# Buck Converter(65nm) Design:

| BUCK CONVERTOR | | | | |
|---|---|---|---|---|
| Parameter | Value | | | Unit |
| | min | typ | max | |
| Supply Voltage | 4.5 | | 30 | V |
| Operating temperature range | -40 | | 85 | C |
| Input Under-Voltage Lockout Threshold | | 4.3 | | V |
| Output Voltage Range | 0.8 | | 0.85*$V_{IN}$ | V |
| Supply Current (Quiescent) | | 2 | 4 | mA |
| Shutdown Supply Current | | 3 | 20 | µA |
| Feedback Voltage | 0.78 | 0.8 | 0.82 | V |
| Load Regulation | | 0.5 | | % |
| Line Regulation | | 0.08 | | % / V |
| ESD Rating: Human Body Model | | 2 | | kV |
| Modulator Spec | | | | |
| Frequency | 315 | 370 | 425 | kHz |
| Maximum Duty Cycle | 85 | | | % |
| Minimum Duty Cycle | | | 6 | % |
| Error Amplifier Voltage Gain | | 500 | | V / V |
| Error Amplifier Transconductance | | 200 | | µA / V |

- Project: Buck-1
  - Technology: 65nm
- Work Done:
  - Architecture selection
  - Area analysis with multiple form factors (aspect ratio)
  - High level power analysis
  - Support for System level integration, package, bump ball map
  - Circuit design and Schematic implementation
  - High Level Floorplan implementation
  - Detailed Layout analysis and implementation
  - Complete physical verification, antenna
  - Signal integrity analysis, EMIR, GB, timing – for critical paths
  - Signoff checks - metal fill, density checks
  - Testability / DPPM checks
  - Final Tapeout checks and signoff
- Team size:
  - Lead: 1
  - Circuit Designer: 2
  - Layout Engineer: 2
- Project Duration: 6 months