

Drive for better vision



Himax Handset Display Driver IC

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Himax Technologies, Inc.
奇景光電股份有限公司

Selected Smart Phones with Himax DDIC Inside



Sony Xperia Miro
α-Si 3.5" HVGA, HX8357-C



Nokia Lumia 610,
3.7" WVGA, HX8363-A



HTC 8X
4.3" HD720, HX8392-A



Samsung Galaxy Player 5.8
5.8" qHD, HX8389-B



LG Optimus L9
4.7" qHD, HX8389-B

Around 20% WW Share



Huawei U8818
3.97" IPS WVGA, HX8369-A



ZTE Blade V880
3.5" WVGA, HX8369-A



Lenovo LePhone K860
5" HD720, HX8394-A



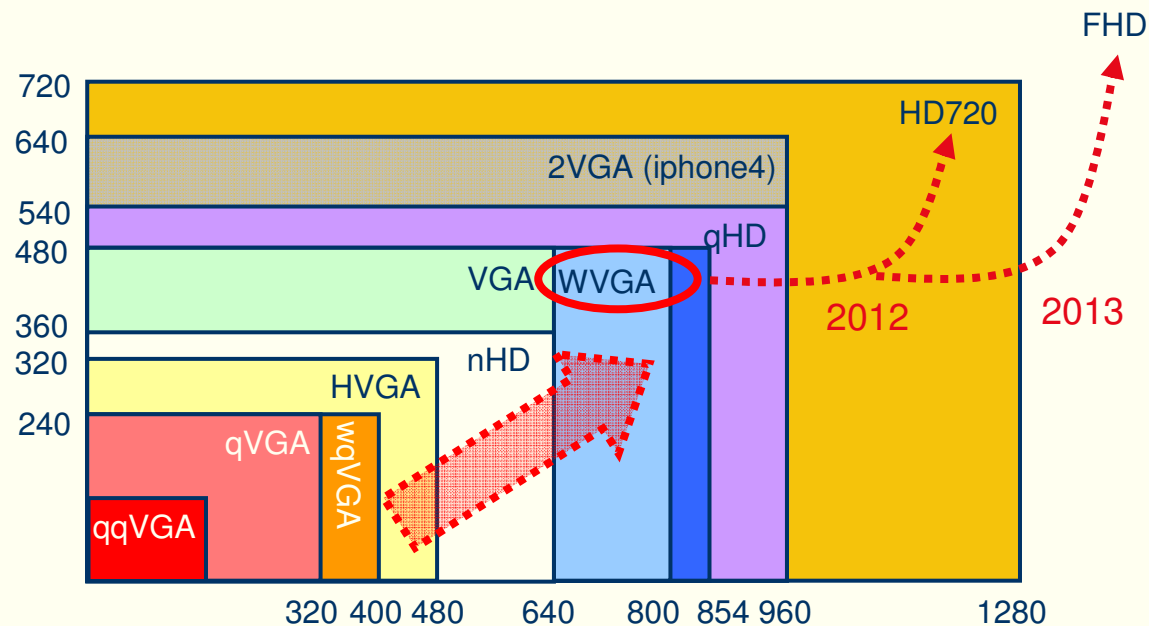
Alcatel OT955
4.3" WVGA, HX8369-A



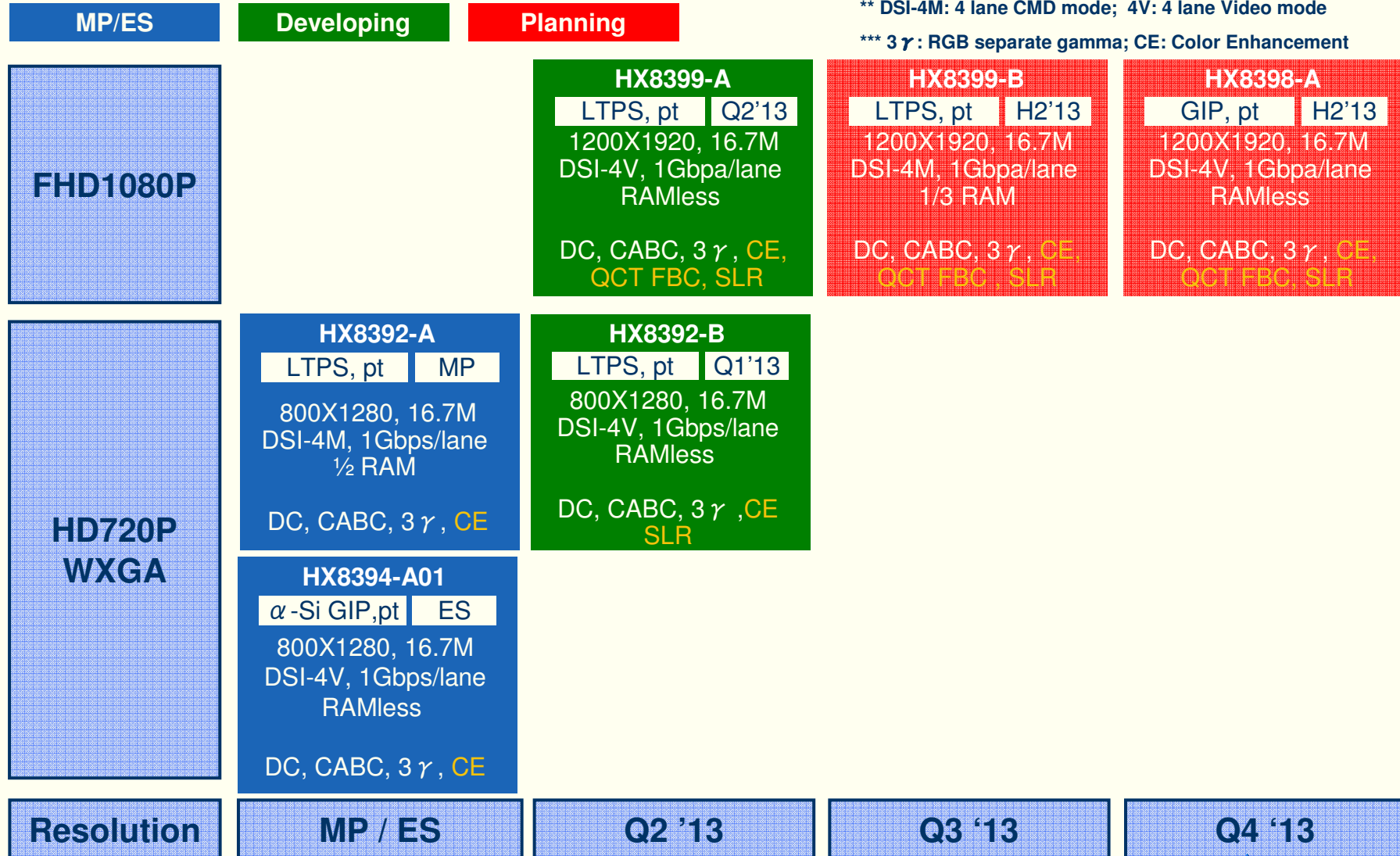
Coolpad 8150
4.05" WVGA, HX8369-A/HX8363-A

Display Trends for Smartphone

- For the entry smart phone
 - ❖ WVGA expected to be mid-to-entry in 2012 to 2013; Low-cost oriented
- For high-end smart phone
 - ❖ Himax is ready for high-end smart phones with HD720/ WXGA with LTPS/ GIP
 - ❖ hTC Rezound: 4.3" LTPS HD720: 342ppi
 - ❖ hTC 8X: 4.3" LTPS HD720: 342ppi
 - ❖ Lenovo: 5.0" GIP HD720: 294ppi
- Next? FHD @ 4.7"/ 5.0"/ 5.3" → 469ppi / 441ppi / 416ppi



Handset Display Driver Roadmap - Smartphone



* pt: portrait ; ls: landscape; GIP: a-Si Gate-In-Panel
 ** DSI-4M: 4 lane CMD mode; 4V: 4 lane Video mode
 *** 3 γ : RGB separate gamma; CE: Color Enhancement

