SC21150
FemtoBuck™ 1.2A Synchronous Buck Regulator

POWER MANAGEMENT

Features

- Input voltage range — 2.5V to 5.5V
- 1.2A continuous output current
- 4MHz switching frequency
  - Optional Frequencies 2.2/3/6MHz
- Adjustable or Fixed Output Voltage
  - Adjustable Output Range 0.8V to VIN
  - Fixed Output Range 0.8V to 3.6V
- 1% output voltage accuracy
- Adaptive On-Time architecture
- Up to 100% duty cycle
- Up to 96% peak efficiency
- Power Save mode for efficient light load operation
- >90% efficiency 30mA to 75mA
- 1µA shutdown current
- 23µA quiescent current
- Pre-bias startup protection
- Internal or optional external Soft Start
- Device options (contact Semtech Marketing)
  - Automatic output discharge
  - Power Good indicator
  - Internal Soft Start
  - External Programmable Soft Start
  - Forced PWM Operation Input
- 0.75mm x 1.11mm, 6-Bump WLCSP Package
- WEEE and RoHS compliant and halogen-free

Applications

- Wearable Electronics
- GPS devices
- Battery powered equipment
- Portable devices

Description

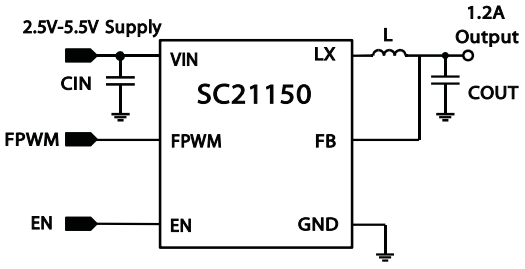
The SC21150 is an ultra-high efficiency 1.2A DC/DC buck regulator available in a tiny CSP package. These features make the SC21150 family perfect for small form factor portable applications where long battery life is essential. SC21150 is an Adaptive On-Time 4MHz switching regulator at full load conditions. Under light load conditions, it seamlessly transitions into Power Save Mode and reduces switching frequency thus saving energy. High switching frequency operation allows the use of a very small 0.47µH inductor along with small input and output capacitors to minimize overall circuit size. A Forced PWM input allows continuous switching under all load conditions.

The SC21150 is highly configurable with a wide range of factory options including internal Soft Start times, fixed or adjustable output voltage, automatic output discharge, and a Forced PWM input. Additional options include exchanging the Forced PWM input for externally programmed Soft Start or a Power Good indicator. Operating frequency options are 2.2, 3, and 6MHz.

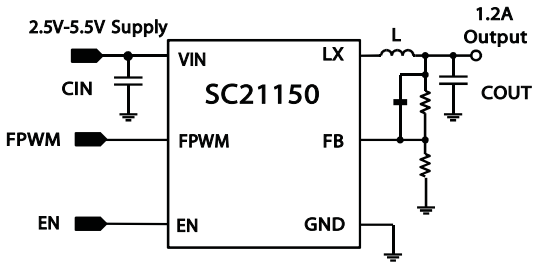
The SC21150 is offered in an ultra-small WLCSP 6-Bump 0.75mm x1.11mm package with a bump pitch of 0.35mm. The SC21150 operating temperature range is -40C to +85C.

Typical Application Circuit

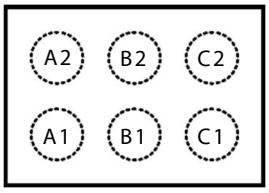
Fixed Output Voltage



Adjustable Output Voltage



Pin Configuration



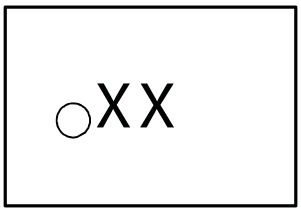
TOP VIEW

0.75x1.11 (mm)
6-Bump WLCSP

Bump Assignments 0.75x1.11mm 6-Bump WLCSP		
Row/Column	**1**	**2**
A	GND	VIN
B	LX	FPWM(1)
C	FB	EN

Notes:
(1) Pin B2 is default configured as Forced PWM input. This pin can also be configured as externally programmed Soft Start or a Power Good Indicator. Refer to Ordering Information.

Marking Information



TOP VIEW

0.75x1.11
6-Bump
WLCSP

6-Bump WLCSP Marking Diagram
XX = Pin A1 and Marking Code

6-Bump WLCSP Device Code		
Part Number	**Output**	**Marking Code**
SC21150ACSTRT	Adj	AZ
SC21150BCSTRT	1.2V	BL
SC21150AVCSTRT	Adj	A2
SC21150CVCSTRT	1.8V	C2

Ordering Information

Device [1][2]	Options[3]				
	Output[3]	Output Discharge[3]	Internal Soft-Start[3]	Pin B2 Option [3]	Frequency [3]
SC21150ACSTRT	Adjustable	Automatic	100µs	Forced PWM	4MHz
SC21150BCSTRT	1.2V	Automatic	100µs	Forced PWM	4MHz
SC21150AVCSTRT	Adjustable	Automatic	800µs	Forced PWM	2.2MHz
SC21150CVCSTRT	1.8V	Automatic	800µs	Forced PWM	2.2MHz
SC21150EVB	Evaluation Board 0.75 x 1.11 mm 6-Bump WLCSP				

Notes:

(1) Available in tape and reel only. A reel contains 5,000 devices.

(2) Lead-free packaging only. Device is WEEE and RoHS compliant and halogen-free.

(3) The following options can be made available. Contact Semtech Marketing for device options.

VOUT options : fixed or adjustable versions.

Fixed voltages can be specified from 0.8V to 3.6V in 50mV increments.

Output Discharge options: Automatic Discharge and No Discharge.

Soft-Start options: Fixed internal with options for 100µs/200µs/400µs/800µs.

Pin B2: The default function of the B2 pin is Forced PWM input. This pin can also be configured to provide externally programmed Soft Start or a Power Good indicator.

Frequency: The frequency is 4MHz or 2.2MHz with options for 3MHz and 6MHz.

Absolute Maximum Ratings

VIN (V) ..... -0.3 to +6.0
EN (V) ..... -0.15 to +(VIN+0.3)
FB, FPWM (V) ..... -0.3 to +(VIN+0.3)
LX (V). ..... -0.3 to +(VIN+0.3)
ESD Protection Level (kV)[1] 4

Recommended Operating Conditions

Input Voltage Range (V) ..... 2.5 to 5.5
Output Voltage Range (V) ..... 0.8 to 3.6
Maximum Continuous Current (A). 1.2
Junction Temperature Range (°C) ..... -40 $< T_J <$ +125

Thermal Information

Thermal Resistance Junction to Ambient[2] (°C/W)
WLCSP package. 100
Maximum Junction Temperature (°C) ..... +150
Operating Junction Temperature (°C). ..... -40 to +125
Storage Temperature Range (°C) ..... -65 to +150
Peak IR Reflow Temperature (10s to 30s) (°C) ..... +260

Exceeding the above specifications may result in permanent damage to the device or device malfunction. Operation outside of the parameters specified in the Electrical Characteristics section is not recommended.

