



HIGH EFFICIENCY MONOLITHIC SYNCHRONOUS STEP DOWN REGULATOR

Table 2. Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V ₆	Input voltage	-0.3 to 6	V
V ₅	Output switching voltage	-1 to V _{CC}	V
V ₁ , V ₈	Low Battery Input, Low Battery Output	-0.3 to V _{CC}	V
V ₃	Feedback voltage	-0.3 to V _{CC}	V
V ₂	Error Amplifier Output Voltage	-0.3 to V _{CC}	V
V ₇	Synchronization / Mode Selector	-0.3 to V _{CC}	V
P _{tot}	Power dissipation at Tamb=70°C	0.45	W
T _j	Junction operating temperature range	-40 to 150	°C
T _{stg}	Storage temperature range	-65 to 150	°C
LX Pin	Maximum Withstanding Voltage Range Test Condition: CDF-AEC-Q100-002- "Human Body Model" Acceptance Criteria: "Normal Performance"	±1000	V
Other pins		±2000	V

Figure 3. Pin Connection

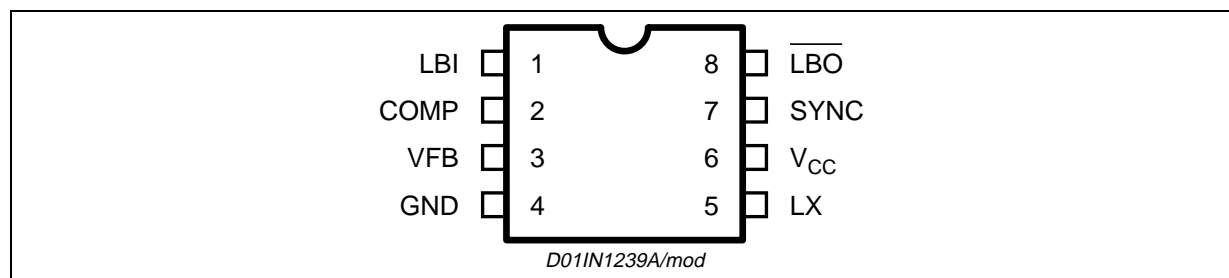


Table 3. Thermal Data

Symbol	Parameter	Value	Unit
R _{th j-amb}	Thermal Resistance Junction to Ambient	180	°C/W

Table 4. Pin Functions

N	Name	Description
1	LBI	Battery low voltage detector input. The internal threshold is set to 0.6V. The external threshold can be adjusted by using an external resistor divider.
2	COMP	Error amplifier output. Compensate it with a 220pF capacitor
3	VFB	Error amplifier input. The output voltage can be adjusted by using an external resistor divider connected to this pin (V _{FB} = 0.6V).
4	GND	Ground.
5	LX	Switch node connection to the inductor.
6	VCC	Input voltage.
7	SYNC	This pin allows to select Low Noise/ Low Consumption Mode or to synchronize the device.
8	LBO	Battery low voltage detector output. If the voltage at the LBI pin drops below the internal threshold, LBO goes low. The LBO is an open drain output. A pull_up resistor should be connected between the pin and the output voltage

Table 5. ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, $V_{CC} = 3.6\text{V}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V _{CC}	Operating input voltage	After Turn On	2.7		5.5	V
V _{CC ON}	Turn On threshold			2.8		V
V _{CC OFF}	Turn Off threshold			2.65		V
V _{CC hys}	Hysteresis			150		mV
R _p	High side Ron	V _{CC} = 3.6V, I _{LX} =100mA		240		mΩ
R _n	Low side Ron	V _{CC} = 3.6V, I _{LX} =100mA		215		mΩ
I _{lim}	Peak current limit	V _{CC} = 3.6V		1.2		A
	Valley current limit	V _{CC} = 3.6V		1.4		A
V _{out}	Output voltage range		0.6		V _{CC}	V
f _{osc}	Oscillator frequency			600		KHz
f _{sync}	Sync mode clock (*)		500		1400	KHz
DC CHARACTERISTICS						
I _q	Quiescent current (low noise mode)	V _{sync} = 0V, no load, V _{FB} > 0.6V		230		μA
	Quiescent current (low consumption mode)	V _{sync} = V _{CC} , no load, V _{FB} > 0.6V		25		μA
I _{sh}	Shutdown current	V _{CC} < 2.7V, V _{FB} > 0.6V		0.2		μA
I _{LX}	LX leakage current (*)	V _{CC} < 2.7V, V _{LX} = V _{CC}		1		μA
		V _{CC} < 2.7V, V _{LX} = 0V		1		μA
ERROR AMPLIFIER CHARACTERISTICS						
V _{fb}	Voltage feedback		0.593	0.6	0.607	V
I _{fb}	Feedback input current (*)	V _{FB} = 0.6V		25		nA
SYNC/MODE FUNCTION						
V _{sync_H}	Sync mode threshold high				1.3	V
V _{sync_L}	Sync mode threshold low		0.5			V
LB SECTION						
V _{LBI}	LBI Threshold			0.6		V
V _{LBO}	LBO Logic Low	I _{sink} = 1mA, V _{CC} = 3.6V, V _{LBI} < 0.6V		0.2	0.4	V
I _{LK-LBO}	LBO Leakage Current (*)	V _{LBO} = 3.6V, V _{CC} = 3.6V, V _{LBI} > 0.6V			50	nA
PROTECTIONS						
HOVP	Hard overvoltage threshold			10		%Vout

