

AUTBUS

Time Sync. Network

Real Time, Deterministic, More Nodes, Long Distance

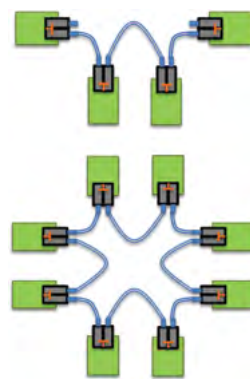
AUTBUS is designed for networking edge devices, such as, sensors, actuators, and controllers for cross industries, it can serve both mission critical and non-mission critical task simultaneously.

AUTBUS will be an international standard soon.

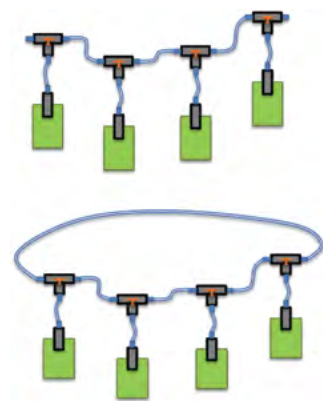
- IEC 61158-Type 28
- IEC 61784-CPF22

Features of AUTBUS

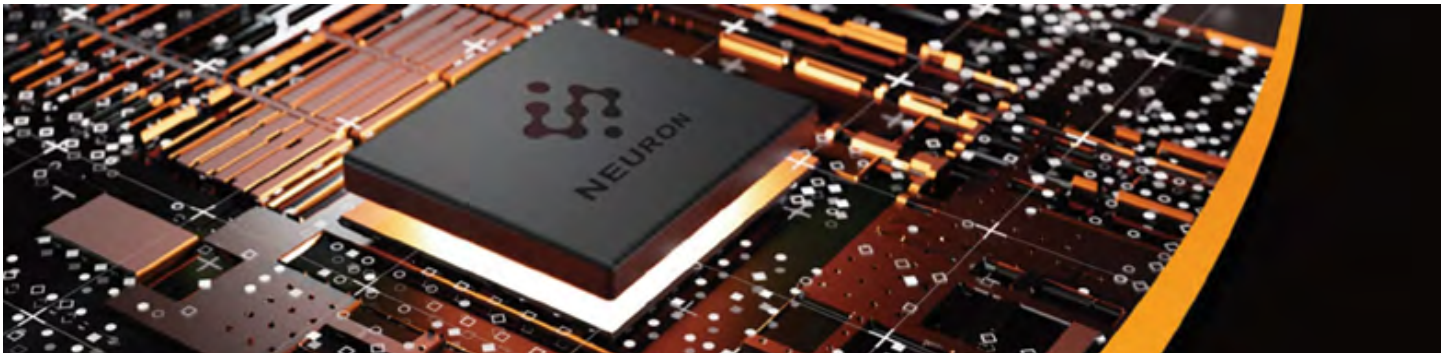
- Deterministic: Time sync. based communication mechanism
- High bandwidth: 100Mbps
- Media: twisted pair, polarity-insensitive
- More node: 254
- Long distance: 500m
- Flexible topology: daisy chain and multidrop
- Power over communication wires



Daisy chain



Multidrop



KY3001 SoC series is fully compatible with AUTBUS protocol and optimized for networking sensors, actuators, and controller as well.



KY3001
(LQFP128)



KY3001LR
(QFN88)

