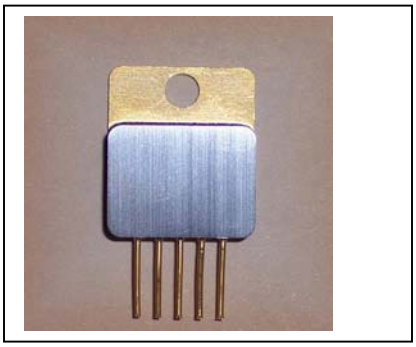
Point-of-Load Switching Regulator
4.5Vdc - 12Vdc Input, 3.5A Output Current

FEATURES

- Input Range 4.5V to 12V
- Adjustable Output Voltage
- Parallel configuration available
- Up to 3.5A Output Current
- Integrated Input Capacitors
- Variable Frequency Operation (note 1)
- Remote-Sense operation
- Efficiencies up to 85%



DESCRIPTION

The SAT8565 is a non-isolated PowerPac module designed for high reliability and full military point of load applications. Fully integrated, the SAT8565 includes buck controller, inductor, and input capacitors integrated in a single package. The SAT8565 operates from an input voltage of +4.5V to +12V providing step down power conversion to any output voltage from 1.21V to 5.0V. Operating features include output voltage adjust, output current limit, shutdown, external synchronization and soft start. Careful design and layout ensure excellent stability, transient response, and low noise operation. Packaged in a compact 5 Pin MO-078 package, the SAT8565 is manufactured in a facility certified to MIL-PRF-38534 and operates over the full –55°C to +125°C temperature range.

ABSOLUTE MAXIMUM RATINGS

(Exceeding maximum ratings may damage the device)

Table.1

Symbol	Parameter	Value	Unit
Vin	DC input Voltage Vin-Vground	15.0	V
Io	Output Current	4.0	A
Pd	Power Dissipation Tcase=25deg.C	25	W
Rthjc	Thermal Resistance, Junction to Case	2.5	°C/W
Vshdn	Shutdown Pin Voltage	7.0	V
Vsync	Sync Pin Voltage	7.0	V
Tstg	Storage Temperature	-65 to +150	°C
Tj	Operating Temperature Range	-55 to +125	°C
Tsold	Maximum Soldering Temperature, 10sec	300	°C

ELECTRICAL CHARACTERISTICS @ Ta=-55deg.C to +125deg.C

(Unless Otherwise Specified)

Table 1.

Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
Vout	Output Voltage accuracy	Vin=5.0V, Iout=2.0A, Vo= Vref		1.0	2.0	%
Kvi	Line Regulation	+4.5V ≤ Vin ≤ +6.0V, Iout = 3A		.1		%
Kvo	Load regulation	Vin = 5V, 1A ≤ Iout ≤ 3A		1.0		%
Vin	Input Voltage Range	Iout=2.5A	4.5		12	V
Vsync	Sync Input Voltage			1.5	2.2	V
Isc	Short-circuit current Limit	Vin=5.0V,		6.0		A
Ishdn	Shutdown Source Current	Vin=6.0V; Vshdn=0, Vsw=0			75	uA
Fsync	Synchronizing Range[1]		580		1000	KHz
Vshdn	Shutdown Input Voltage[2,3]	Vin=5.0, Vout < 0.5V	0.4			V

Notes:

1. Frequency of operation can be adjusted when using the Sync input, (table 1). This input should be grounded when not in use.
2. Output Inhibit guaranteed @ Vshdn< 0.4V.
3. Shutdown pin should be pulled up to Vin (Rpullup≤ 5KΩ), when not in use.

