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(71)Name of Applicant
:

**1)Dr. Srinivasulu
Gundala**

Address of
Applicant :Professor,
Dept. of Electronics and
Communication
Engineering, Lakireddy
Bali Reddy College of
Engineering
(Autonomous),
Mylavaram, Krishna
Dt, Andhra Pradesh,
India Andhra Pradesh
India

(72)Name of Inventor
:

**1)Dr. Srinivasulu
Gundala
2)Dr. M Mahaboob
Basha
3)Dr. Kommu
Siddhartha
Mavovarakumar**

(57) Abstract :

A Digital circuit do voltage level shifting, the circuit includes a short circuit aware MOS transistor and a transmission gate based voltage level shifting; wherein the digital circuit comprises 2 X 1 Multiplexer to select VDDH or VDDL with one NMOS transistor and one PMOS transistor in the level shifting selection stage; wherein the digital circuit receives an input voltage (VIN) from the multi voltage supply circuits and produces an output voltage (VOUT); wherein the input VIN has a voltage swing between VDDL and VDDH supply voltage or rail voltage; wherein the output VOUT has a voltage swing between VDDH and VDDL supply voltage or rail voltage; and wherein the level shifter circuit selects type of level shifting in response to a level of the input voltage. The short circuit aware MOS transistor and Transmission gates as switching elements provides low power consumption and Delay even at higher frequencies.

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