

DUAL CHANNEL 1.5MHz, 600mA SYNCHRONOUS STEP-DOWN DC-DC CONVERTER

A7226

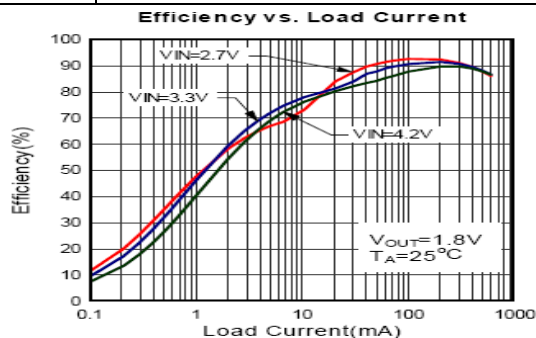
Description

The A7226 is a dual channel high efficiency monolithic synchronous step down current mode DC-DC converter operating at 1.5MHz constant frequency. The device integrates a main switch and a synchronous rectifier for high efficiency without an external schottky diode for each of the channels. The A7226 can operate from a 2.5V to 5.5V input voltage and is ideal for powering portable equipment that runs from a single cell Lithium-Ion (Li+) battery. It can supply 600mA output current for each channel and can also run at 100% duty cycle for low dropout operation, extending battery life in portable system. Pulse Skipping Mode operation at light loads provides very low output ripple voltage for noise sensitive applications.

The A7226 is offered in small profile 10-Lead MSOP and 10-Lead DFN packages.

Ordering Information

MS10	MSOP10	PN: A7226MS10
J10	DFN10	PN: A7226J10
Note	AiT provides all lead free parts	



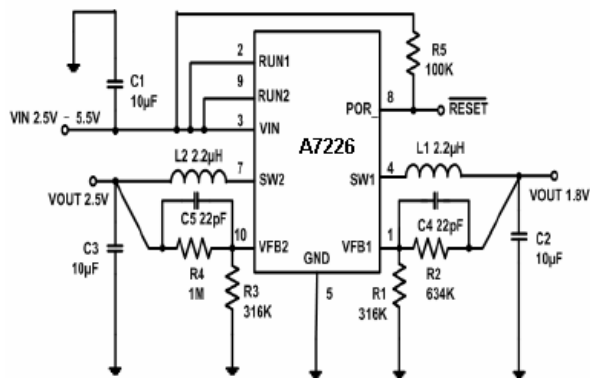
Features

- 1.5MHz Constant Frequency Operation
- 600mA Output Current at $V_{IN}=3V$
- High Efficiency: Up to 96%
- No Schottky Diode Required
- Low $R_{DS(ON)}$ Internal Switches: 0.35Ω
- 0.6V Reference Allows Low Output Voltage
- Low Quiescent Current: 500uA
- Current Mode Operation for Excellent Line and Load Transient Response
- Power-On Reset Output
- Short-Circuit & Thermal Fault Protection
- <1uA Shutdown Current
- Space Saving Small Thermally Enhanced MSOP10 and DFN10 Packages

Application

- Wireless and DSL Modems
- PDA, PMP, DSC, DVR, PMP...etc
- Cellular and Smart Phones
- Portable Instruments

Typical Application



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Pin Description

Pin	Name	Function
1	V _{FB1}	Channel 1 output feedback. It receives the feedback voltage from the external resistive divider across the output
2	RUN1	Channel 1 Enable; RUN1=V _{IN} , Enable; RUN1=GND, Disable
3	VIN	Power Supply
4	SW1	Channel 1 power switch output
5	GND	Ground
6	NC	No Connection
7	SW2	Channel 2 power switch output
8	POR	Power On Reset (Open drain) external resistor (100KΩ) is required
9	RUN2	Enable pin of Channel 2. RUN2=V _{IN} , Enable; RUN2=GND, Disable
10	V _{FB2}	Channel 2 output feedback. It receives the feedback voltage form the external resistive divider across the output
11	EXPOSED PAD	Power Ground. It must be connect to ground properly

Pin Assignment

DFN Package	MSOP Package
<p>Top View 10-Lead (3mm x 3mm) Plastic DFN Exposed Pad is PGND (Pin 11) must be connected to GND</p>	<p>Top View 10-Lead Plastic MSOP Exposed Pad is PGND (Pin 11) must be connected to GND</p>

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Absolute Maximum Ratings

(Those values beyond which the life of a device may be impaired.)

