

Supplementary RUP Information
for MIV_RV32 v3.0

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Introduction

This document contains Resource Utilization and Performance (RUP) data for the MIV_RV32 core and can be used as a reference to estimate the potential footprint of a MIV RV32 core in different configurations. Results were obtained using the Libero v12.5 release and associated tools.

A base configuration of a MIV RV32 configured with an APB interface and TCM is used, additional features are enabled to show the resource increase for those features vs the base. A max frequency is provided for each configuration.

Coremark benchmarks are also available to see the potential performance increase / decrease with different features and interfaces used.

Interface Resource Utilization and Performance

RV32I_APB

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1056	3711	4767	3757	108	
RTG4	RTG4150L FCG1657	1093	3938	5031	3989	59	
SmartFusion2	M2S150T FC1152	1091	3918	5009	3955	59	
IGLOO2	M2GL150 FC1152	1092	3853	4945	3900	52	
Config parameters	RISC-V Extensions: I , Multiplier: n/a, AHB Master: n, Mirrored I/F: n, APB Master: APB3 , APB Mirrored I/F: n, AXI Master: n, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32I_AHB

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1069	3888	4957	3857	113	210
RTG4	RTG4150L FCG1657	1156	4004	5160	4028	59	134
SmartFusion2	M2S150T FC1152	1101	4157	5258	4160	59	294
IGLOO2	M2GL150 FC1152	1109	3998	5107	4035	55	241
Config parameters	RISC-V Extensions: I , Multiplier: n/a, AHB Master: AHB , Mirrored I/F: n, APB Master: n/a, APB Mirrored I/F: n, AXI Master: n, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32I_AXI

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1679	4361	5840	4194	103	1098
RTG4	RTG4150L FCG1657	1558	4450	6008	4403	56	1027
SmartFusion2	M2S150T FC1152	1507	4504	6001	4426	59	1082
IGLOO2	M2GL150 FC1152	1536	4516	6052	4401	50	1132
Config parameters	RISC-V Extensions: I , Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: n/a, APB Mirrored I/F: n, AXI Master: AXI4 , AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32I_APB_AHB

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1169	3908	5077	3957	113	310
RTG4	RTG4150L FCG1657	1206	4034	5240	4103	59	209
SmartFusion2	M2S150T FC1152	1201	4177	5378	4235	59	369
IGLOO2	M2GL150 FC1152	1209	4013	5222	4071	55	277
Config parameters	RISC-V Extensions: I , Multiplier: n/a, AHB Master: AHB , Mirrored I/F: n, APB Master: APB , APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32I_APB_AXI

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1579	4386	5965	4294	102	1198
RTG4	RTG4150L FCG1657	1618	4510	6128	4478	56	1097
SmartFusion2	M2S150T FC1152	1617	4524	6141	4476	59	1132
IGLOO2	M2GL150 FC1152	1616	4536	6152	4476	50	1207
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: AXI4, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y, TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32I_AHB_AXI

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1629	4406	6035	4344	101	1248
RTG4	RTG4150L FCG1657	1688	4540	6228	4548	56	1167
SmartFusion2	M2S150T FC1152	1657	4544	6201	4526	59	1182
IGLOO2	M2GL150 FC1152	1657	4544	6201	4526	50	1182
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: AHB, Mirrored I/F: n, APB Master: n/a, APB Mirrored I/F: n, AXI Master: AXI4, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y, TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32I_APB_AHB_AXI

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1679	4416	6095	4399	101	1303
RTG4	RTG4150L FCG1657	1758	4565	6323	4600	56	1219
SmartFusion2	M2S150T FC1152	1707	4584	6291	4576	59	1242
IGLOO2	M2GL150 FC1152	1707	4584	6291	4576	50	1242
Config parameters	RISC-V Extensions: I , Multiplier: n/a, AHB Master: AHB , Mirrored I/F: n, APB Master: APB , APB Mirrored I/F: n, AXI Master: AXI4 , AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RISC-V Extensions Resource Utilization and Performance

RV32IC_APB

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1						
	FCG1152E	1063	4012	5075	4066	104	308
RTG4	RTG4150L						
	FCG1657	1092	4202	5294	4245	59	263
SmartFusion2	M2S150T						
	FC1152	1095	4222	5317	4265	59	308
IGLOO2	M2GL150						
	FC1152	1090	4194	5284	4232	55	339
Config parameters	RISC-V Extensions: IC , Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB , APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32IM_MACC_APB

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1						
	FCG1152E	1334	4439	5773	4512	59	1006
RTG4	RTG4150L						
	FCG1657	1377	4720	6097	4763	48	1066
SmartFusion2	M2S150T						
	FC1152	1372	4810	6182	4868	50	1173
IGLOO2	M2GL150						
	FC1152	1372	4810	6182	4853	44	1237
Config parameters	RISC-V Extensions: IM, Multiplier: MACC , AHB Master: n/a, Mirrored I/F: n, APB Master: APB , APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32IM_MACC_PIPELINED_APB

