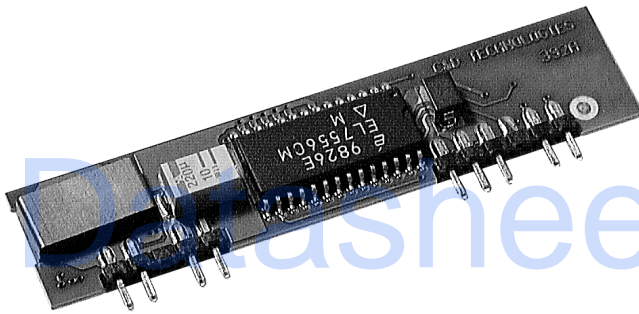


5 V_{DC} INPUT, 3.3 V_{DC} OUTPUT DC/DC CONVERTER

SS26 (SuperSIP™)



Description

The SS26 (SuperSIP™) DC/DC converter accepts a regulated 5V input ($\pm 10\%$) 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.

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 3.3Vdc output
- Wave solderable

More product information and application notes are available
on our website at www.cdpowerelectronics.com

Internet: <http://www.cdpowerelectronics.com>

Power Electronics Division, United States
3400 E Britannia Drive, Tucson, Arizona 85706
Phone: 520.295.4100 Fax: 520.770.9369

Power Electronics Division, Europe
C&D Technologies (Power Electronics) Ltd.
132 Shannon Industrial Estate, Shannon, Co. Clare, Ireland
Tel: +353.61.474.133 Fax: +353.61.474.141

Electrical Specifications

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

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}	<i>Note 1</i>	100		μF
Output					
Output Voltage	V_o	Nominal	3.3	3.35	V_{DC}
Output Program Range		<i>Note 2</i>		3.6	V_{DC}
Output Current	I_o	$T_A=25^{\circ}C$		6	Amps
Output Ripple		20 Mhz BW	15	50	mVp-p
Output Rise time	T		700		μS
Output Capacitance Range	C_o			5000	μF
Line Regulation			± 0.5		%
Load Regulation		I_o min- I_o max	± 1.0		%
Temperature Coefficient	T_c		0.01		$\%/^{\circ}C$
Combined variation		V_{in} min-max I_o min-max $T_A=25^{\circ}C-85^{\circ}C$			%
Current Limit	I_{limit}	$V_{in} = 4.75V_{dc}$	9	12	A
General					
Switching Frequency			800		kHz
Dynamic Response $\Delta I_o/\Delta t = 1A/10\mu sec$, $V_i = 5.0V$, $T_A = 25^{\circ}C$ 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		<i>Note 3</i>	0	+60	$^{\circ}C$
Storage Temperature			-40	+125	$^{\circ}C$

Notes

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

Programming

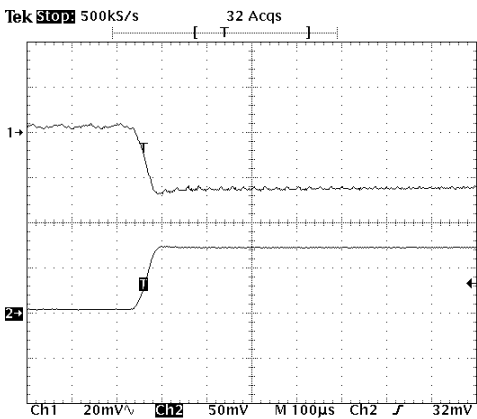
To program the SS26 SuperSIP™ for $V_{out} < 3.3$, connect resistor across pins 8 (TRIM) and 1 (V_o). For $V_{out} > 3.3$, resistor is connected across pins 8 and 4 (Gnd).

Table 2

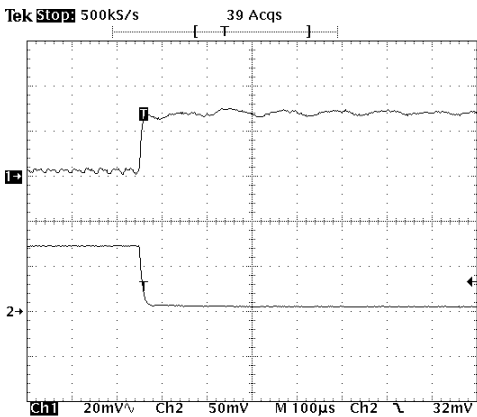
V_{out}	Resistor Value	V_{out}	Resistor Value
1.8	576Ω	2.8	18.2k
1.9	1.21k	2.9	24.3k
2.0	1.96k	3.0	34.8k
2.1	2.8k	3.1	54.9k
2.2	3.83k	3.2	110.0k
2.3	4.99k	3.3	OPEN
2.4	6.49k	3.4	66.5k
2.5	8.25k	3.5	29.4k
2.6	10.7k	3.6	18.2k
2.7	13.7k		

Transient Response

Operating conditions are as follows: $V_{in}=5V$, $V_o=3.3V$, Load change from $I_o=0\%$ to $I_o=100\%$, $T_A=25^\circ C$, $C_{in}=0F$, $C_o=\mu F$.



Operating conditions are as follows: $V_{in}=5V$, $V_o=3.3V$, Load change from $I_o=100\%$ to $I_o=0\%$, $T_A=25^\circ C$, $C_{in}=0F$, $C_o=\mu F$.

