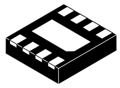
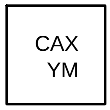
http://onsemi.com



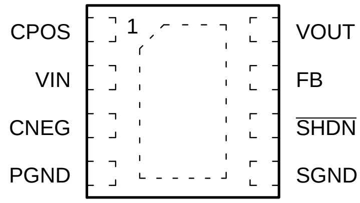
UDFN−8
HU2 SUFFIX
CASE 517AW

MARKING DIAGRAM



CA = Product Name
X = Assembly Location
Y = Production Year (Last Digit)
M = Production Month (1−9, O, N, D)

PIN CONNECTIONS



(Top View)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

Features

- Constant High Frequency (2 MHz) Operation
- 100 mA Output Current
- Regulated Output Voltage (5 V Fixed or Adjustable)
- Low Quiescent Current (1.7 mA Typ.)
- Soft Start, Slew Rate Control
- Reverse Leakage Protection
- Thermal Overload Shutdown Protection
- Low Value External Capacitors (1 μF)
- Foldback Current Overload Protection
- Shutdown Current less than 1 μA
- 8−pad UDFN 2 mm x 2 mm Package
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

Typical Applications

- 3 V to 5 V Boost Conversion
- 2.5 V to 3.3 V Boost Conversion
- White LED Driver
- Handheld Portable Devices

capacitors to be used.

Maximum output loads of up to 100 mA can l
wide range of input supply voltages making t
battery−powered applications.

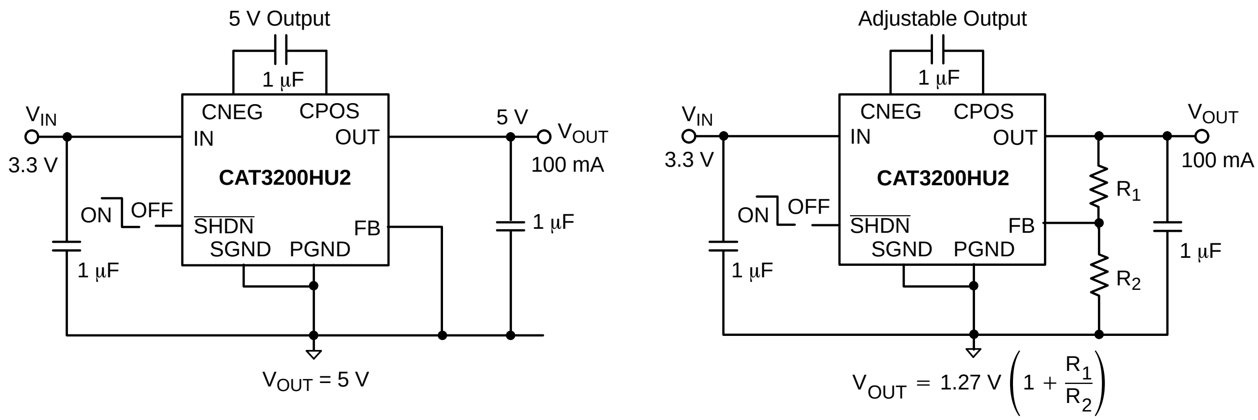


Figure 1. Typical Application Circuits

Table 1. ORDERING INFORMATION

Orderable Part Number	**Output Voltage**	**Package**	**Lead Finish**	**Shipping** (Note 1)
CAT3200HU2−GT3	5 V and Adjustable	UDFN−8	NiPdAu	3,000

1. For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

Table 2. PIN FUNCTION DESCRIPTION

Pin No.	Pin Name	Description
1	CPOS	Positive connection for the flying capacitor
2	VIN	Input power supply
3	CNEG	Negative connection for the flying capacitor
4	PGND	Power ground
5	SGND	Ground reference for all voltages
6	$\overline{SHDN}$	Shutdown control logic input (Active LOW)
7	FB	Feedback to set the output voltage
8	VOUT	Regulated output voltage
	Tab	Connect to ground on PCB

