

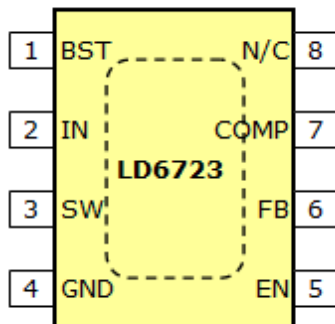
Features

- Integrated 3 Amp switch
- 600KHz frequency of operation
- Current mode controller
- Precision enable threshold
- SO-8 EDP package. Lead free product, fully WEEE and RoHS compliant

Applications

- XDSL modems
- CPE equipment
- DC-DC point of load applications
- Portable equipment

Package Pin Out



General Description

The LD6723 is a current mode switching regulator with an integrated switch, operating at 600KHz with enable functions. The integrated switch allows for cost effective low power solutions (peak switch current 3 amps). High frequency of operation allows for very small passive components. Current mode operation allows for fast dynamic response and instantaneous duty cycle adjustment as the input varies (ideal for CPE applications where the input is a wall plug power).

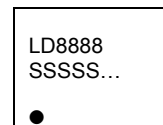
The low shutdown current makes it ideal for portable applications where battery life is important.

Ordering Information

Part No.	Package	Packing Options	
		Tube (TU)	Tape & Reel (TR)
LD6723	SO-8 EDP	LD6723S1-TU	LD6723S1-TR

- Package material default is "Green" package.

Product Marking



- ◇ Line 1 – "LD" is a fixed character
8888: product name
- ◇ Line 2 – SSSSS...: lot number

Pin Definition

Pin#	Pin Name	Pin Description
1	BST	This pin provides power to the internal NPN switch. The minimum turn on voltage for this switch is 2.7V.
2	IN	Pin IN delivers all power required by control and power circuitry. This pin sees high di/dt during switching. A decoupling capacitor should be attached to this pin as close as possible.
3	SW	Pin SW is the emitter of the internal switch. The external freewheeling diode should be connected as close as possible to this pin.
4	GND	All voltages are measured with respect to this pin. The decoupling capacitor and the freewheeling diode should be connected to GND as short as possible.
5	EN	This is the chip enable input. The regulator is switched on if EN is high, and it is off if EN is low. The regulator is in standby mode when EN is low, and the input supply current is reduced to a few microamperes.
6	FB	Feedback input for adjustable output controllers.
7	COMP	This is the output of the internal error amplifier and input of the peak current comparator. A compensation network is connected to this pin to achieve the specified performance.
8	N/C	–
–	Thermal Pad	Pad for heat sinking purposes. Connect to ground plane using multiple vias. Not connected internally.

Absolute Maximum Ratings

Parameter	Maximum	Unit
V _{IN} input supply voltage	-0.3 to +38 ^{*1}	V
V _{BST} - V _{SW} voltage	16	V
V _{BST} voltage	-0.3 to +32	V
V _{EN} EN pin voltage	-0.3 to +24	V
V _{FB} FB pin voltage	-0.3 to +6	V
I _{FB} FB pin current	1	mA
θ _{JA} Thermal impedance to junction ambient	36.5 ^{*2}	°C/W
T _A Operating ambient temperature range	-40 to +85	°C

The values beyond the boundaries of absolute maximum rating may cause the damage to the device. Functional operation in this context is not implied. Continuous use of the device at the absolute rating level might influence device reliability. All voltages have their reference to device ground.

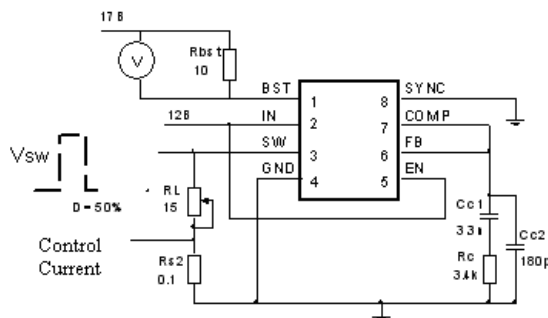
Electrical Characteristics

V_{IN} = 12V, V_{COMP} = 0.8V, V_{BST} = V_{IN} + 5V, EN = tied to V_{IN}, SW = open, -40°C ≤ T_A ≤ +85°C unless specified

