

TS700V High Voltage 0.8 μ m BCDMOS

TS700V is a 0.8 μ m very high voltage BCDMOS technology providing customers a unique opportunity to design products in the rapidly growing high-voltage segment of consumer applications, such as electric vehicles, green energy, and household electronics.

Key Features

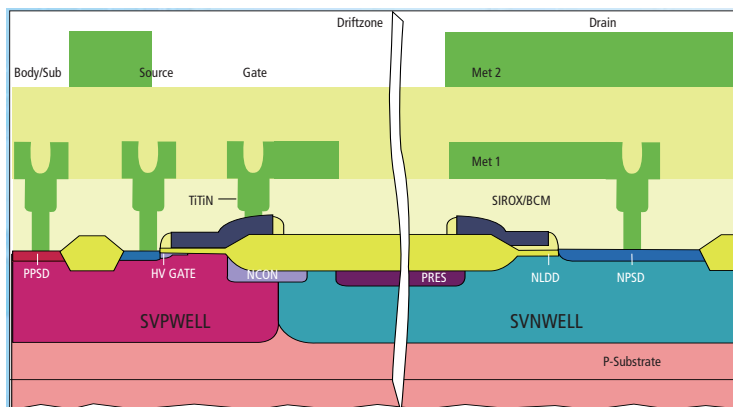
TS700V is a feature rich 0.8 μ m BCDMOS bulk technology with integrated 750V MOSFET devices. The process combines very high voltage devices with standard analog/digital circuits on the same die. This addresses, among many others, the next generation LED lighting, offline switches and gate-driver applications.

- 750V enhancement and depletion NMOS
- Floating High-Side operation up to 600V
- 5V and 20V fully isolated CMOS
- 20V CMOS: high-side capable (V_{DS} max = 50V)
- Mid-voltage DMOS transistors (30V NMOS ISO, 40V NMOS & 45V PMOS)
- Double Poly including capacitors and high resistivity resistors
- NPN, Substrate-PNP and fully isolated VPNP
- MOS capacitors
- 6.2V Zener diode
- EKV models for MOS transistors

Applications

- LCD and Plasma TVs/Flat Panel Displays
- Industrial Motor Control
- Lamp Ballast
- LED Lighting
- Telecom Wire Line Applications
- Off line Switchers
- Gate Drivers

Cross-Section TS700V



Electron Microscope View



Technology Parameters

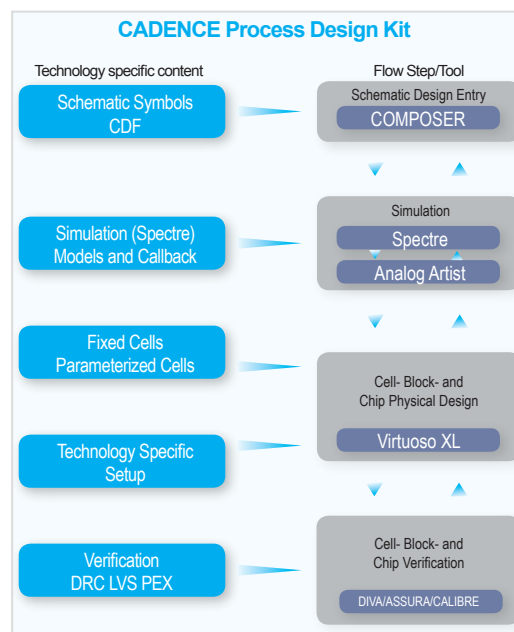
characteristic	details
Minimum feature size	0.8 μm
Substrate	bulk <100> p-type
Isolation	junction based, 1 μm LOCOS
Well construction	NWELL / PWELL
Gate Oxides	17.5 nm / 45 nm
Metallization	2 metals
Mask Levels	21+ (depending on options)

Electrical Device Parameters

device	V_{th}	$R_{ds\ on}$	$I_{d\ sat}$	$V_{ds\ max}$
700V NMOS enhancement	2	<45 ($A^* > 0.55\text{mm}^2$)	>25	700
700V NMOS depletion	-3	<45 ($A^* > 0.55\text{mm}^2$)	>25	700
NDMOS	0.8	<0.1	>250	>30V
PDMOS	-0.8	<0.4	>100	45V
5V NCMOS	1	-	350	10
5V PCMOS	-1	-	150	10
20V NCMOS high-side capable	2	<0.25	>180	50
20V PCMOS high-side capable	-1.5	<0.3	>200	50

device	Beta	V_{early}	$V_{CE\ max}$
VPNP	>20	>70	50

*A = Area



TSI Semiconductors

About TSI Semiconductors

TSI Semiconductors offers World Class Analog & Mixed Signal Foundry Processes and Services for RF, Power Management, High Voltage, and High Temperature Automotive Applications.

TSI Semiconductors' experienced engineering teams also excel at installing customer-specific processes to meet our customers' requirements in Analog & Mixed Signal applications. The complete array of services provided by TSI Semiconductors can take any set of specifications and create a totally transparent turnkey solution, from chipset development to fully qualified and packaged products.

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