Table 3. ABSOLUTE MAXIMUM RATINGS

Rating	Value	Unit
V_{IN}, V_{FB}, $\overline{SHDN}$, C_{NEG}, C_{POS} Voltage	−0.6 to +6	V
V_{OUT}	−0.6 to +7	V
V_{OUT} Short Circuit Duration	Indefinite	
Output Current	200	mA
ESD Protection (HBM)	2000	V
Junction Temperature Range	150	°C
Storage Temperature Range	−65 to +160	°C
Lead Soldering Temperature (10 sec)	300	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Table 4. RECOMMENDED OPERATING CONDITIONS

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Input Voltage	5 V output	V_{IN}	2.7		4.5	V
	3.3 V adjustable output		2.2		3.0	V
C_{IN}, C_{OUT}, C_{FLY} (Note 2)			1.0	2.2	4.7	μF
Load Current		I_{LOAD}			100	mA
Ambient Temperature Range		T_{AMB}	−40		85	°C

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresse

TYPICAL PERFORMANCE CHARACTERISTICS

(V_{IN} = 3.3 V, V_{FB} = GND (5 V output), C_{IN} = C_{OUT} = C_{FLY} = 1 μF, [C0805C105K9RACTU], T_{AMB} = 25°C)

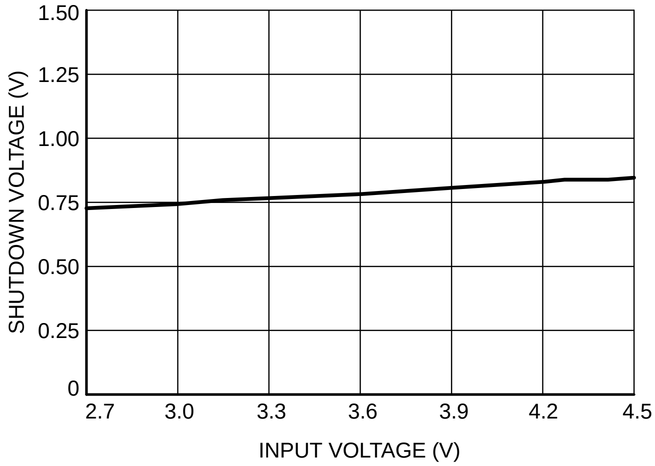


Figure 2. Shutdown Input Threshold vs. Input Voltage

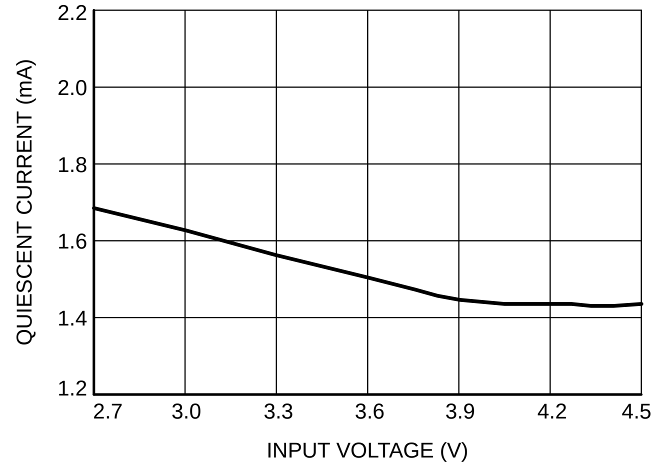


Figure 3. Quiescent Current vs. Input Voltage (No Load)