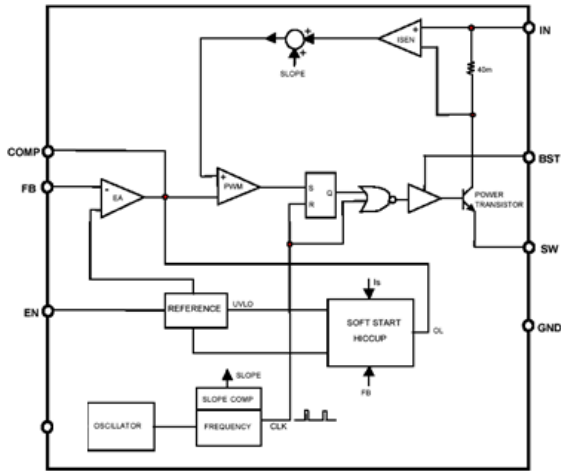
Parameter	Symbol	Condition	Min	Typ.	Max	Unit
Operating input voltage	V _{IN}	–	–	–	24 ^{*1}	V
Maximum switch current limit	I _{SW}	T _A = 25°C, D = 50%	3.5	–	5.5	A
Oscillator frequency	f _{OSC}	–	500	600	700	kHz
Switch on voltage drop	V _{D(SW)}	I _{SW} = 3A	–	570	–	mV
V _{IN} Under voltage lockout	V _{UVLO}	–	–	3.9	4.4	V
V _{IN} UVLO hysteresis	ΔV _{UVLO}	–	–	60	–	mV
V _{IN} supply current	I _Q	V _{FB} = 1V	–	3	5	mA
Standby current	I _{Q(OFF)}	V _{EN} = 0V	–	100	150	μA
FB Input current	I _{FB}	–	–	-0.25	-1	μA
Feedback voltage	V _{FB}	–	0.784	0.8	0.816	V
Feedback voltage line regulation	R _{FBLINE}	4.4V < V _{IN} < 24V ^{*2}	–	+3	–	mV/V
FB to V _{COMP} voltage gain ^{*3}	G _{FB}	0.9V ≤ V _{COMP} ≤ 2.0V	150	350	–	V/V
FB to V _{COMP} transconductance ^{*3}	σ _{FB}	Δ I _{COMP} = ±10μA	500	850	1300	μMho
V _{COMP} pin source current	I _{CMPSO}	V _{FB} = 0.6V	–	70	110	μA
V _{COMP} pin sink current	I _{CMPSI}	V _{FB} = 1.0V	–	-70	-110	μA
V _{COMP} pin to switch current transconductance	σ _{COMP}	V _{COMP} = 1.25V	–	5	–	A/V
V _{COMP} pin maximum switching threshold	V _{CMPSW}	Duty cycle = 0%	–	0.6	–	V
V _{COMP} OCP Threshold	V _{CMPOCP}	V _{COMP} rising	–	2	–	V
V _{COMP} hiccup retry threshold	V _{CMPHIC}	V _{COMP} falling	–	0.25	–	V
Maximum switch duty cycle	D _{SW}	V _{COMP} = 1.2V, I _{SW} = 400mA	85	–	–	%
Minimum boost voltage above switch ^{*3}	V _{BSTSW}	–	–	2.7	–	V
Boost current ^{*4}	I _{BST}	I _{SW} = 1A	–	43	55	mA
		I _{SW} = 3A	–	59	70	
Enable input threshold voltage	V _{ETH}	–	1.1	1.27	1.5	V
Enable output bias current	I _{EOL} I _{EOH}	EN = 50mV below threshold	–	32	70	μA
		EN = 50mV above threshold	–	31	70	

Notes:

