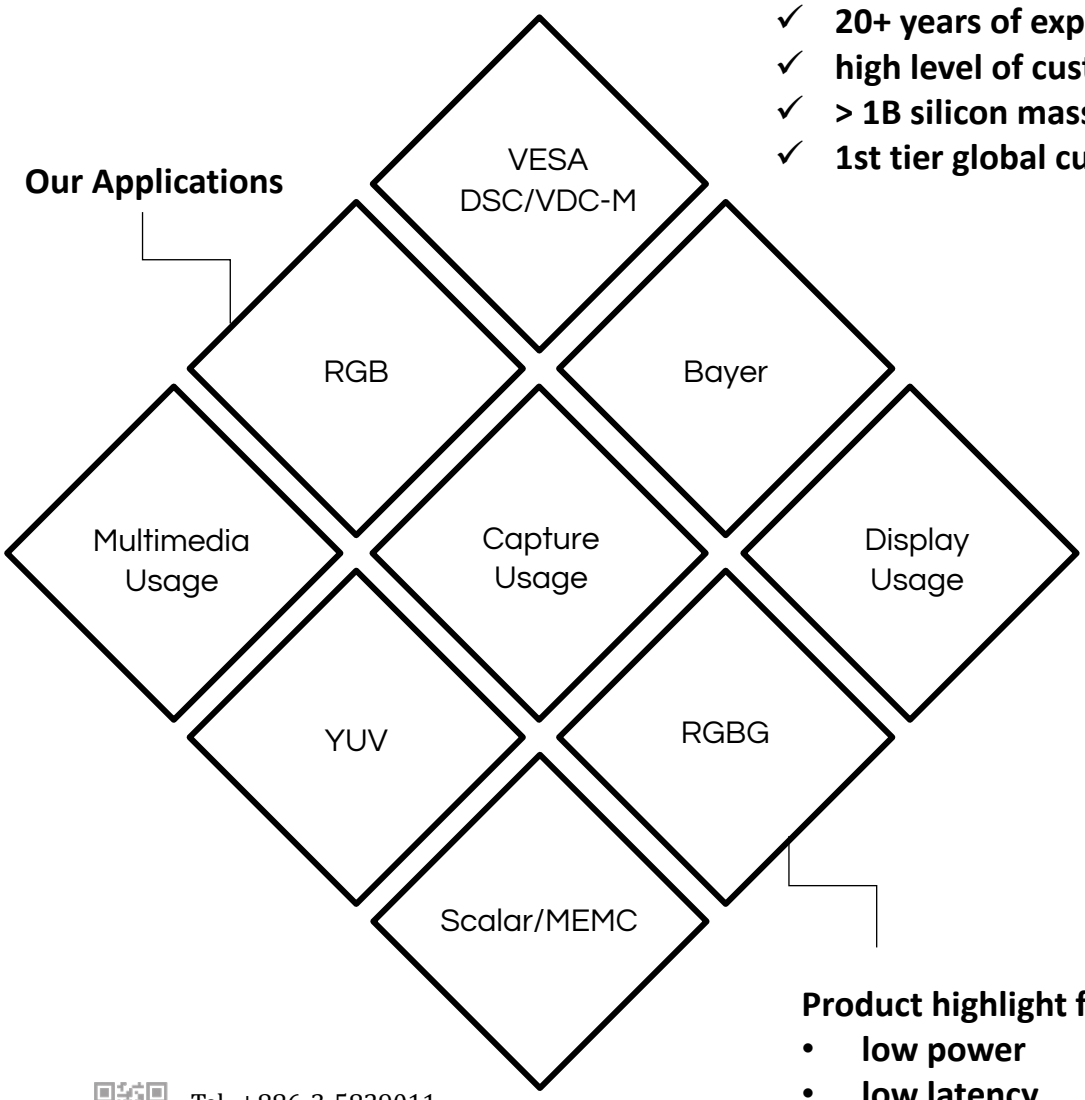
Taiwan Imaging Tek Corp.
TITC 沛錦科技

TITC

Image Compression IP specialist

- ✓ 20+ years of experience
- ✓ high level of customization
- ✓ > 1B silicon mass produced
- ✓ 1st tier global customers