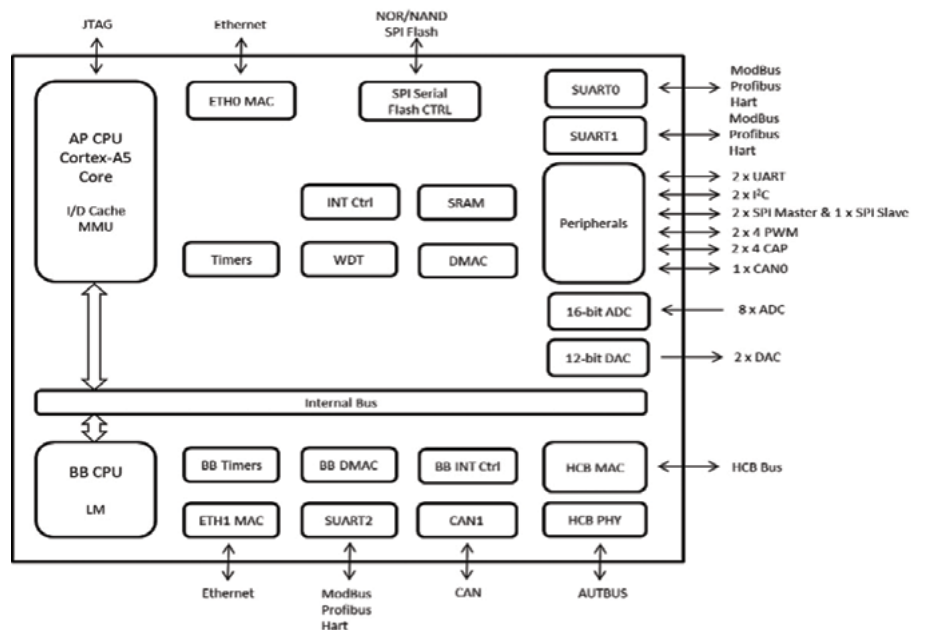


KY3001LRS
(QFN56)

Chip Features

- High performance: 32-bit ARM Cortex-A5 Core, 400MHz, 512K-SRAM
- Support NOR or NAND FLASH memory with SPI interface
- Bandwidth of AUTBUS is up to 100Mbps
- Support CAN/RS485/Modbus
- 1 x channel 10/100/1000Mbps RGMII
- 1 x channel 10/100Mbps RGMII
- 2 x master +1 x SPI slave
- 3 x SUART
- 1 x UART
- 2 x I²C
- 10 x 32-bit Timers
- 2 x 4 CCP
 - Captures or Compare input or
 - PWM output
- 8 channel x 16-bit ADC input
- 2 channel x 12-bit DAC output

Chip Architecture



Model selection

Table 1. Difference between

	Description	KY3001	KY3001LR	KY3001LRS
Dimension	PINS	LQFP128	QFN88	QFN56
	SIZE	16 x 16	10 x 10	7 x 7
Analog	AUTBUS	1	1	1
	ADC	8	2	-
	DAC	2	1	-
Digital	CPU	400MHz	400MHz	400MHz
	SRAM	512K	512K	512K
	CAPTURE	8-Differential	5-Differential	5-Single end
	PWM	8-Differential	5-Differential	5 Single end
	TIMER	10	10	10
	ETH0 (a)	1	1	-
	ETH1 (b)	1	-	-
	HCB	1	-	-
	SPI (M)	2	1	1
	SPI (S)	1	1	-
	FLASH	1	1	1
	I ² C	2	2	1
	CAN	1	1	1
	UART	2	2	1
	SUART (HART)	3	1	1
	JTAG	1	1	1

