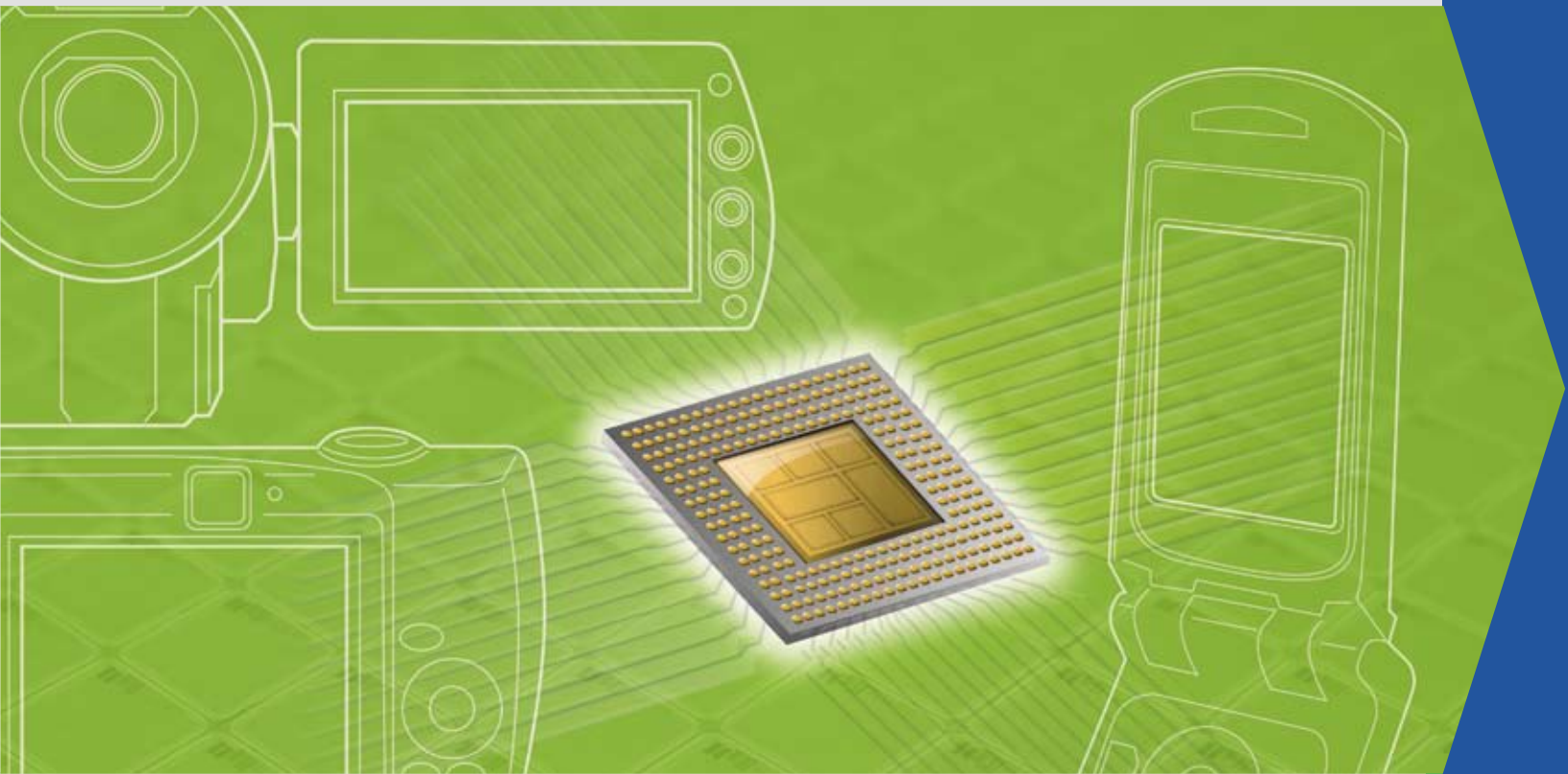


FOUND RY LEADERSHIP FOR THE SoC GENERATION

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HV

High Voltage

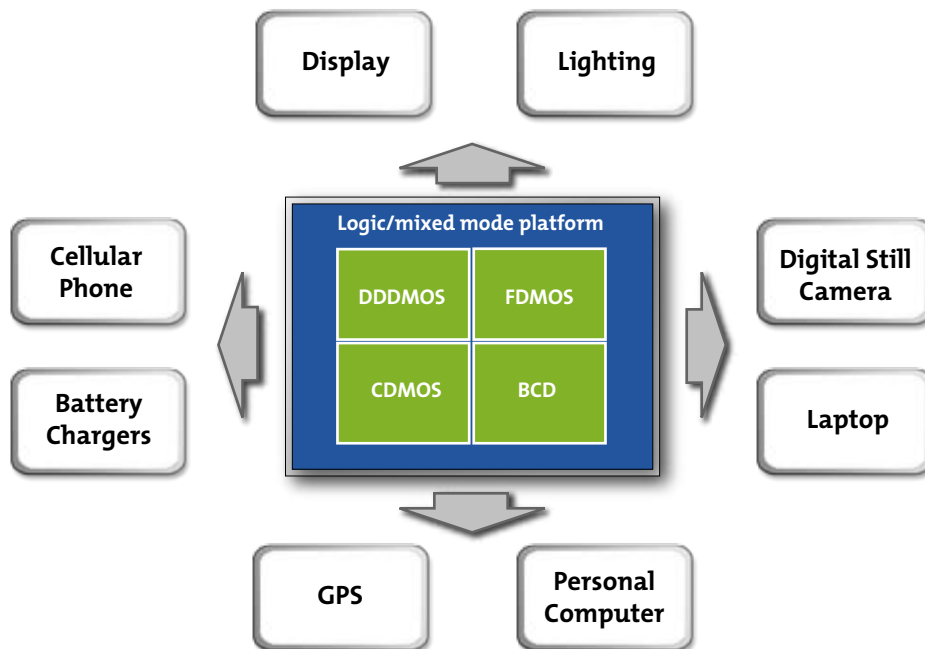


UMC



SoC SOLUTIONS FOR HIGH VOLTAGE APPLICATIONS

Today's "4C" (Computer, Consumer, Communications, and Car) products have been the driving force behind the rapidly growing high voltage (HV) IC market. UMC supports these applications with extensive and proven HV technologies, while continuing to invest in research and development to provide more and better solutions to meet the demanding requirements of the ever-expanding HV market.



BROAD RANGE OF TECHNOLOGY PLATFORMS

UMC's HV technologies include Double Diffused Drain MOSFET (DDDMOS), Field Drift MOSFET (FDMOS), Bipolar-CMOS-DMOS (BCD), CMOS-DMOS (CDMOS), and others. These state-of-the-art process offerings can be applied to a variety of designs, such as cellular phone, DSC, laptop, chargers, and other products requiring robust HV devices.

HV TECHNOLOGIES FOR MAJOR APPLICATIONS

Two mainstream HV technology applications are display driver ICs and power management ICs (PMIC). UMC's HV technology solutions are based on our logic/Mixed Mode (MM) technology, accommodating multiple voltage device options for different HV applications.

