

## Industry Smallest and Low Profile 7.5W 1.5A DC/DC Boost Converter with High Output Density Power



### FEATURES

- Fully integrated DC/DC converter
- High efficiency over large load range
- 100% duty cycle
- Power density - more than 280W/inch<sup>3</sup>
- 1uA shutdown current
- 2.5V to 6V input range (1Li+ and 3-cell NiCd or NiMH cells)
- 3.3V to 6V output voltage
- Programmable PWM/PSM controls
- Low output ripple
- BGA construction
- Temperature range: - 40°C to + 85°C
- No external components needed
- Output power 7.5W
- Maximum current 1.5A
- Low profile

The DC/DC converter is a programmable topology synchronized Boost converter for today's continuous changing portable electronic market. The DC/DC converter provides flexibility of utilizing various battery configurations and chemistries such as NiCd, NiMH, or Li+ with input voltage range of 2.5V to 6V. An additional flexibility is provided with topology programmability to power multiple loads such as power amplifiers, microcontrollers, or baseband logic IC's. For ultra-high efficiency, converters are designed to operate in synchronous rectified PWM mode under full load while transforming into externally controlled pulse-skipping mode (PSM) under light load.

The DC/DC converter is available in 20-ports BGA package. In order to satisfy the stringent ambient temperature requirements, the DC/DC converter is designed to handle the industrial temperature range of - 40°C to + 85°C.

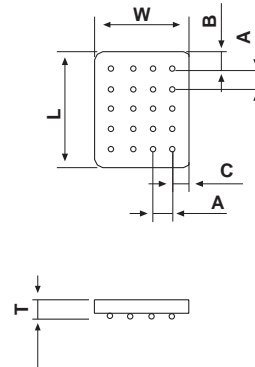
### APPLICATION

- Cordless phones, PDAs and others
- Supply voltage source for low-voltage chip sets
- Portable computers
- Battery back-up supplies
- Cameras

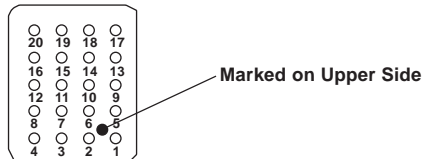
### ORDERING INFORMATION

	<b>FX</b>	<b>5545</b>	<b>G006</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FUNCTION								
SIZE								
CIRCUIT IDENTIFIER								
OUTPUT VOLTAGE-Example: 2.7V should be written as 2V7 as the V indicates the decimal point, or ADJ for adjustable version - self selectable output voltage.								
PACKAGING-B1 = 10pcs in bulk; B5 = 50pcs in bulk; T1 = 13" reel; T2 = 7" reel.								

DIMENSIONS in inches [millimeters]	
L	0.58 ± 0.01 [14.7 ± 0.25]
W	0.48 ± 0.01 [12.2 ± 0.25]
A	0.1 ± 0.01 [2.54 ± 0.25]
B	0.09 ± 0.01 [2.29 ± 0.25]
C	0.09 ± 0.01 [2.27 ± 0.25]
T	0.12 max [3 max]



BOTTOM SIDE

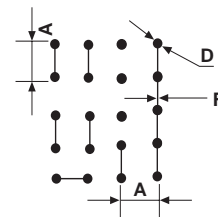


PIN CONFIGURATION*	
PIN	CONNECTION
1, 2	$\overline{SD}$
3, 7	SYNC**
4, 8	N/C
5, 9	Vin
6, 10	PWM/PSM
11, 12	N/C
13, 17	GND
14, 18	Vout
15, 19	N/C
16, 20	N/C

\*Note: Pin Description application note is available on page 32.

\*\*Note: if not used must be connected to Vin.