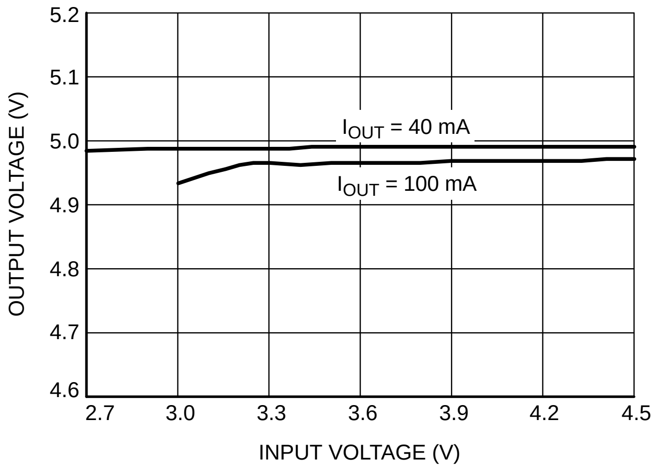


Figure 4. Output Voltage vs. Input Voltage

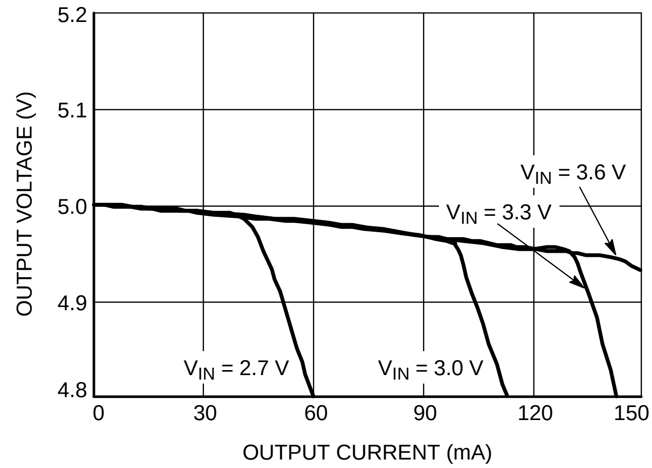


Figure 5. Output Voltage vs. Output Current

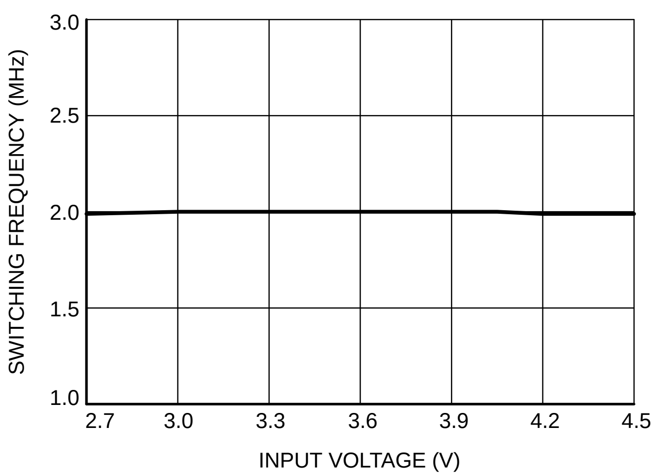


Figure 6. Oscillator Frequency vs. Input Voltage

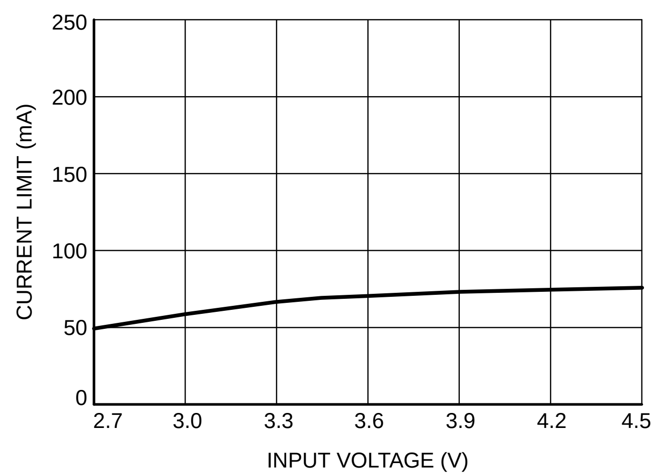


Figure 7. Short Circuit Current vs. Input Voltage

TYPICAL PERFORMANCE CHARACTERISTICS

(V_{IN} = 3.3 V, V_{FB} = GND (5 V output), C_{IN} = C_{OUT} = C_{FLY} = 1 μF, [C0805C105K9RACTU], T_{AMB} = 25°C)

