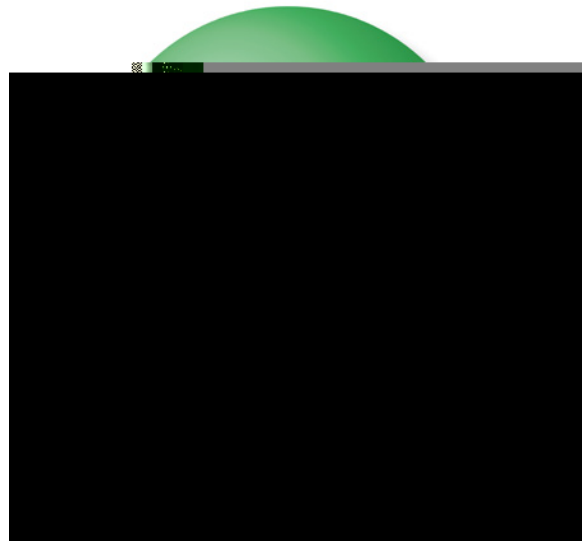




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Application Diagram

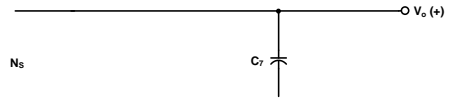


Figure 1. Typical Application

Internal Block Diagram

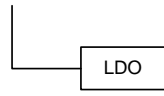


Figure 2. Function Block Diagram

## Marking Information

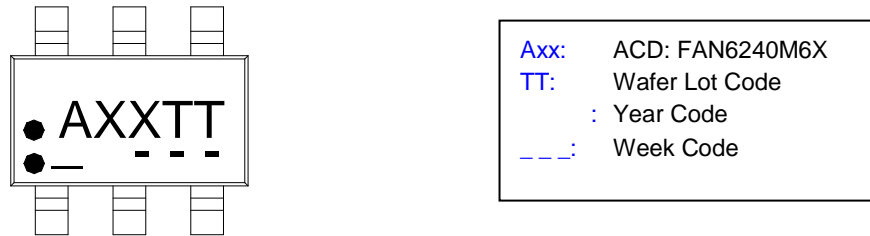


Figure 3. Top Mark

## Pin Configuration

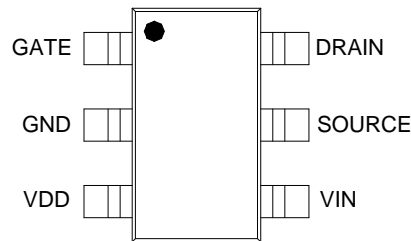


Figure 4. Pin Configuration

## Pin Definitions

Pin #	Name	Description
1	GATE	Gate drive output
2	GND	Ground
3	VDD	Internal regulator 5 V output and gate drive power supply rail. Bypass with 1uF capacitor to GND.
4	VIN	LDO input, supports up to 30 V operation. An integrated 5 V LDO generates the internal VDD power supply rail for the low-voltage control circuitry.
5	SOURCE	Synchronous rectifier source sense input.
6	DRAIN	Synchronous rectifier drain sense input.

## Absolute Maximum Ratings

## Electrical Characteristics

$V_{IN} = 12\text{ V}$  and  $T_J = -40^\circ\text{C}$  to  $125^\circ\text{C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
<b>Input Voltage</b>						
$V_{IN\_ON}$	Turn-On Threshold	$V_{IN}$ Rising	3.1	3.4	3.7	V
$V_{IN\_OFF}$	Turn-Off Threshold	$V_{IN}$ Falling	2.8	2.9	3.0	V
$I_{IN\_OP}$	Operating Current	$f_{SW} = 100\text{ kHz}$ , $C_{GATE} = 3.3\text{ nF}$ , $V_{IN} = 5\text{ V}$		2	3.5	mA

### Power Supply Section

## Functional Description

### Theory of SR Control Operation

For an ideal circuit operation, the SR control algorithm of FAN6240 is very straightforward. FAN6240 controls the SR MOSFET based on the instantaneous drain-to-source voltage as illustrated in Figure 5. When the body diode starts conducting, the drain-to-source voltage drops below the turn-on threshold ( $V_{TH\_ON}$

### SR Turn-Off Algorithm

As diagram shown in Figure 7, the turn-off of SR GATE is triggered by the two input signals of AND gate. The first input signal is turn off signal, which is enabled when  $V_{DS,SR} > V_{TH\_OFF}$ . The second input is TURN\_OFF\_ALLOW signal given from the adaptive turn-off blanking. The blanking time is adaptively determined as half of SR conduction time (SR\_COND) of the previous switching cycle for better noise immunity.

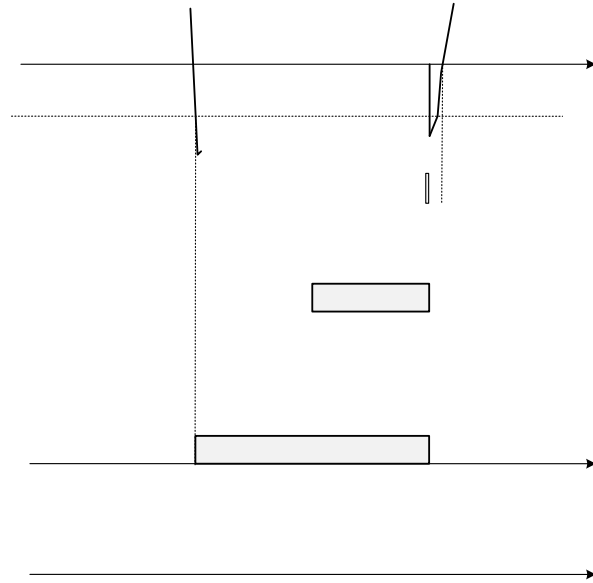


Figure 7. SR Turn-Off Algorithm

### SR Skipping Mode Algorithm

As diagram shown in Figure 8, FAN6240 disables SR gate signal (SR skipping) at next cycle when previous cycle SR conduction time  $V_{GS,SR}$  signal is smaller than the minimum ON time  $t_{ON\_MIN,LL}$  in order reduce power consumption. This operation occurs only when the burst mode entry level of the primary side PWM controller is extremely low.

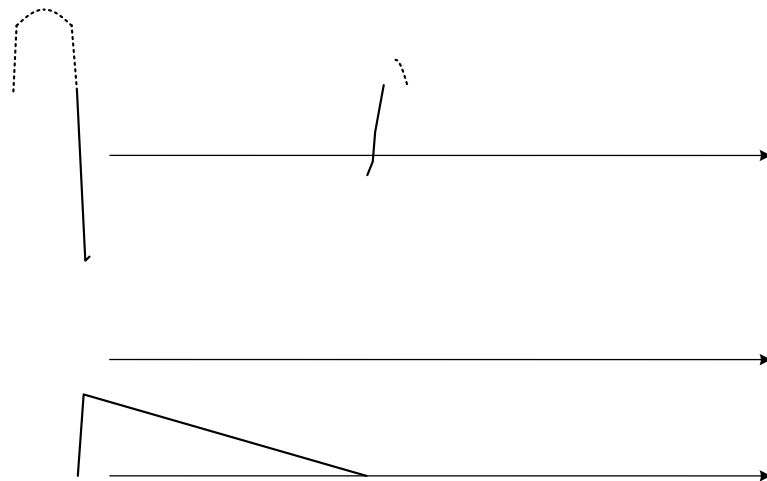


Figure 8. SR Skipping Diagram





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