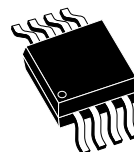
(*) Guaranteed by design

Figure 4. MSOP8 Mechanical Data & Package Dimensions

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.10			0.043
A1	0.050		0.150	0.002		0.006
A2	0.750	0.850	0.950	0.03	0.033	0.037
b	0.250		0.400	0.010		0.016
c	0.130		0.230	0.005		0.009
D (1)	2.900	3.000	3.100	0.114	0.118	0.122
E	4.650	4.900	5.150	0.183	0.193	0.20
E1 (1)	2.900	3.000	3.100	0.114	0.118	0.122
e		0.650			0.026	
L	0.400	0.550	0.700	0.016	0.022	0.028
L1		0.950			0.037	
k	0° (min.) 6° (max.)					
aaa			0.100			0.004

Note: 1. D and F does not include mold flash or protrusions.
Mold flash or protrusions shall not exceed 0.15mm (.006inch) per side.

OUTLINE AND MECHANICAL DATA



MSOP8 (Body 3mm)

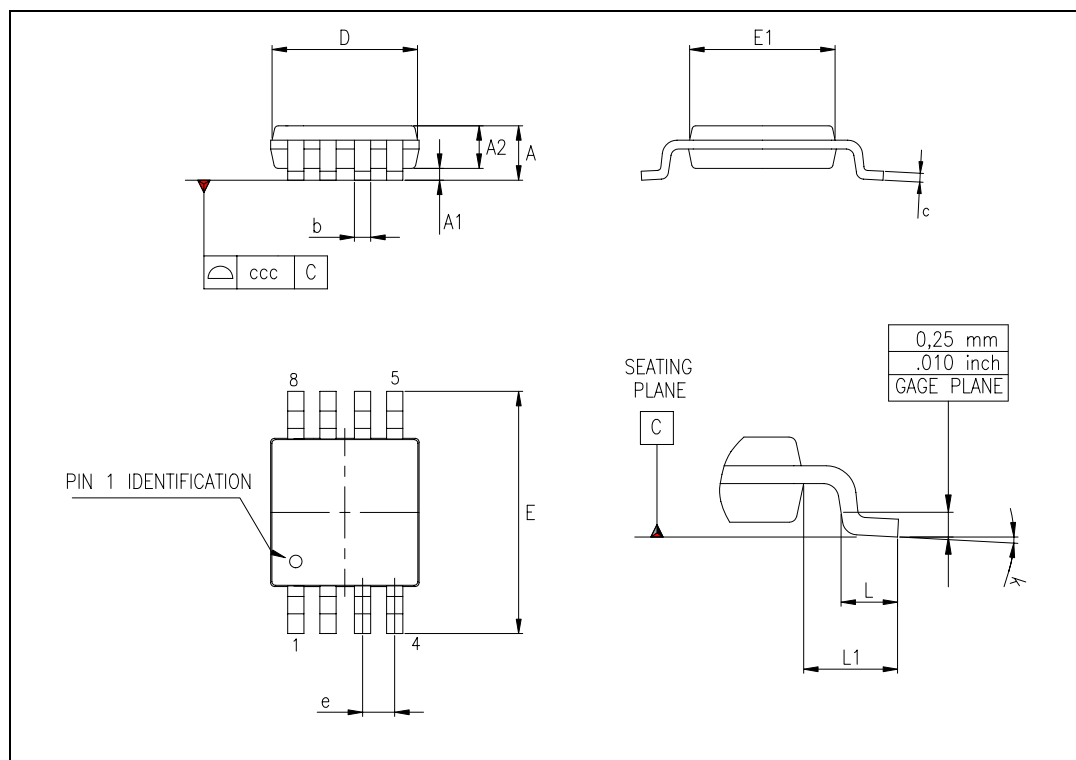


Table 6. Revision History

Date	Revision	Description of Changes
January 2004	2	First Issue in EDOCS DMS
September 2004	3	Changed Style-sheet and Table 2

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