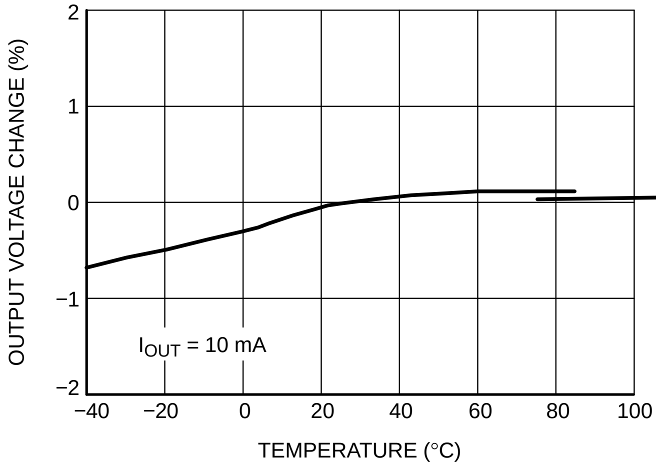
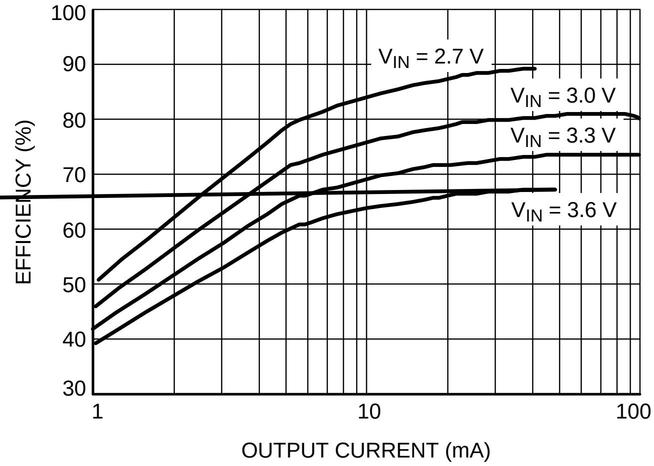
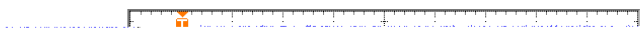
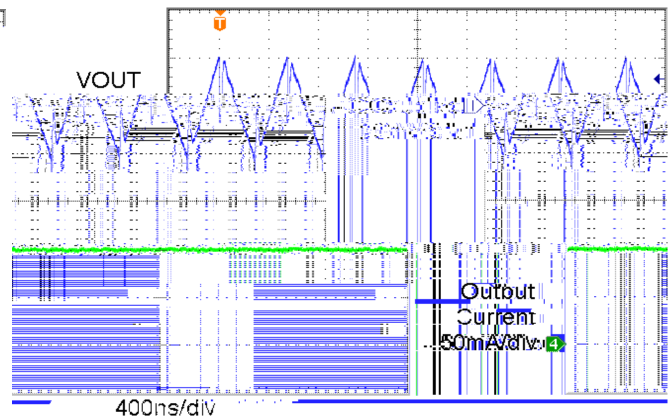
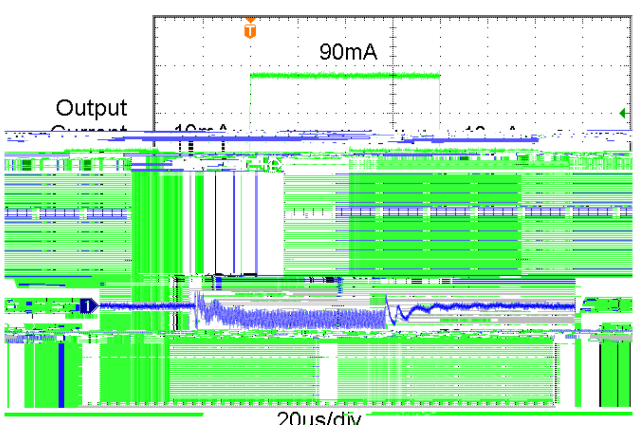


