Gerda™ Series IC

HMI Solution for Automotive

Gerda-4L

Product Brief

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Gerda-4L

General description

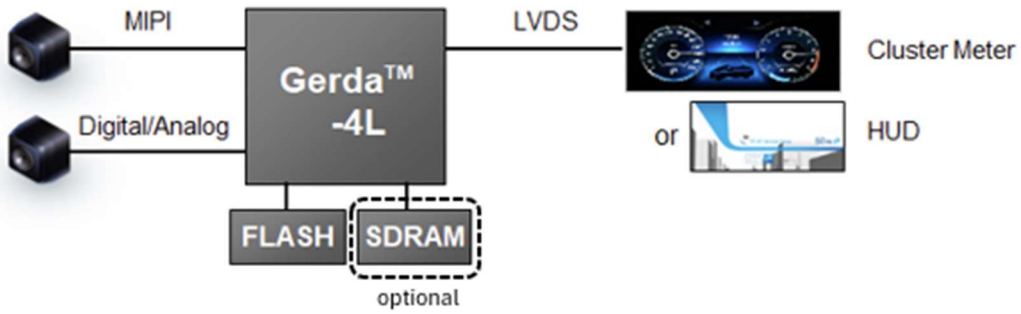
Gerda-4L is a family of Gerda™ Human Machine Interface (HMI) Display ICs targeted at automotive systems such as instrument clusters and Head-Up Displays (HUD). Gerda-4L has an Arm® Cortex®-M7 CPU, 2.5D Graphics Engine, Built-in RAM with image compression function, Warping Engine, Hardware Security Module (HSM) and many functional safety mechanisms.

Gerda-4L integrates high-performance computing, high-speed large-capacity on-chip memory, and advanced image technologies, delivering both ease of use and robust real-time processing capabilities to enable safe and comfortable HMI solutions.

Features

- **CPU subsystem**
  - Arm® Cortex®-M7 CPU
    - I-TCM 768 KB, D-TCM 256 KB
    - I-Cache 64KB, D-Cache 64KB
  - DMA controllers 2 x 6ch
- **Video subsystems**
  - Video Input
    - MIPI-CSI2/DSI (4 lane) or DRGB or CVBS
    - max display size: 1920x1080@60FPS
  - Video Output
    - LVDS(4 lane) or DRGB I/F
    - max display size: 1280x720@60FPS
  - 2.5D Graphics Engine
  - Warping Engine
  - Image Quality adjustment Engine
    - Gamma, Brightness, Noise shaping
    - Others
- **Memory**
  - Built-In RAM 5 or 6 MB
    - Image compression (25 or 50%)
  - Quad SPI Flash (Max 6)
  - SDRAM I/F (16/32 width data)
- **Audio**
  - I2S/TDM/PCM
  - Audio DAC (PWM)
- **Communication I/F**
  - CAN-FD 2ch
  - Ethernet 100Mbps 1ch
  - USB 2.0 HS 1ch
  - Peripherals
    - I2C 5ch / SSP 2ch / UART 5ch
    - ADC 10bit 6ch
    - GPIO
- **Security**
  - HSM supporting the EVITA Full
    - AES/ECC/RSA
    - PRNG/TRNG
    - NVM
- **Safety**
  - Functional safety for ASIL-B
    - Memory Protection Unit
    - WDT, ECC, Dual-core Lockstep
    - Boot Time BIST
    - Freeze detection, Telltale check
    - Others
- **Power**
  - Digital block : 0.9V
  - IO block : 3.3V, 1.8V
- **Package**
  - LQFP216L 24x24mm^2
  - LQFP256L 28x28mm^2