Typical Performance Characteristics

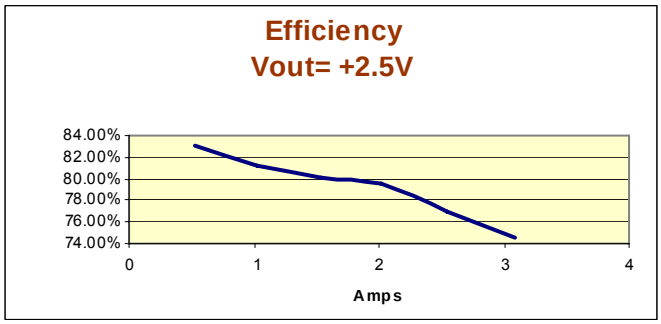


Figure 1, Efficiency

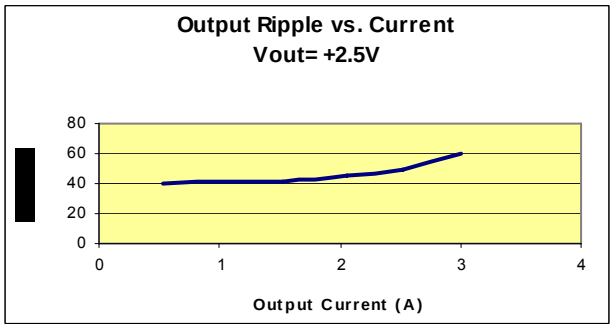


Figure 2, Output Ripple

Application Circuits

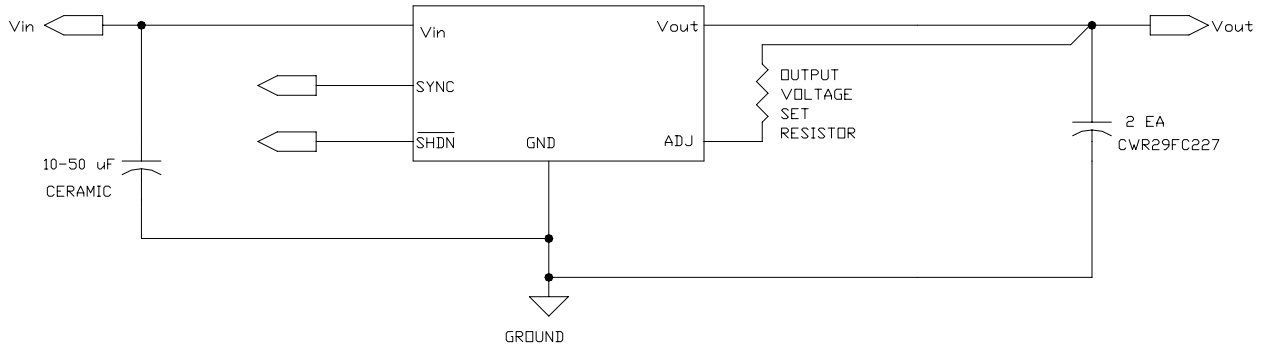


Figure 4.- Adjustable Regulator Version

Vout = Vref x (1+Radj/2490), with Vref~1.21 Volts

Table 3.- Commonly Available 1% resistor values for various output Voltages

V_{out} (V)	R_{adj} (Ω)	V_{out} (V)	R_{adj} (Ω)
1.21	0	2.8	3240
1.5	590	3.0	3650
1.8	1210	3.3	4320
2.0	1620	3.5	4750
2.2	2050	3.8	5360
2.5	2670	4.0	5760

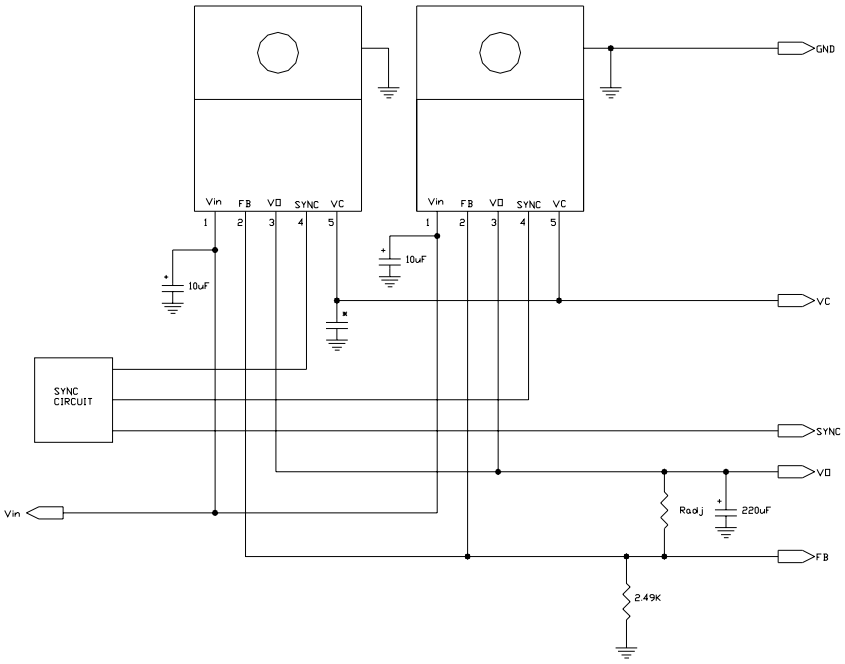
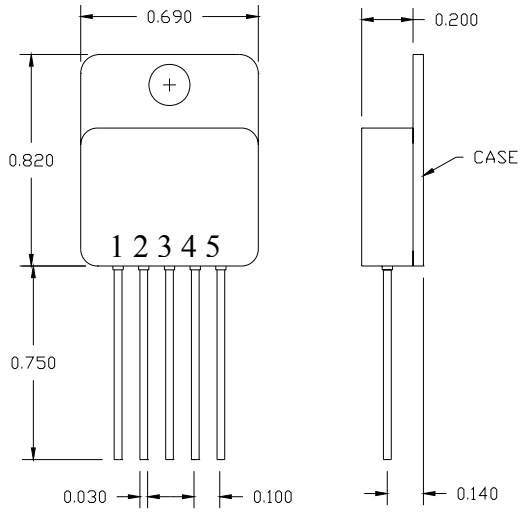