Our Applications



Product highlight features:

- low power
- low latency
- small area

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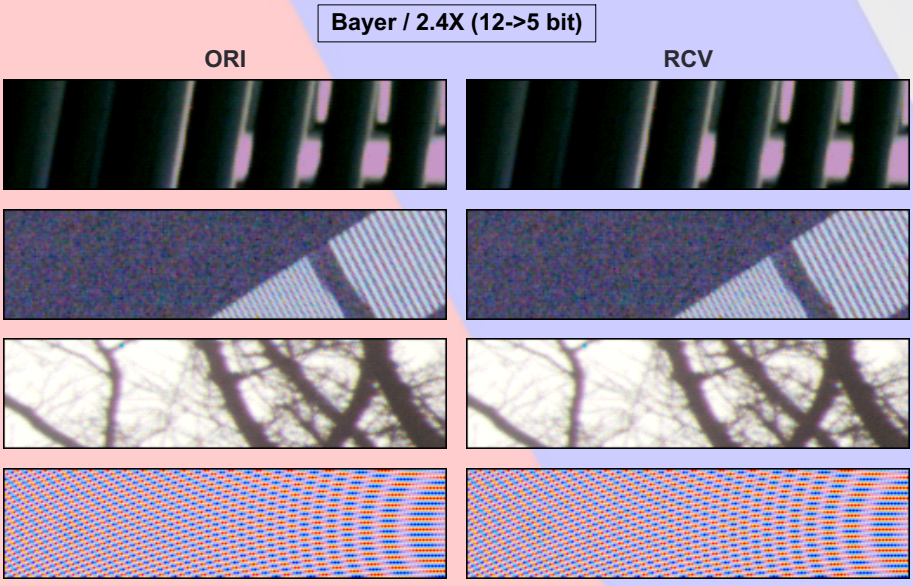
TITC B-Series IP
Bayer for ISP

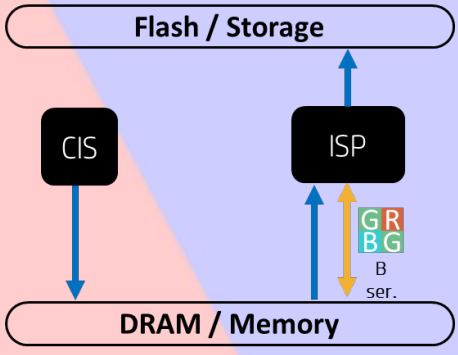
B-series IPs are collection of propietary algorithm which are used for real-time compress/decompress Bayer image data. These IPs/algorithm are designed for front-end of ISP device, which facilitate temporal storage efficiency of Bayer image data. End products like ADAS, surveillance, action/meeting/mobile/professional cam may benefit from B-series IPs.

B-series IPs are featured by customized bitdepth/ratio support, reasonable hardware resources, friendly IP integration, and flexible access/store compressed bitstream. Feature support/algorithm are tailored for picture quality requirement and hardware budget via TITC engineer team.



➢ TITC B-Series IP

Usage / Series		capture / B-series
IP Name		ISP_Bayer v1
Data	Type	Bayer
	Bit-Depth	8~16-bit
Compression	Type	Lossy/Lossless
	Ratio(Lossy)	1.33~2.5X
	Unit	H64V1 / H32V2
Performance	Throughput	4-pix (per T)
Note		* lossy is major trend * compression unit can be customized



