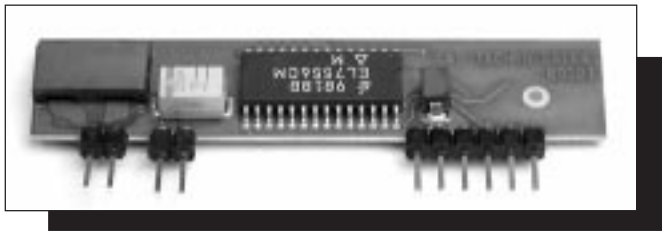
C&D TECHNOLOGIES

Product Data Sheet

5 VDC INPUT, 3.3 VDC OUTPUT DC/DC CONVERTER

Continuum

SuperSIP™



Features

- **Non isolated DC/DC Converter designed to operate from a regulated 5V bus**
- **Output voltage Range: 1.8V - 3.6V**
- **Easy resistive programming for desired output**
- **No resistive programming gives 3.3 Vdc output**
- **Wave solderable**

Description

The SuperSIP™ DC/DC converter accepts a regulated 5V input (±10%) and provides 1.8Vdc to 3.6Vdc at 6A. The circuit is optimized for high efficiency and fast load transient response needed by telecom, DSP, and microprocessor applications. Advanced thermal design, monolithic power circuitry, planar magnetics, and synchronous rectification result in outstanding performance and value. Pins are staked for wave solderability. Multiple programming, power good and on/off options allow superior flexibility and drop in compatibility for most existing designs.

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Electrical Specifications

Unless otherwise specified, operating conditions are as follows: V_{in}=5V, V_o=3.3V, I_o=6A, T_A=25°C, C_{in}=100µF, C_o=0F.

Parameters		Conditions	Min.	Typ.	Max.	Units
Input						
Input Voltage	V_{in}		4.5	5.0	5.5	V_{DC}
Input Current Ripple				200		mA_{RMS}
Required Capacitance	C_{in}	*Note 1*	0	100		µF
Output						
Output Voltage	V_o	Nominal	3.25	3.3	3.35	V_{DC}
Output Program Range		*Note 2*	1.8		3.6	V_{DC}
Output Current	I_o	T_A=25°C	0		6	Amps
Output Ripple		20 Mhz BW		15	50	mVp-p
Output Rise time	T			700		µS
Output Capacitance Range	C_o		0		5000	µF
Line Regulation				±0.5		%
Load Regulation		I_o min-I_o max		±1.0		%
Temperature Coefficient	T_c			0.01		%/°C
Combined variation		V_{in} min-max				
		I_o min-max				
		T_A=25C°-85C°	-2		+2	%
Current Limit	I_{limit}	V_{in} = 4.75Vdc	6.5	9	12	A
General						
Switching Frequency				800		kHz
Dynamic Response						
$\Delta I_O/\Delta t$ = 1A/10μsec, V_i = 5.0V, T_A = 25°C						
Load Change from I_O = 0% to I_O = 100%						
Peak Deviation				30		mV
Settling time (V_O<10% Peak Deviation)				100		µsec
Load change from I_O = 100% to I_O = 0%						
Peak Deviation				30		mV
Settling time (V_O<10% Peak Deviation)				100		µsec
Temperature						
Operating Temperature		*Note 3*	0		+60	°C
Storage Temperature			-40		+125	°C

Notes

1. Input source<3" from SuperSIP™, Load transient <3A per SIP. 100µF low ESR capacitor for load transients >3A.
2. Optional programming 1.8 - 3.6 or ±10% available. See Table.
3. 100 lfm air, V_o=3.3V, I_o=6A. See Thermal Design Guide for other conditions.

Programming

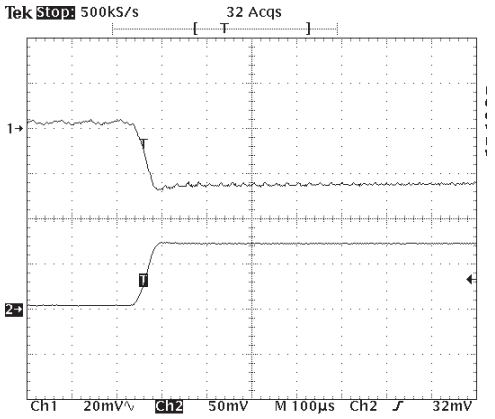
To program the SuperSIP™ for V_{out}<3.3, connect resistor across pins 8 (TRIM) and 6 (V_o). For V_{out}>3.3, resistor is connected across pins 8 and 4 (Gnd).