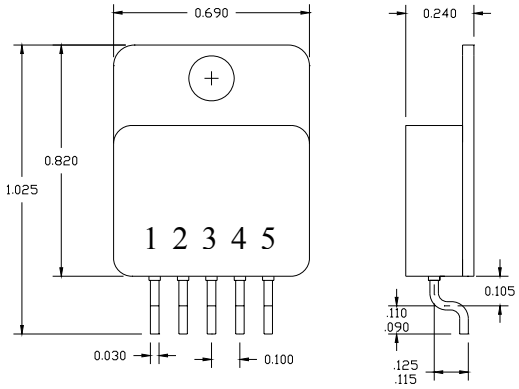
Figure 3.- Parallel Operation
(See SAT8565 Design Note for further information)

* ~1.5nF times the number of paralleled units if using electrolytic output capacitors, 22nF times if using ceramic output capacitors.

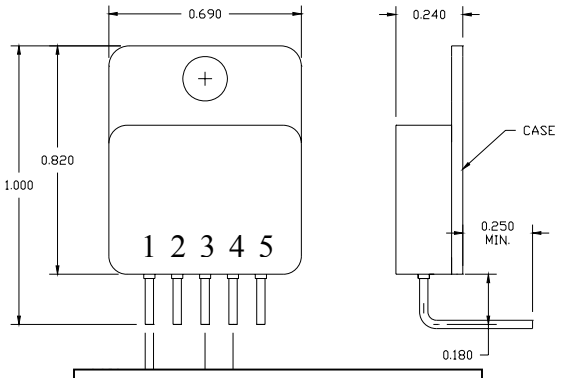
PACKAGE OUTLINES



Standard Thru-Hole Package



Surface Mount Lead-Bend**



Right angle Lead-Bend**

Pin Assignments for SAT8565A, (Adjustable configuration).

Pin No	Pin Name	Pin Description
1	Vin	Input Voltage
2	GND	Ground
3	Vout	Output Voltage
4	SHDN	Shutdown Pin. Output reset occurs when Vshdn< 0.4V
5	Adjust	Adjust pin for Adjustable Output (SAT8565A) ;
	Case	Isolated- No connection

Pin assignments for SAT8565P, (Parallel configuration).

Pin No	Pin Name	Pin Description
1	Vin	Input Voltage
2	FB	Feedback Pin (Adjust)
3	Vout	Output Voltage
4	Sync	Sync Pin.
5	Vc	Compensation Pin
	Case	Ground

ORDERING INFORMATION:

SAT8565A	-3	H	T	-Adj
Product Number	Current Designation	Screening Level	Package Type	Output Voltage
P= Parallel Version A= Adjustable Version	- 3 = 3A Version	K= Class K Comliant (MIL-PRF-38534) H = Class-H Compliant (MIL-PRF-38534) *Blank* = SatCon Commercial screening EM = Eng. Model	T = MO-078	-ADJ = Adjustable Version

**** Lead-Bend and surface-mount configurations may be requested as a separate line item on your order.**

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Specifications in this document are subject to change without notice.