Handset Display Driver Roadmap - Smartphone

| MP/ES | Developing | Planning | | |
|-----------------|---|--|---|--|
| qHD | | HX8389-B GIP, 24b, pt MP 540X960, 16.7M DPI/DSI-3V, RAMless DC, CABC, 3 γ , CE | | |
| FWVGA WVGA | HX8369-A GIP, 24b, pt MP 480X864, 16.7M DBI/ DSI-2M/ MDDI1.2 500Mbps/lane RAM DC, CABC, 3 γ | HX8369-B GIP, 24b, pt MP 480X864, 16.7M DPI / DSI-2V 500Mbps/lane RAMless DC, CABC, 3 γ , CE | HX8379-A GIP, 24b, pt MP 480X864, 16.7M DPI/ DSI-2V 500Mbps/lane RAMless DC, CABC, 3 γ , CE | HX8379-B GIP, 24b, pt Q2 480X864, 16.7M DBI/ DSI-2M 500Mbps/lane 1/2RAM DC, CABC, 3 γ , CE |
| hVGA 320x480 | HX8357-C α , 18bpp,pt MP 320X480, 262K DSI-1M/ MDDI RAM DC, CABC, 3 γ | HX8357-D α , 18bpp,pt MP 320X480, 262K DSI-1M RAM DC, CABC, 3 γ , CE | | |
| Resolution | MP / ES | | Q4 '12 | H1 '13 |

* pt: portrait ; ls: landscape; GIP: α -Si Gate-In-Panel
 ** DSI-4M: 4 lane CMD mode; 2V: 2 lane Video mode
 *** 3 γ : RGB separate gamma; CE: Color Enhancement

1st LTPS HD720 with 1/2 RAM: HX8392-A



HTC Rezound
Sharp 4.3" + HX8392-A



Acer Cloud Mobile S500
CMI 4.3" + HX8392-A



HTC 8X
4.3" HD720, HX8392-A



HTC One X+
Sharp 4.7" + HX8392-A

- HX8392-A features:
 - ❖ 1st HD720 / WXGA resolution with frame buffer (1/2 RAM) inside
 - ❖ MIPI DSI with 2 to 4 lane configurations, 500Mbps*4; 650Mbps *3; 850Mbps *2
 - ❖ Tested with QCT 8660/8960 (HTC Rezound) and nVidia Tegra3 (HTC One X), MT6589
 - ❖ Color enhancement (Saturation / Brightness / Sharpness) features
 - ❖ Available Panels: Sharp 4.3", 4.7"; CMI 4.3", 4.7", 5.0", 5.3"
- HX8392-B (RAMless) coming soon in Q2.