NOTES:

(1) Tested according to JEDEC standard JESD22-A114-B.

(2) Calculated from package in still air, mounted to 3 x 4.5 (in), 4 layer FR4 PCB with thermal vias under the exposed pad per JESD51 standards.

Electrical Characteristics

Unless otherwise noted VIN = 5.0V, CIN = 4.7µF (4MHz) or 10uF (2.2MHz), COUT = 10µF (4MHz) or 22uF (2.2MHz), L = 0.47µH(4MHz) or 1.0uH (2.2MHz), EN = VIN, T_J = -40 to +85°C. Typical values are at T_A = 25°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input Supply						
Input Supply Voltage Range	VIN		2.5		5.5	V
Shutdown Current	ISD	EN = 0V		0.1		µA
Quiescent Current	IQ	Operating, No Load, Power Save Option		23		µA
Under Voltage Lock Out Threshold	UVLOrise	VIN rising edge		2.25	2.50	V
Under Voltage Lock Out Hysteresis	UVLOhyst			160		mV
Output Voltage[1]						
Feedback Voltage	VFB	Adjustable Vout (Fixed Vout: see Output in Ordering Information, page 3.)		0.80		V
Feedback Voltage Tolerance	VFBtol	Adjustable Vout and Fixed Vout	-3	+/- 1	+3	%
Feedback Input Leakage Current	IFB	Adjustable Vout		1	25	nA
Feedback Input Impedance	ZFB	Fixed Vout		4000		kΩ

Electrical Characteristics (continued)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage Range	Vout	Adjustable Vout	0.8		VIN	V
		Fixed Vout	0.8		3.6	V
Output Voltage Line Regulation	dVline	5.5V > VIN > (Vout +1), PWM operation		0.17		%/V
Output Voltage Load Regulation	dVload	500mA < ILOAD < 1.2A		-0.13		%/A
Maximum Output Current	IOUT	Continuous current	1.2			A
Soft Start						
Soft Start Time [1]	TSS	FB from LX rising edge to 95% of final value (Internal Soft Start)				
		SC21150ACSTRT/SC21150BCSTRT		100		µs
		SC21150AVCSTRT/SC21150CVCSTRT		800		µs
LX Switching Node						
On Resistance High-side	Rdson_hs	FB = 0V; ILX = 500mA		160		mΩ
On Resistance Low-side	Rdson_ls	FB = VIN; ILX = 500mA		120		mΩ
LX Leakage Current High Side	ILX_hs	FB = VIN = 5.5V; VLX = 0V	-1.5	-0.1		µA
LX Leakage Current Low Side	ILX_ls	FB = 0V; VLX = VIN = 5.5V; Vout Automatic Discharge disabled		0.1	1	µA
LX Pulldown Current[1]	ILX_pd	EN = 0V; VLX = 1V; Vout Automatic Discharge enabled		20		mA
Switching Frequency Tolerance[1]	Fsw_tol	PWM operation, 500mA load Adjustable Output: Vout = 2.5V Fixed Output: see Ordering Information	-10		+10	%
Current Sense						
High Side Current Limit	ILIMhs	Current from VIN to LX	1.5	2.2	3.0	A
Low Side Current Limit	ILIMls	Current from LX to GND		-0.8		A
Zero Cross Detector Threshold	Ithzcpfm	Power Save Mode and DC Test condition		0		mA
Thermal Protection						
Over-Temperature Shutdown	Tts_rise	Rising temperature		160		℃
Over-Temperature Hysteresis	Tts_hyst			10		℃

Electrical Characteristics (continued)

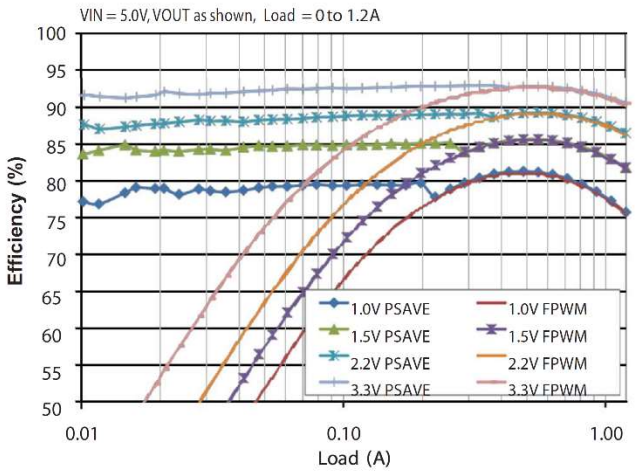
Parameter	Symbol	Conditions	Min	Typ	Max	Units
EN Input						
EN Input High Threshold	VIHen		1.2			V
EN Input Low Threshold	VILen				0.4	V
EN Input High Current	IIHen	VEN = VIN	-1			µA
EN Input Low Current	IILen	VEN = 0V			1	µA
Forced PWM Input(1)						
FPWM Input High Threshold	VIHfpwm		1.2			V
FPWM Input Low Threshold	VILfpwm				0.4	V
FPWM Input High Current	IIHfpwm	FPWM pin = VIN	-1			µA
FPWM Input Low Current	IILfpwm	FPWM pin = 0V			1	µA

Notes:

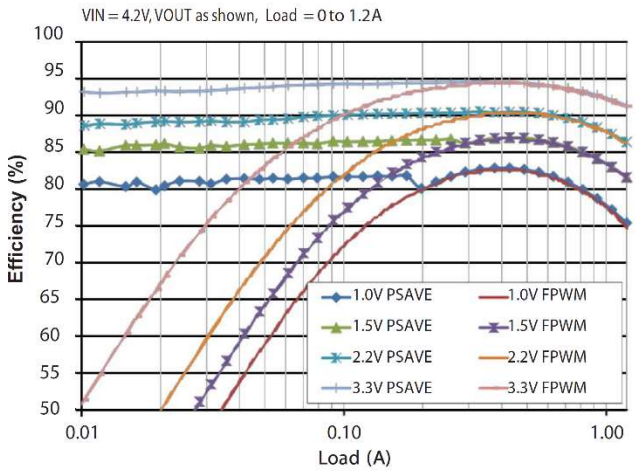
(1) The following options can be made available. Contact Semtech Marketing for device options.
VOUT options: fixed or adjustable versions.
Fixed voltage options are as shown in the Ordering Information Table.
Additional fixed voltages can be specified, from 0.8V to 3.6V in 50mV increments. Soft-Start options: Fixed internal with options for 100µs/200µs/400µs/800µs.
Output Discharge options: Automatic Discharge and No Discharge.
Frequency: The frequency is 4MHz or 2.2MHz with options for 3MHz and 6MHz.
Pin B2: The default function of the B2 pin is Forced PWM input. This pin can also be configured to provide externally programmed Soft Start or a Power Good indicator.

