



ACE7207D

1uA Ultra-Low Quiescent Current, 0.6A Output Synchronous BUCK

Description

The ACE7207D is a high-efficiency, DC-to-DC step-down switching regulator, capable of delivering up to 0.6A of output current. It has an ultra-low quiescent current below 1uA when there is no load. Running at a fixed frequency of 1.5MHz allows the use of small inductance value and low DCR inductors, thereby achieving higher efficiencies. Other external components, such as ceramic input and output caps, can also be small due to higher switching frequency, while maintaining exceptional low noise output voltages. Internal soft-start control circuitry reduces inrush current. Short-circuit and thermal-overload protection improves design reliability.

Features

- Ultra low 1uA Iq, and 1-2uA at standby
- Up to 96% Efficiency
- Up to 600mA Max Output Current
- 1.5MHz Frequency
- Light Load operation
- Internal Compensation
- Tiny Package

Application

- Wearable
- IOT
- Energy Harvest
- Battery powered devices

Absolute Maximum Ratings

Parameter			Value
IN, SW, OUT, EN Voltage			-0.3V to 6V
SW to ground current			Internally limited
Operating Temperature Range			-40°C to 85°C
Storage Temperature Range			-55°C to 150°C
Thermal Resistance	SOT-23-5	θ_{JC}	190°C/W
		θ_{JA}	90°C/W
	DFN2*2-6L	θ_{JC}	165°C/W
		θ_{JA}	45°C/W
Lead Temperature (Soldering, 10ssec)			260°C
ESD HBM (Human Body Mode)			2KV
ESD MM (Machine Mode)			200V

Note: Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.

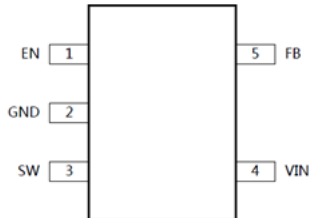


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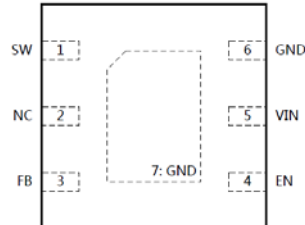
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Packaging Type

SOT-23-5



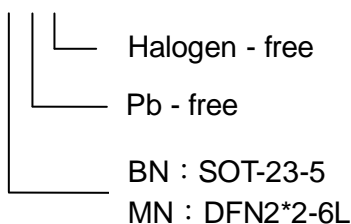
DFN2*2-6L



PIN NO		Description	Description
SOT-23-5	DFN2*2-6L		
1	4	EN	Enable Pin. Pull high to enable, pull low to disable. A RC delay network at EN pin is recommended to have chip enabled after Vin power up.
2	6, 7	GND	Ground
3	1	SW	Inductor Connection. Connect a 2.2uH inductor Between SW and the regulator output.
4	5	VIN	Supply Voltage. Short to PIN. Bypass with a 10μF ceramic capacitor to GND
5	3	FB	FB Voltage Pin. Connect an external resistor divider from the output to FB and GND to set the output to a voltage between 1.13V and VIN
	2	NC	Not Connected