Input Supply Voltage	-0.3V~+6.0V
RUN1, RUN2 Voltage	-0.3V~(V _{IN} +0.3V)
V _{FB1} , V _{FB2} Voltage	-0.3V ~ (V _{IN} +0.3V)
SW1, SW2 Voltage	-0.3V ~ (V _{IN} +0.3V)
POR Voltage	-0.3V~+6.0V
Peak SW1, SW2 Sink & Source Current	1.5A
Operating Temperature Range (note1)	-40°C ~ +85°C
Junction Temperature	+125°C
Storage Temperature Range	-65°C ~ +150°C
Lead Temperature (Soldering, 10s)	+300°C

Note1: The regulated feedback voltage is tested in an internal test mode that connects V_{FB} to the output of the error amplifier.

Electrical Characteristics

(V_{IN}=V_{RUN1}=V_{RUN2}=3.6V, T_A=25°C, unless otherwise noted.)

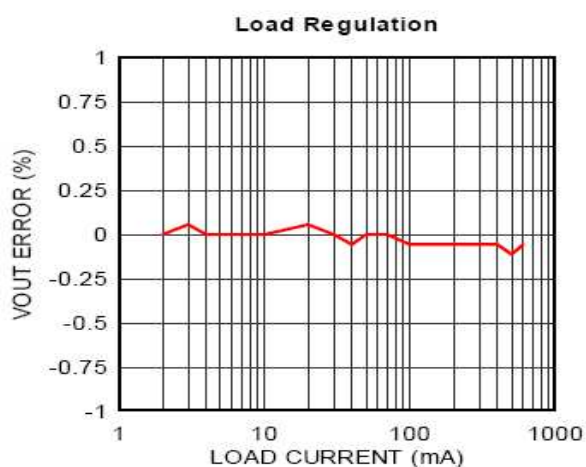
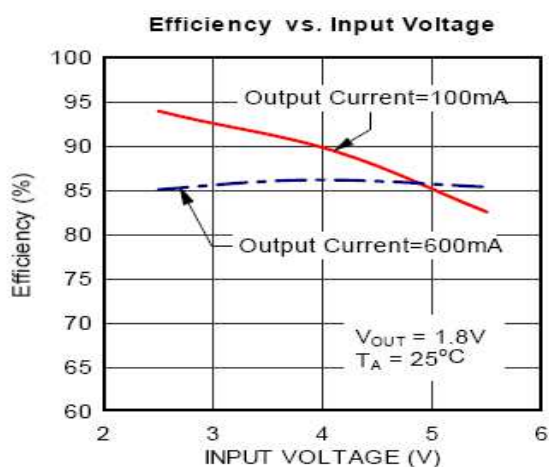
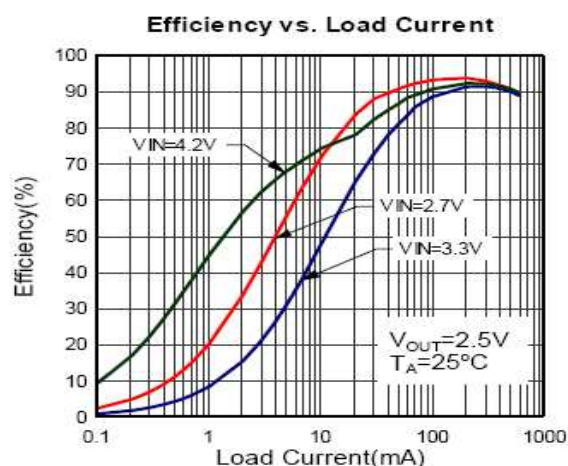
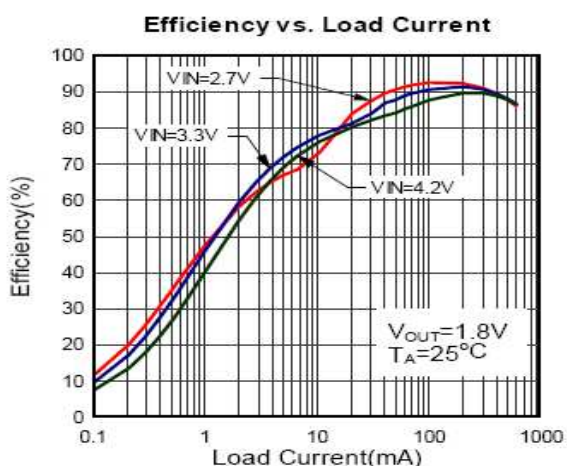
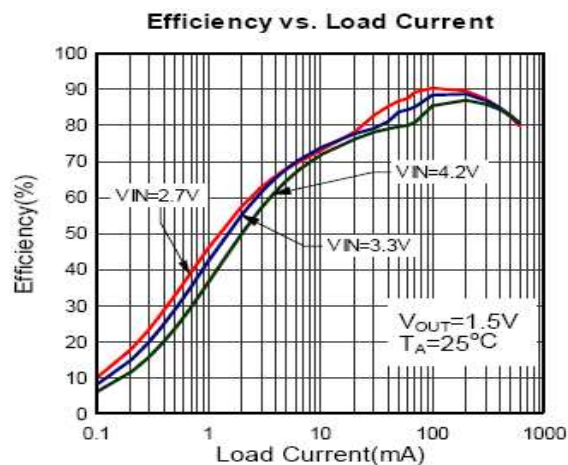
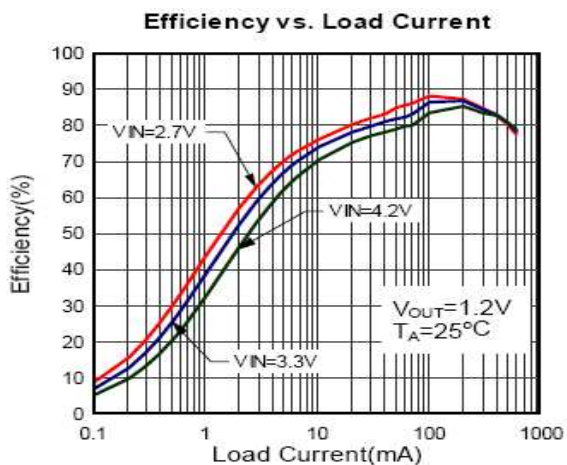
Parameter	Conditions	Min	Typ	Max	Unit
Input Voltage Range		2.5		5.5	V
Input DC Supply Current					
Active Mode	V _{FB1} =V _{FB2} =0.5V		500	800	μA
Shutdown Mode	RUN1=RUN2=0V, V _{IN} =4.2V		0.3	2	μA
Regulated Reference Voltage (note 2)	T _A =25°C, Channel 1 or 2	0.5880	0.6000	0.6120	V
