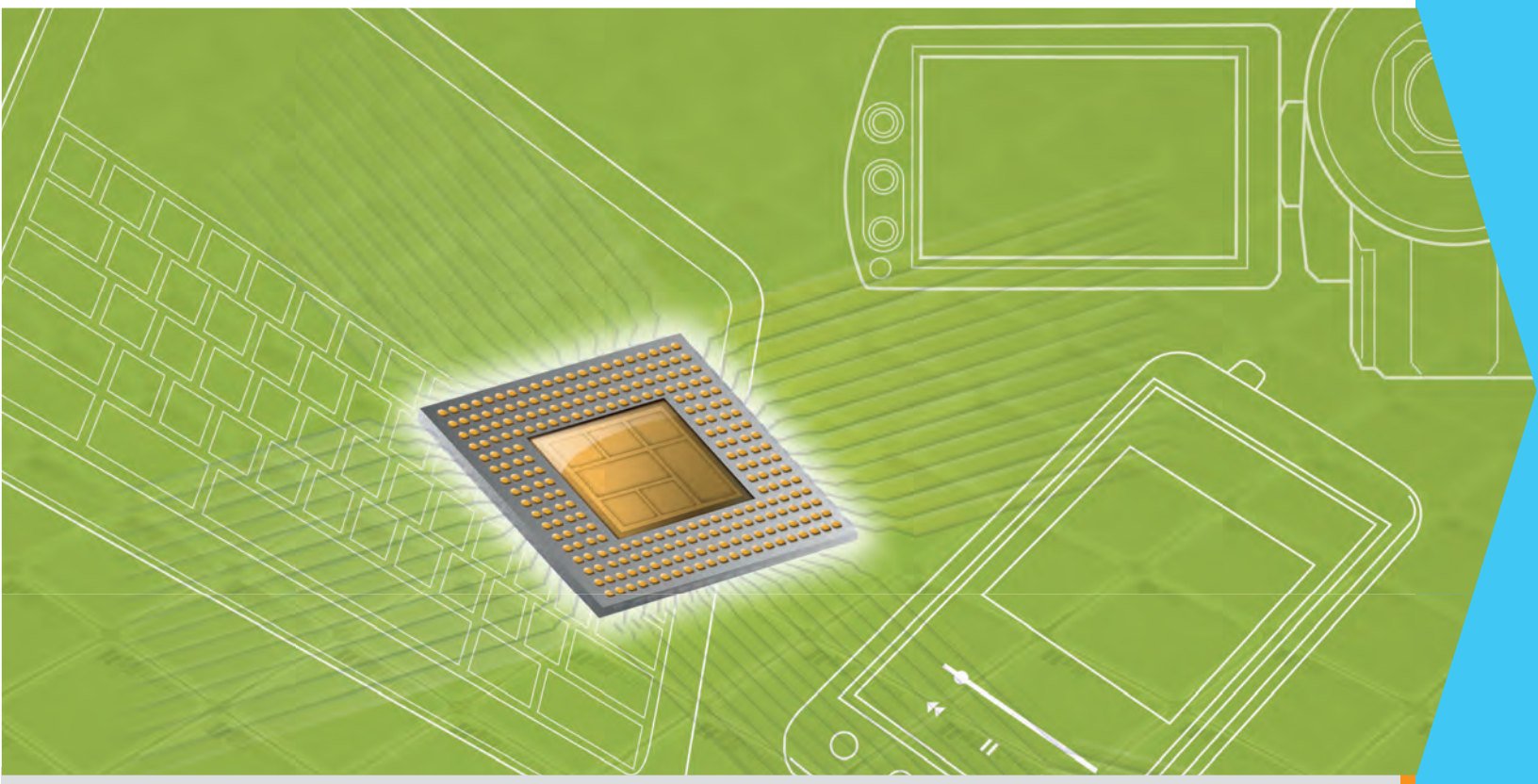
FOUNDRY LEADERSHIP FOR THE SoC GENERATION

WWW.UMC.COM

eHV

High Voltage Applications



UMC

SoC Solutions for High Voltage Applications

Today's high-resolution displays and high data transmission speed have been driving the rapidly growing embedded high voltage (eHV) IC market. UMC supports these applications with extensive and proven eHV technologies, while continuing to invest in research and development to provide more and better solutions to meet current and future requirements for the ever-expanding eHV market.