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1333	4539	5872	4590	59	1105
RTG4	RTG4150L FCG1657	1374	4770	6144	4820	56	1113
SmartFusion2	M2S150T FC1152	1379	4805	6184	4859	59	1175
IGLOO2	M2GL150 FC1152	1372	4762	6134	4807	50	1189
Config parameters	RISC-V Extensions: IM, Multiplier: MACC Pipelined , AHB Master: n/a, Mirrored I/F: n, APB Master: APB , APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32IM_FABRIC_APB

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1228	4744	5972	4798	59	1205
RTG4	RTG4150L FCG1657	1260	4723	5983	4774	59	952
SmartFusion2	M2S150T FC1152	1268	4825	6093	4900	59	1084
IGLOO2	M2GL150 FC1152	1260	4864	6124	4945	55	1179
Config parameters	RISC-V Extensions: IM, Multiplier: Fabric , AHB Master: n/a, Mirrored I/F: n, APB Master: APB , APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32IMC_MACC_APB

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1584	4429	6043	4612	59	1116
RTG4	RTG4150L FCG1657	1587	4790	6377	4993	48	1296
SmartFusion2	M2S150T FC1152	1592	4830	6432	5018	50	1323
IGLOO2	M2GL150 FC1152	1592	4830	6432	5018	44	1323
Config parameters	RISC-V Extensions: IMC, Multiplier: MACC , AHB Master: n/a, Mirrored I/F: n, APB Master: APB , APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32IMC_MACC_PIPELINED_APB

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1483	4589	6072	4744	59	1259
RTG4	RTG4150L FCG1657	1494	4870	6364	4986	56	1279
SmartFusion2	M2S150T FC1152	1499	4855	6354	5002	59	1318
IGLOO2	M2GL150 FC1152	1499	4855	6354	5002	50	1318
Config parameters	RISC-V Extensions: IMC, Multiplier: MACC Pipelined , AHB Master: n/a, Mirrored I/F: n, APB Master: APB , APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32IMC_FABRIC_APB

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1228	5246	6474	5315	104	1707
RTG4	RTG4150L FCG1657	1261	5050	6311	5087	59	1280
SmartFusion2	M2S150T FC1152	1264	5098	6362	5140	59	1353
IGLOO2	M2GL150 FC1152	1263	5224	6487	5262	52	1542
Config parameters	RISC-V Extensions: IMC, Multiplier: Fabric , AHB Master: n/a, Mirrored I/F: n, APB Master: APB , APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

Interrupts Resource Utilization and Performance

RV32I_APB_6_EXT_IRQ

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1						
	FCG1152E	3792	1062	4854	3841	106	87
RTG4	RTG4150L						
	FCG1657	3973	1097	5070	4018	59	39
SmartFusion2	M2S150T						
	FC1152	3985	1104	5089	4021	59	80
IGLOO2	M2GL150						
	FC1152	3920	1102	5022	3956	56	77
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 6, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y, TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32I_APB_VEC_IRQ

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1						
	FCG1152E	3624	1024	4648	3663	108	-119
RTG4	RTG4150L						
	FCG1657	3892	1069	4961	3932	59	-70
SmartFusion2	M2S150T						
	FC1152	3904	1062	4966	3944	59	-43
IGLOO2	M2GL150						
	FC1152	3925	1060	4985	3979	58	40
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: Y, TCM: Y, TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32I_APB_VEC_6_EXT_IRQ

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	3644	1028	4672	3663	106	-94
RTG4	RTG4150L FCG1657	3898	1079	4977	3929	58	-60
SmartFusion2	M2S150T FC1152	3911	1076	4987	3953	59	-2
IGLOO2	M2GL150 FC1152	3927	1068	4995	3912	58	12
Config parameters	RISC-V Extensions: I , Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB , APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 6 , MTVEC Offset: 0x34, Vectored Interrupts: Y , TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

TCM Resource Utilization and Performance

RV32I_APB_TCM

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	1056	3711	4767	3757	108	
RTG4	RTG4150L FCG1657	1093	3938	5031	3989	59	
SmartFusion2	M2S150T FC1152	1091	3918	5009	3955	59	
IGLOO2	M2GL150 FC1152	1092	3853	4945	3900	52	
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32I_APB_TCM_TAS

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	3821	1061	4882	3875	108	115
RTG4	RTG4150L FCG1657	4021	1098	5119	4062	59	88
SmartFusion2	M2S150T FC1152	3984	1098	5082	4031	59	73
IGLOO2	M2GL150 FC1152	3995	1098	5093	4047	53	148
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y , TCM Direct Access Port: Y , Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

MTIME Resource Utilization and Performance

RV32I_APB_MTIME

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	4094	1155	5249	4137	113	482
RTG4	RTG4150L FCG1657	4294	1189	5483	4340	59	452
SmartFusion2	M2S150T FC1152	4276	1188	5464	4313	59	455
IGLOO2	M2GL150 FC1152	4342	1189	5531	4377	55	586
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y, TCM Direct Access Port: n, Internal MTIME: Y, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32I_APB_MTIMEIRQ

