



## AXP - the logic family for portable applications

# Advanced, extremely-low voltage & power CMOS logic

A feature rich family designed for high-performance, low voltage and low-power applications, these Si-gate CMOS devices provide logic solutions with very low static and dynamic power dissipation.

### Key features

- ▶ Very low dynamic power dissipation ( $C_{pd}$ )
- ▶  $t_{pd}$  of 2.9 ns at  $V_{cc}$  of 1.8 V
- ▶ Wide supply voltage range (0.7 V to 2.75 V)
- ▶ Fully specified at the 0.8 V node
- ▶ Schmitt-trigger action on all inputs
- ▶ 4.5 mA balanced output drive
- ▶ Over-voltage tolerant I/Os
- ▶ Fully specified (-40 to +85 °C)
- ▶ Pb-free, RoHS compliant and Dark Green

### Benefits

- ▶ Low propagation delay
- ▶ Suitable for mixed low-voltage applications
- ▶ High noise immunity
- ▶ Extended battery life
- ▶ Wide range of functions
- ▶ Simplified board layout, mechanical stability

### Applications

- ▶ Smart phones/Tablet PC's
- ▶ Digital cameras
- ▶ Portable medical devices
- ▶ Other low voltage power sensitive applications

The AXP family of Si-gate CMOS devices uses leading low threshold process technology and next generation packaging technology to create extremely small functions that support the trend to very low operating voltage and consume very little power. The devices are targeted at small footprint portable applications and are available in single (1G), dual (2G) and triple (3G) gate formats.

Multiple standard and configurable logic functions are included in the AXP family. These are made available in the industries smallest packages.



## Improved speed without a power penalty

The primary logic solutions for low voltage portable applications have been either very low power or very high speed. The choice to be made between using the fastest or lowest power logic family at 1.2 V has been to either accept a 6x increase in power dissipation or a 3 x increase in propagation delay. The AXP family addresses this imbalance by providing a much faster solution at the same low power dissipation capacitance ( $C_{pd}$ ) as the lowest power logic family. In addition due to the use of low threshold transistors the AXP family is fully specified at 0.8 V making it ideal for migrating applications from 1.8 V to 1.2 V and beyond.

## AXP portfolio

Type number	Description	Features					Packages			
		Schmitt trigger inputs	Schmitt trigger action	3.0 V tolerant I/O's	Open-drain output	Power-off protection (IOFF)	SOT886 (GM)	SOT1115 (GN)	SOT1202 (GS)	SOT1226 (GX)
<b>Configurable</b>										
74AXP1G57	single configurable multiple function gate	•		•		•	•	•	•	
74AXP1G58	single configurable multiple function gate	•		•		•	•	•	•	
74AXP1G97	single configurable multiple function gate	•		•		•	•	•	•	
74AXP1G98	single configurable multiple function gate	•		•		•	•	•	•	
<b>Buffers/inverters</b>										
74AXP1G04	single inverter		•	•		•	•	•	•	•
74AXP2G07	dual buffer; open-drain	•	•	•	•	•	•	•	•	•
74AXP1G125	single buffer/line driver; 3-state		•	•		•	•	•	•	•
74AXP2G14	dual inverter; Schmitt trigger	•		•		•	•	•	•	•
74AXP1G17	single buffer; Schmitt trigger	•		•		•	•	•	•	•
<b>Gates</b>										
74AXP1G00	single 2-input NAND gate		•	•		•	•	•	•	•
74AXP1G02	single 2-input NOR-gate		•	•		•	•	•	•	•
74AXP1G08	single 2-input AND gate		•	•		•	•	•	•	•
74AXP1G09	single 2-input AND gate; open-drain		•	•	•	•	•	•	•	•
74AXP1G32	single 2-input OR-gate		•	•		•	•	•	•	•

For more information about our AXP family visit <http://www.nxp.com/products/logic/family/AXP/>

## Packages

AXP devices are available in leadless MicroPak and the world's smallest logic package, the Diamond package (SOT1226). This makes them suitable for volume constrained (area and height) portable applications such as smart phone and tablet PC.

The lower gate count logic products reduce time-to-market by making it easy to implement last-minute changes. They also improve the cost-effectiveness of crowded layouts, by simplifying routing and eliminating dependencies in intricate line-layout patterns.

Package suffix	GX 5-pin	GM 6-pin	GN 6-pin	GS 6-pin
				
Package	SOT1226	SOT886	SOT1115	SOT1202
Width (mm)	0.80	1.00	1.00	1.00
Length (mm)	0.80	1.45	0.90	1.00
Height (mm)	0.35	0.50	0.35	0.35
Pitch (mm)	0.50	0.50	0.30	0.35