Typical Characteristics - SC21150ACSTRT 4MHz

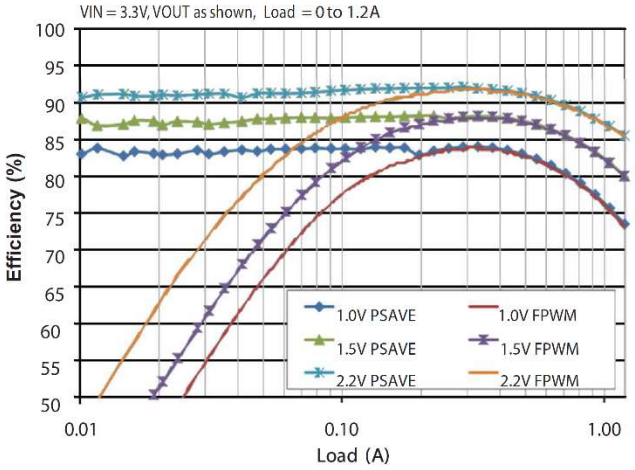
Efficiency vs. Load - 5VIN



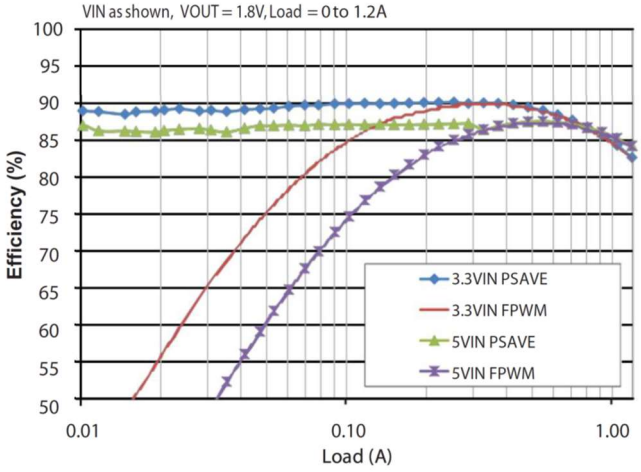
Efficiency vs. Load - 4.2VIN



Efficiency vs. Load - 3.3VIN

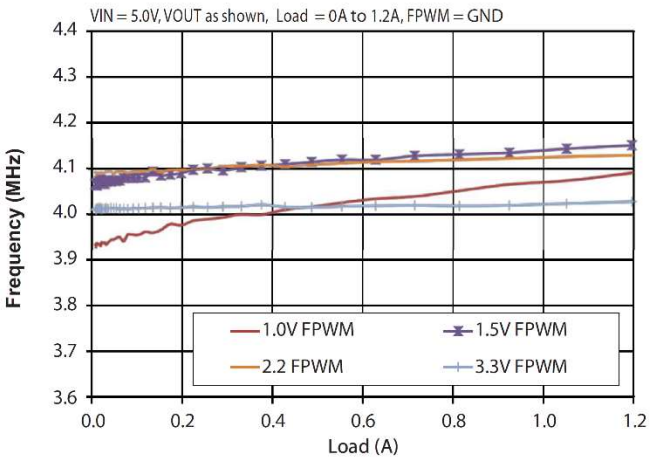


Efficiency vs. Load - VOUT 1.8V

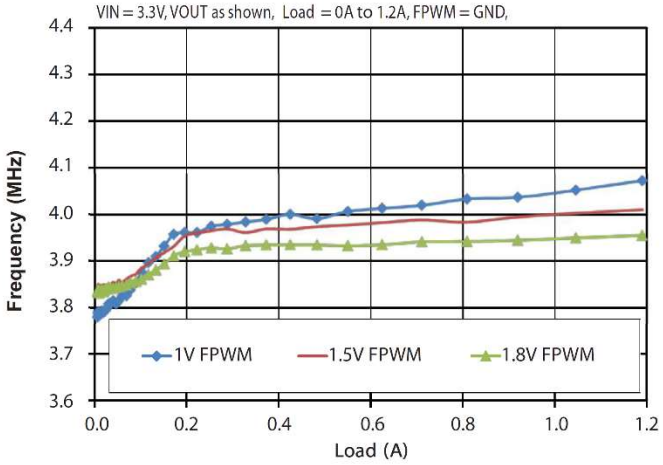


Typical Characteristics - SC21150ACSTRT 4MHz (continued)

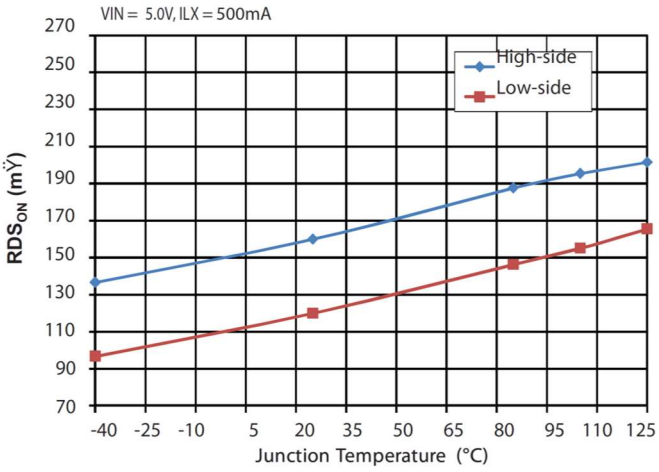
Frequency vs load - 5VIN, FPWM operation



Frequency vs load - 3.3VIN, FPWM operation

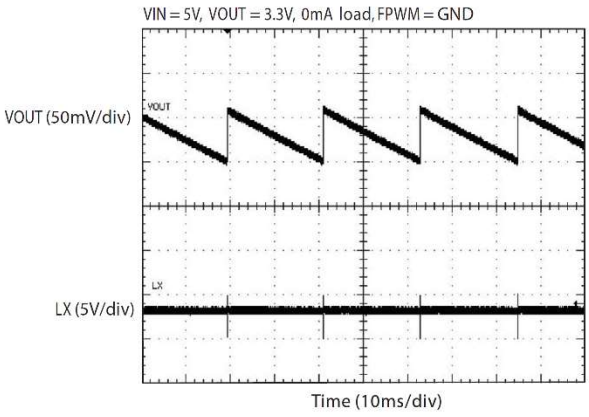


RDS_{ON} vs. Temperature

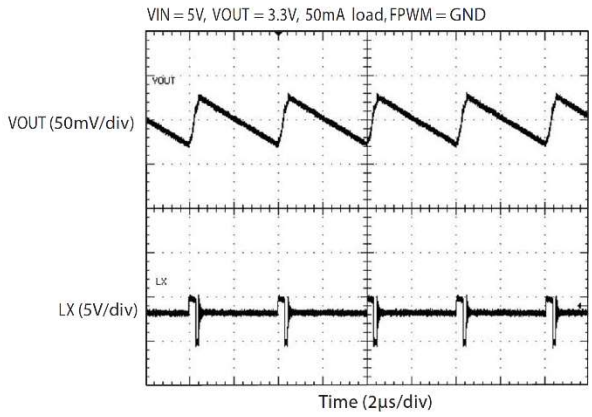


Typical Characteristics - SC21150ACSTRT 4MHz (continued)