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	3929	1123	5052	3976	108	285
RTG4	RTG4150L FCG1657	4201	1159	5360	4245	59	329
SmartFusion2	M2S150T FC1152	4128	1155	5283	4159	59	274
IGLOO2	M2GL150 FC1152	4067	1163	5230	4108	55	285
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y, TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: Y, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

RV32I_APB_MTIME_MTIMEIRQ

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	4194	1205	5399	4267	107	612
RTG4	RTG4150L FCG1657	4389	1209	5458	4455	58	567
SmartFusion2	M2S150T FC1152	4396	1288	5684	4513	58	655
IGLOO2	M2GL150 FC1152	4492	1219	5661	4187	54	696
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: Y, TCM Direct Access Port: n, Internal MTIME: Y, Internal MTIME IRQ: Y, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: n						

Debug Resource Utilization and Performance

RV32I_APB_DEBUG

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1						
	FCG1152E	5505	1843	7348	5579	106	2581
RTG4	RTG4150L						
	FCG1657	5516	1878	7394	5605	58	2363
SmartFusion2	M2S150T						
	FC1152	5481	1881	7362	5563	59	2353
IGLOO2	M2GL150						
	FC1152	5563	1879	7442	5650	53	2497
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: n, TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: Y, Register Forwarding: n, ECC: n, GPR Registers: n						

Registers Resource Utilization and Performance

RV32I_APB_FWD_REGS

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	3909	1072	4981	3979	59	214
RTG4	RTG4150L FCG1657	3951	1102	5053	4012	48	22
SmartFusion2	M2S150T FC1152	4205	1101	5306	4258	55	297
IGLOO2	M2GL150 FC1152	3958	1105	5063	4023	46	118
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: n, TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: Y, ECC: n, GPR Registers: n						

RV32I_APB_GPR_REGS

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1 FCG1152E	5154	1964	7118	5575	59	2351
RTG4	RTG4150L FCG1657	5289	2020	7309	5678	58	2278
SmartFusion2	M2S150T FC1152	5256	1998	7254	5597	59	2245
IGLOO2	M2GL150 FC1152	5243	2010	7253	5628	50	2308
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: n, TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: n, GPR Registers: Y						

ECC Resource Utilization and Performance

RV32I_APB_ECC

Family	Part	Synthesis			P&R LEs*	Performance MHz	Total increase from RV32I APB
		DFF	4LUT	Total			
PolarFire	MPF500T-1						
	FCG1152E	4196	1111	5307	4250	59	540
RTG4	RTG4150L						
	FCG1657	4517	1234	5751	4566	53	720
SmartFusion2	M2S150T						
	FC1152	4481	1235	5716	4522	56	707
IGLOO2	M2GL150						
	FC1152	4583	1234	5817	4644	50	872
Config parameters	RISC-V Extensions: I, Multiplier: n/a, AHB Master: n/a, Mirrored I/F: n, APB Master: APB, APB Mirrored I/F: n, AXI Master: n/a, AXI Mirrored I/F: n, Reset Vector Address Upper 16bits: 0x8000, Reset Vector Address Lower 16bits: 0x0, External IRQs: 0, MTVEC Offset: 0x34, Vectored Interrupts: n, TCM: n, TCM Direct Access Port: n, Internal MTIME: n, Internal MTIME IRQ: n, Debug: n, Register Forwarding: n, ECC: Y , GPR Registers: n						

Coremark Performance

Coremark /MHz	Config					
	RV32	Multiplier	Reg Fwd	Reg GPRs	ECC	Memory
0.533	I	n/a	0	0	0	TCM
1.567	IM	MACC	0	0	0	TCM
1.567	IM	MACC Pipe	0	0	0	TCM
1.067	IM	Fabric	0	0	0	TCM
0.533	IC	n/a	0	0	0	TCM
1.567	IMC	MACC	0	0	0	TCM
1.500	IMC	MACC Pipe	0	0	0	TCM
1.033	IMC	Fabric	0	0	0	TCM
0.533	I	n/a	0	0	1	TCM
0.533	I	n/a	1	0	0	TCM
0.967	I	n/a	0	1	0	TCM
1.067	I	n/a	1	1	0	TCM
1.567	IMC	MACC	1	0	0	TCM
2.533	IMC	MACC	0	1	0	TCM
2.767	IMC	MACC	1	1	0	TCM
0.167	I	n/a	0	0	0	AHB
0.433	IM	MACC	0	0	0	AHB
0.200	IC	n/a	0	0	0	AHB
0.467	IMC	MACC	0	0	0	AHB
0.167	I	n/a	1	0	0	AHB
0.200	I	n/a	0	1	0	AHB
0.200	I	n/a	1	1	0	AHB
0.133	I	n/a	0	0	0	AXI
0.400	IM	MACC	0	0	0	AXI
0.167	IC	n/a	0	0	0	AXI
0.400	IMC	MACC	0	0	0	AXI
0.133	I	n/a	1	0	0	AXI
0.167	I	n/a	0	1	0	AXI
0.167	I	n/a	1	1	0	AXI