	T _A =0°C ≤ T _A ≤ 85°C, Channel 1 or 2	0.5865	0.6000	0.6135	V
	T _A =-40°C ≤ T _A ≤ 85°C, Channel 1 or 2	0.5850	0.6000	0.6150	V
Feedback Pin Input Current	V _{FB} =0.65V			±30	nA
Reference Voltage Line Regulation	V _{IN} =2.5V to 5.5V		0.11	0.40	%/V
Output Voltage Line Regulation	V _{IN} =2.5V to 5.5V. I _{OUT} =10mA		0.11	0.40	%/V
Output Voltage Load Regulation	V _{IN} =2.5V to 5.5V. I _{OUT} =10 to 600mA		0.0015		%/mA
Maximum Output Current	V _{IN} =3.0V	600			mA
Oscillation Frequency	V _{FB1/2} =0.6V	1.2	1.5	1.8	MHz
R _{DS(ON)} of P-CH MOSFET	I _{SW} = 300mA		0.35	0.45	Ω
R _{DS(ON)} of N-CH MOSFET	I _{SW} = - 300mA		0.28	0.45	Ω
Peak Inductor Current	V _{IN} =3V, V _{FB} =0.5V, Duty Cycle<35%		1.2		A
RUN Threshold	-40°C ≤ T _A ≤ 85°C	0.30	0.45	1.50	V
RUN Leakage Current			±0.1	±1.0	μA
SW Leakage	V _{RUN} =0V, V _{SW} =0V or 5V, V _{IN} =5V		±0.01	±1.0	μA
Power-On Reset Threshold (POR)	V _{FBX} Ramping Up		8.5		%
	V _{FBX} Ramping Down		-8.5		%
	Power-On Reset Delay		175		Ms
	Power-On Reset On-Resistance		100		Ω

Note2: The regulated feedback voltage is tested in an internal test mode that connects V_{FB} to the output the of error amplifier.

