

# ***2201V-21X***

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**Dual-Channeling**

**CC/CV Mode Switching Controller**

***Version 1.1***  
***Mar. 28, 2012***

**2201V**  
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**Reversion History**

<b>Date</b>	<b>Reversion #</b>	<b>Description</b>	<b>Page</b>
2012/05/18	1.0		
2012/05/28	1.1	Remove Spread Spectrum Clocking function	3

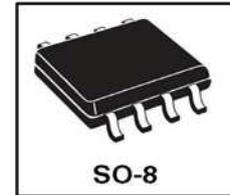
# 2201V

## Dual-Channeling CC/CV Mode Switching Controller

### General Description

The SL2201V is a dual-channeling CV/CC mode switching regulator. The SL2201V is designed to allow for operating a wide supply voltage range from 8V to 36V and capable of delivering 5A output current.

The SL2201V features a dual-channeling CV/CC mode control functions, the CV mode (Constant Voltage) function to provide a regulated voltage output and the dual-channeling CC mode (Constant Current) function provides dual-channeling current limitation function, it is suitable for the DC / DC switching power applications when requested the dual-channeling current limitation function.



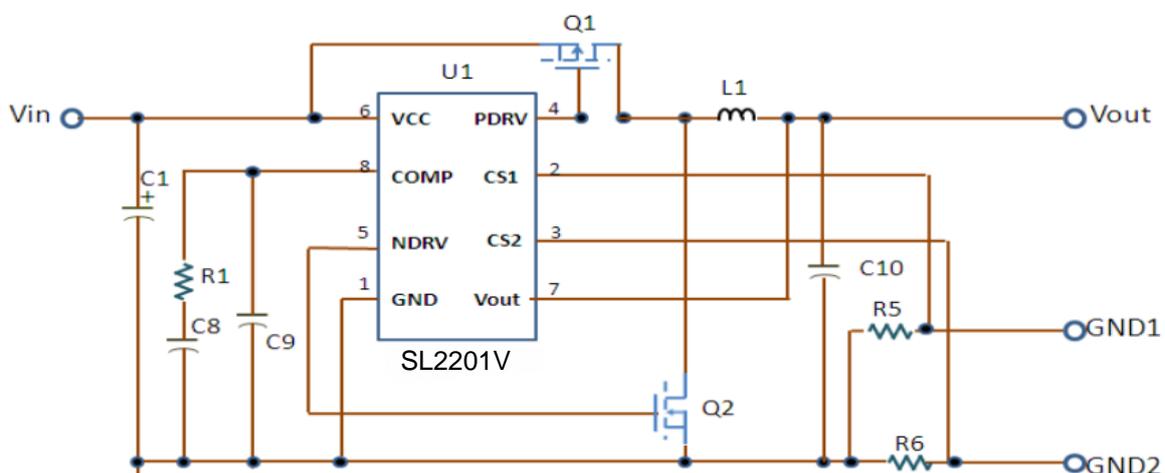
### Features

- 8V~36V Input Voltage Range
- UVLO protection
- Fixed 100KHz operating Frequency
- Dual-Channeling CC/CV Mode Control
- +/- 1% Voltage Reference Accuracy
- +/- 4% Current Limit Accuracy
- Soft Start Function for Start-up
- Output Over-Voltage Protection
- Over Temperature Protection
- Fold Back Short-Circuit Protection
- Synchronization Rectification
- High Efficiency Operation
- SOP-8 Package
- ISO7637-2 Pulse 1~4 Compliant

### Applications

- Car Charger
- Automotive power applications
- DC/DC converters with current limited
- General Purpose CV/CC power supply