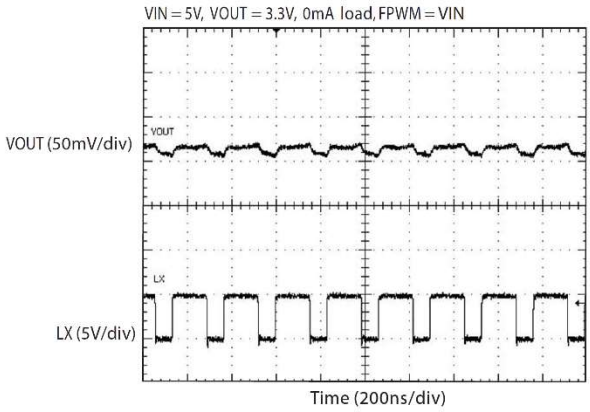
Power Save Operation — no load



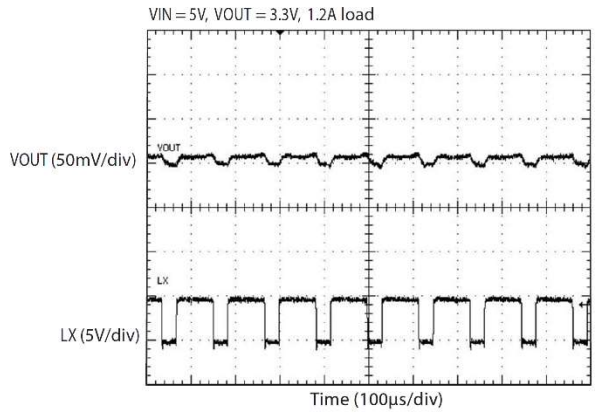
Power Save Operation — 50mA load



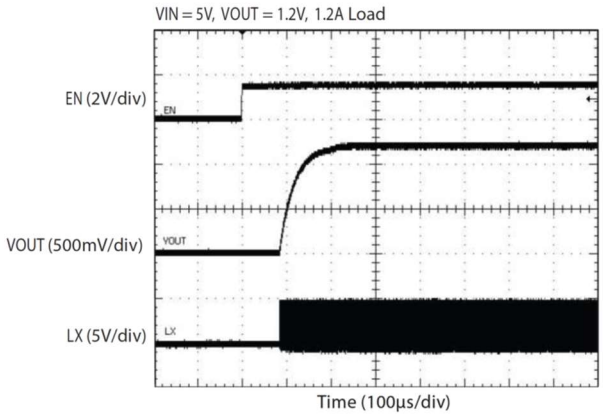
FPWM Operation — no load



FPWM Operation — 1.2A load

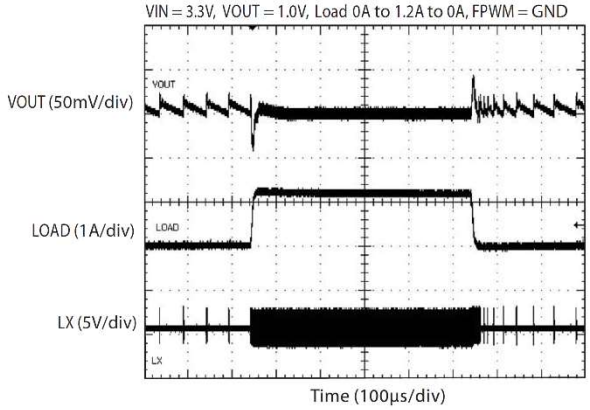


Startup - EN Control

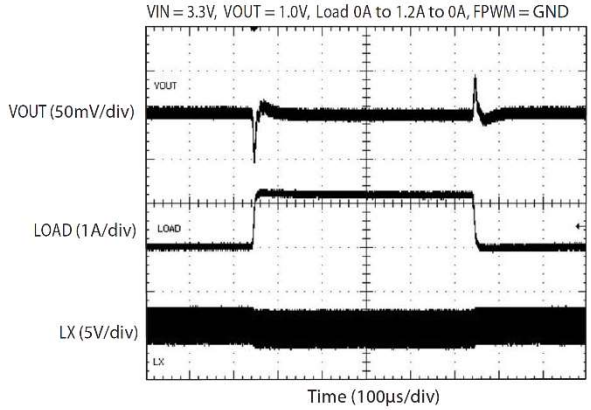


Typical Characteristics - SC21150ACSTRT 4MHz (continued)

