



# PicoGate and MicroPak

The logical solution for miniaturization

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NXP PicoGate and MicroPak™ packages are roughly ten to fifteen times smaller than conventional SO14 packages and provide significant miniaturization in space-constrained applications. Available in a wide range of logic functions, they provide an equally wide range of choices and deliver the right levels of performance.

## Addressing today's most critical design issues:

- Miniaturization, for board-space savings
- ASIC fixes and glue logic, for faster time-to-market
- Simpler PCB routing, for more cost-effective designs
- ASIC output drive, for reduced ASIC chip size
- Voltage translation, for 1.2-to-3.3-V interface

## Offering the most popular functions for a very wide range of applications:

- Laptops, notebooks, docking stations, PC cards
- Mobile phones, PDAs, pagers
- Portable radios, portable CD and MP3 players
- LCD TV and set-top box
- Cameras
- Disk memory drivers
- High-temperature (-40 to +125 °C) automotive and military applications

## Faster time-to-market, simpler layouts

These devices make it simple to implement last-minute changes yet minimize the impact on board layouts. With an ASIC design, for example, engineering teams can fine-tune performance without re-spinning silicon, since it's easy to add discrete logic functions like gates or inverters.

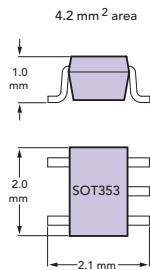
By simplifying routing and eliminating dependencies in intricate line-layout patterns, these devices improve the cost-effectiveness of crowded layouts. Also, since configurable logic functions can replace up to four devices, using PicoGate and MicroPak devices can reduce inventory, too.

## Better selection, more choice

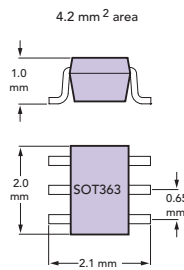
PicoGate and MicroPak devices include single-, dual-, and triple-gate functions and are housed in 5-, 6-, and 8-pin packages, so you get just the functions you need. To support the widest range of applications, every product in the portfolio is specified for high-temperature operation (-40 to +125 °C). And, since they perform the most popular functions and either meet or exceed competitive specifications, they put an end to single-source problems.



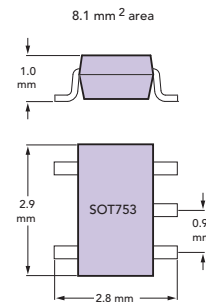
## Package size comparisons (nominal values) and suffixes



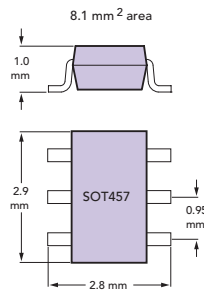
Package type:  
GW



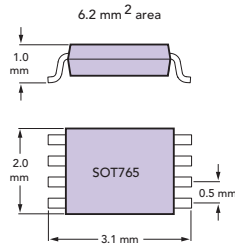
Package type:  
GW



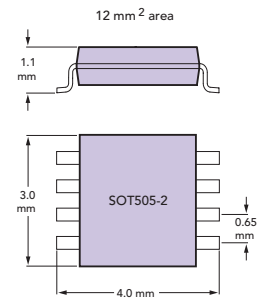
Package type: GV



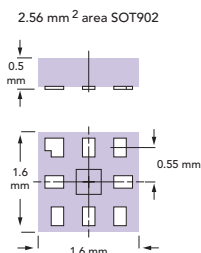
Package type: GV



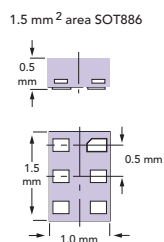
Package type: DC



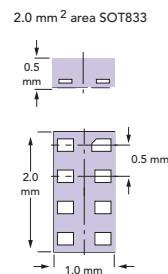
Package type: DP



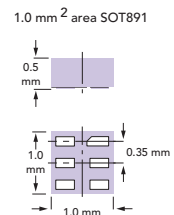
Package type:  
GM



Package type:  
GM



Package type: GT



Package type: GF

Drawings not to scale.