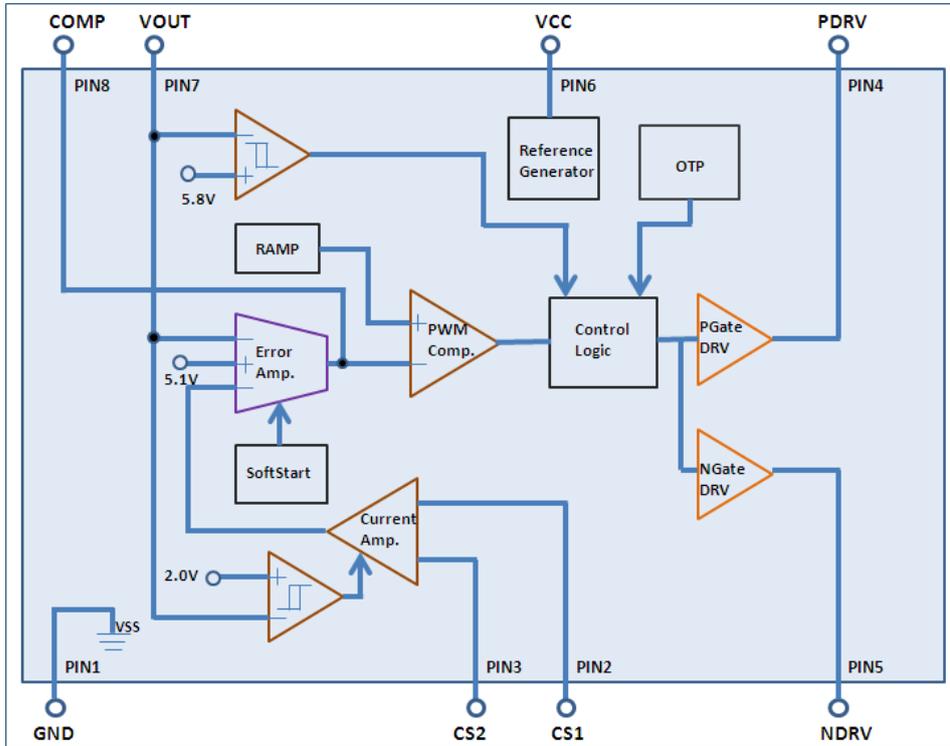
### Typical Application Circuits



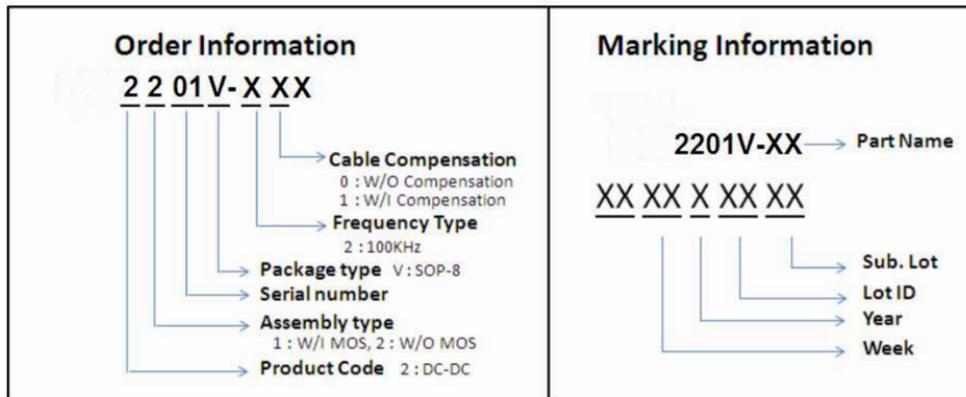
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## Dual-Channeling CC/CV Mode Switching Controller

### Block Diagram

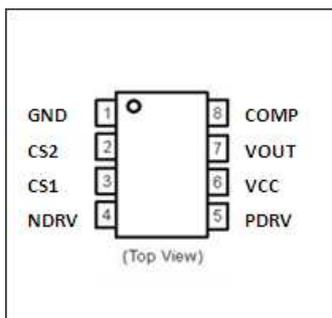


### Ordering and Marking Information



### Signal Descriptions

#### Pin Configurations



#### Pin Description

Pin No.	Symbol	Description
1	GND	Ground pin
2	CS1	1 <sup>st</sup> channel current sense input pin
3	CS2	2 <sup>nd</sup> channel current sense input pin
4	PDRV	PMOSFET driver output pin
5	NDRV	NMOSFET driver output pin
6	VCC	Input supply voltage pin
7	VOUT	Output voltage regulation feedback pin
8	COMP	E/A output pin for compensation.

## **Functional Descriptions**

### **Dual-Channeling CV/CC mode control**

The SL2201V provides dual channeling CV/CC function. The CV (constant voltage) function is implemented to deliver a regulated output voltage for the output terminal, and the dual-channeling CC (constant current) function is to limit dual-port output current to be a limited value to prevent the device damaged due to output short circuit or over current condition.