RAM-less GIP Leader in HD720/ qHD/ (F)WVGA



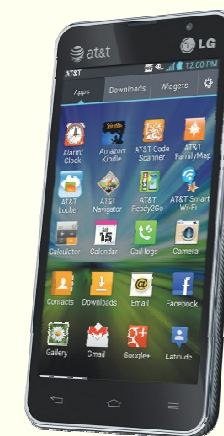
Lenovo LePhone K860
BOE 5.0" + HX8394-A



Samsung Galaxy Player 5.8
SDC 5.8" + HX8389-B



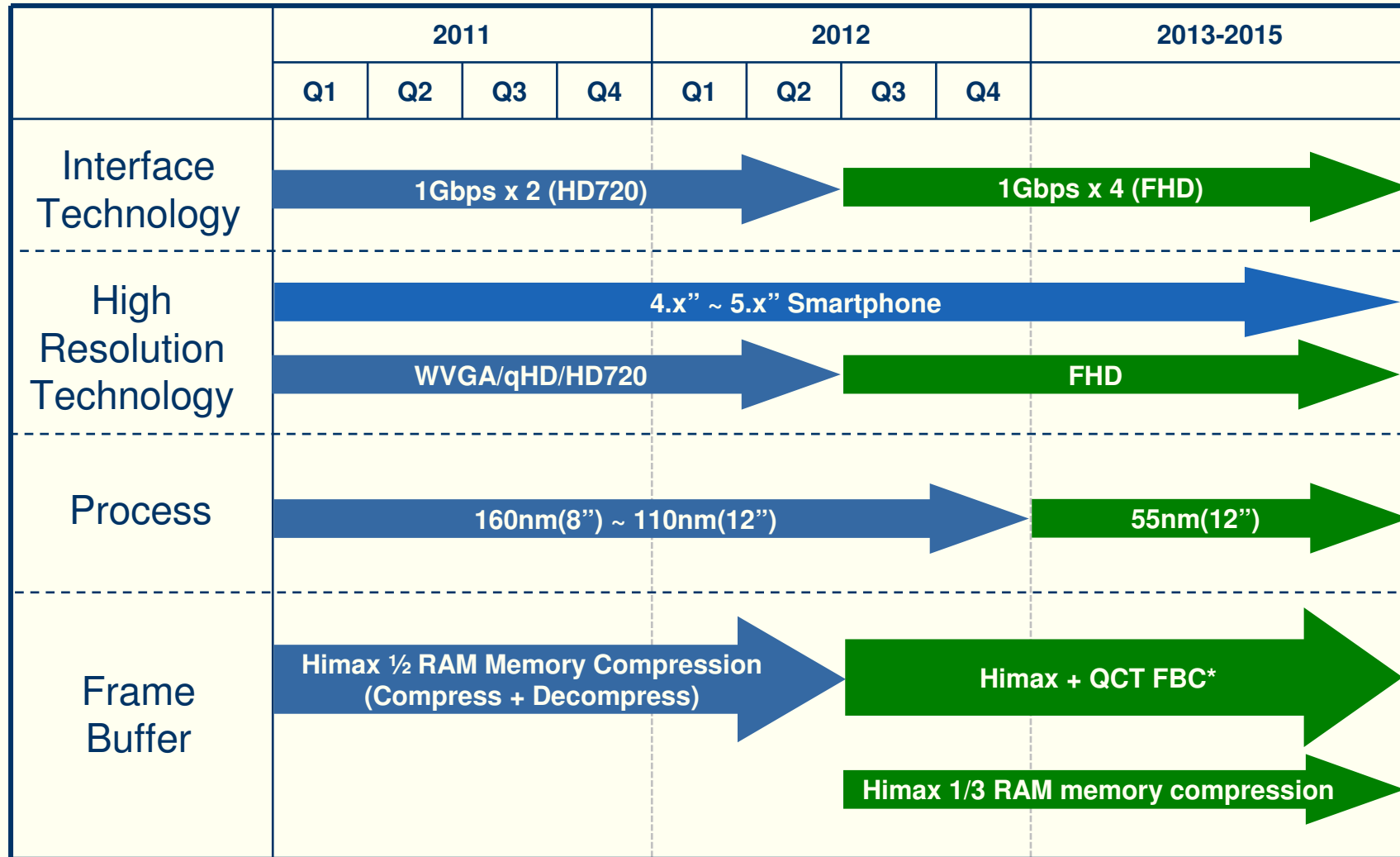
LG Optimus L9
Tianma 4.7" + HX8389-B



LG Escape
LGD 4.3" + HX8389-B

- HX8394-A HD720
 - ❖ Available panels: BOE 4.8/5.0/5.3/5.7", CPT 5.0/5.3/5.7", Tianma 4.7"/5.0", CMI, JDI 4.5"
- HX8389-B qHD
 - ❖ Best video-mode (RAMless) qHD driver IC in MT6572 and MT6589 QVL
- HX8379-A (F)WVGA
 - ❖ Best video-mode WVGA IC. MP in LGE
 - ❖ HX8379-B (CMD-mode) coming soon in Q2

