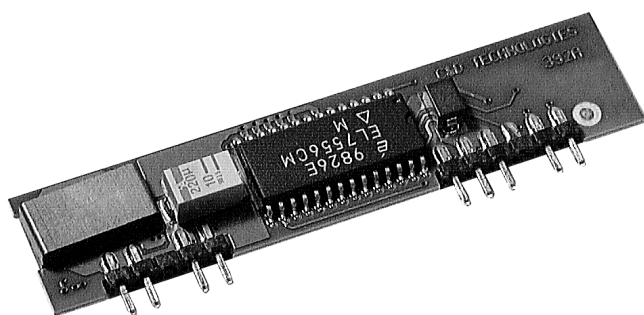


5 V_{DC} INPUT, 3.3 V_{DC} OUTPUT DC/DC CONVERTER

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>

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Electrical Specifications

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

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}	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	$T_A=25^{\circ}C$	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		%/ $^{\circ}C$
Combined variation	V_{in} min-max I_o min-max $T_A=25^{\circ}C$ - $85^{\circ}C$	-2		+2	%
Current Limit I_{limit}	$V_{in} = 4.75V_{dc}$	6.5	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	Note 3	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

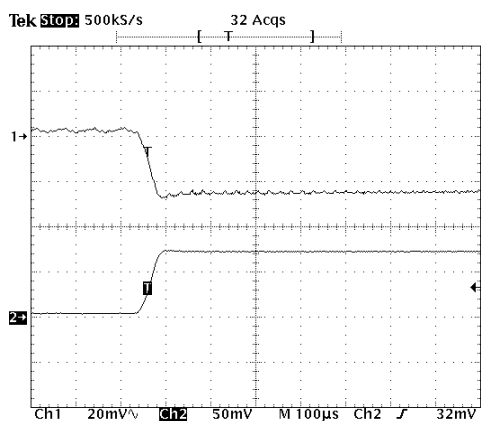
To program the SS26 SuperSIP™ for $V_{out} < 3.3$, connect resistor across pins 8 (TRIM) and 1 (V_o). For $V_{out} > 3.3$, resistor is connected across pins 8 and 4 (Gnd).

Table 2

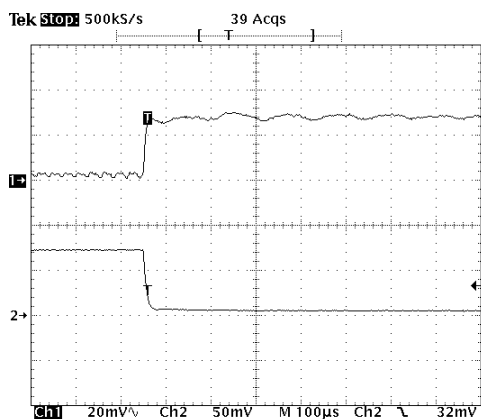
V_{out}	Resistor Value	V_{out}	Resistor Value
1.8	576 Ω	2.8	18.2k
1.9	1.21k	2.9	24.3k
2.0	1.96k	3.0	34.8k
2.1	2.8k	3.1	54.9k
2.2	3.83k	3.2	110.0k
2.3	4.99k	3.3	OPEN
2.4	6.49k	3.4	66.5k
2.5	8.25k	3.5	29.4k
2.6	10.7k	3.6	18.2k
2.7	13.7k		

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 $I_o=0\%$, $T_A=25^\circ C$, $C_{in}=0F$, $C_o=\mu F$.