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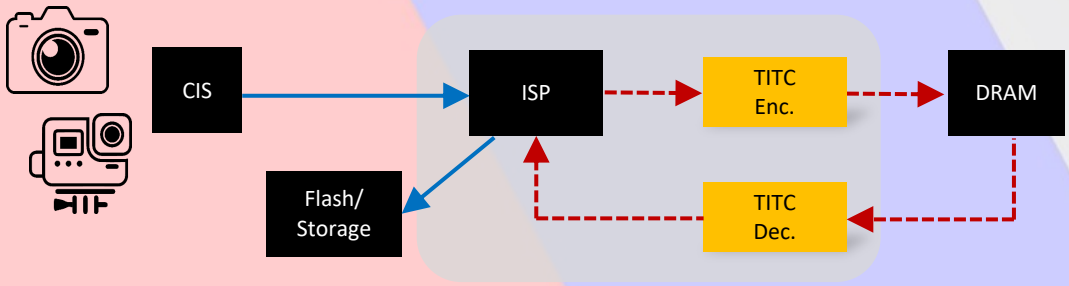
TITC YS-Series IP
YUV for ISP

YS-series IPs are collection of propietary algorithm which are used for real-time compress/decompress YUV subsample data. These IPs/algorithm are designed for back-end of ISP device, which facilitate temporal storage efficiency of YUV subsample data. End products like ADAS, surveillance, action/ meeting/ mobile/ professional cam may benefit from YS-series IPs.

YS-series IPs are featured by customized bitdepth/ratio support, reasonable hardware resources, friendly IP integration, and flexible access/store compressed bitstream. Feature support/algorithm are tailored for picture quality requirement and hardware budget via TITC engineer team.



➢ TITC YS-Series IP

Usage / Series		capture / YS-series	
IP Name		ISP_YUV v1	ISP_YUV v2
Data	Type	YUV422/YUV420	YUV422
	Bit-Depth	8~16-bit	8-bit
Compression	Type	Lossy/Lossless	Lossy/Lossless
	Ratio(Lossy)	1.33~4X	2~4X
	Unit	H32V2	H8V4
Performance	Throughput	2-pix/4-comp (per T)	32-comp (per T)
Note		* focus on 2X * compression unit can be customized	* focus on high ratio, high thoughput

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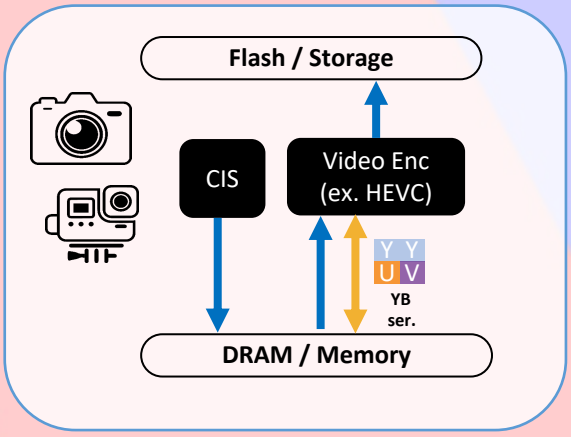
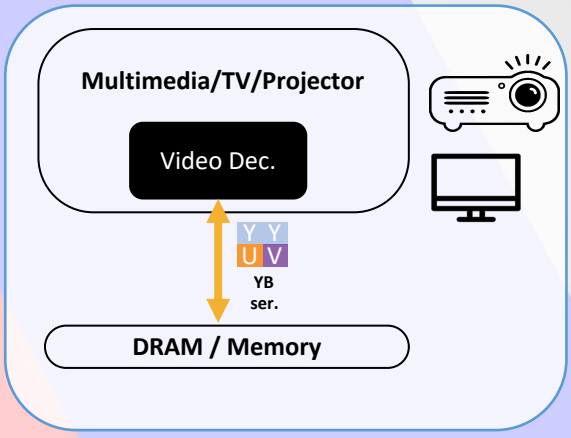
TITC YB-Series IP
YUV for Video Encoder/Decoder

YB-series IPs are collection of propietary algorithm which are used for real-time compress/decompress block-based YUV subsample data. These IPs/algorithm are designed for video encoding/decoding device, which facilitate temporal storage efficiency of ME(motion estimation)/MC(motion compensation) data. End products like cinema camcoder, mobile multimedia system, TV system may benefit from YB-series IPs.

