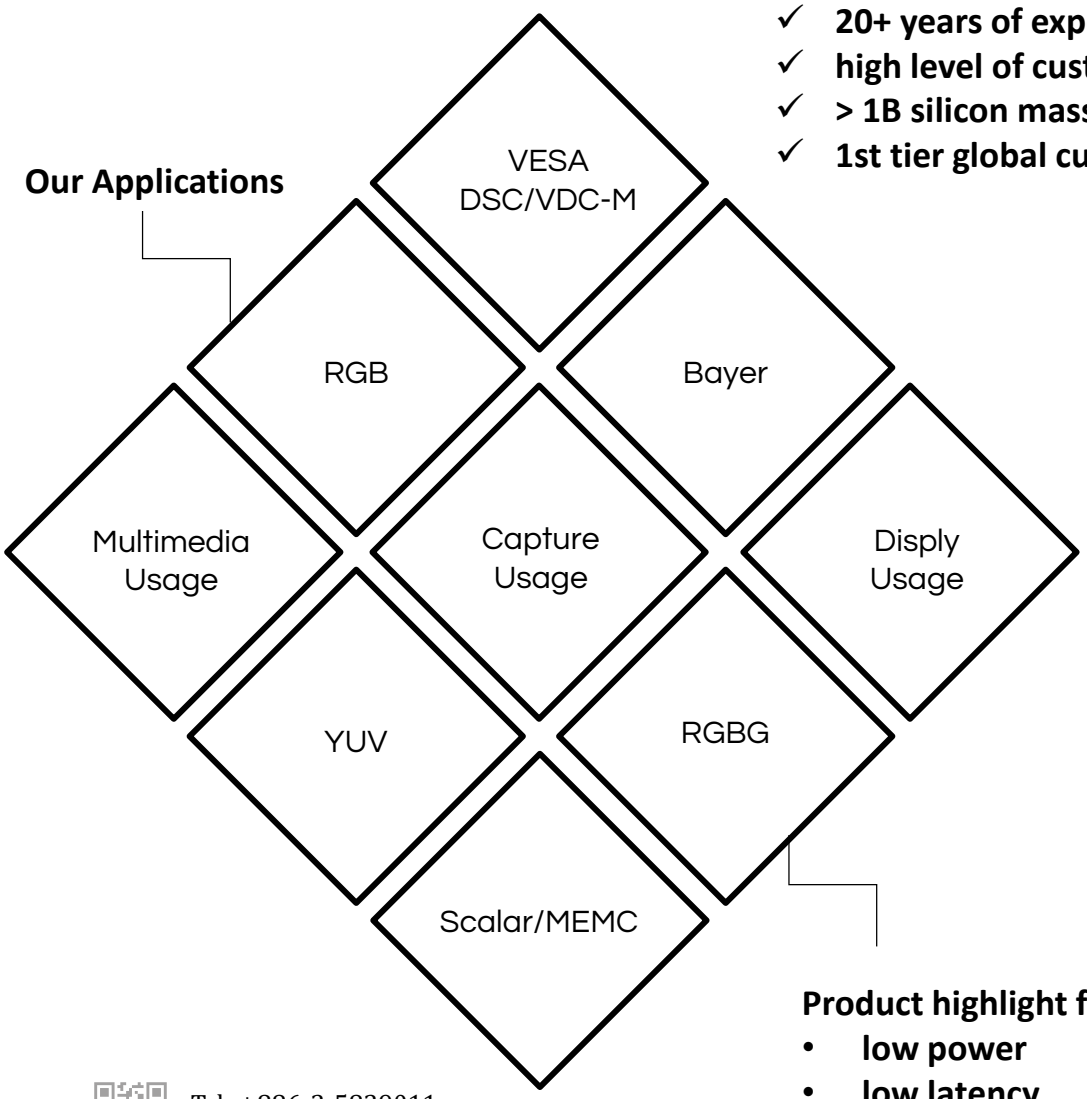
Taiwan Imaging Tek Corp.
TITC
沛錦科技

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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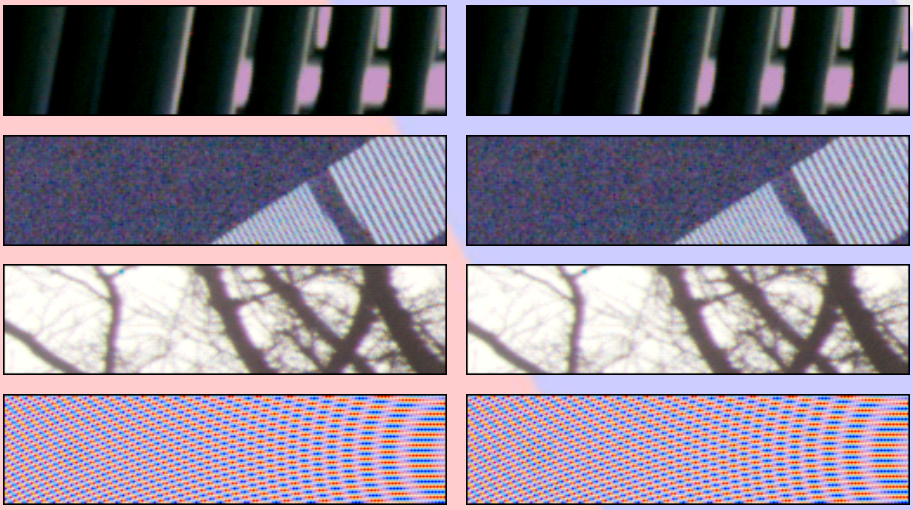
TITC B-Series IP
Bayer for ISP

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.

