BYTE QUEST

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Byte Quest is the article published by the CSE dept of Vasavi College of Engineering regarding the latest innovative Technologies and Software that have been emerged in the competitive world. The motto of this article is to update the people regarding the improvement in technology. The article is designed by the active participation of students under the guidance of faculty coordinators.

Good ,bad or indifferent if you are not investing in new technology , you are going to be left behind.

-Philip Green

Once a new technology rolls over you, if you're not part of the steamroller, you're part of the road.

-Stewart Brand.

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BARCODING TECHNOLOGY

Barcode scanner reads the code, data is sent to the computer, and computer looks up into the database for the price and description of the item. Barcodes are structured to contain specific product related information. It basically encodes alphanumeric characters and symbols using black and white stripes, also called bars. Bar-coding is one of the AIDC (Automatic Identification and Data Collection) technologies which reduce human involvement in data entry and collection and thereby also reducing error and time.

A typical barcode consists of the following:

Quiet Zone

Start Code

Data

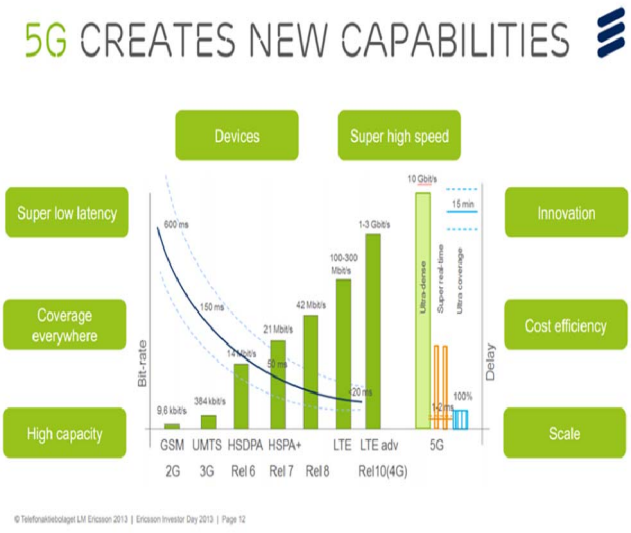
Check Digit

Stop Code

Barcode symbologies can be either one dimensional or two-dimensional.

- AKHIL REDDY (CSE-B 2/4)

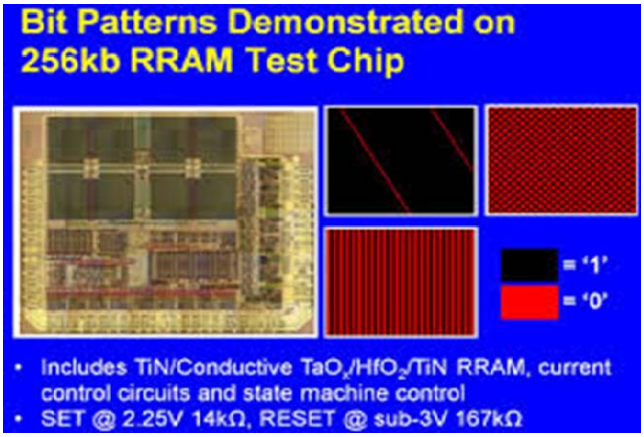
5G MOBILE TECHNOLOGY



5G Technology stands for fifth Generation Mobile technology. From generation 1G to 2.5G and from 3G to 5G this world of telecommunication has seen a number of improvements along with improved performance with every passing day. This fast revolution in mobile computing changes the way we work, interact, learn etc. In fifth generation researches are being made on development of World Wide Wireless Web (WWWW), Dynamic Adhoc Wireless Networks (DAWN) and Real Wireless World. Fifth generation focus on VOIP-enabled devices. Main features in 5G mobile network is that user can simultaneously connect to the multiple wireless technologies.

- Y. BHAVANI (CSE-B 2/4)

RESISTIVE RAM



Resistive RAM (RRAM) is one of the most promising emerging nonvolatile memory technologies thanks to fast operation, superior scalability, low power consumption and potential for 3D stacking. From an architectural point of view, 1T1R architecture is suitable for embedded memory applications while 1S1R based cross-point architecture is suited to high density memory applications.

The sneak path challenge has been overcome by utilizing a Field Assisted Superlinear Threshold (FAST) selector which uses an insulating amorphous material which provides volatile switching at critical electric field. Excellent selector performance is presented, including high selectivity of > 107, sharp switching slope of < 5mV/dec., and large endurance of > 1011. The low fabrication temperature (≤300°C) of the FAST selector allows 3D stacking of 1S1R memory layers.

It is also demonstrated that a volatile switch based selector has inherent benefits such as low voltage overhead for 1S1R integration and high read voltage margin.

For the 1S1R demonstration, electrochemical metallization RRAM with a sub-5nm filament is utilized. The RRAM device offers a self-current-limiting feature during the program operation. The self-limited program obviates the need for external current compliance, which can increase the number of concurrent programs in the 1S1R cross-point architecture with reduced power consumption and increased reliability benefits. The hold voltage property of a FAST selector allows novel sensing techniques such as Resistance Ratio Amplification (RRA) which amplifies the intrinsic ON/OFF ratio of RRAM by a factor of > 104 [2]. Besides the direct advantage of increased memory ON/OFF ratio, the RRA technique also reduces BER and increases read bandwidth of the RRAM array. The integrated self-current-limited RRAM with FAST selector enables the high density and high performance 1S1R RRAM technology.

- R. AASHRITHA (CSE-B 2/4)