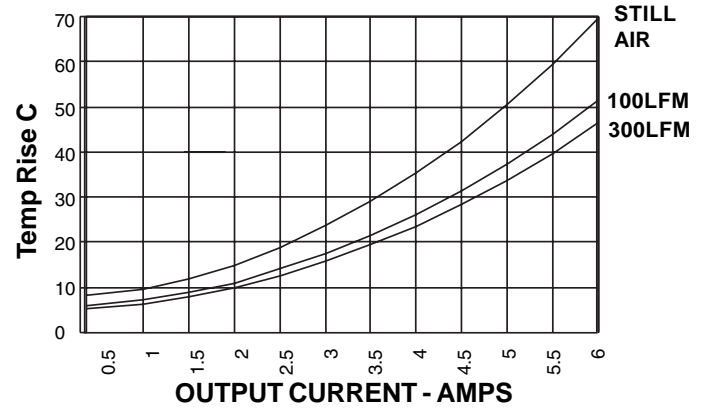


Thermal Design Guide

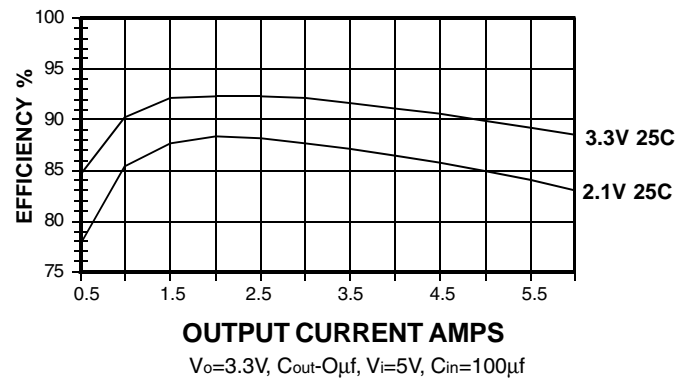
Locate your operating current, read the junction temp rise from the graph and add to your maximum ambient. $135^\circ C$ is the maximum allowable operating junction temperature. Test conditions: Device soldered into 4" x 4" PCB, 2 sided with power and ground planes for heat conduction. Due to the difficulty in predicting the thermal effects of airflow velocity and direction, and thermal conduction through ground planes it is important that the SS26 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 SS26 SuperSIP™ Junction Temperature", for further assistance.

T_j Rise vs. I_o

(Junction Temp Rise vs. Output Current)



Efficiency



$V_o=3.3V$, $C_{out}=0\mu f$, $V_i=5V$, $C_{in}=100\mu f$

Ordering Information

Typical examples:



Standard configuration 5V to 3.3V with 1.8V-3.6V trim range



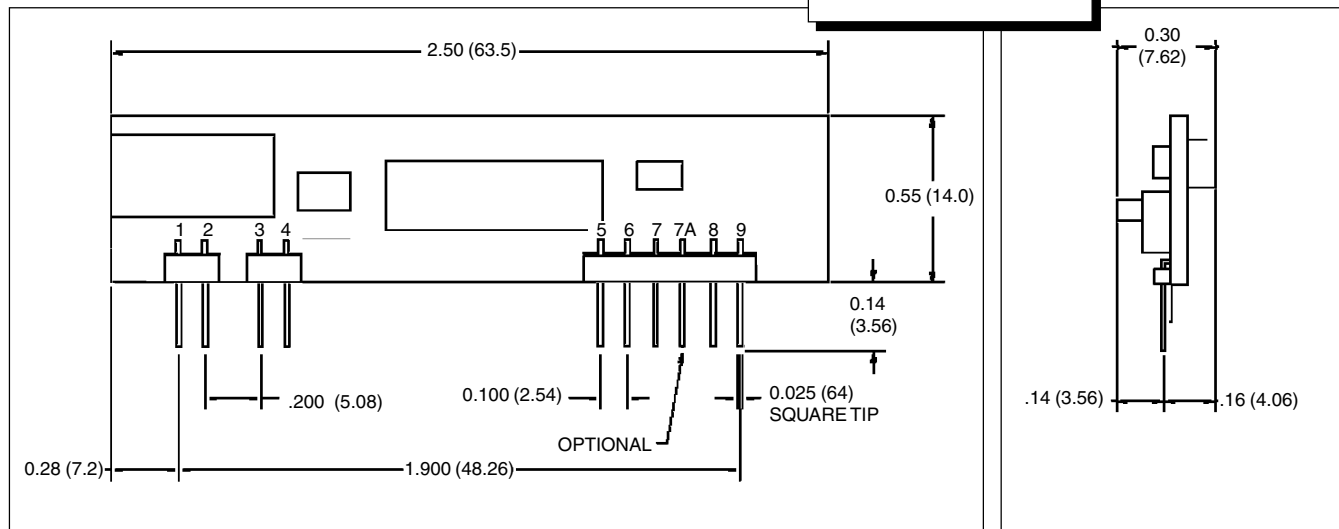
Power Good	Enable	Programming (See Table 2)
A = Pin 7A installed for Power Good option B = Pin omitted (industry standard)	A = logic 1 or open = ON logic 0 or gnd = OFF B = logic 0 or gnd = ON logic 1 = OFF	A = Standard 3.3V with Pin 8 open or program per Table 2.

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



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