Ordering information

ACE7207D XX+ H

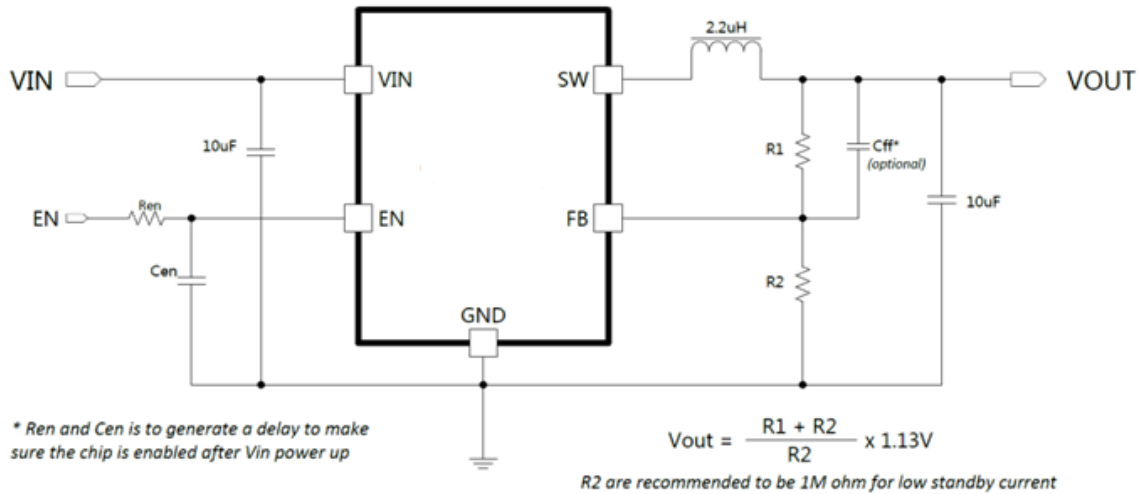




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Typical Application



Electrical Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Input Voltage Range		2.6		5.5	V
Input UVLO	Rising, Hysteresis=220mV		2.34		V
Input Supply Current	No Load, RFB_G =1Mohm		2.3		μA
Input Shutdown Current			0.1		μA
FB Voltage		1.107	1.13	1.153	V
Load Regulation			0.4		%A
Line Regulation	VIN =2.7 to 5.5V		0.14		%V
Switching Frequency			1.5		MHz
NMOS Switch On Resistance	ISW =200mA		200		mΩ
PMOS Switch On Resistance	ISW =200mA		300		mΩ
PMOS Switch Current Limit			1		A
SW Leakage Current	VOUT=5.5V,VSW=0 or 5.5V,EN= GND			10	μA
EN Input Current	EN= GND			1	μA
EN Input Low Voltage				0.4	V
EN Input High Voltage		1.0			V



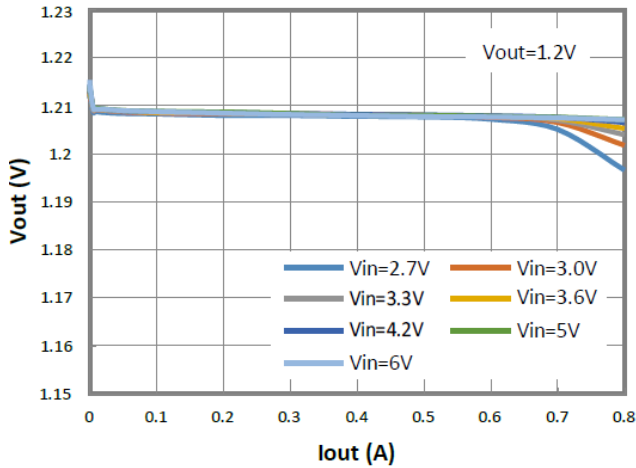
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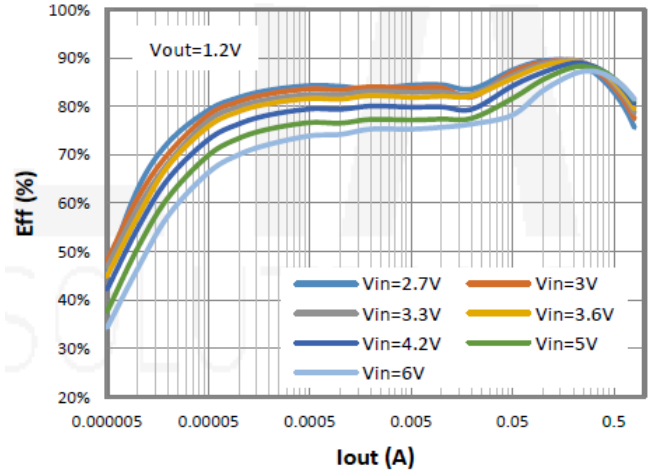
Typical Characteristics