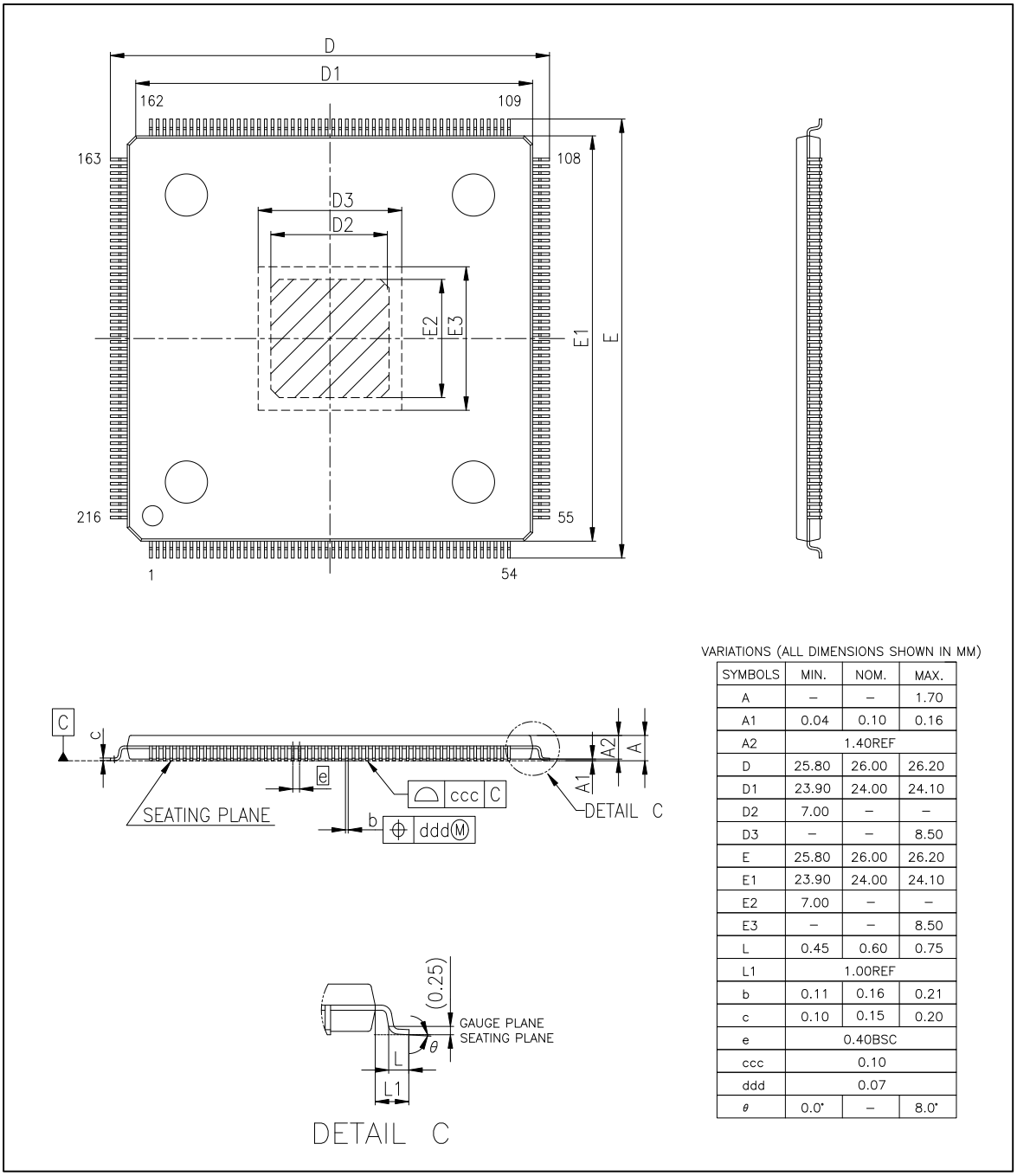
System Configuration Example



Gerda-4L Series

Part Number	KM2KSZ120UA	KM2KSZ12Z6UA	KM2KSZ180UA	KM2KSZ18Z6UA
Package	LQFP216L 24x24mm^2	LQFP216L 24x24mm^2	LQFP216L 24x24mm^2	LQFP216L 24x24mm^2
CPU	ARM Cortex®-M7	ARM Cortex®-M7	ARM Cortex®-M7	ARM Cortex®-M7
Graphics	2.5D	2.5D	2.5D	2.5D
Display size	1920x480 (recommended)	1920x480 (recommended)	1920x480 (recommended)	1920x480 (recommended)
Video input	Analog / Digital Mipi-CSI2	Analog / Digital Mipi-CSI2	Analog / Digital Mipi-CSI2	Analog / Digital Mipi-CSI2
Video output	LVDS Single	LVDS Single	LVDS Single	LVDS Single
Embedded Memory	8MB	8MB	10MB	10MB
External Memory IF	S-Flash	S-Flash	S-Flash / SDRAM	S-Flash / SDRAM
USB	-	Yes	-	Yes
Ethernet	-	Yes	-	Yes
CAN-FD	-	Yes	-	Yes
Security	-	Yes	-	Yes