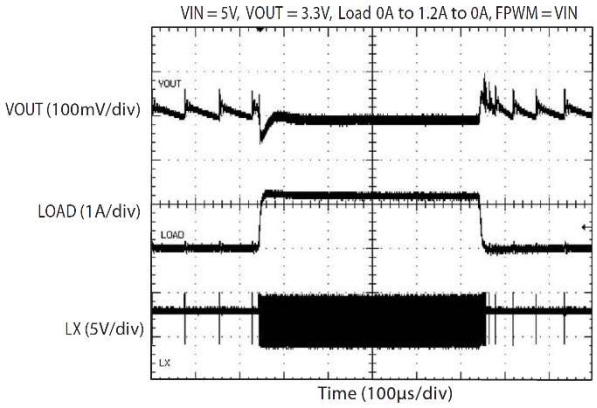
Load Transient - Power Save PFM to PWM



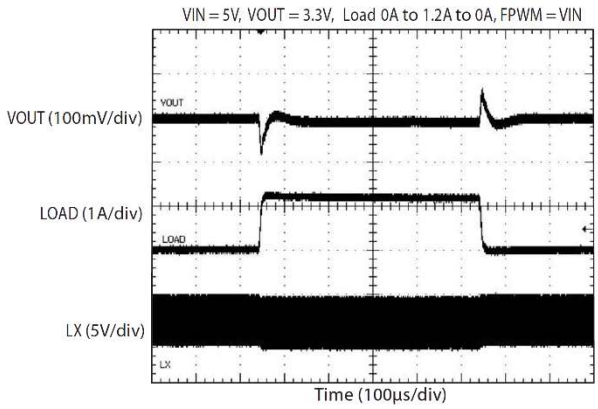
Load Transient - PWM to PWM



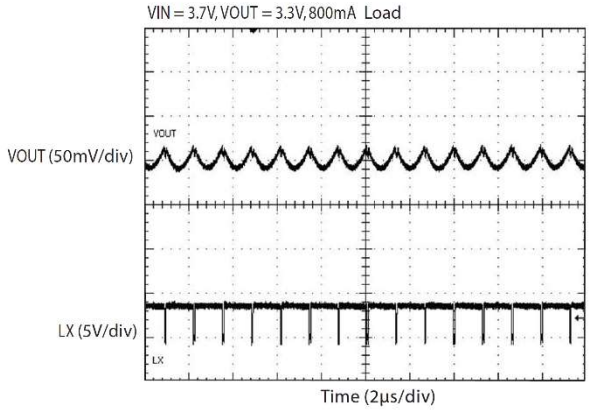
Load Transient - Power Save PFM to PWM



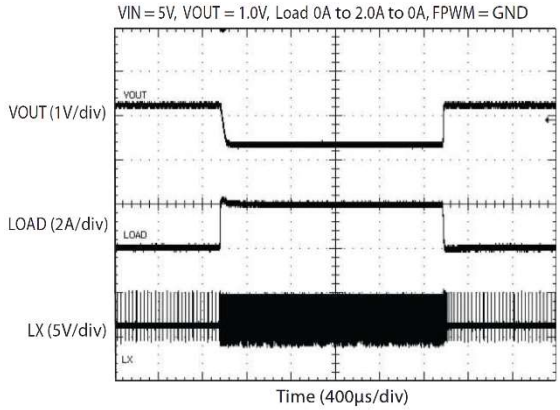
Load Transient - PWM to PWM



PWM Minimum Off Operation

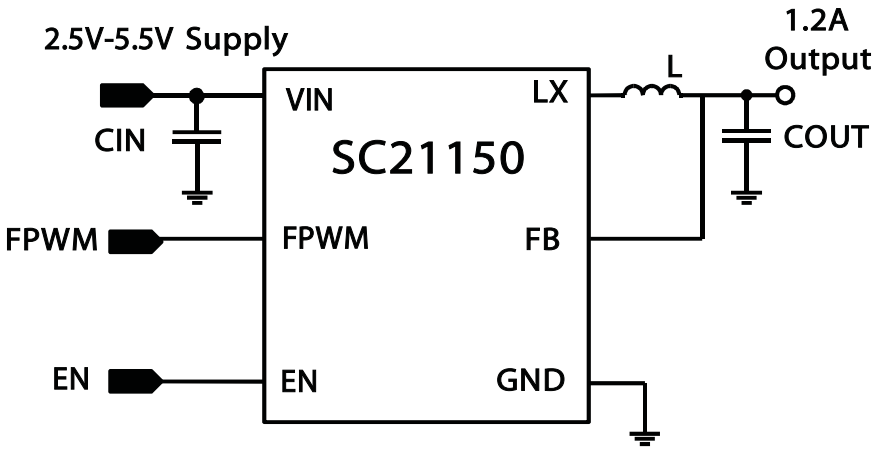


Overcurrent Shutdown and Recovery

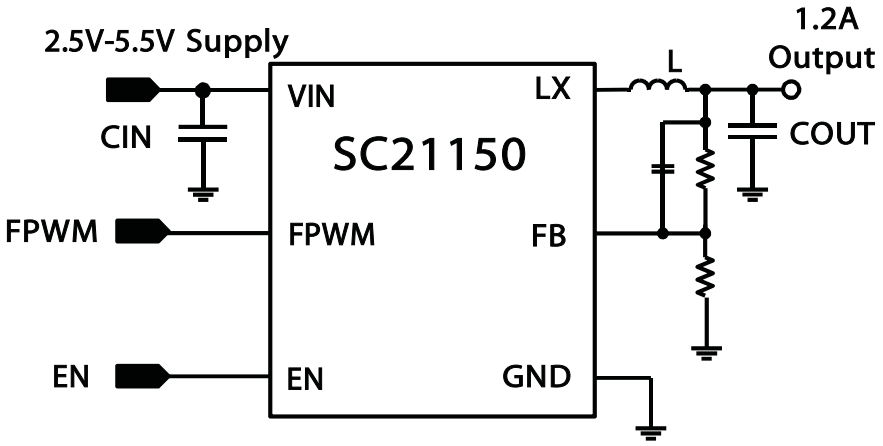


Detailed Application Circuit

Fixed Output Voltage



Adjustable Output Voltage

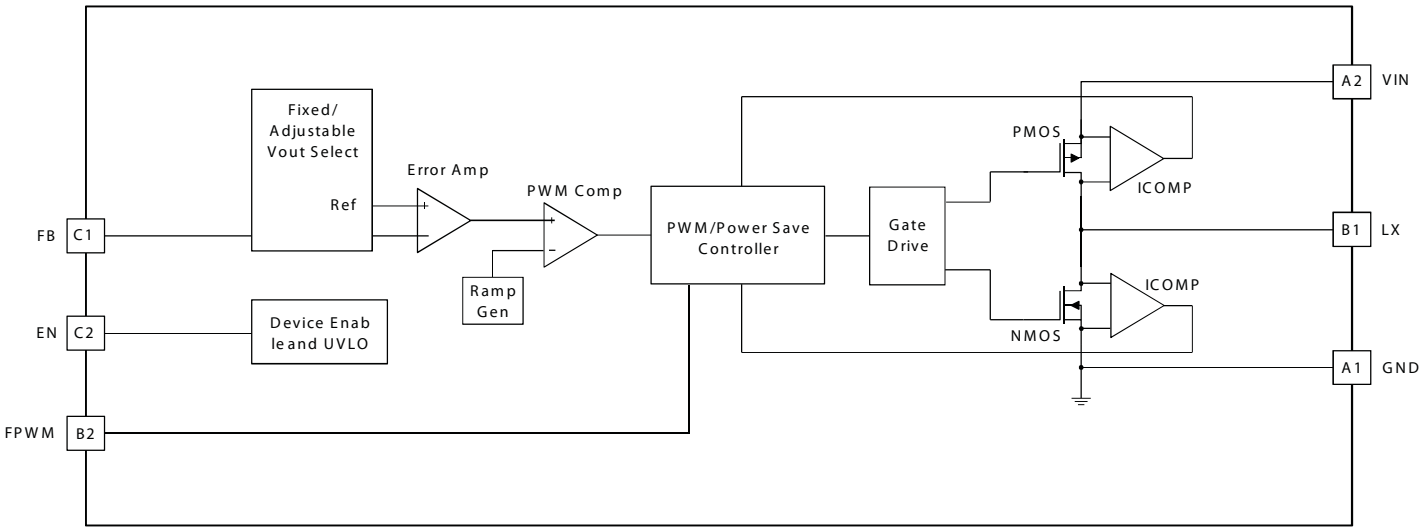


Components				
Device	Frequency	CIN	L	COUT
SC21150ACSTRT	4MHz	4.7µF	0.47µH	10µF
SC21150BCSTRT	4MHz	4.7µF	0.47µH	10µF
SC21150AVCSTRT	2.2MHz	10µF	1.0µH	22µF
SC21150CVCSTRT	2.2MHz	10µF	1.0µH	22µF