Figure 8. Output Voltage Change vs. Temperature



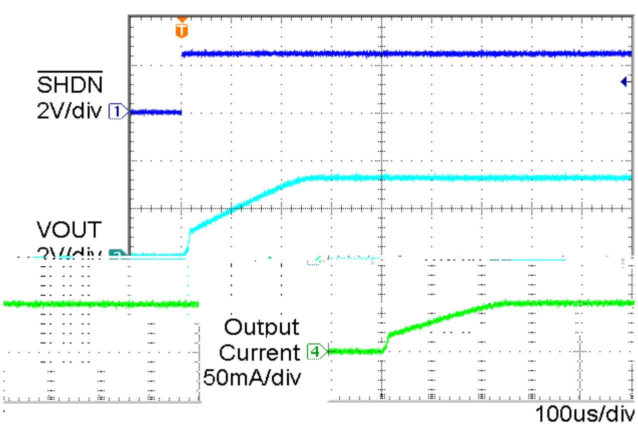


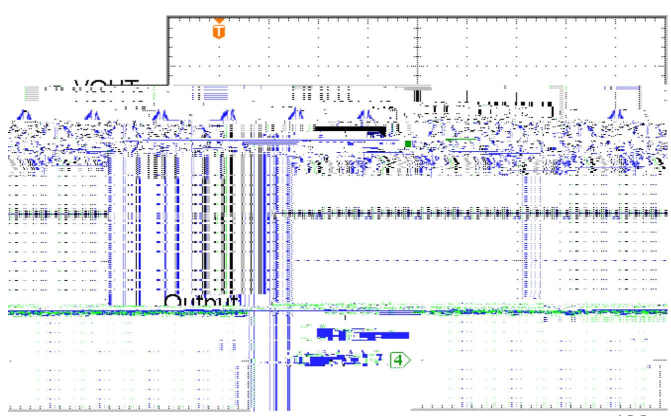




TYPICAL PERFORMANCE CHARACTERISTICS

(V_{IN} = 2.5 V, V_{OUT} = 3.3 V (adjustable output), R1 = 16 kΩ, R2 = 10 kΩ, C_{IN} = C_{OUT} = C_{FLY} = 1 μF, [C0805C105K9RACTU], T_{AMB} = 25°C)





Pin Functions

VIN is the power supply. During normal operation the device draws a supply current which is almost constant. A very brief interval of non−conduction will occur at the switching frequency. The duration of the non−conduction interval is set by the internal non−overlapping “break−before−make” timing. VIN should be bypassed with a 1 μF to 4.7 μ

Application Information

Ceramic Capacitors

Ceramic capacitors of different dielectric materials lose their capacitance with higher temperature and voltage at different rates. For example, a capacitor made of X5R or X7R material will retain most of its capacitance from −40°C to 85°C whereas a Z5U or Y5V style capacitor will lose considerable capacitance over that range.

Z5U and Y5V capacitors may also have voltage coefficient causing them to lose 60% or more of their capacitance when the rated voltage is applied. When comparing different capacitors it is often useful to consider the amount of achievable capacitance for a given case size rather than discussing the specified capacitance value. For example, over rated voltage and temperature conditions, a 1 μF, 10 V, Y5V ceramic capacitor in an 0603 case may not provide any more capacitance than a 0.22 μF, 10 V, X7R available in the same 0603 case. For many CAT3200HU2 applications these capacitors can be considered roughly equivalent.

Output Ripple

The output ripple voltage is related to the output capacitor size C_{OUT} and ESR (equivalent series resistance) and can be calculated using the formula below:

$V_R = I_{LOAD} /$

UDFN8, 2x2
CASE 517AW
ISSUE A

DATE 13 NOV 2015