DESCRIPTION

The A7211 is a current mode synchronous buck converter with integrated high side and low side power MOSFETS, and has excellent transient load and line regulation. It enables the device to adopt to both low ESR output capacitors, such as POSCAP or SP-CAP, and ultra-low ESR ceramic capacitors.

The A7211 operates from 5.5V to 18V V_{IN} input, and the output voltage can be programmed between 0.81V to 14V with 1A output current, and +/-2% high accuracy output voltage.

Due to 125mΩ (High side) and 70mΩ (Low side) integrated FETs, the A7211 works in high efficiency (up to 91% @12V Input, 5.0V output).

The A7211 is available in TSOT-26 packages.

ORDERING INFORMATION

Package Type	Part Number	
TSOT-26	TE6	A7211TE6R
		A7211TE6VR
Note	V: Halogen free Package R : Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

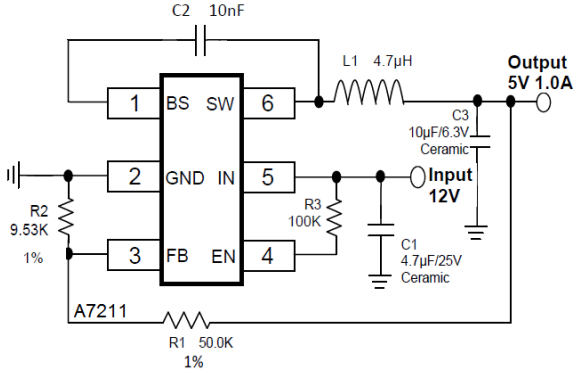
FEATURES

- Up to 18V Synchronous Converter
- No Schottky Rectifier Diode
- 1A Output Current
- Fixed 1.4MHz High Switching Frequency
- Integrated Two Power FETs Optimized for portable application: 125mΩ (High side) and 70mΩ (Low side)
- High Efficiency Up to 91% Efficiency @ 12V Input, 5.0V Output
- Wide Input Voltage Range: 5.5V to 18V @ 1A loading, T_A=25°C
- Wide Output Voltage Range: 0.81V to 14V @ 1A loading (14Watt output @max)
- Low Output Ripple and Allows Ceramic Output Capacitor
- Thermal Shutdown Protection
- Cycle By Cycle Over Current Limit
- Over Voltage Protection
- Internal Compensation
- Minimum Number of External Component
- Smaller PCB Size due to no Schottky Diode
- Available in TSOT-26 Packages

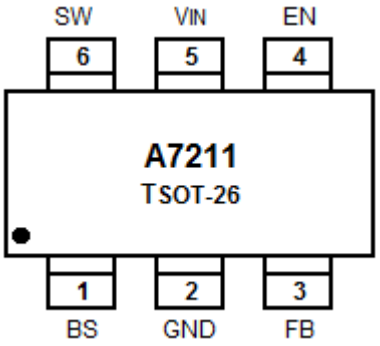
APPLICATION

- Wide Range of Applications for Low Voltage System
- IP Camera, Monitor
- xDSL Cable Modem
- Digital STB
- Ideal for Portable Applications

TYPICAL APPLICATION



PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	BS	Supply input for high-side NFET gate driver (boost terminal). Connect capacitor from this pin to SW pin. An internal PN diode is connected between VREG to BS pin.
2	GND	Signal ground pin, also serve as ground returns for low-side NFET.
3	FB	Converter feedback input. Connect with feedback resistor divider.
4	EN	Enable control input
5	V_{IN}	Power input and connected to high side NFET drain
6	SW	Switch node connection between high-side NFET and low-side NFET. Also serve as inputs to current comparators.

ABSOLUTE MAXIMUM RATINGS

Voltage Range	IN	-0.3V to 20V
	BS	-0.3V to 23V
	SW	-2V to 20V
	SW(10 ns transient)	-2.5V to 21V
	FB	-0.3V to 5.5V
	EN	-0.3V to 8V
T_J, Operation Junction		-40°C to +150°C
T_{STG}, Storage temperature		-55°C to +150°C

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

Over operating free-air temperature range, unless otherwise noted

Voltage	Supply input voltage range	5.5V to 18V
	VBS	-0.1V to 21V
	SS,FB	-0.1V to 5V
	EN	-0.1V to 7.5V
	GND	-0.1V to +0.1V
T_A, Operating free-air temperature		-40°C to 85°C
T_J, Operating junction temperature		-40°C to 125°C