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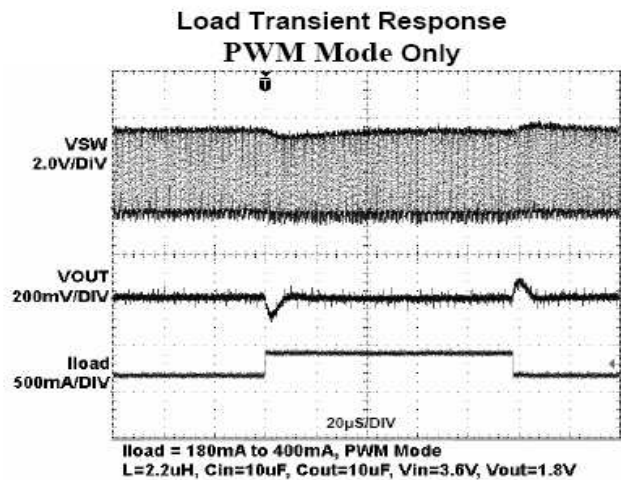
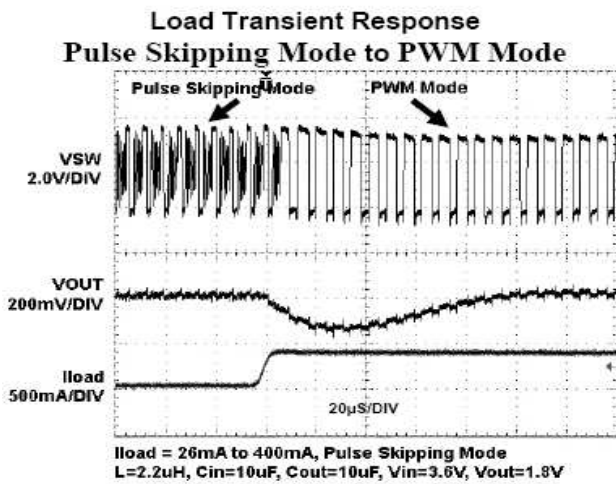
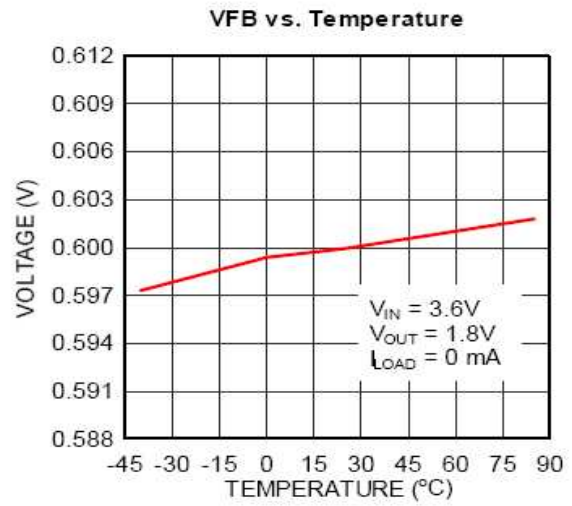
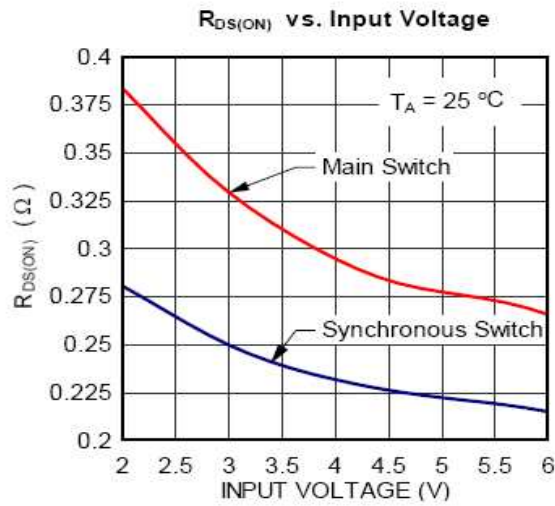
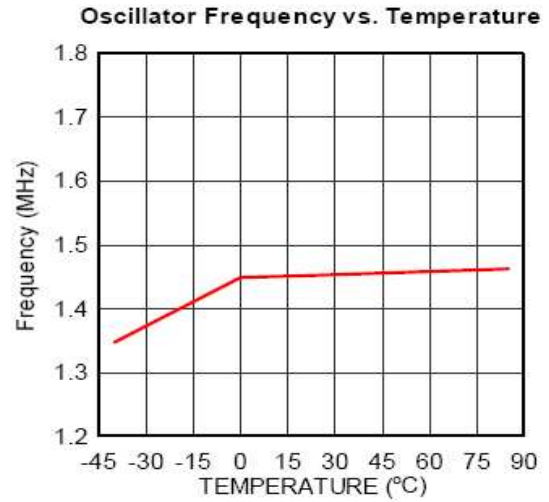
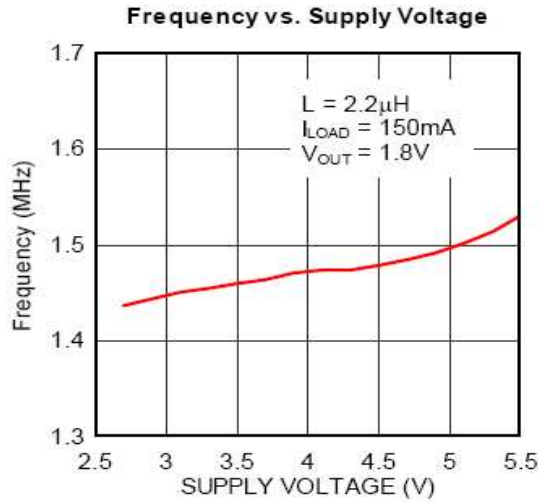
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Typical Characteristics