Electrical Characters

Table 1. Max. Rating Value

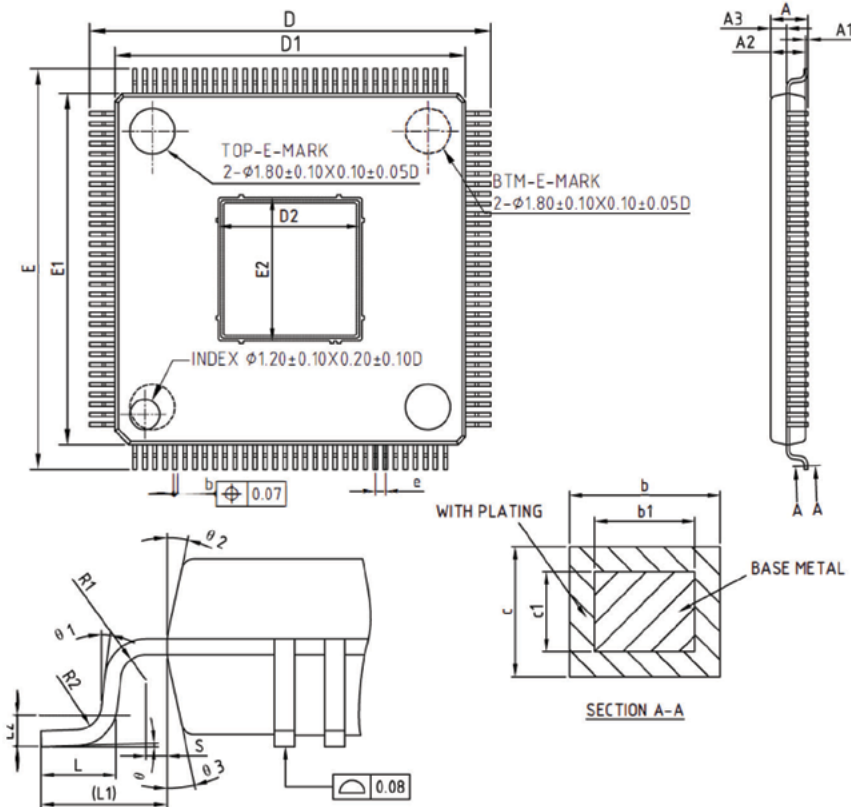
Symbol	Description	Min	Typ.	Max	Unit
VDDC	Digital core voltage	-0.3		1.32	V
VDDIO	Digital IO voltage	-0.3		3.6	V
AVDD18	Analog core voltage	-0.3		1.98	V
AVDD33	Analog IO voltage	-0.3		3.6	V
T _J	Junction temperature	-40	25	125	°C
T _{STG}	Storage temperature	-65		150	°C
T _A	Operation temperature	-40		100	°C

Table 2. Operation Condition

Symbol	Description	Min	Typ.	Max	Unit
VDDC	Digital core voltage	1.04	1.2	1.32	V
VDDIO	Digital IO voltage	2.95	3.3	3.63	V
AVDD18	Analog core voltage	1.24	1.8	1.98	V
AVDD33	Analog IO voltage	3	3.3	3.6	V
V _{IH}	Digital Input high	2.0		3.6	V
V _{IL}	Digital Input low	-0.3		0.8	V
V _{OH}	Digital output high	2.4			V
V _{OL}	Digital output low			0.4	V
V _{XO}	Crystal oscillation level	1	3.3		V _{PP}
T _A	Suggested Op. temp.	0		85	°C

Package and Dimension

Diagram 1. KY3001 Package (mm)