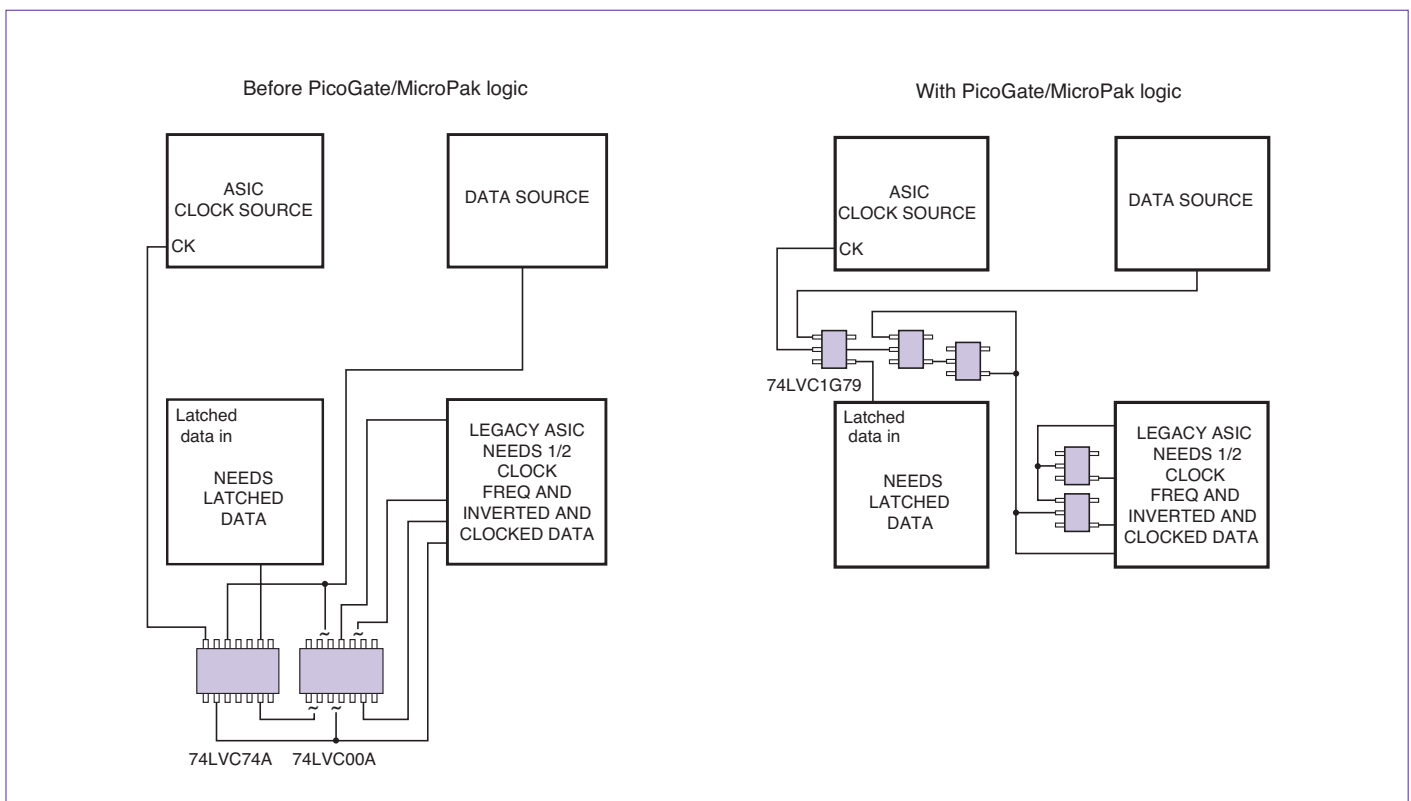
Function	Description	Pins	HC/T	AHC/T	LVC	AUC	AUP	SOT353	SOT753	SOT363	SOT457	SOT505-2	SOT765	SOT886	SOT833	SOT902	SOT891
	Single-gate	Technology						Package options									
1G00	Single two-input NAND gate	5	•	•	•	•	•	•	•					•			•
1G02	Single two-input NOR gate	5	•	•	•	•	•	•	•					•			•
1G04	Single inverter	5	•	•	•	•	•	•	•					•			•
1G06	Single inverter (open-drain output)	5		•	•		•	•	•					•			•
1G07	Single inverter (open-drain output)	5		•	•		•	•	•					•			•
1G08	Single two-input AND gate	5		•	•		•	•	•					•			•
1G0832	Three-input AND-OR gate	6					•			•				•			•
1G125	Single 3-state buffer	5	•	•	•			•	•	•				•			•
1G126	Single 3-state buffer	5	•	•	•			•	•	•				•			•
1G132	Two-input NAND Schmitt-trigger	5					•	•						•			•
1G11	Single three-input AND gate	5			•		•							•			•
1G14	Single Schmitt-trigger inverter	5	•	•	•	•	•	•	•					•			•
1G175	D-type flip-flop with reset	6	•		•					•	•			•			•
1G157	Single two-input multiplexer	6			•		•							•			•
1G158	Single two-input multiplexer	6			•		•							•			•
1G17	Single Schmitt-trigger buffer	6			•									•			•
1G18	Non-inverting demultiplexer	5			•					•	•			•			•
1G19	Decoder/demultiplexer	5			•					•	•			•			•
1G240	Buffer/line driver (3-state)	5					•	•						•			•
1G3157	Single 2-channel analog multiplexer/demultiplexer (SPDT switch)	5			•									•			•
1G32	Single two-input OR gate	5	•	•	•	•	•	•	•	•				•			•
1G3208	Three-input OR-AND gate	6					•							•			•
1G34	Single buffer	5			•		•	•						•			•
1G384	Single analog switch	6			•									•			•
1G386	Three-input Exclusive-OR gate	5			•					•	•			•			•
1G38	Single two-input NAND gate with open-drain outputs	5			•									•			•
1G66	Analog switch	5	•	•	•			•	•					•			•
1G53	Two-channel analog mux/demux	8			•								•		•		•
1G57	Single low-power configurable multi-function gate	5			•		•							•			•
1G58	Single low-power configurable multi-function gate	5					•							•			•
1G74	D-type flip-flop	8	•	•	•							•	•		•	•	
1G79	D-type flip-flop, positive-edge trigger	8		•	•			•	•								
1G80	D-type flip-flop, positive-edge trigger	5				•			•	•							
1G86	Single two-input Exclusive-OR gate	5	•	•	•	•	•	•	•	•							