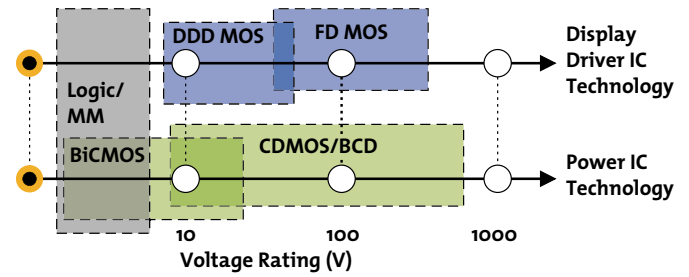
Display Drivers:

- Suitable to all sizes of panel applications
- High voltage gate MOSFET process that includes DDDMOS and FDMOS devices
- Covers applications such as a-TFT LCD, LTPS TFT LCD, CSTN LCD, OLED, PDP, VFD, ePD, etc.

Power ICs:

- Performance driven BCD and cost effective CDMOS technologies
- Comprehensive high voltage device options with high breakdown voltage and low R_{ds(on)}
- Suitable for applications such as battery chargers, DC-DC converters, LED driver, Motor driver, offline, etc.

Wide Voltage Range and Technology Offerings



DISPLAY DRIVER IC APPLICATIONS

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, e-NVM, etc. together on the same chip for small panel applications.

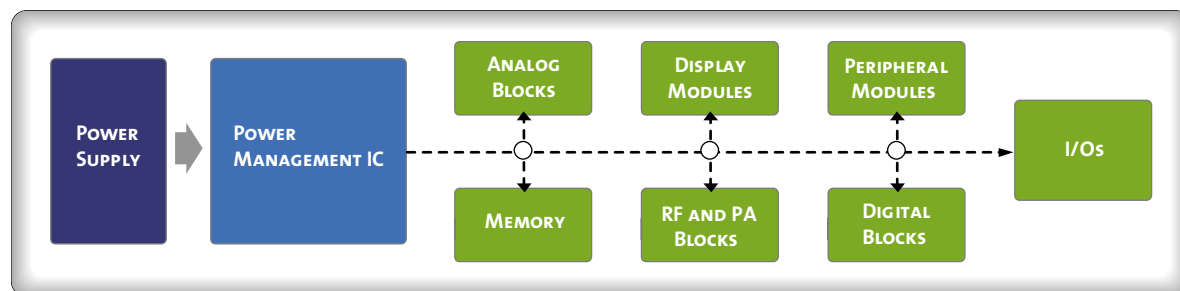
On the other hand, large panel applications such as full-size TVs have different HV process technology requirements, including higher performance logic devices, aggressive metal rules for higher channel counts, color depth and fast clock rate applications.