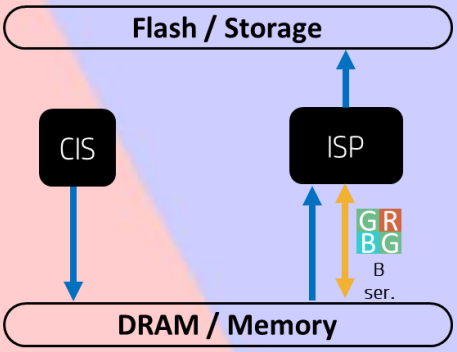
Bayer / 2.4X (12->5 bit)

ORI RCV



➢ 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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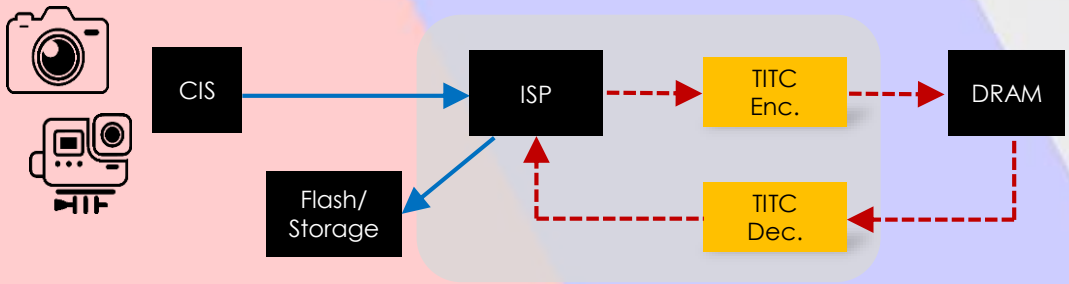
TITC YS-Series IP
YUV for ISP

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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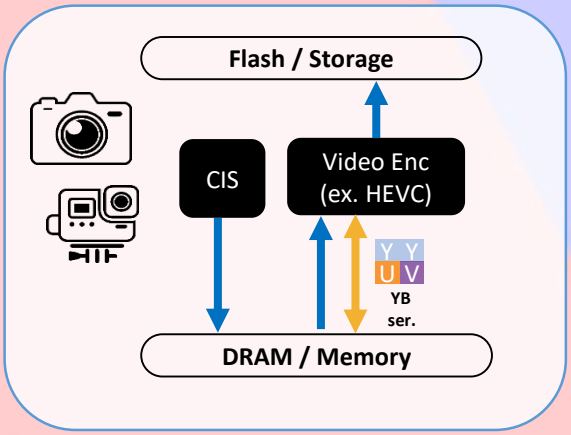
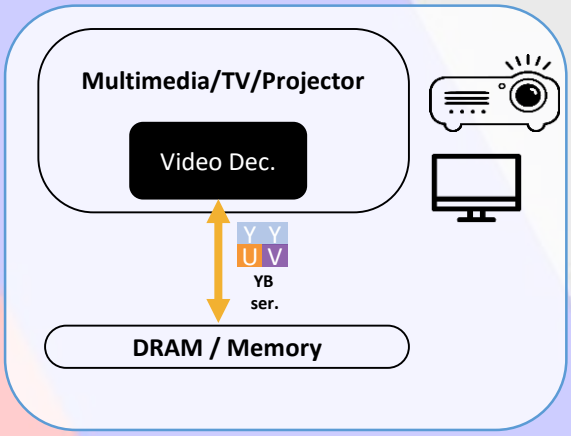
TITC YB-Series IP
YUV for Video Encoder/Decoder

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
Feature-map for AI

N-series IPs are collection of propietary algorithm which are used for real-time compress/decompress featuremap data.These IPs/algorithm are designed for neural network(AI) device, which facilitate temporal storage efficiency of featuremap data.AI edge devices and end products embedded NPU may benefit from N-series IPs.

N-series IPs are featured by lossless/lossy bi-direction support, tiny hardware resources, friendly IP integration, and flexible access/store compressed bitstream.Feature support/algorithm are tailored for neural network architecture via TITC engineer team.

Classification

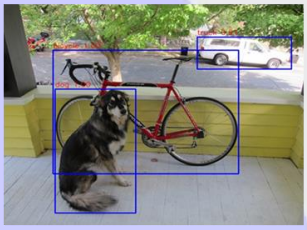
model: mobilenet v2
dataset: ILSVRC2012/50-pics

<lossy compression>
*TITC/1.78X: ave.err=0.251%
<lossless compression>
*TITC: ave.rat=1.90X

Object Detection

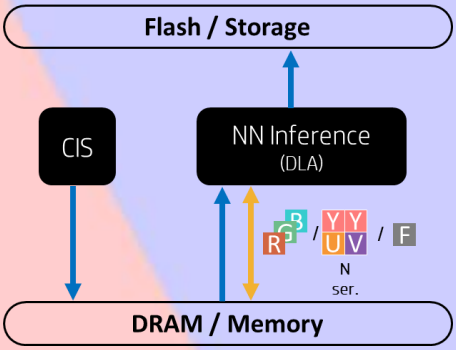
model: tiny-yolo v2
dataset: VOC2007/4952-pics

<lossy compression>
*no compr. : mAP=48.05
*TITC/1.78X: mAP=46.88
<lossless compression>
*TITC: ave.rat=2.36X



➢ TITC AI Inference Device IP

Usage / Series		capture / N-series
IP Name		featuremap v1
Data	Type	featuremap
	Bit-Depth	8-bit
Compression	Type	Lossy/Lossless
	Ratio(Lossy)	1.14~2X
	Unit	H4V4
Performance	Throughput	16-pix (per T)
Note		* lossless is encouraged * compression unit/ratio(lossy) can be customized



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