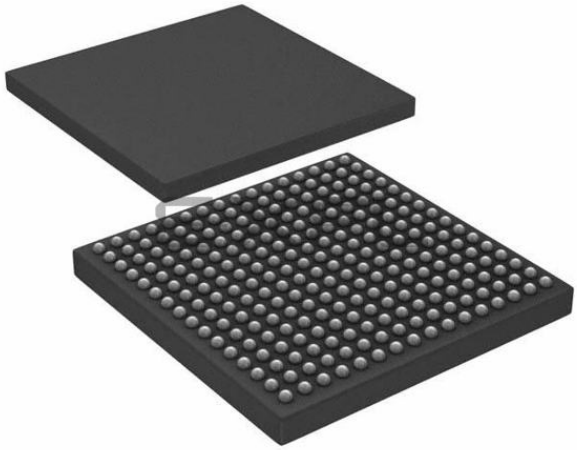


Welcome to E-XFL.COM

Understanding Embedded - FPGAs (Field Programmable Gate Array)

Embedded - FPGAs, or Field Programmable Gate Arrays, are advanced integrated circuits that offer unparalleled flexibility and performance for digital systems. Unlike traditional fixed-function logic devices, FPGAs can be programmed and reprogrammed to execute a wide array of logical operations, enabling customized functionality tailored to specific applications. This reprogrammability allows developers to iterate designs quickly and implement complex functions without the need for custom hardware.

Applications of Embedded - FPGAs

The versatility of Embedded - FPGAs makes them indispensable in numerous fields. In telecommunications.

Details	
Product Status	Active
Number of LABs/CLBs	-
Number of Logic Elements/Cells	-
Total RAM Bits	36864
Number of I/O	157
Number of Gates	250000
Voltage - Supply	1.425V ~ 1.575V
Mounting Type	Surface Mount
Operating Temperature	-40°C ~ 125°C (TA)
Package / Case	256-LBGA
Supplier Device Package	256-FPBGA (17x17)
Purchase URL	https://www.e-xfl.com/product-detail/microchip-technology/a3p250-1fg256t

I/Os Per Package

ProASIC3 Devices	A3P060	A3P125	A3P250		A3P1000	
	I/O Type					
Package	Single-Ended I/O	Single-Ended I/O	Single-Ended I/O [2]	Differential I/O Pairs	Single-Ended I/O [2]	Differential I/O Pairs
VQ100	71	71	68	13	–	–
FG144	96	97	97	24	97	25
FG256	–	–	157	38	177	44
FG484	–	–	–	–	300	74
QNG132	–	84	87	19	–	–

Notes:

1. *When considering migrating your design to a lower- or higher-density device, refer to the ProASIC3 FPGA Fabric User's Guide to ensure complying with design and board migration requirements.*
2. *Each used differential I/O pair reduces the number of available single-ended I/Os by two.*
3. *FG256 and FG484 are footprint-compatible packages.*

Automotive ProASIC3 Device Status

Automotive ProASIC3 Devices	Status
A3P060	Production
A3P125	Production
A3P250	Production
A3P1000	Production

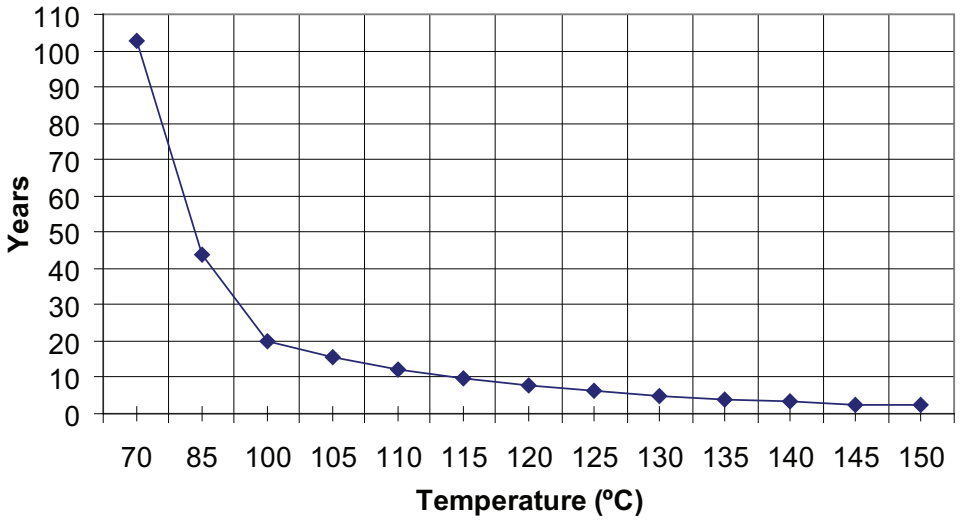
Table 2-2 • Recommended Operating Conditions

Symbol	Parameter		Automotive Grade 1	Automotive Grade 2	Units
T_J	Junction temperature		–40 to +135	–40 to +115	°C
VCC	1.5 V DC core supply voltage		1.425 to 1.575	1.425 to 1.575	V
VJTAG	JTAG DC voltage		1.4 to 3.6	1.4 to 3.6	V
VPUMP	Programming voltage	Programming Mode [3]	3.15 to 3.45	3.15 to 3.45	V
		Operation [4]	0 to 3.6	0 to 3.6	V
VCCPLL	Analog power supply (PLL)		1.425 to 1.575	1.425 to 1.575	V
VCCI and VMV	1.5 V DC supply voltage		1.425 to 1.575	1.425 to 1.575	V
	1.8 V DC supply voltage		1.7 to 1.9	1.7 to 1.9	V
	2.5 V DC supply voltage		2.3 to 2.7	2.3 to 2.7	V
	3.3 V DC supply voltage		3.0 to 3.6	3.0 to 3.6	V
	LVDS/B-LVDS/M-LVDS differential I/O		2.375 to 2.625	2.375 to 2.625	V
	LVPECL differential I/O		3.0 to 3.6	3.0 to 3.6	V

Notes:

1. *The ranges given here are for power supplies only. The recommended input voltage ranges specific to each I/O standard are given in Table 2-14 on page 2-16. VMV and V_{CCI} should be at the same voltage within a given I/O bank.*
2. *All parameters representing voltages are measured with respect to GND unless otherwise specified.*
3. *The programming temperature range supported is $T_{ambient}$ = 0°C to 85°C.*
4. *V_{PUMP} can be left floating during operation (not programming mode).*

Tj (°C)	HTR Lifetime (yrs)
70	102.7
85	43.8
100	20.0
105	15.6
110	12.3
115	9.7
120	7.7
125	6.2
130	5.0
135	4.0
140	3.3
145	2.7
150	2.2



Note: HTR time is the period during which you would not expect a verify failure due to flash cell leakage.

Figure 2-1 • High-Temperature Data Retention (HTR)