Multiple Technology Platforms

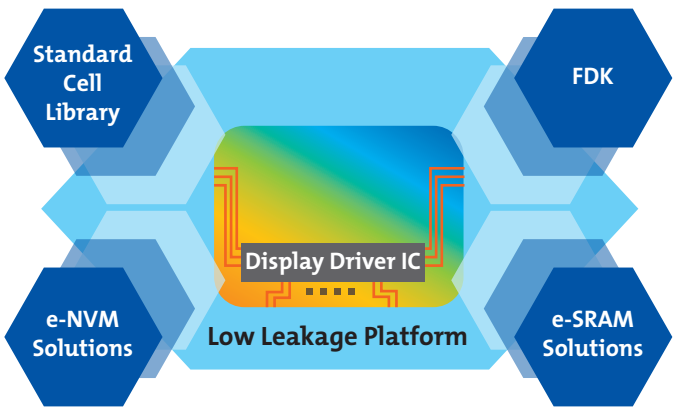
UMC's eHV technology solutions are based on logic/mixed-signal (MS) technology, accommodating multiple voltage device options for different eHV applications.

A variety of high voltage device structures can be used to build a high voltage process platform. UMC's eHV technologies mainly include Double Diffused Drain MOSFET (DDDMOS), Field Drift MOSFET (FDMOS) and others. These state-of-the-art HV process offerings can be applied to a variety of designs. UMC offers FDMOS for those applications where the voltage requirement is greater than 30V. For applications requiring less than 30V, we recommend that our customers utilize our DDDMOS technology.

Display Driver IC Applications

Display Drivers

- Suitable for all sizes of panel applications.
- High voltage gate MOSFET process that includes DDDMOS and FDMOS devices.
- Covers applications such as a-Si TFT LCD, LTPS TFT LCD, CSTN LCD, AMOLED, PMOLED, PDP, VFD, ePD, touch controller line driver, etc.



UMC's ultra low leakage solutions enable SoC integration by giving customers the ability to combine the control logic circuits, gate driver, source driver, RAM, eNVM, etc., together on the same chip for small panel applications.

On the other hand, large panel applications such as full-size TVs have different eHV process technology requirements, including higher performance logic devices, aggressive metal rules for higher channel counts, color depth, and fast clock rate applications. UMC offers both the technology and the necessary IP solutions to meet today's display requirements.

UMC also provides several process platforms for e-Paper display drivers, AMOLED display drivers, and touch controller line drivers. With these technologies, UMC can meet the demanding requirements for a broad range of today's display applications.

Display Driver IC Solutions

Generation	LV	MV	HV(Vg=Vds)	Readiness
40nm	1.1V	6V	±16V	√
	1.1V	8V	±10V	√
	1.1V	8V	±16V	√
55nm	1.2V	6V	±16V	√
80nm	1.2V	6V	±16V	√
	1.2V	8V	±16V	√
0.11um	1.5V	6V	±16V	√
	1.2V	6.75V	13.5V	√
	1.2V	6V	±16V	Under developing
0.13um	1.5V	5.5V	±16V	√
0.15um	1.8V	4.5V	9V	√
	1.8V	6.75V	13.5V	√
	1.8V	9V	18V	√
	3.3V	9V	18V	√
0.162um	3.3V	6.75V	13.5V	√
	3.3V	9V	18V	√
	1.8V	5.5V	±16V	√
	1.8V	5.5V	±20V	√
0.25um	2.5V	5.5V	±12V	√
	3.3V		24V	√
0.28um	3.3V	6.75V	13.5V	√
	3.3V	9V	18V	√
0.3um	3.3V	6.75V	13.5V	√
	3.3V	9V	16.5V	√
0.35um	3.3V	5.5V	±9V	√
	3.3V		±20V	Under developing
0.8um	5V		±20V, 12V, 18V, 30V, 40V	√

UMC's Complete Solutions For eHV Applications

UMC's eHV solutions cover various size LCD and OLED display panel driver applications as well as other display and non-display-related applications.

For display-related applications, these solutions range from highly-integrated small panel solutions, such as mobile phones or DSCs, to function-specific large panel solutions, such as NB/monitors or LCD TVs. UMC also provides leading-edge process solutions for sophisticated 3D applications and high-resolution Tablet PC/Ultrabook panel display as well as the comprehensive IP solutions, such as standard cell library, eFuse, OTP, memory compilers, etc.

Large Display Driver IC

- Advanced 0.11um BEOL support capability
- 3.3V/1.8V/1.5V LV device support capability
- 9V/13.5V/16.5V/18V fine-pitch HV device support capability
- LHL MV device support capability (0.15um)
- Support e-Fuse/OTP/Standard cell (0.15um)
- Support low-cost Mask Reduction (MR) version (0.15um)

Small Display Driver IC

- 0.13um/0.11um/90nm/80nm/55nm/40nm support capability
- Dedicated MV 8V for AMOLED SDDI applications at 80nm, 40nm and below
- Compact size of SRAM bit cell support capability
- Ultra-low leakage 1.2V LV device support capability
- MTP key IP support capability (0.13um/0.11um)
- Worldwide No.1 foundry market share

Smartphone display panel technology trends