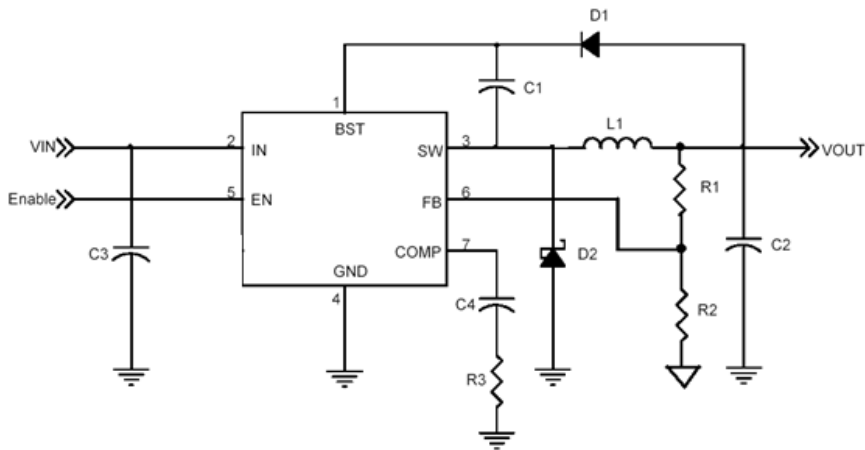
1. The device may not function properly outside its operating input voltage range.
2. The required minimum input voltage for a regulated output depends on the output voltage and load condition.
3. Guaranteed by design.
4. Test Circuit for Boost Current



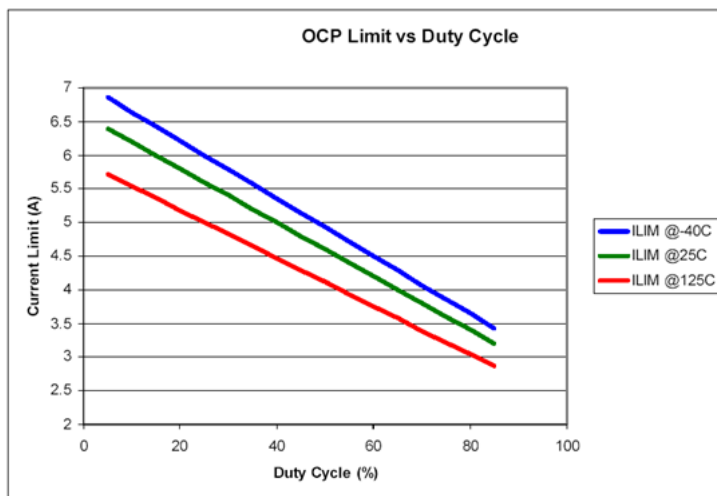
Block Diagram



Typical Application Circuit

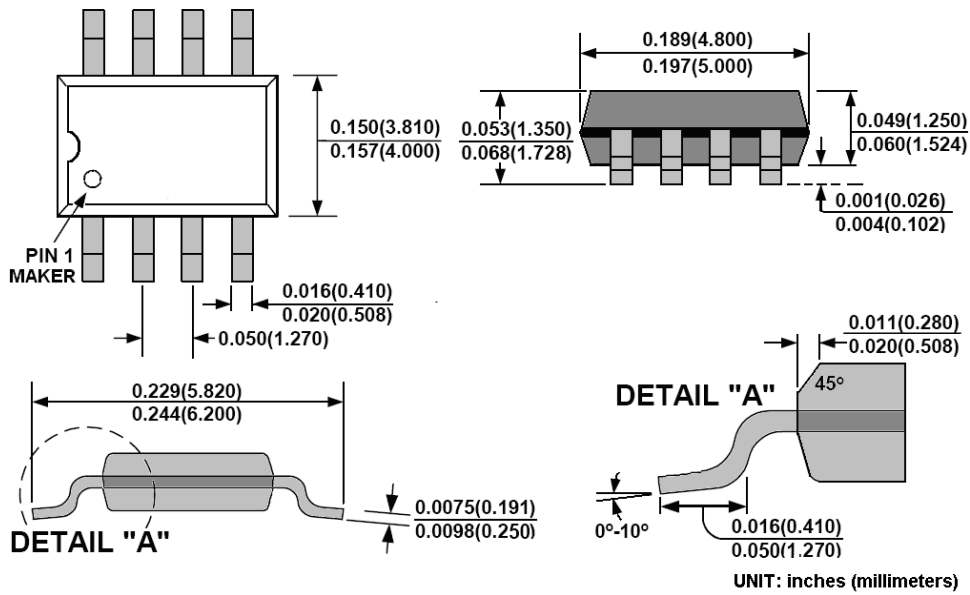


Typical Performance Characteristics



Package Outline

SOP8:



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