### **Soft Start function**

The SL2201V is composed of built-in internal soft start function to prevent a large surge current happening when during start-up period due to the surge current charging output filter capacitors.

### **Output Over-Voltage Protection**

The SL2201V provides built-in output over-voltage protection function. When output over-voltage happens, the SL2201V shuts down and recovers to normal state automatically if output over-voltage is released.

### **Output Short-Circuit Protection**

The SL2201V provides output short-circuit protection function. When output over-voltage happens, the SL2201V shuts down and recovers to normal state automatically if output short-circuit is released.

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## Dual-Channeling CC/CV Mode Switching Controller

### Electrical Specifications

#### Absolute Maximum Ratings

Parameter	Symbol	Limits	Units
VCC to GND	$V_{CC}$	-0.3 to +40	V
PDRV to VCC	PDRV	+0.3 to -40	V
NDRV to VCC	NDRV	+0.3 to -40	V
Vout to GND	VOUT	-0.3 to +7	V
CS1 to GND	CS1	-0.3 to +7	V
CS2 to GND	CS2	-0.3 to +7	V
COMP to GND	COMP	-0.3 to +7	V
Maximum Output Current	$I_{CC}$	6	A
Power Dissipation at $T_a < 60^\circ\text{C}$	$P_D$	0.75	W
ESD	$V_{HBM}$	$\pm 2000$	V
	$V_{MM}$	$\pm 200$	V
Operation Junction Temperature	$T_J$	-40 to 150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-60 to 150	$^\circ\text{C}$
Lead Temperature ( Reflow )	$T_{LEAD}$	260	$^\circ\text{C}$

**Note:** Stress beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those are indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

#### Thermal Data

Parameter	Symbol	SOP- 8	Units
Thermal Resistance Junction to Ambient	$\theta_{ja}$	100	$^\circ\text{C/W}$
Thermal Resistance Junction to Case	$\theta_{jc}$	15	$^\circ\text{C/W}$

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## Dual-Channeling CC/CV Mode Switching Controller