1G97	Configurable multi-function gate	8			•		•						•		•	•	
1G98	Configurable multi-function gate	8			•		•						•		•	•	
1GU04	Single inverter (unbuffered)	5	•	•	•		•	•	•					•			•
1GX04	3.3-V crystal driver	5			•									•			•
	Dual-gate	Technology						Package options									
1T34	Dual supply translating buffer	5					•	•						•			•
2G00	Dual two-input NOR gate	8	•	•	•	•						•	•		•	•	
2G02	Dual two-input NOR gate	8	•	•	•	•						•	•		•	•	
2G04	Dual inverter	6	•	•	•	•	•			•	•			•			•
2G06	Dual inverter (open drain)	6	•	•	•		•			•	•			•			•
2G07	Dual buffer (open drain)	6	•	•	•		•			•	•			•			•
2G08	Dual two-input AND gate	8	•	•	•	•						•	•		•	•	
2G125	Dual 3-state buffer	8	•	•	•	•						•	•		•	•	
2G126	Dual 3-state buffer	8	•	•	•	•						•	•		•	•	
2G14	Dual Schmitt-trigger inverter	6	•	•	•	•	•			•	•			•			•
2G17	Dual Schmitt-trigger buffer	6			•	•	•			•	•			•			•
2G240	Dual buffer, inverter, 3-state	8	•	•	•	•						•	•		•	•	
2G241	Dual buffer, 3-state	8	•	•	•	•						•	•		•	•	
2G32	Dual two-input OR gate	8	•	•	•	•						•	•		•	•	
2G34	Dual buffer	6	•	•	•	•	•			•	•			•			•
2G38	Dual two-input NAND buffer, Ocs	8	•	•	•	•						•	•		•	•	
2G53	Dual analog multiplexer/demultiplexer	8			•							•	•		•	•	
2G58	Single low-power configurable multi-function gate	8					•										
2G66	Dual bilateral analog switch	8	•	•	•							•	•		•	•	
2G74	Single D-type flip-flop with ser/reset	8			•		•					•	•		•	•	
V2G66	Dual over-voltage-tolerant bilateral analog switch	8					•								•	•	
2G86	Dual Exclusive-OR gate	8	•	•	•	•						•	•		•	•	
2GU04	Dual inverter (unbuffered)	6	•	•	•	•	•			•	•						
	Triple-gate	Technology						Package options									
3G04	Triple inverter	8	•	•	•	•	•					•	•		•	•	
3G06	Triple inverter (open-drain output)	8	•	•	•	•						•	•		•	•	
3G07	Triple buffer (open-drain output)	8	•	•	•							•	•		•	•	
3G14	Triple Schmitt-trigger inverter	8	•	•	•	•						•	•		•	•	
3G17	Triple Schmitt-trigger buffer	8	•	•	•	•						•	•		•	•	
3G34	Triple buffer gate	8	•	•	•	•						•	•		•	•	
3GU04	Triple inverter (unbuffered)	8	•	•	•							•	•		•	•	
		Technology						Package options									
1G125	74CBTLV1G125 single-bus switch							•	•					•			