UMC also provides several process platforms for e-Paper display driver applications. 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(V _G =V _{DS})	READINESS
90nm	1.2V	6V	±16V	Q2/10
0.13 μm	1.5V	6V	±16V	√
0.15 μm	1.8V	6.75V	13.5V	Q3/10
	1.8V	8.25V	16.5V	Q2/10
0.162 μm	3.3V	6.75V	13.5V	√
	3.3V	8.25V	16.5V	√
	3.3V	9V	18V	Q2/10
	1.8V	5.5V	±16V	√
	1.8V	5.5V	±20V	Q1/10
0.18 μm	1.8V	5.5V	±16V	√
0.25 μm	2.5V	5.5V	±12V, ±16V, ±20V, 24V, 40V	√
	2.5V	3.3V	±9V, ±12V, 18V, 24V	√
	2.5V		12V	√
0.28 μm	3.3V	6.75V	13.5V	√
	3.3V	9V	18V	√
0.3 μm	3.3V		13.5V, 16.5V	√
0.35 μm	3.3V	5V	±9V	√
	3.3V		±9V, 12V, 13.5V, 16.5V, 18V, 30V, 40V	√
0.5 μm, 0.6 μm, 0.8 μm	3.3V		±20V, 12V, 18V, 30V, 40V	√
	5V		±20V, 12V, 18V, 30V, 40V, 80V, 120V	√

POWER MANAGEMENT IC APPLICATIONS

UMC's solutions include comprehensive device options for different voltage ratings at each technology node. For each technology node, logic compatible processes for various voltage ratings can share the same design within the logic portion. In addition, logic compatible One Time Programmable Memory (OTP) will be supported without adding any extra masks. Multiple Times Programmable Memory (MTP) will be available too. UMC also welcomes customers to take advantage of the large HV fab capacity available through process porting, as UMC is capable of quickly ramping up high volume PMIC production with high yields.



System with Functional Blocks

TECHNOLOGY	LV/CORE	MV / IO	HV-DMOS	PROCESS READY
0.18 μ m CDMOS 16V/18V	1.8V	5V	V _G =5V; V _D =16V/18V	√
0.18 μ m CDMOS 24V/30V	1.8V	5V	V _G =5V; V _D =24V/30V	√
0.18 μ m CDMOS 40V	1.8V	5V	V _G =5V; V _D =40V	Q1/10
0.18 μ m CDMOS 60V	1.8V	5V	V _G =5V; V _D =60V	Q2/10
0.35 μ m CDMOS 60V V _G 18V	5V	5V	V _G =5/18V; V _D =60V	Q2/10
0.35 μ m CDMOS 40V V _G 18V	5V	5V	V _G =5/18V; V _D =40V	Q1/10
0.35 μ m CDMOS 60V/65V	3.3V	5V	V _G =5V; V _D =60V/65V	Q1/10
0.35 μ m CDMOS 40V/30V	3.3V	5V	V _G =5V; V _D =40V/30V	√
0.35 μ m CDMOS 18V	3.3V	5V	V _G =5V; V _D =18V	√
0.35 μ m CDMOS 12V	3.3V	5V	V _G =5V; V _D =12V	√
0.5 μ m BCD 12V		5V	V _G =5V; V _D =12V	√
0.5 μ m BCD 30V		5V	V _G =5V; V _D =30V	√
0.5 μ m BCD 40V		5V	V _G =5V; V _D =40V	√
0.5 μ m CDMOS 18V/30V		5V	V _G =18V; V _D =18V/30V	√
0.5 μ m CDMOS 40V		5V	V _G =5V; V _D =40V	√
0.5 μ m CDMOS 60V		5V	V _G =5V; V _D =60V	√
0.5/0.6 μ m BCD 40V		5V	V _G =5V; V _D =40V	√
0.5 μ m CDMOS 80V/100V		5V	V _G =5V; V _D =80/100V	√
0.5 μ m CDMOS 120V		5V	V _G =5V; V _D =120V	√
0.5 μ m CDMOS 200V		5V	V _G =5V; V _D =200V	Q1/10
0.6 μ m CDMOS 700V	NA	24V	V _G =24V; V _D =700V	√
0.6 μ m CDMOS 700V	NA	30V	V _G =30V; V _D =700V	√
0.6 μ m CDMOS 700V	5	30V	V _G =30V; V _D =700V	√
0.6 μ m CDMOS 700V	5	40V	V _G =40V; V _D =700V	Q1/10

UMC's Complete Solutions for HV applications

- Complete solutions for display driver IC applications including a-TFT LCD, LTPS TFT LCD, CSTN LCD, OLED, PDP, VFD, ePD, etc.
- Complete solutions for PMIC applications including battery charger, DC-DC converter, LED driver, Motor driver, etc.