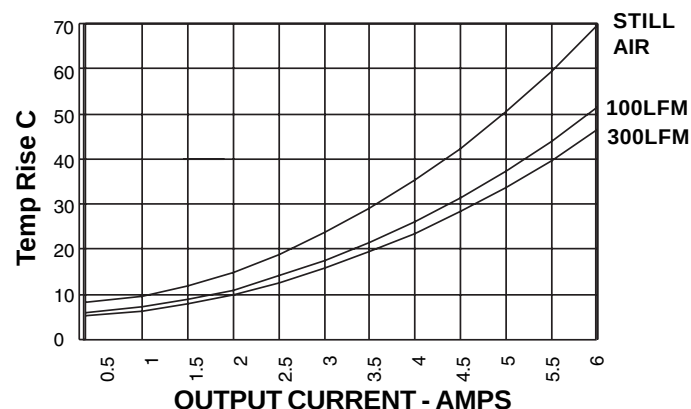


Thermal Design Guide

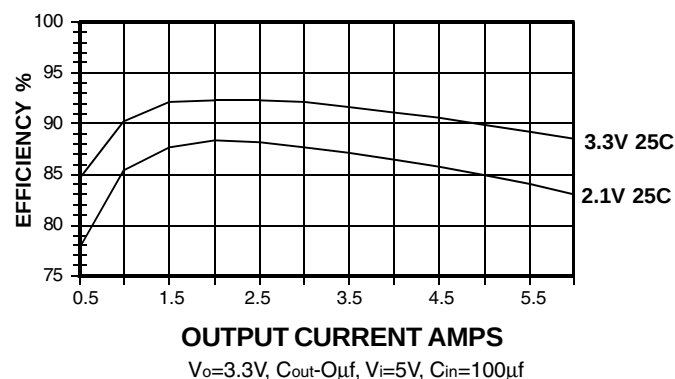
Locate your operating current, read the junction temp rise from the graph and add to your maximum ambient. $135^\circ C$ is the maximum allowable operating junction temperature. Test conditions: Device soldered into 4" x 4" PCB, 2 sided with power and ground planes for heat conduction. Due to the difficulty 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



Ordering Information

Typical examples:

SS 26 - A - A - A

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

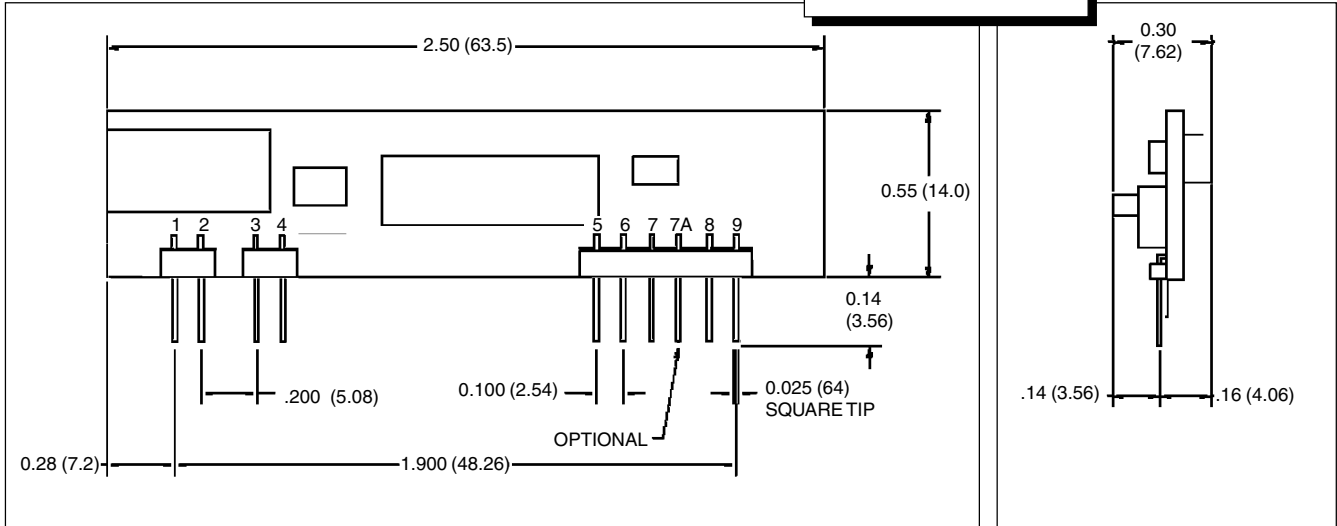
SS 26 - B - A - A

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



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