# The NXP portfolio of PicoGate and MicroPak logic

**PicoGate and MicroPak logic devices are available in our HC/T, AHC/T, LVC, AUC, and AUP families**

HC/T family	Cost-effective functions optimized for 5-V operating conditions
AHC/T family	Single-, dual-, and triple-gate functions that deliver low noise and low power in the 2- to 6-V supply range
LVC family	5-V-tolerant functions that achieve performance similar to an equivalent 3.3-V LVC gate and provide low voltage, low noise, and low power in the 1.2- to 5.5-V range
AUC family	Functions that deliver low operating voltage ( $V_{CC}$ down to 0.8 V), propagation delays of less than 2.0 ns TPD, and $I_{OFF}$ power-down
AUP family	1.1- to 3.6-V functions that offer power-down consumption rates that are 30% lower than competing logic families

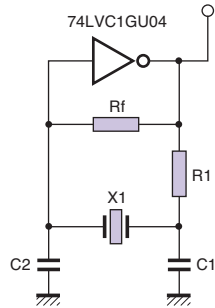
## Simplified routing and less board space



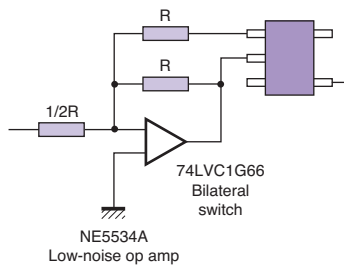


## Sample applications of PicoGate/MicroPak logic

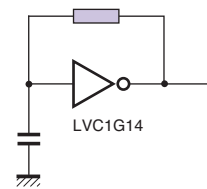
Crystal oscillator using a U04



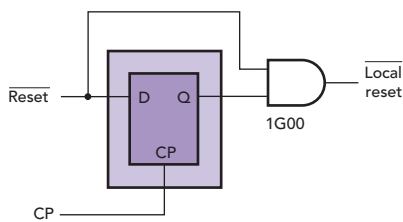
Gain control using an analog switch



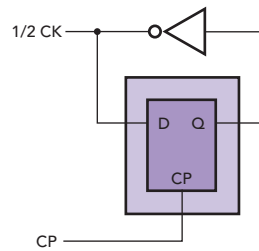
Simple RC oscillator using a Schmitt-trigger 1G14



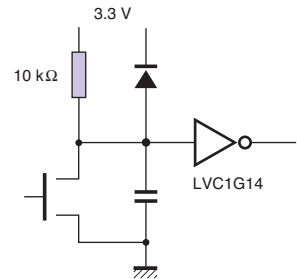
Asynchronous enable with synchronous. Removal recommended for high-speed logic designs