Himax Handset DDIC Technology Roadmap

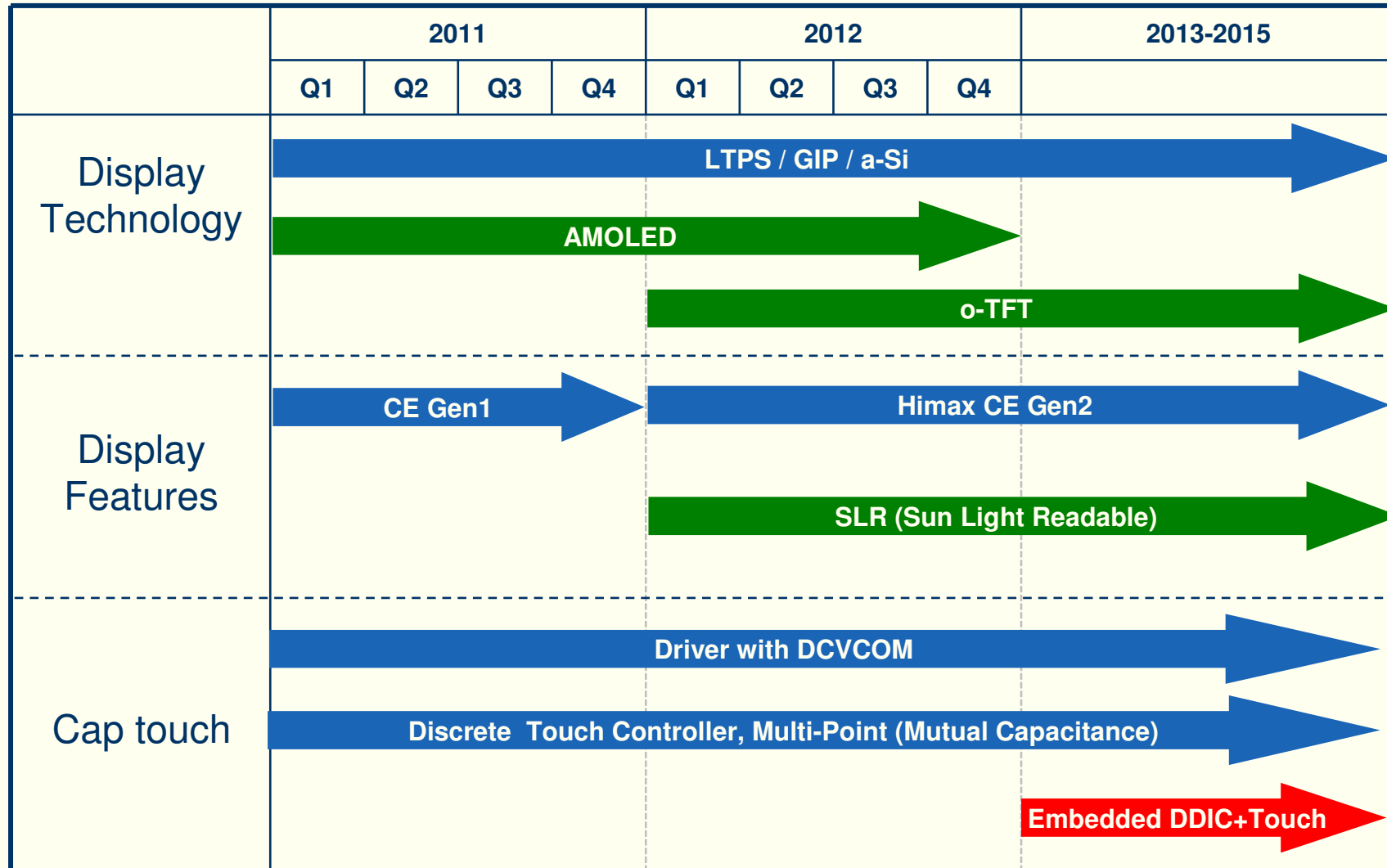


Developed

Developing

Planning

Himax Handset DDIC Technology Roadmap



Developed

Developing

Planning

Himax IC VS. BB Suppliers (Smartphone)