Tested under $T_A=25^{\circ}\text{C}$, unless otherwise specified

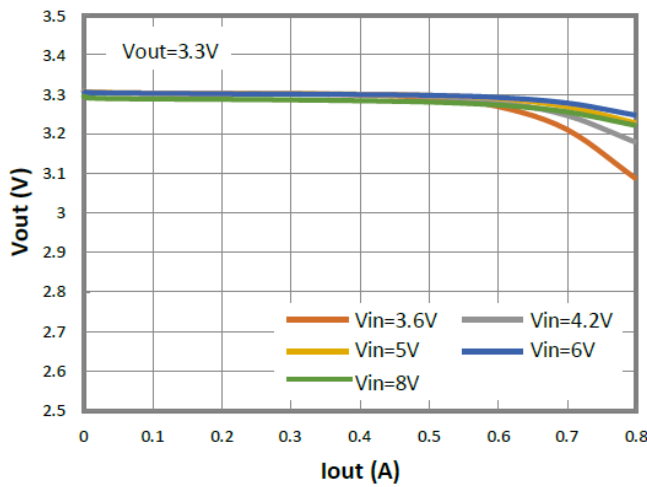
Vout Vs. Iout



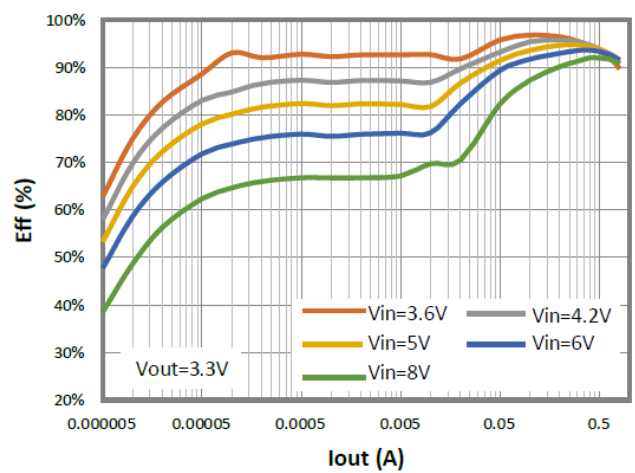
Eff. Vs. Iout



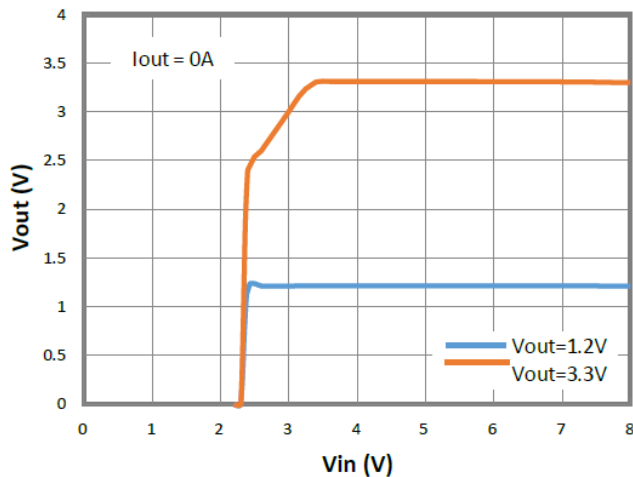
Vout Vs. Iout