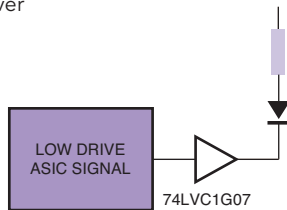
1G79 and 1G04 inverter form clock divider



Switch debounce using a Schmitt-trigger 1G14

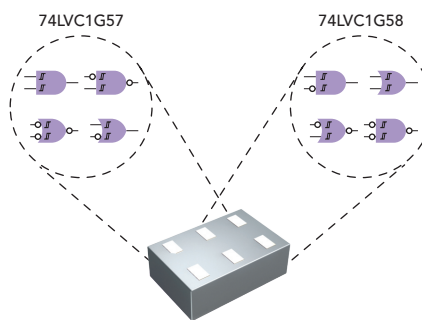


LED driver

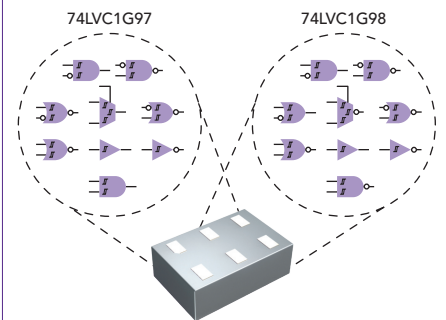


Common PicoGate/MicroPak logic applications include increased drive capability, voltage-level shifting, and signal shaping

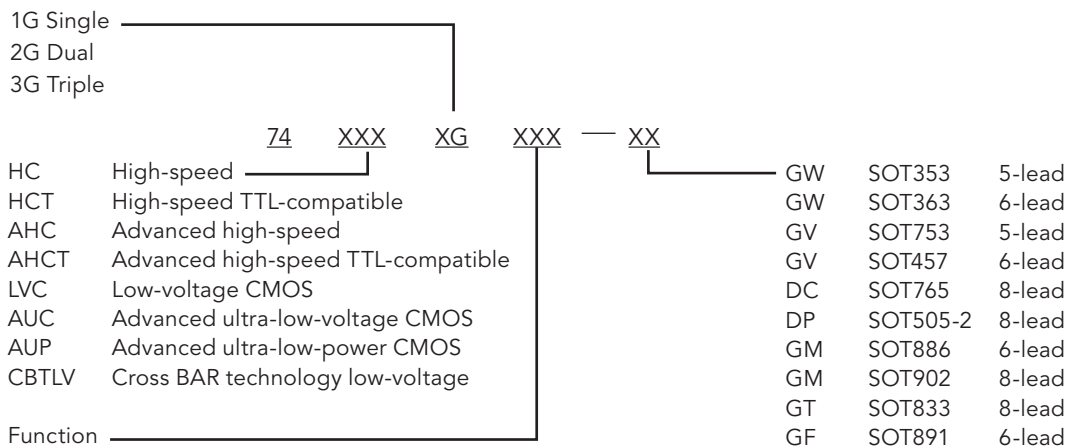
Multi-function configurable gates



Multi-function configurable gates



## Product naming convention



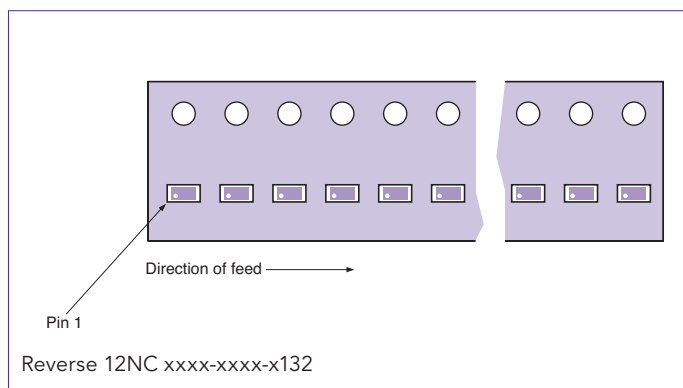
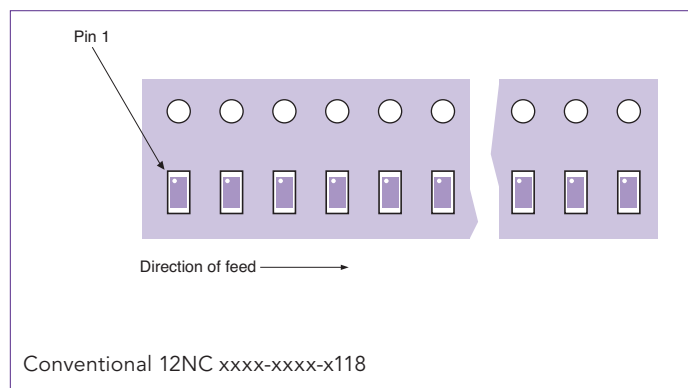
## Competitive cross-reference: family

