

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/inch³
- 1uA shutdown current
- 2.7V 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.

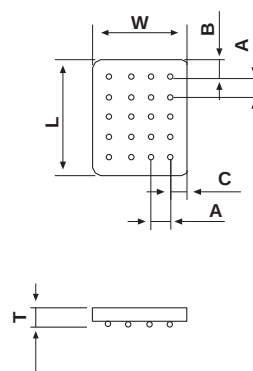
APPLICATION

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

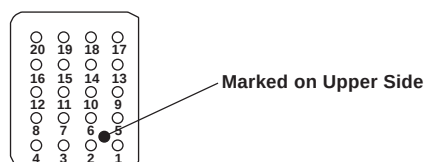
ORDERING INFORMATION

	FX	5545	G006	☐	☐	☐	☐	☐
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 $\pm$ 0.25]
W	0.48 ± 0.01 [12.2 $\pm$ 0.25]
A	0.1 ± 0.01 [2.54 $\pm$ 0.25]
B	0.09 ± 0.01 [2.29 $\pm$ 0.25]
C	0.09 ± 0.01 [2.27 $\pm$ 0.25]
T	0.12 max [3 max]



BOTTOM SIDE



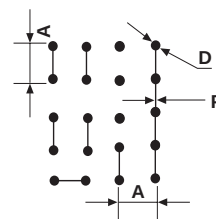
***Note:** Pin Description application note is available on page 32.

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

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

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

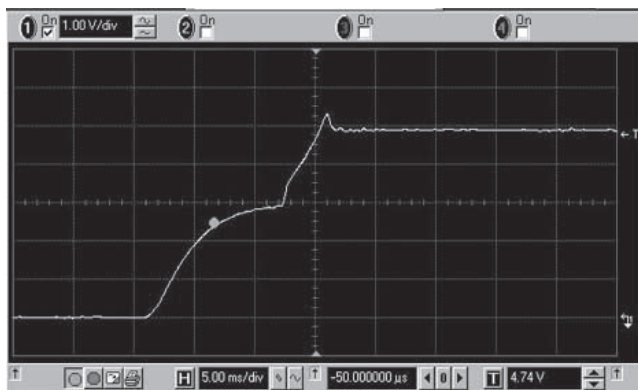
**TAPE AND REEL**

See Tape and Reel Information - Type B

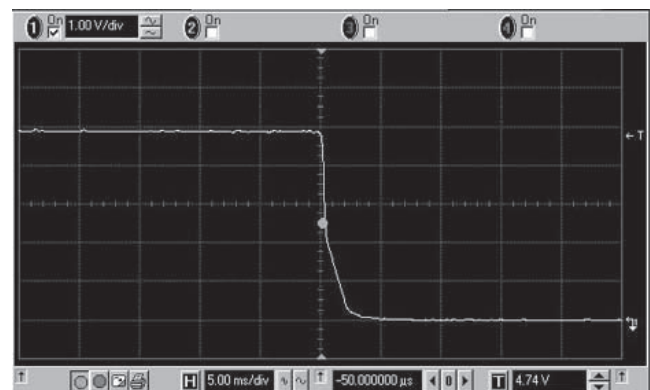
**STANDARD ELECTRICAL SPECIFICATIONS**

PARAMETER	UNIT	CONDITION	MIN	TYP	MAX
Input					
Voltage Range	V_{DC}		2.7		6
Quiescent Current	A	PSM mode		200	
Soft Start Time	ms	T_{SS}		16	
SD, PWM/PSM, SYNC					
Logic High	V	V_H	2.4		
Logic Low	V	V_L			0.8
Shutdown Mode	A	I_{DD}			1
Shutdown Time	ms	T_{SS}		3	
Insulation					
Test Voltage	V_{AC}	60Hz 60sec	750		
Resistance	Ω	$V_{ISO} = 500V_{DC}$	1×10^{11}		
Leakage Current	nA	$V_{ISO} = 500V_{DC}$			5
Output					
Power	W			7.5	
Voltage	V_{DC}			3.3 to 6	
Voltage Tolerance	%	at 25°C Ambient Temperature	- 5		+ 5
Temp. Coefficient	%/°C				0.03
Ripple and Noise	mVpp	DC to 20MHz		100	
General					
Package Weight	gr.				1.5
Oscillator					
Frequency	KHz			670	
SYNC Range	KHz	F_{SYNC}/F_{OSC}	1.2		1.5
Temperature					
Operation	°C		- 40		+ 85
Storage	°C		- 55		+ 125
Operating Junction Temp.	°C	T_J		150	
Thermal Impedance	°C/W _D	θ_{JA}		82	