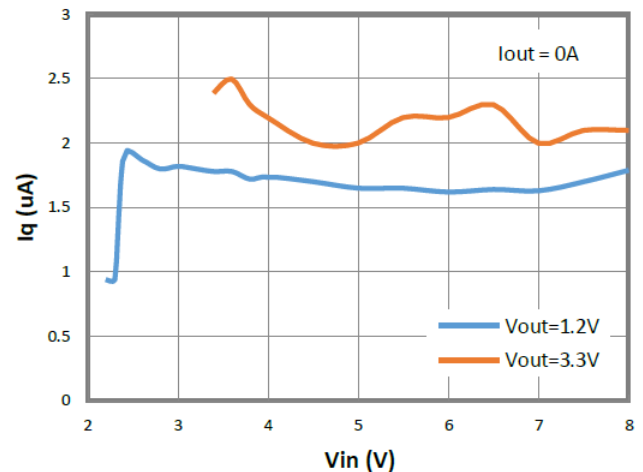
Eff. Vs. Iout



Vout Vs. Vin



Iq Vs. Vin

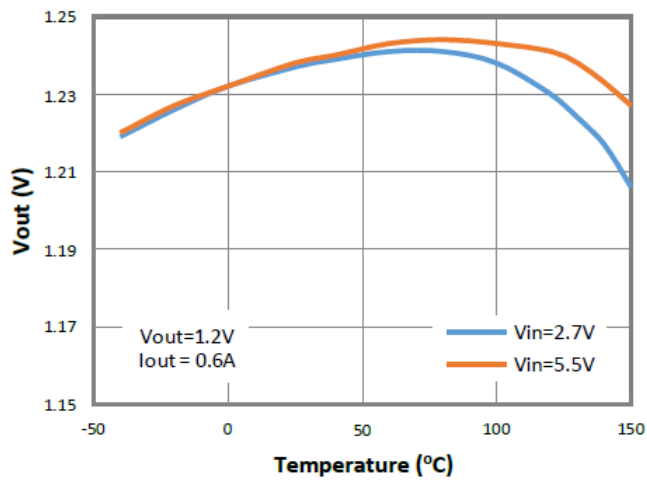




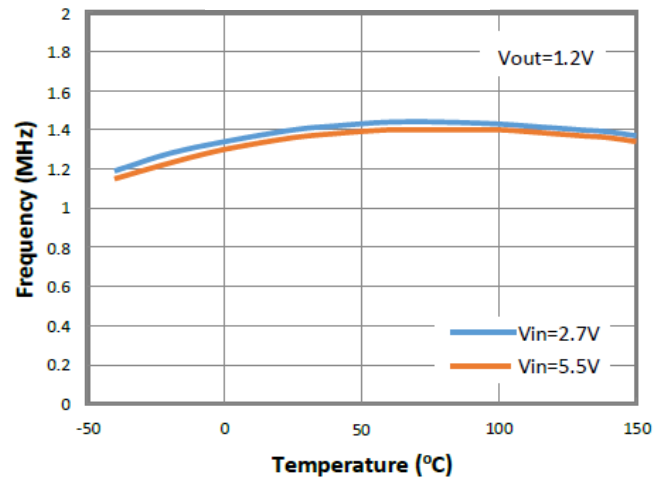
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Vout Vs. Temp



