|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| K | Area(um^2) | Power(mw) | Delay(ns) | Energy(pj) |
| 4 | 1028.394 | 0.251 | 2.934 | 0.7364 |
| 8 | 1148.846 | 0.2092 | 3.583 | 0.749 |
| 12 | 1479.492 | 0.2446 | 3.583 | 0.8764 |
| 16 | 1575.081 | 0.2571 | 3.583 | 0.9211 |

Tanhx –

Hardware characteristics :

Error characteristics :

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| K | MAE | ME(e-06) | MIN ERROR | MAX ERROR | STD DEV | ERMS |
| 4 | 0.012121452 | -8.1870437 | -0.176557 | 0.1766401 | 0.0304898 | 0.03048957 |
| 8 | 0.006089142 | -37.63969 | -0.1170359 | 0.1165739 | 0.0172566 | 0.0172565 |
| 12 | 0.004619698 | -42.672374 | -0.0978097 | 0.09734772 | 0.0138984 | 0.01389834 |
| 16 | 0.0037624 | 15.598340 | -0.0825299 | 0.0820679 | 0.01150814 | 0.011508 |
| cordic | 0.00016539 | -4.9020294 | -0.0165049 | 0.016539 | 0.00087393 | 0.0008739 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| K | NoEB | Q1 | Q2 | Q3 | IQR |
| 4 | 31.9566 | -1.20657924e-5 | 7.76646e-11 | 1.30926e-5 | 2.515839e-5 |
| 8 | 31.9753 | -1.2026519e-5 | 7.756173e-11 | 1.30189e-5 | 2.50454e-5 |
| 12 | 31.98 | -1.249854e-5 | -7.620903e-11 | 1.24681e-5 | 2.49666e-5 |
| 16 | 31.9834 | -1.27442e-5 | -7.914591e-11 | 1.20897e-5 | 2.4834e-5 |
| cordic | 31.9987 | -11.6321e-5 | 3.582244e-8 | 11.6841e-5 | 23.8029e-5 |

Sigmoid –

Hardware characteristics :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| K | Area(um^2) | Power(mw) | Delay(ns) | Energy(pj) |
| 4 | 1028.394 | 0.251 | 2.934 | 0.7364 |
| 8 | 1148.846 | 0.2092 | 3.583 | 0.749 |
| 12 | 1479.492 | 0.2446 | 3.583 | 0.8764 |
| 16 | 1575.081 | 0.2571 | 3.583 | 0.9211 |
| cordic | 25435.341 | 4.95 | 14.201 | 70.294 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| K | Area(um^2) | Power(mw) | Delay(ns) | Energy(pj) |
| 4 | 3965.148 | 0.4561 | 7.354 | 3.3541 |
| 8 | 4208.31 | 0.425 | 7.354 | 3.125 |
| 12 | 4442.854 | 0.4416 | 7.375 | 3.2568 |
| 16 | 4574.763 | 0.45146 | 7.272 | 3.2825 |
| Cordic | 32216.037 | 6.30 | 26.339 | 165.9357 |

Error characteristics :

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| K | MAE | | ME | | MIN ERROR | | MAX ERROR | | STD DEV | | ERMS |
| 4 | 0.0165077 | | 0.000161529 | | -0.413392 | | 0.4685672 | | 0.0454502 | | 0.0454501 |
| 8 | 0.0117621 | | 0.0002125 | | -0.438369 | | 0.485374 | | 0.042828 | | 0.042828 |
| 12 | 0.0104722 | | 0.0002488 | | -0.4487602 | | 0.4893475 | | 0.04250028 | | .0425006 |
| 16 | 0.00977047 | | 0.0001609 | | -0.4564373 | | 0.4905439 | | 0.04219099 | | 0.04219091 |
| cordic | 0.0014653 | | -0.001404 | | -0.014231 | | 0.002309 | | 0.002304 | | 0.002699 |
| K | | NoEB | | Q1 | | Q2 | | Q3 | | IQR | |
| 4 | | 31.93587 | | -2.0127e-3 | | 6.314e-6 | | 2.13365e-3 | | 4.14639e-3 | |
| 8 | | 31.9394 | | -1.61267e-3 | | 6.17061e-6 | | 1.6399e-3 | | 3.25266e-3 | |
| 12 | | 31.9399 | | -1.2303e-3 | | 6.59401e-6 | | 1.33929e-3 | | 2.56968e-3 | |
| 16 | | 31.9403 | | -1.05448e-3 | | 6.45476e-6 | | 1.09548e-3 | | 2.14997e-3 | |
| cordic | | 31.99611 | | 1.8197e-3 | | -2.374648e-4 | | 1.139417e-5 | | 1.83118e-3 | |