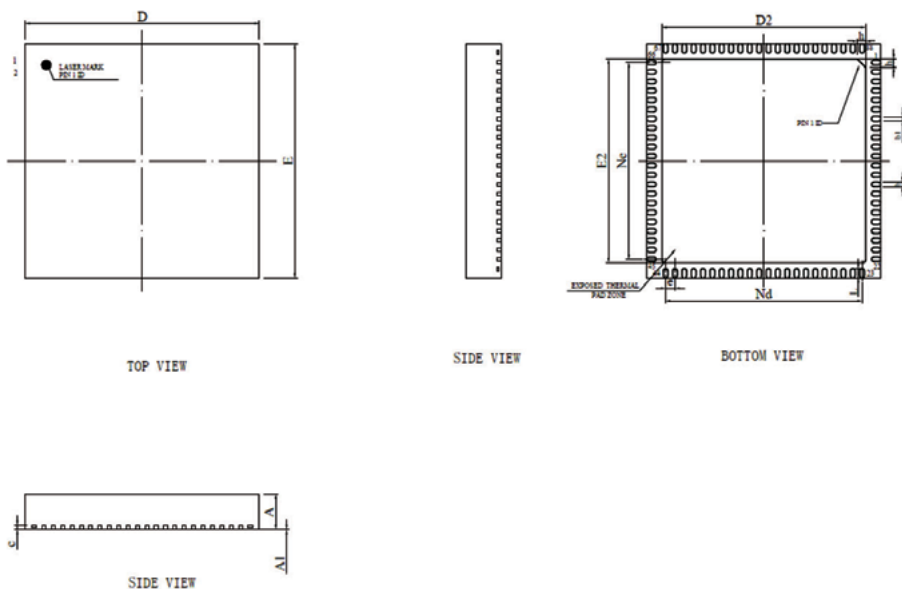


Symbol	Min.	Nor.	Max.
A	-	-	1.60
A1	0.05	-	0.15
A2	1.35	1.40	1.45
A3	0.59	0.64	0.69
b	0.14	-	0.23
b1	0.13	0.16	0.19
c	0.13	-	0.18
c1	0.12	0.127	0.134
D	15.80	16.00	16.20
D1	13.90	14.00	14.10
D2	5.715REF		
E	15.80	16.00	16.20
E1	13.90	14.00	14.10
E2	5.715REF		
e	0.35	0.40	0.45
L	0.45	0.60	0.75
L1	1.00REF		
L2	0.25BSC		
R1	0.08	-	-
R2	0.08	-	0.20
S	0.20	-	-
θ	0°	3.5°	7°
θ_1	0°	-	-
θ_2	11°	12°	13°
θ_3	11°	12°	13°

Note:

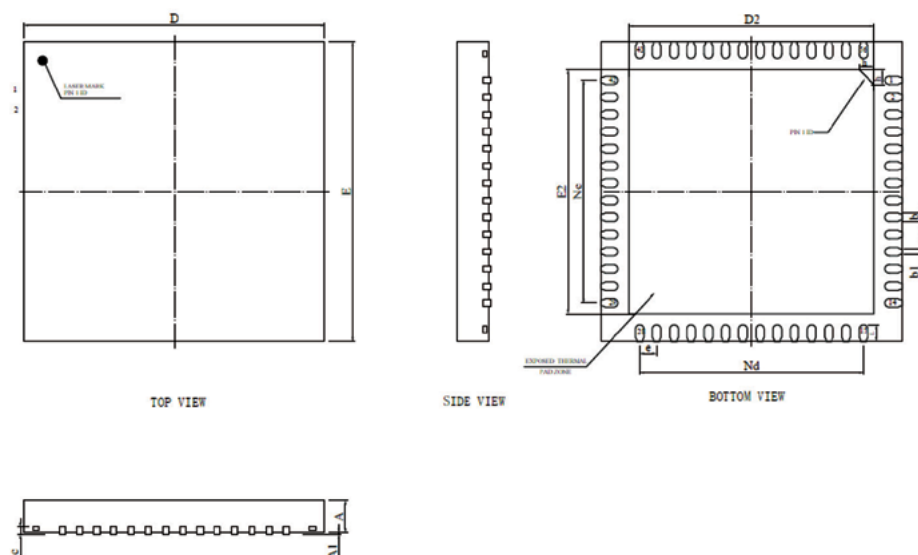
1. All dimension refer to Jeduc standard MS-026, BEE-HD do not include mold flash or protrusions
2. D2 & e2 are optional, exposed dap sizes and outlook are variables depending on L/F.

Diagram 2. KY3001LR Package (mm)



Symbol	Min.	Nor.	Max.
A	0.70	0.75	0.80
A1	-	0.02	0.05
b	0.15	0.20	0.25
b1	0.14REF		
c	0.203REF		
D	9.90	10.00	10.10
D2	8.60	8.70	8.80
e	0.40BSC		
Ne	8.40BSC		
Nd	8.40BSC		
E	9.90	10.00	10.10
E2	8.60	8.70	8.80
L	0.35	0.40	0.45
h	0.30	0.35	0.40

Diagram 3. KY3001LRS Package (mm)



Symbol	Min.	Nor.	Max.
A	0.70	0.75	0.80
A1	-	0.02	0.05
b	0.15	0.20	0.25
b1	0.14REF		
c	0.203REF		
D	6.90	7.00	7.10
D2	5.60	5.70	5.80
e	0.40BSC		
Ne	5.20BSC		
Nd	5.20BSC		
E	6.90	7.00	7.10
E2	5.60	5.70	5.80
L	0.35	0.40	0.45
h	0.30	0.35	0.40

Ordering Information

Model	Ref. No.	Description
KY3001	101031774	LQFP-128, with E-pad (RoHS)
KY3001LR	101031868	QFN-88, with E-pad (RoHS)
KY3001LRS	101031967	QFN-56, with E-pad (RoHS)