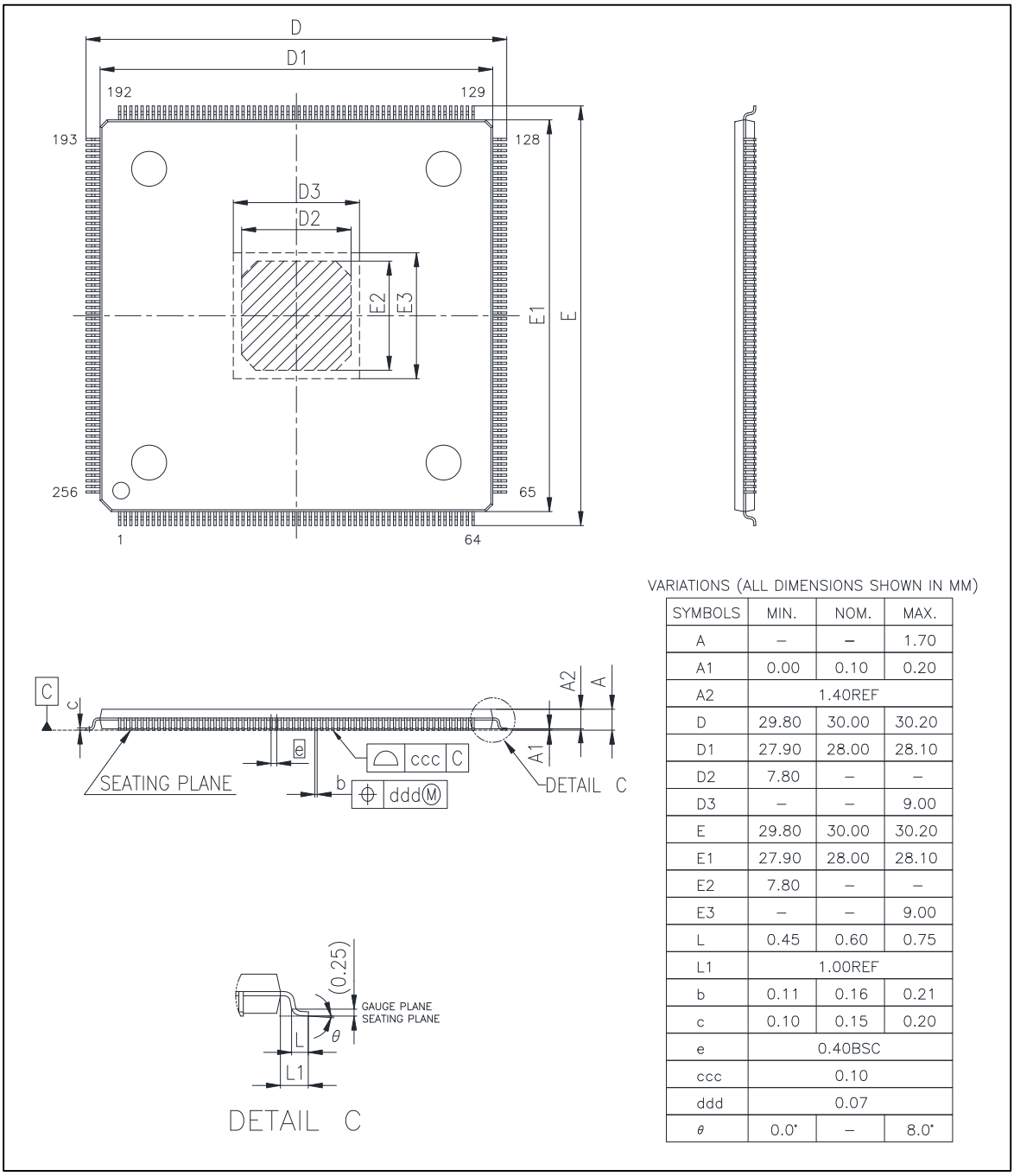
LQFP216L 24x24mm², Thickness 1.40mm, Lead_Pitch 0.40mm, Lead_Length 1.00mm, EP_SIZE 7.0x7.0mm²



VARIATIONS (ALL DIMENSIONS SHOWN IN MM)

SYMBOLS	MIN.	NOM.	MAX.
A	–	–	1.70
A1	0.04	0.10	0.16
A2		1.40REF	
D	25.80	26.00	26.20
D1	23.90	24.00	24.10
D2	7.00	–	–
D3	–	–	8.50
E	25.80	26.00	26.20
E1	23.90	24.00	24.10
E2	7.00	–	–
E3	–	–	8.50
L	0.45	0.60	0.75
L1		1.00REF	
b	0.11	0.16	0.21
c	0.10	0.15	0.20
e		0.40BSC	
ccc		0.10	
ddd		0.07	
θ	0.0°	–	8.0°

LQFP256L 28x28mm², Thickness 1.40mm, Lead_Pitch 0.40mm, Lead_Length 1.00mm, EP_SIZE 7.8x7.8mm²



VARIATIONS (ALL DIMENSIONS SHOWN IN MM)

SYMBOLS	MIN.	NOM.	MAX.
A	–	–	1.70
A1	0.00	0.10	0.20
A2		1.40REF	
D	29.80	30.00	30.20
D1	27.90	28.00	28.10
D2	7.80	–	–
D3	–	–	9.00
E	29.80	30.00	30.20
E1	27.90	28.00	28.10
E2	7.80	–	–
E3	–	–	9.00
L	0.45	0.60	0.75
L1		1.00REF	
b	0.11	0.16	0.21
c	0.10	0.15	0.20
e		0.40BSC	
ccc		0.10	
ddd		0.07	
θ	0.0°	–	8.0°