Bump Descriptions - 0.75 x 1.11mm 6-bump WLCSP

Bump	Bump Name	Bump Description
A1	GND	Ground connection.
A2	VIN	Input Supply Voltage for the device and sense point for the input Under Voltage Lock Out.
B1	LX	Switching node connection to inductor.
B2	FPWM	Forced PWM input. A logic low enables the automatic Power Save feature. A logic high disables the Power Save feature to ensure Forced PWM operation. Note that the B2 pin can also be configured to provide externally programmed Soft Start or a Power Good Indicator, refer to Ordering Information.
C1	FB	Feedback input (Output Voltage sense). For Adjustable Output, connect to the midpoint of a resistor divider between the output voltage and GND. For Fixed Output, connect directly to the output (VOUT).
C2	EN	Enable input. Connect to logic high or VIN to enable the device. Connect to logic low or GND to disable the device.

Block Diagram



Applications Information

Synchronous Buck Converter

The SC21150 is a synchronous buck regulator that employs an adaptive on-time architecture to provide fast transient response and very small circuit area. The SC21150 operates over an input voltage range of 2.5 to 5.5V.

Operating Modes

The SC21150 operates in one of four different modes depending on the status of VIN, VOUT, and load.

PWM Adaptive On-time operation (AOT) PWM Minimum Off-time operation (Min Off)

PFM (Pulse Frequency Modulation for Power Saving) Drop-Out operation (LDO mode)

PWM AOT Mode Operation

During PWM AOT operation the controller uses adaptive on-time control. The FB ripple signal is routed to a gain stage and then to the internal comparator and reference which trigger the high-side pulses. The reference includes a compensation ramp which emulates the inductor current to provide stable switching.

AOT operation is used when the low-side pulse-width (off- time) is greater than the Minimum Off time (60nsec for 4MHz devices, 110nsec for 2.2MHz devices). A switching cycle in AOT mode is as follows:

- On-time: the cycle starts with the high-side mosfet turn-on. The pulse width is set by the following formula where f_{SW} is the switching frequency.

$$T_{ON} = \frac{V_{OUT}}{V_{INMAX} \times f_{SW}}$$

- Off-time: after the high-side on-time is completed, the low-side mosfet turns on to begin the off-time. The off-time pulse width is variable and set by an internal compensation ramp.

Note that the SC21150 enters constant switching operation (AOT or Min Off) if VIN is less than VOUT/0.88. Also note that connecting the FPWM input to a logic high will disable the Power Save feature, providing constant switching even under light load conditions.

PWM Min Off Operation

The device will enter Minimum Off-time operation (Min Off) when VIN, VOUT, and load conditions force the off- time (time between high-side pulses) to the minimum value (60nsec for 4MHz devices, 110nsec for 2.2MHz devices). This indicates that the controller has reached maximum duty cycle for AOT operation and longer duty cycles are needed.

In Min Off operation the SC21150 uses constant off-time control. As in AOT operation, the FB ripple signal is routed to a gain stage and then to the internal AOT comparator and reference. In Min Off mode, the FB ripple triggers the low-side turn-on. Min Off switching cycle operation is as follows:

- Off-time: The low-side mosfet is on for the fixed Minimum Off time. This draws current from the output capacitor through the inductor via the LX pin and causes the output to fall.
- On-time: after the Min Off time has elapsed, the high-side mosfet turns on. This helps recharge the output capacitor and bring the output voltage up. The on-time pulse width is determined by the internal compensation ramp.

Drop-out Operation

When operating in Min Off mode, the off-time is constant and the high-side on-time varies in order to regulate the output. For cases where VIN is near VOUT, the high-side will remain on continually with 100% duty cycle. The output voltage will then be limited by the input voltage, high-side RDS_{ON} and inductor DCR as shown in the following equation:

$$VOUT = VIN - ILOAD \times (RDSON + DCR)$$

Note that RDS_{ON} is a function of input voltage and temperature. Inductor DC resistance also increases with temperature.

Applications Information (continued)

Power Save (PFM) Operation

PFM operation is enabled when the FPWM input is a logic low. Under this condition, the IC automatically reduces switching frequency under light load conditions to con- serve power. In PFM operation, the FB ripple signal is routed to a gain stage and compared to an internal reference. A switching cycle is as follows.

- On-time: The high-side mosfet turns on, as triggered by the FB signal falling to the internal reference. The high-side stays on for a predetermined time based on VIN and VOUT, then turns off.
- Off-time: the low-side mosfet turns on. Inductor current is monitored via the low-side switch. When the current falls to zero, the low-side mosfet turns off.
- Dead-time: both mosfets are off. If the FB signal is higher than the internal reference, both mosfets remain off. During the dead-time the load current is supplied by the output capacitor, causing the output and the FB signal to fall. When the FB signal falls to the 800mV threshold, the next high-side pulse begins.

As load current increases, the dead-time between pulses reduces. On any cycle, if the minimum off-time (60nsec) has elapsed and the FB signal is calling for another high- side on-time, the controller exits PFM and enters PWM operation.

Once the controller is in PWM operation, the inductor current must go below zero (go negative) for 16 switching cycles before the controller will return to PFM operation.

Soft start

The SC21150 contains an internal soft start to reduce inrush current during start-up. During start-up, the FB signal is compared to an internal ramp, providing a gradual ramp on VOUT. The timing to move VOUT from 0V to 95% of final value is typically 100usec with optional soft start times of 200usec, 400usec, and 800usec.

Pre-bias Start-up

During start-up, the low-side mosfet turns off if the inductor current falls negative (into the LX pin) on any cycle. This prevents discharge of the output capacitor during soft-start. Note that if the output is loaded during Pre- Bias start-up, the output voltage may fall until the internal Soft-start ramp exceeds the voltage seen at the FB pin.

VIN Under-Voltage Lockout

The SC21150 includes an under-voltage lockout (UVLO) to inhibit switching until the input voltage exceeds 2.5V. The VIN UVLO threshold has 160mV hysteresis to prevent chatter during start-up.

EN Input

The EN input is a logic level input. When EN is set to logic high, the SC21150 goes through an internal reset to prepare for operation. The soft-start ramp and mosfet switching begin typically 50µsec after EN is driven high.

When EN is low (grounded), the power mosfets are off and the SC21150 is its lowest power state. The automatic discharge mosfet connected to LX is on to discharge the output before the next start-up cycle.

FPWM Input

The B2 pin (FPWM input) is a logic level input that enables or disables the Power Save feature. Connect the FPWM input to a logic low or GND to enable Power Save operation. To disable Power Save operation and provide continuous switching at all loads, connect the FPWM input to a logic high or VIN.