Table 2

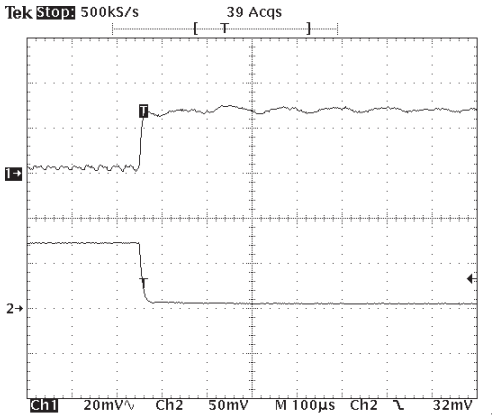
V_{out}	Resistor Value	V_{out}	Resistor Value
1.8	576Ω	2.8	18.2k
1.9	1.21k	2.9	24.3k
2.0	1.96k	3.0	34.8k
2.1	2.8k	3.1	54.9k
2.2	3.83k	3.2	110.0k
2.3	4.99k	3.3	OPEN
2.4	6.49k	3.4	66.5k
2.5	8.25k	3.5	29.4k
2.6	10.7k	3.6	18.2k
2.7	13.7k		

Transient Response

Operating conditions are as follows: Vin=5V, Vo=3.3V, Load change from Io=0% to Io=100%, TA=25°C, Cin=0F, Co=µF.



Operating conditions are as follows: Vin=5V, Vo=3.3V, Load change from Io=100% to Io=0%, TA=25°C, Cin=0F, Co=µF.

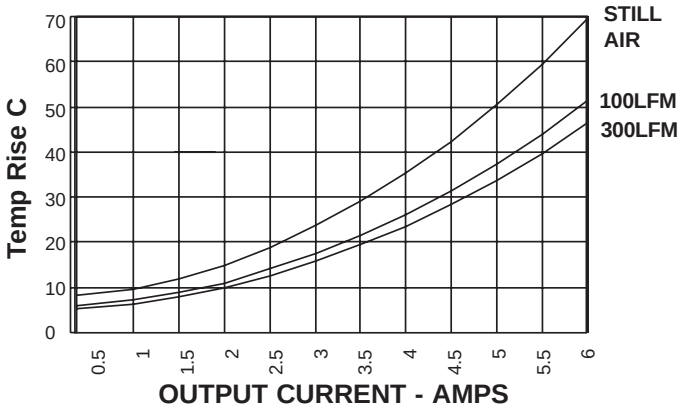


Thermal Design Guide

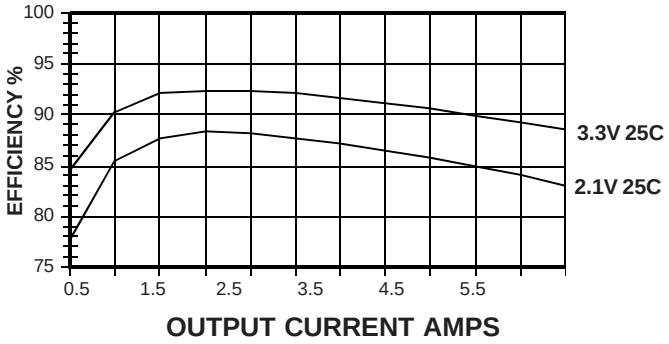
Locate your operating current, read the junction temp rise from the graph and add to your maximum ambient. 135°C is the maximum allowable operating junction temperature. Test conditions: Device soldered into 4" x 4" PCB, 2 sided with power and ground planes for heat conduction. Due to the difficulty in predicting the thermal effects of airflow velocity and direction, and thermal conduction through ground planes it is important that the SuperSIP™ be evaluated thermally in each application. For high ambient temperature/high current application please request our Application Note 35-118-01, "Accurate Measurements of SuperSIP™ Junction Temperature", for further assistance.

T_j Rise vs. I_o

(Junction Temp Rise vs. Output Current)



Efficiency



V_o=3.3V, C_{out}-Oµf, V_i=5V, C_{in}=100µf

Ordering Information

Typical examples:

SS	25	-	A	-	A	-	A	Standard configuration 5V to 3.3V with 1.8V-3.6V trim range
SS	25	-	B	-	A	-	A	

Power Good	Enable	Programming (See Table 2)
A = Pin 7A installed for Power Good option **B** = Pin omitted (industry standard)	**A** = logic1 or open = ON logic 0 or gnd = OFF **B** = logic 0 or gnd = ON logic 1 = OFF	**A** = Standard 3.3V with Pin 8 open or program per Table 2.

Pin Out

Pin	Function	Description
1	V_o	Output Voltage
2	V_o	Output Voltage
3	V_o	Output Voltage
4	GND	Ground
5	GND	Ground
6	V_{IN}	Input Voltage
7	V_{IN}	Input Voltage
7A	P_{good}	Power Good Option
8	Trim	Output Voltage Adjust
9	Enable	Enable Option

Mechanical

TOLERANCES
± .008" for 3 place decimals
± .02" for 2 place decimals
± .002" for pin diameter