### Electrical Characteristics

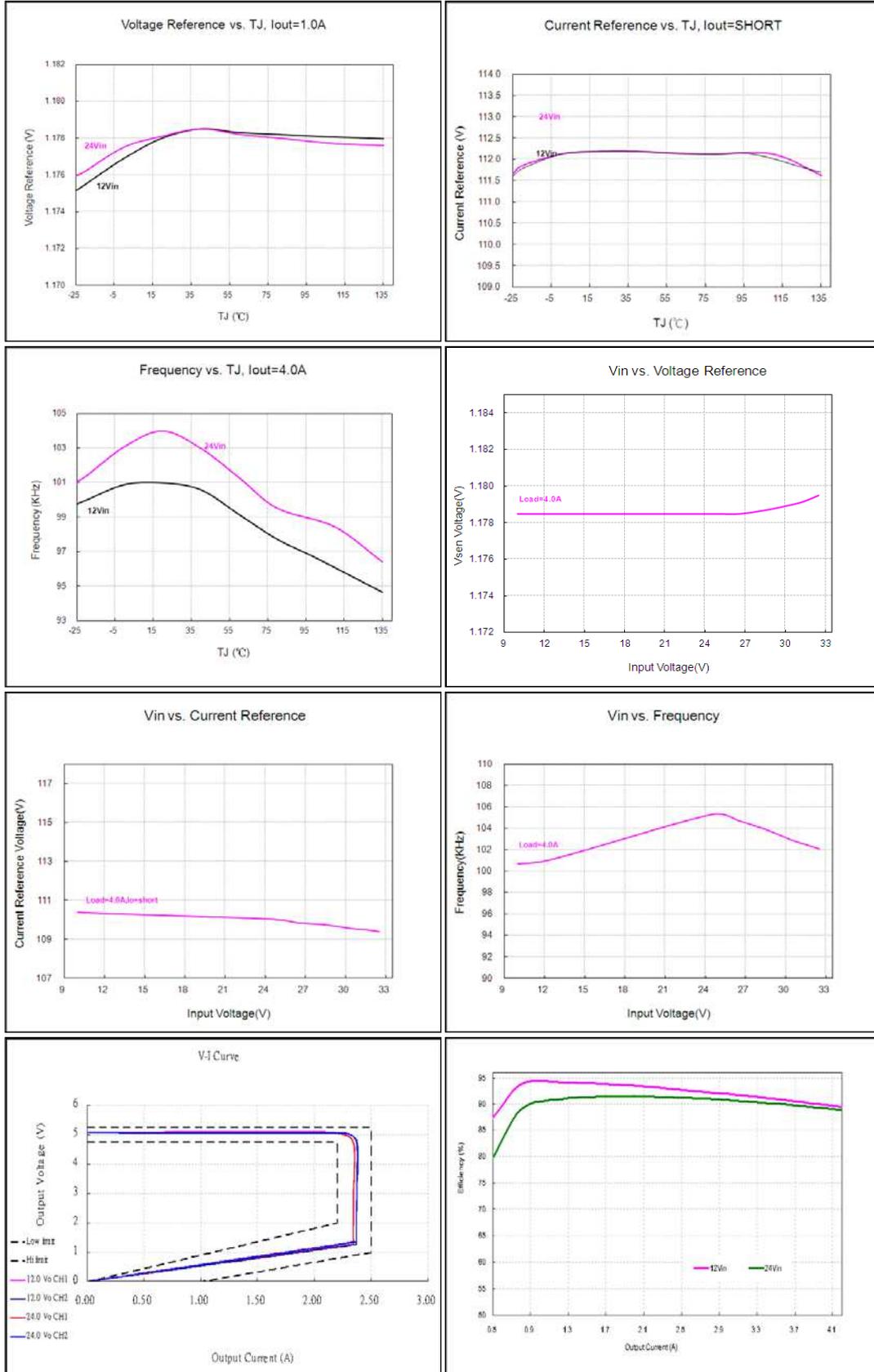
( $V_{in}=12V$ ,  $T_a=25^{\circ}C$ ,  $I_o=4.0A$ , unless otherwise specified)

Parameter	Symbol	Conditions	Min	Type	Max	Units
<b>Input Voltage Section</b>						
Input Voltage	$V_{IN}$		8		36	V
Input No Load Current	$I_{no-load}$	$I_o=0A$			10	mA
<b>Oscillator Section</b>						
Operating Frequency	$F_{osc}$		85		115	KHz
		$T_j = -25^{\circ}C$ to $125^{\circ}C$	80		120	KHz
Duty Cycle Range					95	%
<b>Error Amplifier Section</b>						
Reference Voltage of the Voltage Error Amplifier	$V_{OUT}$	$I_o=0.0A$	5.05	5.1	5.15	V
		$T_j = -25^{\circ}C$ to $125^{\circ}C$	4.89		5.21	V
Reference Voltage of the Current Error Amplifier	$V_{CS1}$		107.5	112	116.5	mV
	$V_{CS2}$	$T_j = -25^{\circ}C$ to $125^{\circ}C$	105.5		118.5	mV
Tran conductance of Error Amplifier	$G_{Merr}$			150		$\mu A/V$
<b>Output Over Voltage Protection Section</b>						
Output Over Voltage Protection	$V_{OVP}$			5.8		V
<b>Output Short Circuit Protection Section</b>						
Short Circuit Fold back Voltage	$V_{SCP}$			2.0		V
<b>Over Temperature Protection Section</b>						
Thermal Shut-down Temperature	$T_{OTP,R}$	Temperature Rising		150		$^{\circ}C$
	$T_{OTP,F}$	Temperature Falling		100		$^{\circ}C$

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## Dual-Channeling CC/CV Mode Switching Controller