Note that the B2 pin can also be configured to provide either externally programmable Soft Start or a Power Good Indicator, refer to Ordering Information.

Automatic Discharge

When the EN pin is pulled low (grounded), the power mosfets are tri-stated and the LX pin is connected to GND through an internal mosfet to discharge the output capacitors. Typical mosfet RDSON is 40 ohms at 5V and 25°C. Note that RDSON is a function of both VIN and temperature. The automatic discharge feature can optionally be dis- abled from the device.

Applications Information (continued)

Over-current Protection

The SC21150 provides overload protection through pulse by pulse current limiting. During the high-side on-time, the high-side switches off if the inductor current exceeds 2.2A typically. The low-side turns on briefly, followed by the next high-side on-time. Switching continues while the output overload exists. When the overload is removed, the SC21150 will resume normal operation. If the overload causes high junction temperature, the SC21150 will go into Over-temperature protection.

Over-temperature Protection

The SC21150 will shut down if the junction temperature exceeds typically 160 °C. The device will automatically restart after the junction temperature has dropped typically 10 °C.

Component Selection

The SC21150 is optimized for use with components as shown in the Detailed Applications Circuit, page 11.

Inductor: For 4MHz devices, the inductor should be 0.47µH. For 2.2MHz, the inductor should be 1.0µH. The inductor should be capable of supporting a minimum current of 1.2A.

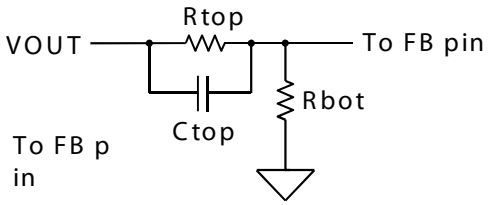
Input capacitor: For 4MHz devices, the minimum capacitor should be 4.7µF. For 2.2MHz, the minimum capacitor should be 10µF. Ceramic capacitors are recommended, with dielectric of X5R or X7R or better.

Output capacitor: For 4MHz devices, the minimum capacitor should be 10µF. For 2.2MHz, the minimum capacitor should be 22µF. Ceramic capacitors are recommended, with dielectric of X5R or X7R or better.

Note when operating in Min Off mode, higher output capacitance may be needed to reduce output ripple when VIN approaches VOUT.

For Fixed Output devices, no FB components are required and the FB pin can be connected directly to the output.

For Adjustable Output devices, the FB components are required to provide output voltage sensing and feedback compensation. The output voltage is programmed using two resistors along with a compensation capacitor. The optimum value for Ctop is 22pF, with Rbot set to 100kΩ and Rtop set as shown in the above formula.



The FB regulation threshold for Adjustable output devices is 800mV. The output voltage can be calculated as shown.

$$V_{OUT} = 0.8 \times \left(1 + \frac{Rtop}{Rbot}\right)$$

The FB resistor values can be calculated as shown. It is recommended to use 100kΩ for Rbot to minimize power loss in the FB network.

$$Rtop = \frac{(VOUT - 0.8V) \times Rbot}{0.8V}$$

PCB Layout Guidelines

An optimum layout for the SC21150 is shown below. The PCB layout should follow the guidelines below.

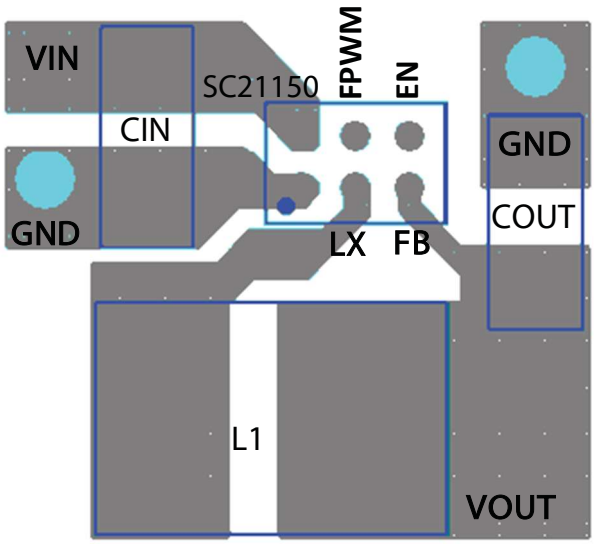
The input capacitor must be located as close as possible to the IC and directly connected to pins A2 (VIN) and A1 (GND).

The LX trace from pin B1 to the inductor should be as short as possible, and wide to reduce IR loss and improve heat dissipation.

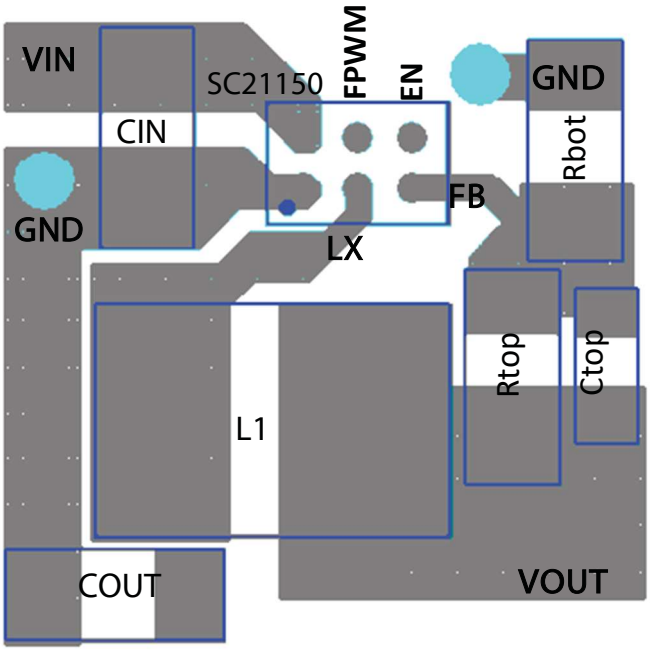
The output capacitor should be close to the inductor.

For adjustable output devices, the feedback components (Rtop, Ctop, Rbot) should be located as close as possible to the FB pin. For the ground connection to Rbot, use a via to a ground plane and place another via near the A1 (GND) pin of the IC. Do not place a via between the GND pins of CIN and the SC21150.

The FB trace should be short and not routed near noise signals. Do not route the FB trace under the inductor; the high impedance of the FB circuit can pick up noise from the inductor's magnetic field.