RECOMMENDED PAD PATTERN in inches [millimeters]		
A	D	F
0.1 ± 0.01 [2.54 ± 0.25]	0.03 ± 0.001 [0.8 ± 0.02]	0.02 ± 0.001 [0.5 ± 0.02]



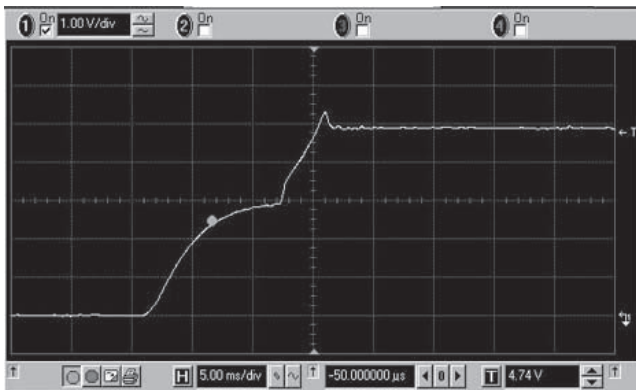
## TAPE AND REEL

See Tape and Reel Information - Type B

<b>STANDARD ELECTRICAL SPECIFICATIONS</b>					
PARAMETER	UNIT	CONDITION	MIN	TYP	MAX
<b>Input</b>					
Voltage Range	V <sub>DC</sub>		2.5		6
Quiescent Current	μA	PSM mode		200	
Soft Start Time	ms	T <sub>SS</sub>		16	
<b>SD, PWM/PSM, SYNC</b>					
Logic High	V	V <sub>H</sub>	2.4		
Logic Low	V	V <sub>L</sub>			0.8
Shutdown Mode	μA	I <sub>DD</sub>			1
Shutdown Time	ms	T <sub>SS</sub>		3	
<b>Insulation</b>					
Test Voltage	V <sub>AC</sub>	60Hz 60sec	750		
Resistance	Ω	V <sub>ISO</sub> = 500V <sub>DC</sub>	1 x 10 <sup>11</sup>		
Leakage Current	nA	V <sub>ISO</sub> = 500V <sub>DC</sub>			5
<b>Output</b>					
Power	W			7.5	
Voltage	V <sub>DC</sub>			3.3 to 6	
Voltage Tolerance	%	at 25°C Ambient Temperature	- 3		3
Temp. Coefficient	%/°C				0.03
Ripple and Noise	mVpp	DC to 20MHz		100	
<b>General</b>					
Package Weight	gr.				1.5
<b>Oscillator</b>					
Frequency	KHz			670	
SYNC Range	KHz	F <sub>SYNC</sub> /F <sub>OSC</sub>	1.2		1.5
<b>Temperature</b>					
Operation	°C		- 40		+ 85
Storage	°C		- 55		+ 125
Operating Junction Temp.	°C	T <sub>J</sub>		150	
Thermal Impedance	°C/W <sub>D</sub>	θ <sub>JA</sub>		82	

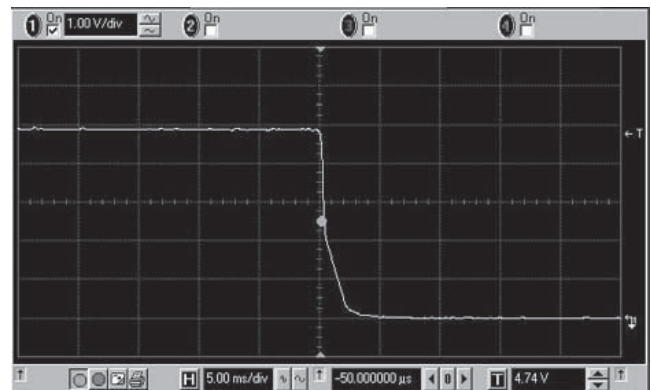
**Note:** W<sub>D</sub> = Power Dissipated