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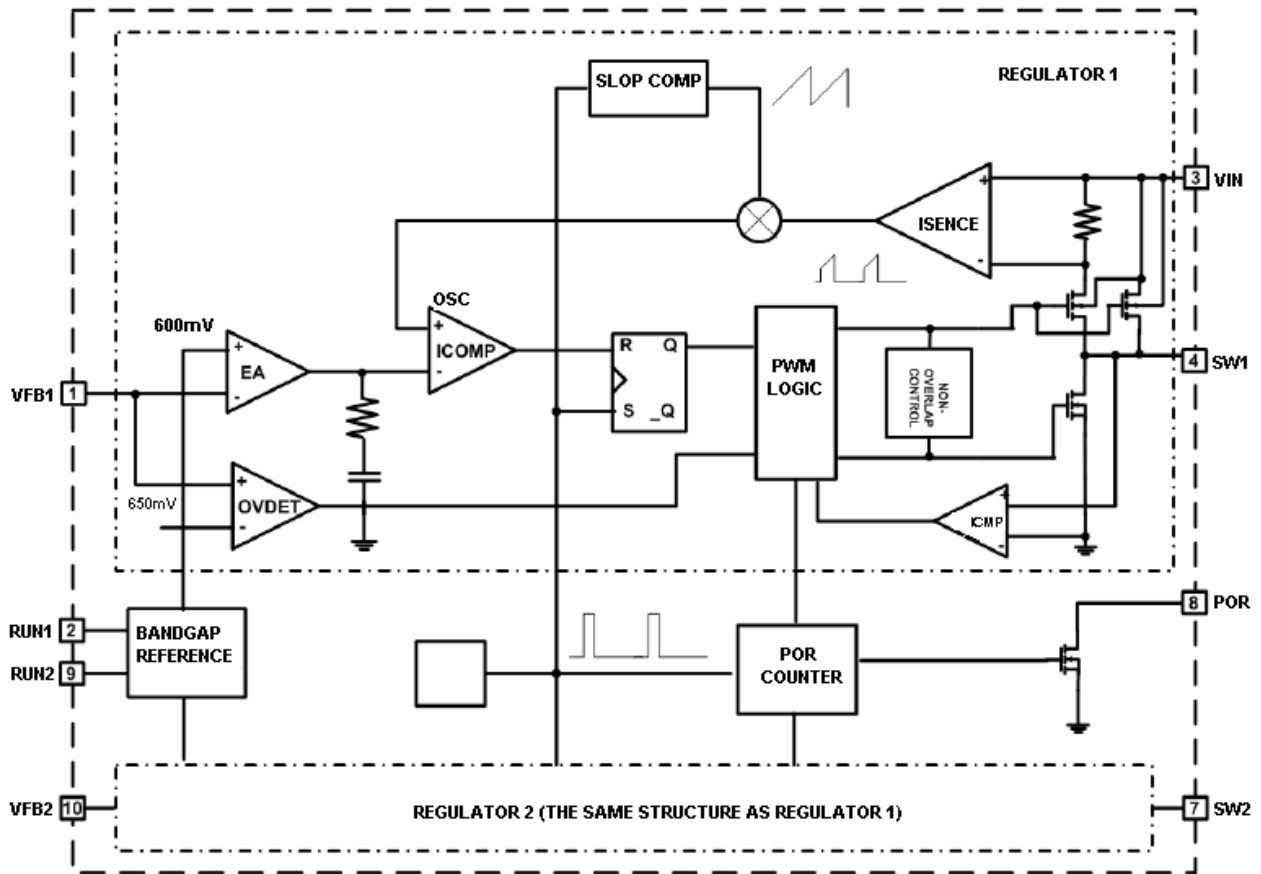
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Block Diagram