### Typical Performance Characteristics



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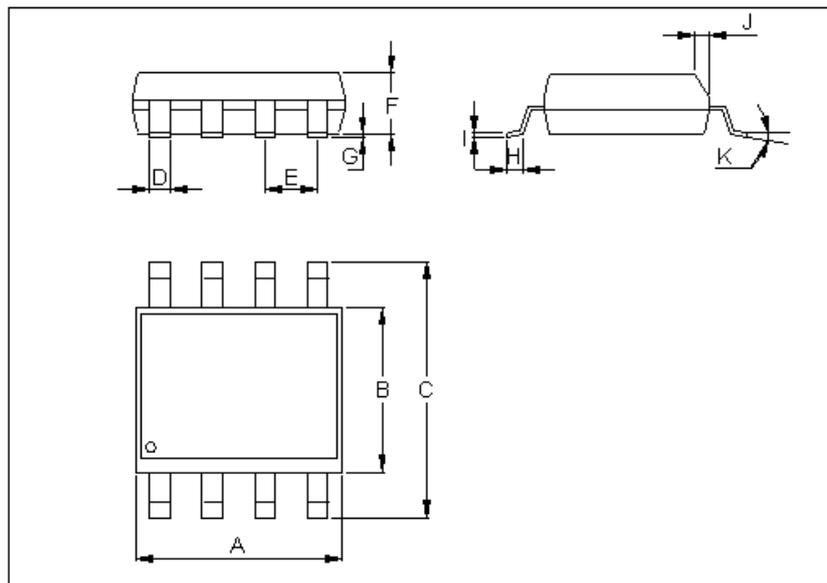
## Dual-Channeling CC/CV Mode Switching Controller

### Package Information

#### Package Dimensions

SOP-8 Mechanical Data							
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.7	4.9	5.1	H	0.4	0.715	0.83
B	3.7	3.9	4.1	I	0.19	0.22	0.26
C	5.8	6	6.2	J	0.25	0.375	0.5
D	0.33	0.445	0.51	K	0°	4°	8°
E		1.27		L			
F	1.2	1.375	1.62	M			
G	0.08	0.175	0.28	N			

Weight : 0.083 ± 0.003 g / pcs

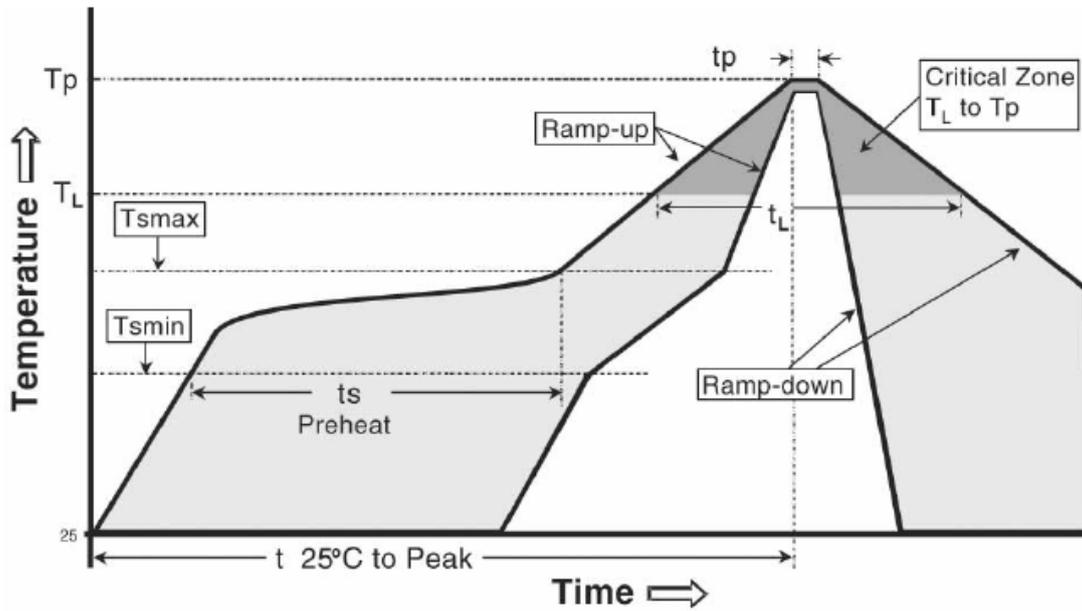


#### Storage Condition and Period for Package

Package	MSL	Max. Reflow Temp.	Floor Life Storage Condition	Dry Pack
SOP8	LEVEL 3	260 -5/+0 °C	168hrs @ ≤ 30 °C/60% RH	YES

**NOTE:** Please refer to IPC/JEDEC J-STD-020 standard.

Recommended SMT Temperature Profile



Source: JEDEC.org.