### Rise Time



Rise Time (PWM mode): Vin = 3.5V; Vout = 5V; Iout = 1A

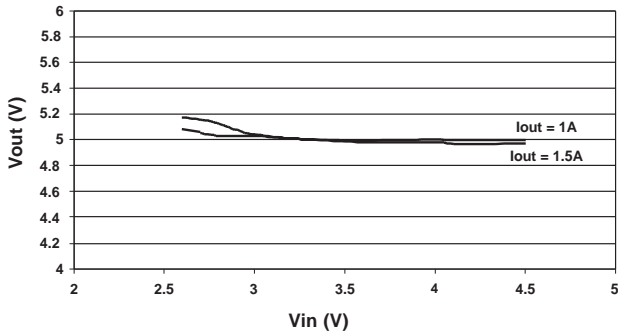
### Fall Time



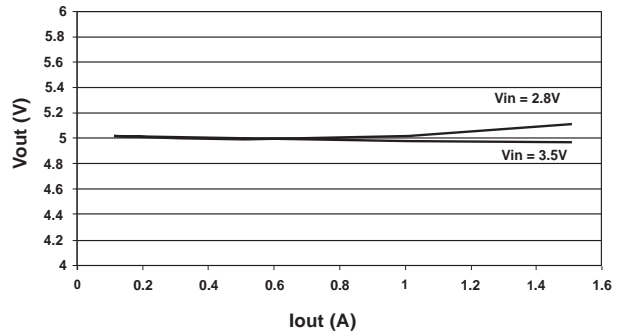
Fall Time (PWM mode): Vin = 3.5V; Vout = 5V; Iout = 1A



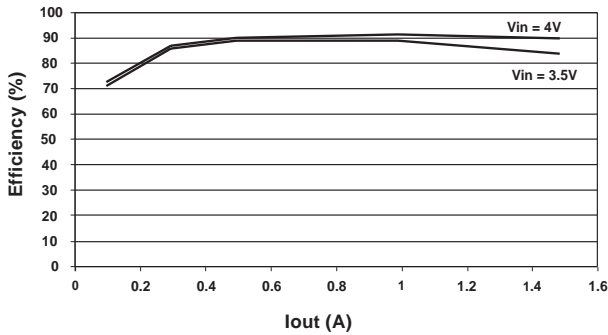
**Vout Vs. Vin (PWM mode)**



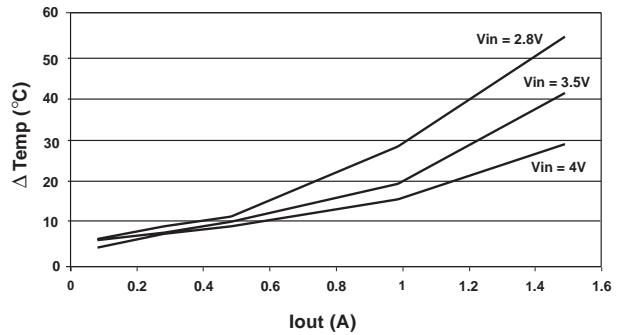
**Vout Vs. Iout (PWM mode)**



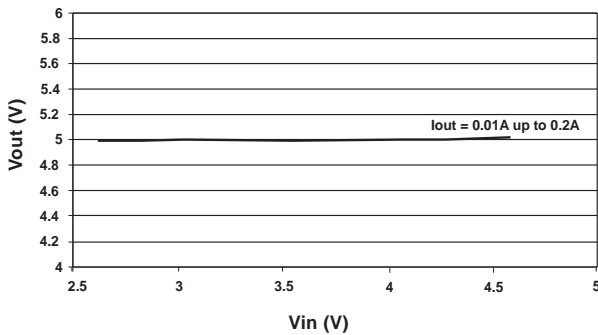
**Efficiency Vs. Iout (PWM mode)**



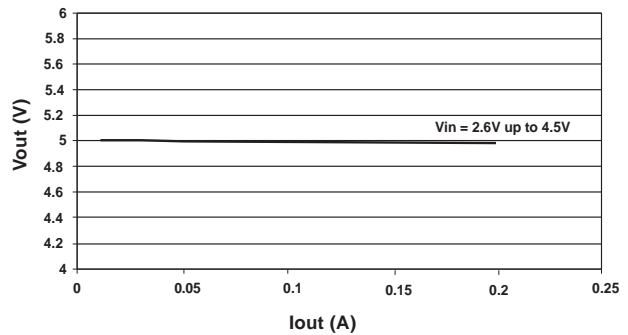
**Δ Temp Vs. Iout Above 25°C Ambient Temperature**



**Vout Vs. Vin (PSM mode)**



**Vout Vs. Iout (PSM mode)**



**Efficiency Vs. Iout (PSM mode)**