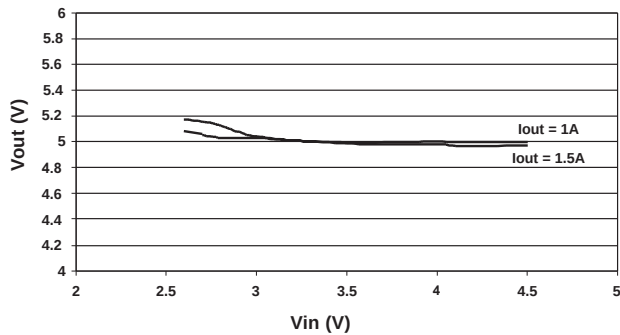
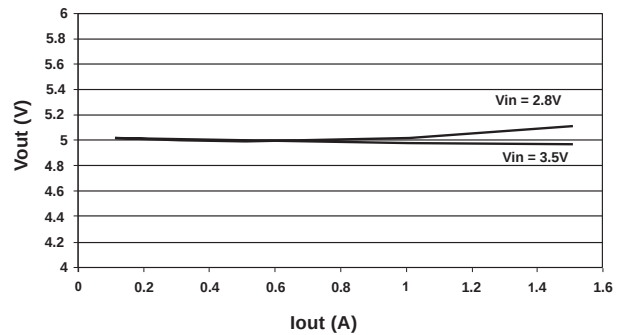
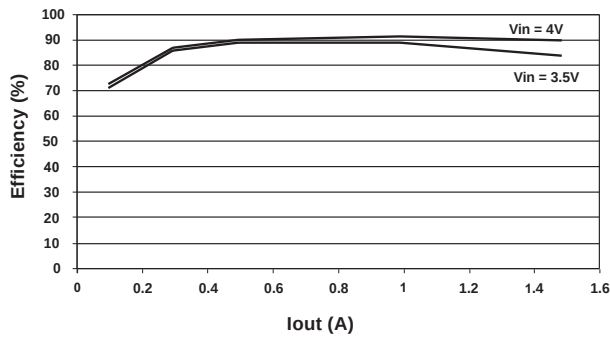
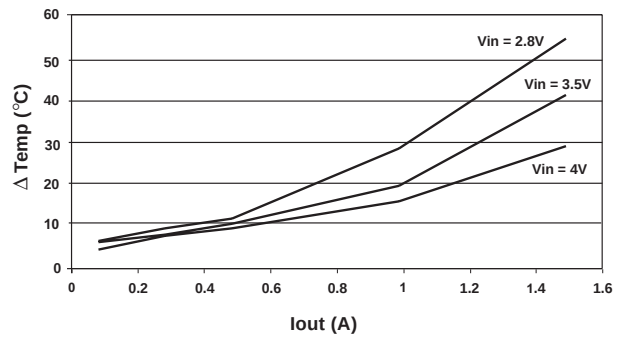
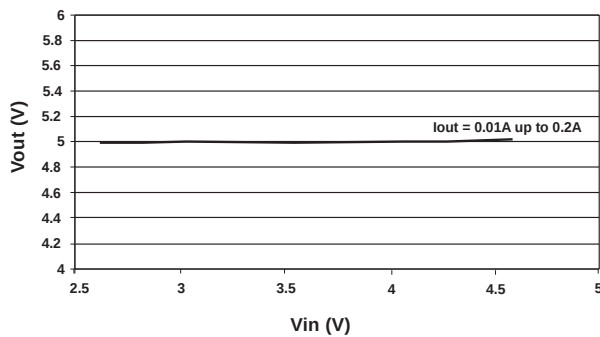
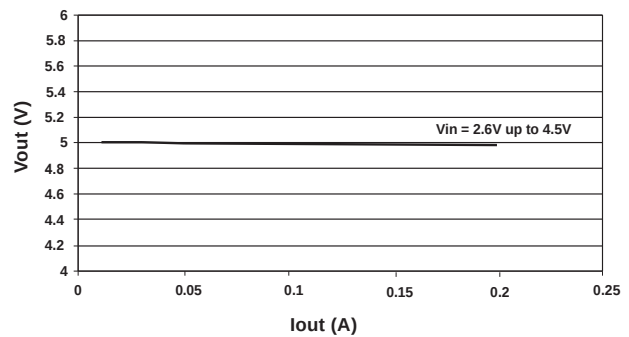
Note: W_D = Power Dissipated

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)**