DISSIPATION RATINGS

Package	θ_{JA}	θ_{JC}	Units
TSOT-26	220	110	°C/W

ELECTRICAL CHARACTERISTICS

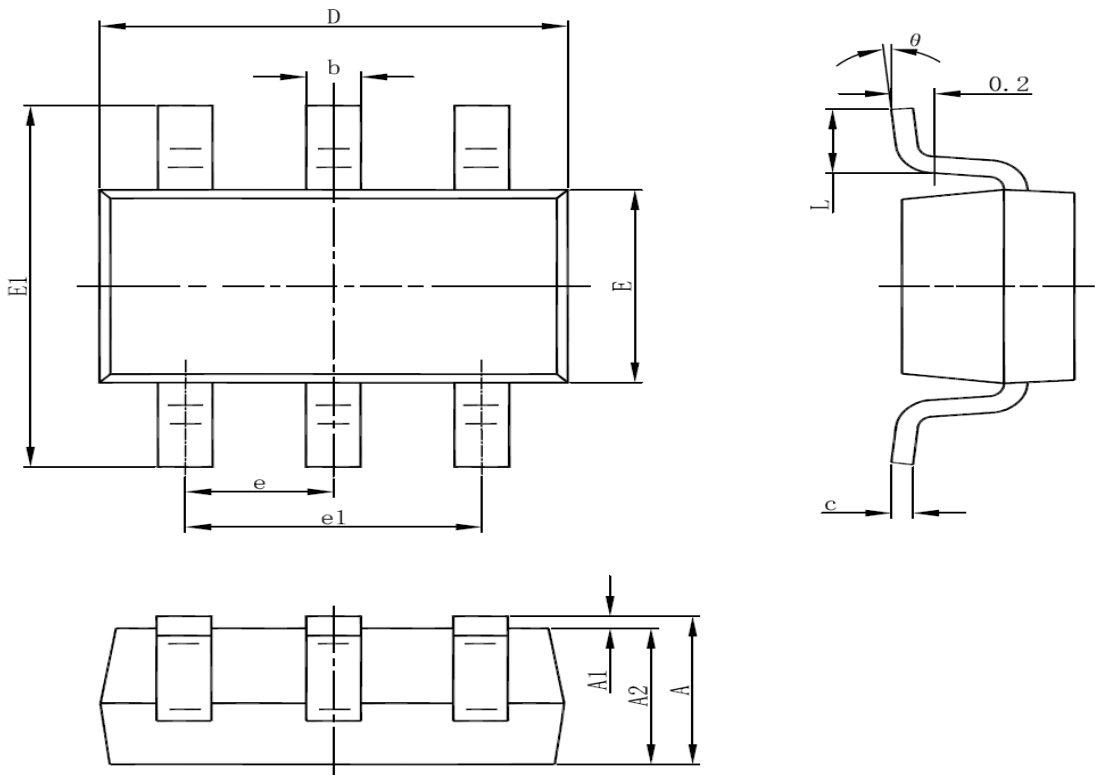
V_{IN}=12V, T_A=25℃, Over operating free-air temperature range, unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply Current						
Operating-non-switching supply current	I_{IN}	V_{IN} current, T_A=25℃, EN=1.8V, V_{FB}=1.0V		1.1	2.0	mA
Shut Down Supply Current	I_{SDN}	V_{EN}=0V, V_{IN}=8.4V		20		μA
Feedback Voltage	V_{FB}	5.5V ≤V_{IN}≤18V	0.790	0.810	0.830	V
Feedback Input Current	I_{FB}	V_{FB}=2V			1	μA
Feedback Overvoltage Threshold	OVP			0.923		V
High Side Switch ON Resistance	$R_{DS(on)\_1}$			125		mΩ
Low Side Switch ON Resistance	$R_{DS(on)\_2}$	MOSFET's R_{DS_ON}		70		mΩ
High Side Switch Leakage Current	$I_{LEAKGAE}$	V_{EN}=0V, V_{SW}=0V			10	μA
High Side Switch Current Limit	ILM_H	Minimum Duty Cycle	1.3	1.8		A
Low Side Switch Current Limit	ILM_L	From Drain to Source	200			mA
Switching Frequency	F_{SW_1}			1.4		MHz
Short Circuit Switching Frequency	F_{SW_2}	V_{FB}=0V		660		KHz
Maximum Duty Cycle	D_{MAX}	V_{FB}=0.70		85		%
Minimum ON Time[NOTE1]	ton_min			100		ns
EN Input High Voltage	V_{EN_H}	V_{EN} Rising	1.2			V
EN Input Low Voltage	V_{EN_L}	V_{EN} Falling			0.8	V
Input Under Voltage Lockout Threshold	V_{UVLO}	V_{IN} Rising	3.0	3.75	4.75	V
Input Under Voltage Lockout Threshold Hysteresis	VHys_UV			500		mV
Thermal Shutdown	TSD			160		°C

NOTE1: Guaranteed by design

PACKAGE INFORMATION

Dimension in SOT-26 Package (Unit: mm)



SYMBOL	MIN	MAX
A	0.700	0.900
A1	0.000	0.100
A2	0.700	0.800
b	0.350	0.500
c	0.080	0.200
D	2.820	3.020
E	1.600	1.700
E1	2.650	2.950
e	0.950(BSC)	
e1	1.900(BSC)	
L	0.300	0.600
θ	0°	8°

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