Freq Vs. Temp



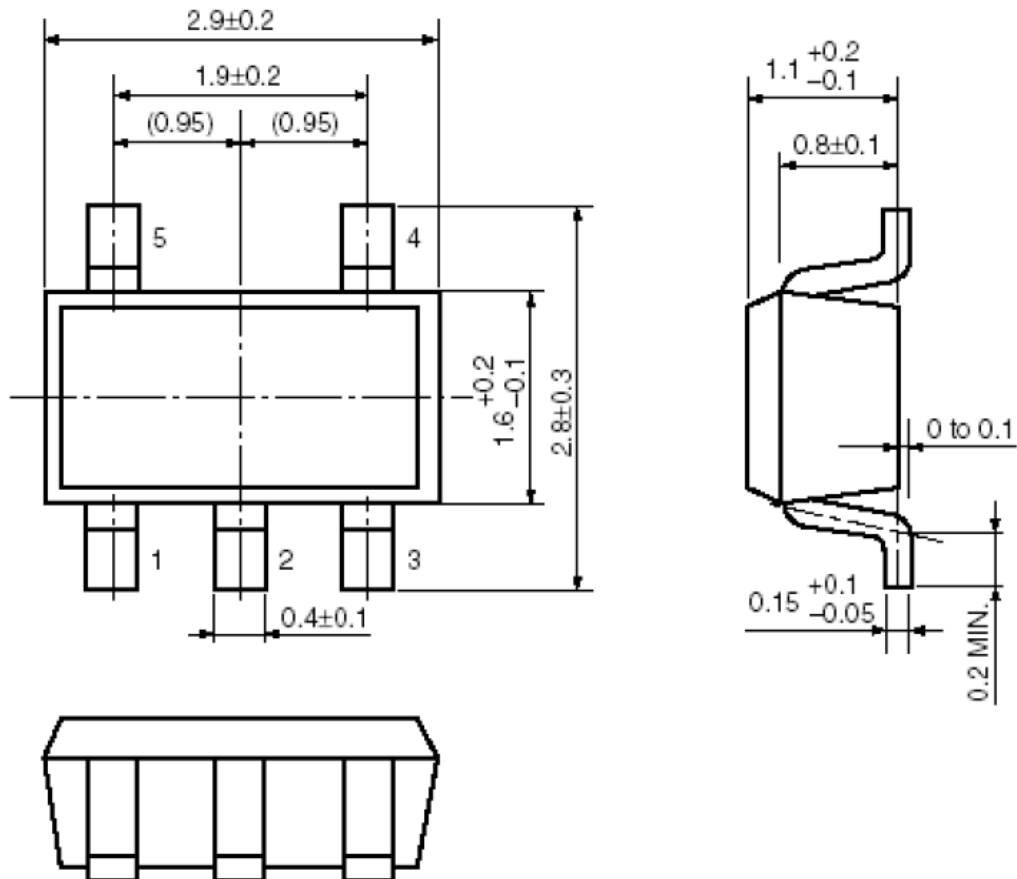


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Packing Information

SOT-23-5



UNIT: mm

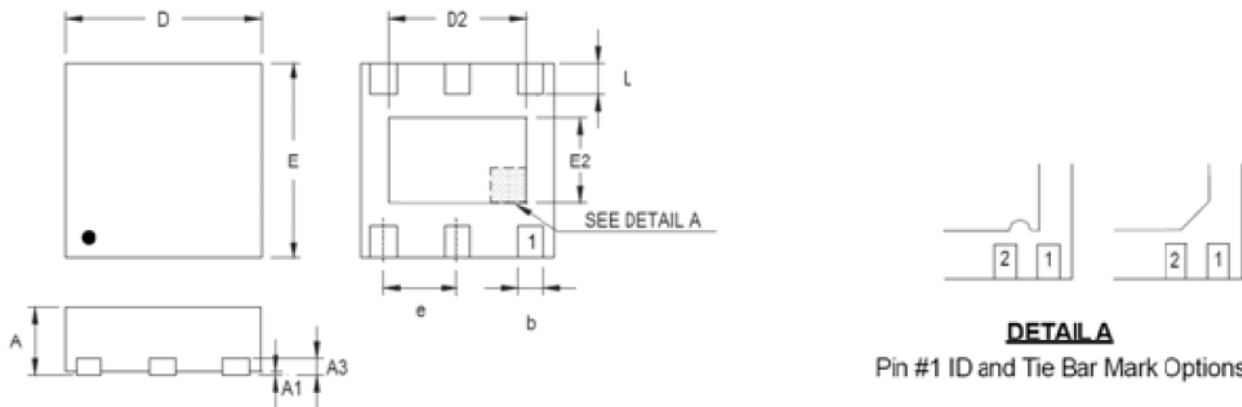


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Packing Information

DFN2*2-6L



DETAIL A
Pin #1 ID and Tie Bar Mark Options

Note : The configuration of the Pin #1 identifier is optional, but must be located within the zone indicated.

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.175	0.250	0.007	0.010
b	0.200	0.350	0.008	0.014
D	1.950	2.050	0.077	0.081
D2	1.000	1.450	0.039	0.057
E	1.950	2.050	0.077	0.081
E2	0.500	0.850	0.020	0.033
e	0.650		0.026	
L	0.300	0.400	0.012	0.016



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Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD. As sued herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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