YB-series IPs are featured by customized bitdepth/ratio support, reasonable hardware resources, friendly IP integration, and flexible access/store compressed bitstream. Feature support/algorithm are tailored for picture quality requirement and hardware budget via TITC engineer team.





➢ TITC YB-Series IP

Usage / Series		capture, multimedia / YB-series	
IP Name		YB v1	YB v2
Data	Type	YUV422/YUV420	YUV420/Y-Only
	Bit-Depth	8/10/12-bit	8/10-bit
Compression	Type	Lossy/Lossless	Lossy
	Ratio(Lossy)	1.33~2X	2~4X
	Unit	H4V4/ H8V8/ H8V4	H8V8
Performance	Throughput	2-pix/4-comp (per T)	64-comp (per T)
Note		* compression unit can be customized * lossless+lossy is encouraged	* focus on high ratio, high thoughput

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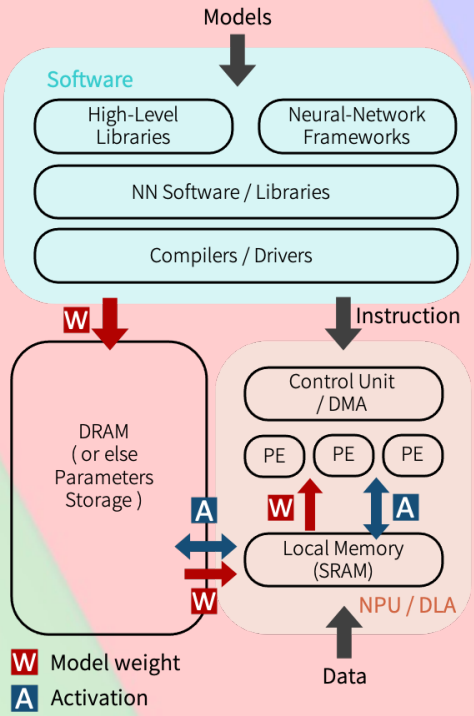
TITC N-Series IP
Model weight/Activation for AI

N-series IPs offer an efficient, lossless solution for reducing the storage and bandwidth demands of AI models. By compressing both model weights and activations, it significantly lowers data traffic power consumption, cache SRAM cost, and DRAM space usage. The algorithm achieves near-theoretical compression ratios and maintains consistent performance across different models. With minimal hardware cost, ultra-low latency, and high throughput, the solution features an adaptive, entropy-aligned design and a parallel hardware architecture that scales to meet mainstream DRAM bandwidth requirements.



➢ TITC AI Inference Device IP

Usage / Series		capture / N-series
IP Name		TITC_N1
Data	Type	Weight/feature map
	Bit-Depth	int8
Compression	Type	Lossless
	Unit	16 data / T (= int8 * 16)
Performance	Throughput	16 data / T (= 128bit / T)
Note		* Ultra high throughput with ultra low latency * Tiny gate count with no SRAM in need

Note

If specifically for CNN, Activation also can be described as ‘Feature Map’.

Model Weight	Model	Size (byte)	Compression Ratio	
			zip	TITC_N1
CNN	mobilenet_v1	4,210,112	57.00%	65.53%
	yolo_v2	15,855,536	61.56%	67.25%
	private_a	9,009,472	83.08%	91.39%
	private_b	14,782,144	53.16%	57.81%
Transformer	bert	108,310,272	60.55%	67.65%
	gpt2	354,823,168	58.56%	64.64%
	llama3	8,030,261,248	52.69%	59.64%

Feature Map	Model	Size (byte)	Compression Ratio	
			zip	TITC_N1
CNN	private_a	78,151,680	57.17%	58.88%
	private_b1	4,516,762	40.16%	53.38%
	private_b2	30,870,800	56.48%	65.53%

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