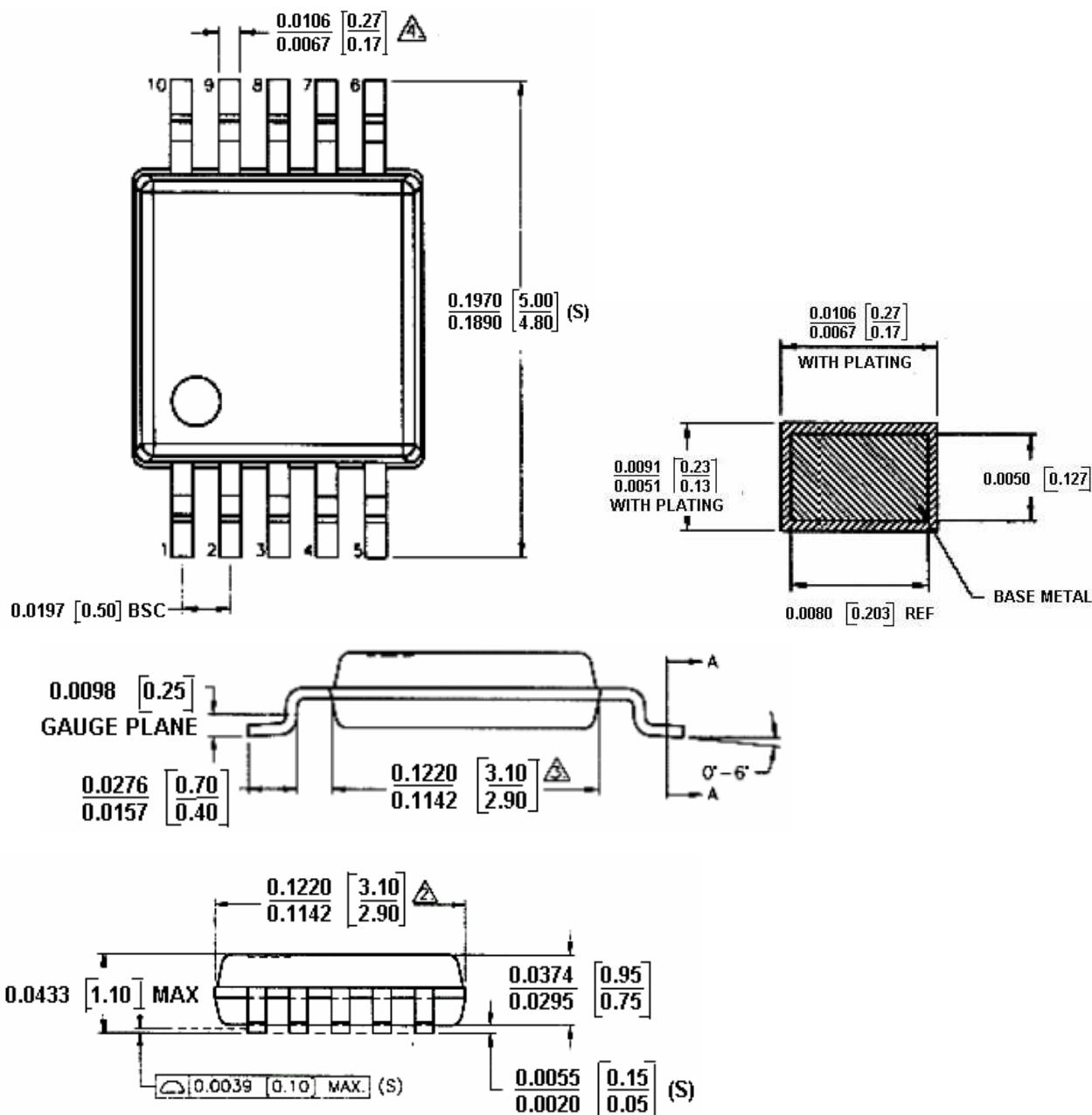


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Package Information

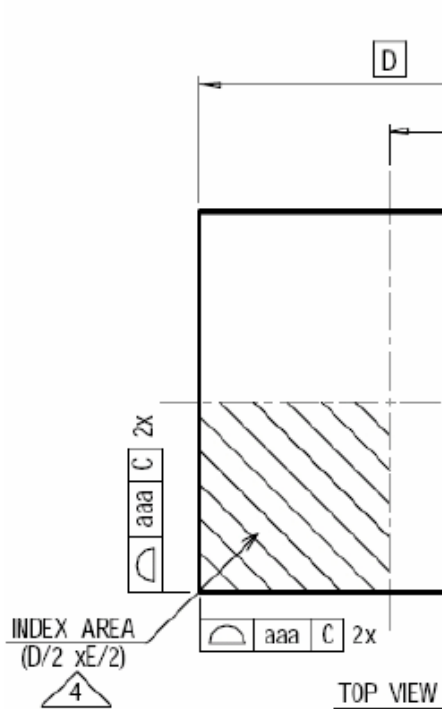
Dimension in MSOP10 (Unit: mm)



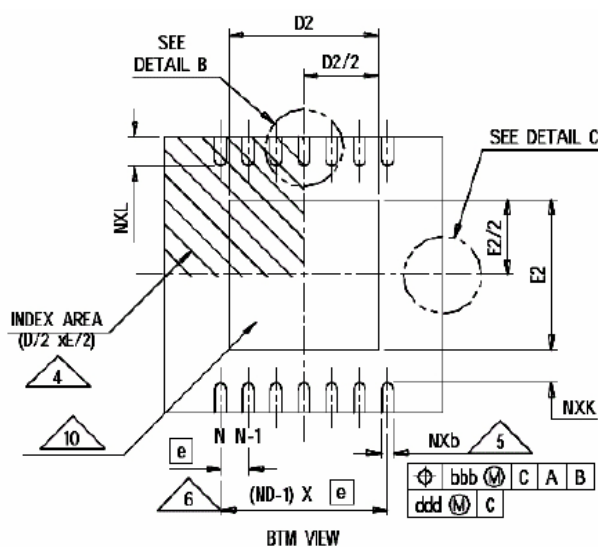
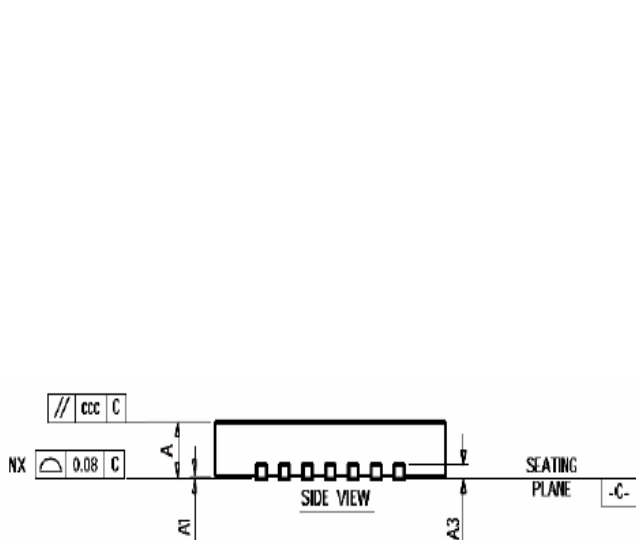
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Dimension in DFN10 (Unit: mm)



A	0.75
A1	0.02
A3	0.20 ref
aaa	0.15
bbb	0.10
ccc	0.10
ddd	0.05
eee	0.08
ggg	0.10
D BSC	3.00
E BSC	3.00
D2	2.20-2.70
E2	1.40-1.75
L	0.40
N	10
ND	5



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