash current and duration, and the charging current. Assuming the driver is in 2x mode, the charging time is calculated as follows.

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## EXAMPLE OF ORDERING INFORMATION (NOTE 4)



4. The device used in the above example is a CAT3224HV3-GT2 (TQFN, NiPdAu, Tape & Reel, 2,000 / Reel).
5. All packages are RoHS-compliant (Lead-free, Halogen-free).
6. The standard lead finish is NiPdAu.
7. For additional package and temperature options, please contact your nearest **onsemi** sales office.
8. For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

**TQFN16, 3x3**  
CASE 510AD

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