| 解析度/ | Himax IC | 高通 | 聯發科 | 博通 | 展訊 | 聯芯 |
|--------------|----------------------------|------------------------|-----------------------|-------------------------|--------------|--------------|
| FHD | HX8399-A | 8x64 | 6589 | (13'H2) | (14'H1) | (13'H2) |
| HD720 | HX8392-A/-B HX8394-A/-B | 8x30Q 4V4M | 6577H 6589 | Hawaii 28155 4V4M | (Shark) | 1810 4M4V |
| qHD | HX8389-B | 8x25Q 8x30Q 2V2M | 6572 6577 6589M | Hawaii 28155 4V4M | Tiger | 1810 4M4V |
| wVGA | HX8369-A/-B HX8379-A/-B | 8x25Q 2V2M | 6515 6572 | Rhea 28145 1M | 8805 8810 | 1810 4M4V |
| hVGA | HX8357-C/-D | 7227A 7125A 2V2M | 6515M 6572M | Rhea 21553 1M | 8805 | 1809 |

Note: 2V2M → 2 lane Video mode/Command mode

MT6589 → 4-core, MIPI DSI 4 lane, MP

MT6572(M) → 2-core, MIPI DSI 2 lane, 3/M ES, 5/M MP

Himax drivers are all in MTK DRL.

Smart Phone Panel Solutions (2013.03.06)

| Resolution | Himax IC | Innolux | CPT | HSD | TIANMA | BOE | GP | IVO | AUO | EEBG | LGD | JDI |
|------------|----------------------|--|----------------------------------|----------------------------------|--|-------------------------------|--------------------------------------|--------------------------|-------|-------------|-------------------------------|-----|
| FHD | HX8399A HX8399B | 5.0 (5.5) (6.0) | | | | | | | | | | |
| HD720 | HX8394-A | 4502 5501 5007 | 4.5/ 4.7 5.0/ 5.3 5.3/ 5.7 | 4.46 5.0 5.5 6.0 | 4.3/ 4.5* 4.66*/ 5.0* 5.4*/ 5.7* 5.5* | 4.8/ 5.0 5.3/ 5.7 6.0 | 5.3 5.4 | -- | -- | 6.0 | 4.5* 4.7* 5.5* | |
| HD720 | HX8392-A | 4.3/ 4.5/ 4.7 4.96/ 4.99 5.3/ 6.07 | -- | -- | 4.5* 5.0* | 4.67* | -- | -- | -- | 4.7 | -- | |
| qHD | HX8389-B | 4501* 4801* 5.0 | 4.3/ 4.5 5.0/ 5.8 | 4.5*/ 4.5* 4.66* 5.0/ 5.0* | 4.3*/4.46 4.7/ 5.0* 5.3/ 5.5 | 4.46* 5.0 | 3.9*/ 4.5* 4.75* 5.4* 5.79* | 5.43 | 4.52* | -- | 4.3* 4.46* 4.7* 5.0* | |
| FWVGA | HX8379-A | 4011* 4503* 5005* (5502*) | 4.5 4.7 | 4.02* 5.0* 5.27* | 4.5*/4.5* 4.7*/ 5.0* 5.5* | 4.5* 5.0* | -- | 4.63 4.46 | -- | 4.46 | -- | |
| wVGA | HX8379-A | 4012* 4013* 4014* 4307* | 3.97 4.05 5.0 | 3.97* 4.3* | 3.97 3.97 4.02* 4.3* | 3.97* 4.3* 4.7* 5.0* | -- | 3.97 | -- | 4.3 3.97 | 4.3* | |
| wVGA | HX8369-A HX8369-B | -- | 3.97 4.05 5.0 | 3.97 | 3.97/3.97 4.3/4.3 4.5 | 4.0/4.3 4.66 5.01 | 3.97 | -- | 4.3* | -- | 3.2/3.5 3.8/4.0 4.3 | |
| wVGA | HX8363-A HX8363-B | 3508/3514 3706/4008 | 3.5/ 3.8 4.0/ 4.3 | -- | 5.88 | 4.08 | 4.05/ 4.3 4.63/ 5.0 | 3.97 4.05 4.3/ 5.2 | -- | -- | -- | |

Note: TN, Wide View (IPS/FFS/VA...etc), (FS.)

* → bump compensation on panel



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