Family	Device type	NXP	Texas Instruments	Fairchild Semiconductor	ON Semiconductor	Toshiba	ST Microelectronics
HC(T) series	Single-gate	74HC(T)1Gxxx		NC7S(T)xxx	MC74HC1Gxxx	TC7Sxxx TC74Wxxx TC7Wxxx	74H1G66
	Dual-gate	74HC(T)2Gxxx					
	Triple-gate	74HC(T)3Gxxx					
AHC(T) series	Single-gate	74AHC(T)1Gxxx	SN74AHC(T)1Gxxx		MC74VHC1Gxxx	TC7S(H/ET)xxx	74V1G/Txxx
	Dual-gate	74AHC(T)2Gxxx				TC7WHxxx	74V2G/Txxx
	Triple-gate	74AHC(T)3Gxxx				TC7NHxxx	74V3G/Txxx
LVC series	Single-gate	74LVC1Gxxx	SN74LVC1Gxxx	NC7SZxxx	NL17SZxxx	TC7SZxxx	74LX1G/Txxx
	Dual-gate	74LVC2Gxxx	SN74LVC2Gxxx	NC7WZxxx	NL27WZxxx	TC7WZxxx	
	Triple-gate	74LVC3Gxxx	SN74LVC3Gxxx	NC7NZxxx	NL37NZxxx	TC7NZxxx	
	Translators	74LVC1Txxx	SN74LVC1Txxx				
AUC series	Single-gate	74AUC1Gxxx	SN74AUC1Gxxx	NC7SVxxx	TC7SLxxx		
	Dual-gate	74AUC2Gxxx	SN74AUC2Gxxx	NC7WVxxx			
	Triple-gate	74AUC3Gxxx	SN74AUC3Gxxx	NC7NVxxx			
AUP series	Single-gate	74AUP1Gxxx	SN74AUP1Gxxx	NC7SPxxx			
	Dual-gate	74AUP2Gxxx	SN74AUP2Gxxx	NC7WPxxx			
	Triple-gate	74AUP3Gxxx		NC7NPxxx			
	Translators	74AUP1Txxx	SN74AUP1Txxx				

## Competitive cross-reference: packaging

Family	Pin count	NXP	Pack method	Texas Instruments	Fairchild Semiconductor	ON Semiconductor	Toshiba	ST Microelectronics
SOT353	5	GW	Reverse	DCK	P5	DFT	FU	CTR
SOT753	5	GV	Reverse	DBV	M5	DTT	F	STR
SOT363	6	GW	Reverse	DCK	P6	DFT	FU	
SOT457	6	GV	Reverse	DBV	M6	DTT	F	
SOT765	8	DC	Reverse	DCU	K8	US8	FK	
SOT505-2	8	DP	Reverse	DCT			FU	STR
SOT886	6	GM	Conventional & reverse	YZP	L6			
SOT902	8	GM	Reverse		L8			
SOT833	8	GT	Conventional	YZP				
SOT891	6	GF	Conventional					

## MicroPak pack method



[www.nxp.com](http://www.nxp.com)

NXP Semiconductors is in the process of being established as a separate legal entity in various countries worldwide. This process will be finalized in the course of 2006.

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