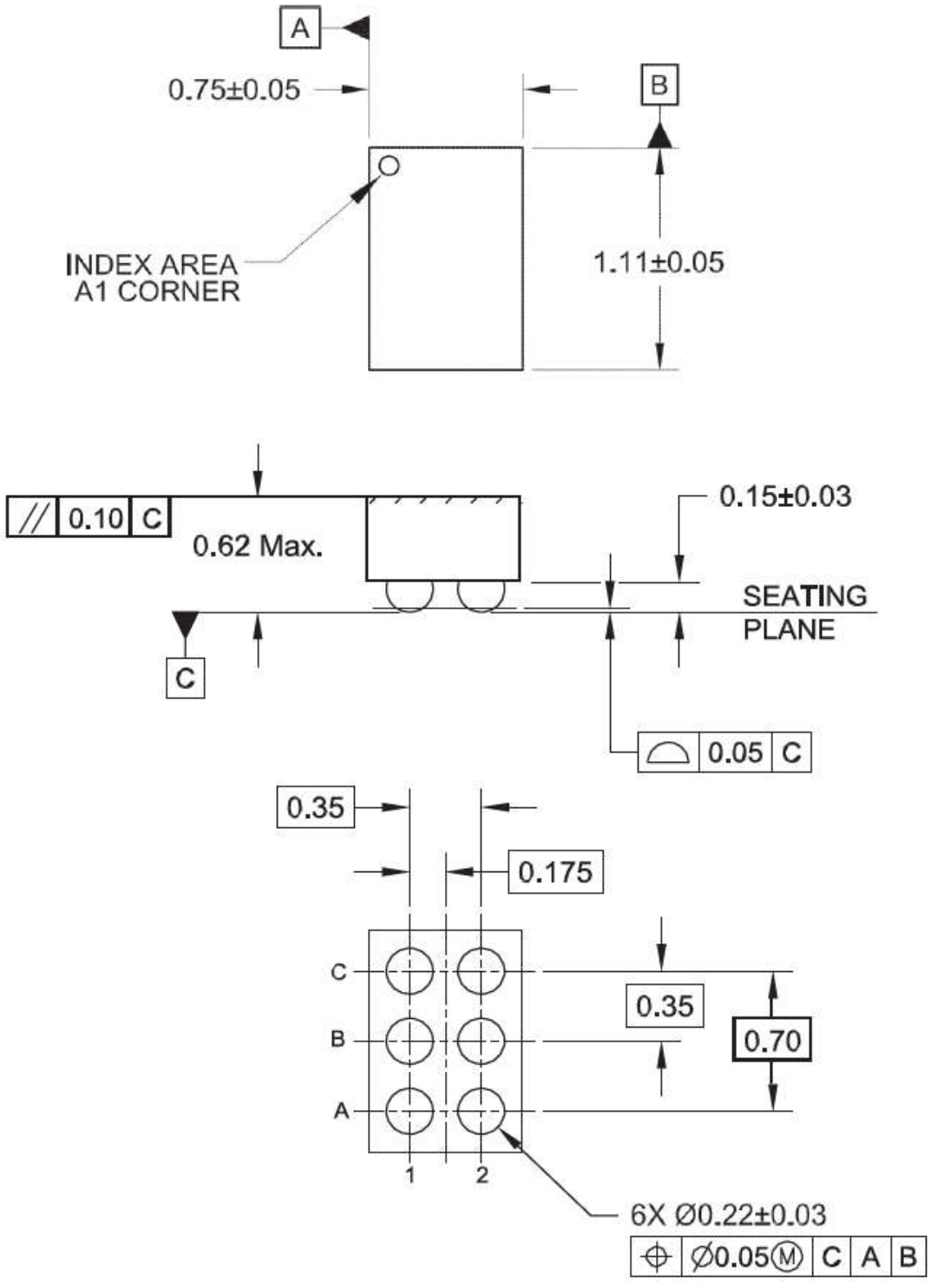


SC21150 - Fixed Output PCB Layout



SC21150 - Adjustable Output PCB Layout

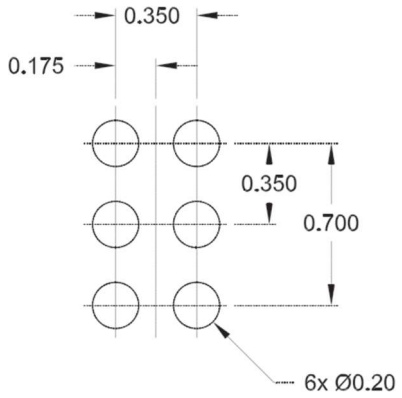
Outline Drawing — 0.75 x 1.11mm 6-Bump WLCSP



NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS

Land Pattern — 0.75x1.11 6-Bump WLCSP



NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS
2. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY. CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR COMPANY'S MANUFACTURING GUIDELINES ARE MET.

Important Notice

Information relating to this product and the application or design described herein is believed to be reliable, however such information is provided as a guide only and Semtech assumes no liability for any errors in this document, or for the application or design described herein. Semtech reserves the right to make changes to the product or this document at any time without notice. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. Semtech warrants performance of its products to the specifications applicable at the time of sale, and all sales are made in accordance with Semtech's standard terms and conditions of sale.

SEMTECH PRODUCTS ARE NOT DESIGNED, INTENDED, AUTHORIZED OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT APPLICATIONS, DEVICES OR SYSTEMS, OR IN NUCLEAR APPLICATIONS IN WHICH THE FAILURE COULD BE REASONABLY EXPECTED TO RESULT IN PERSONAL INJURY, LOSS OF LIFE OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. INCLUSION OF SEMTECH PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE UNDERTAKEN SOLELY AT THE CUSTOMER'S OWN RISK. Should a customer purchase or use Semtech products for any such unauthorized application, the customer shall indemnify and hold Semtech and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs damages and attorney fees which could arise.

Contact Information

Semtech Corporation
Wireless & Sensing Products
200 Flynn Road, Camarillo, CA 93012
Phone: (805) 498-2111

For general inquiries, sales and technical supports:
www.semtech.com/contact

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Switching Voltage Regulators ***category:***

Click to view products by Semtech ***manufacturer:***

Other Similar products are found below :

FAN53610AUC33X FAN53611AUC123X FAN48610BUC33X FAN48610BUC45X FAN48617UC50X R3 430464BB KE177614 FAN53611AUC12X MAX809TTR NCV891234MW50R2G NCP81103MNTXG NCP81203PMNTXG NCP81208MNTXG NCP81109GMNTXG SCY1751FCCT1G NCP81109JMNTXG AP3409ADNTR-G1 NCP81241MNTXG LTM8064IY LT8315EFE#TRPBF LTM4664EY#PBF LTM4668AIY#PBF NCV1077CSTBT3G XCL207A123CR-G MPM54304GMN-0002 MPM54304GMN-0004 MPM54304GMN-0003 AP62300Z6-7 MP8757GL-P MIC23356YFT-TR LD8116CGL HG2269M/TR OB2269 XD3526 U6215A U6215B U6620S LTC3412IFE LT1425IS MAX25203BATJA/VY+ MAX77874CEWM+ XC9236D08CER-G MP3416GJ-P BD9S201NUX-CE2 MP5461GC-Z MPQ4415AGQB-Z MPQ4590GS-Z MAX38640BENT18+T MAX77511AEWB+