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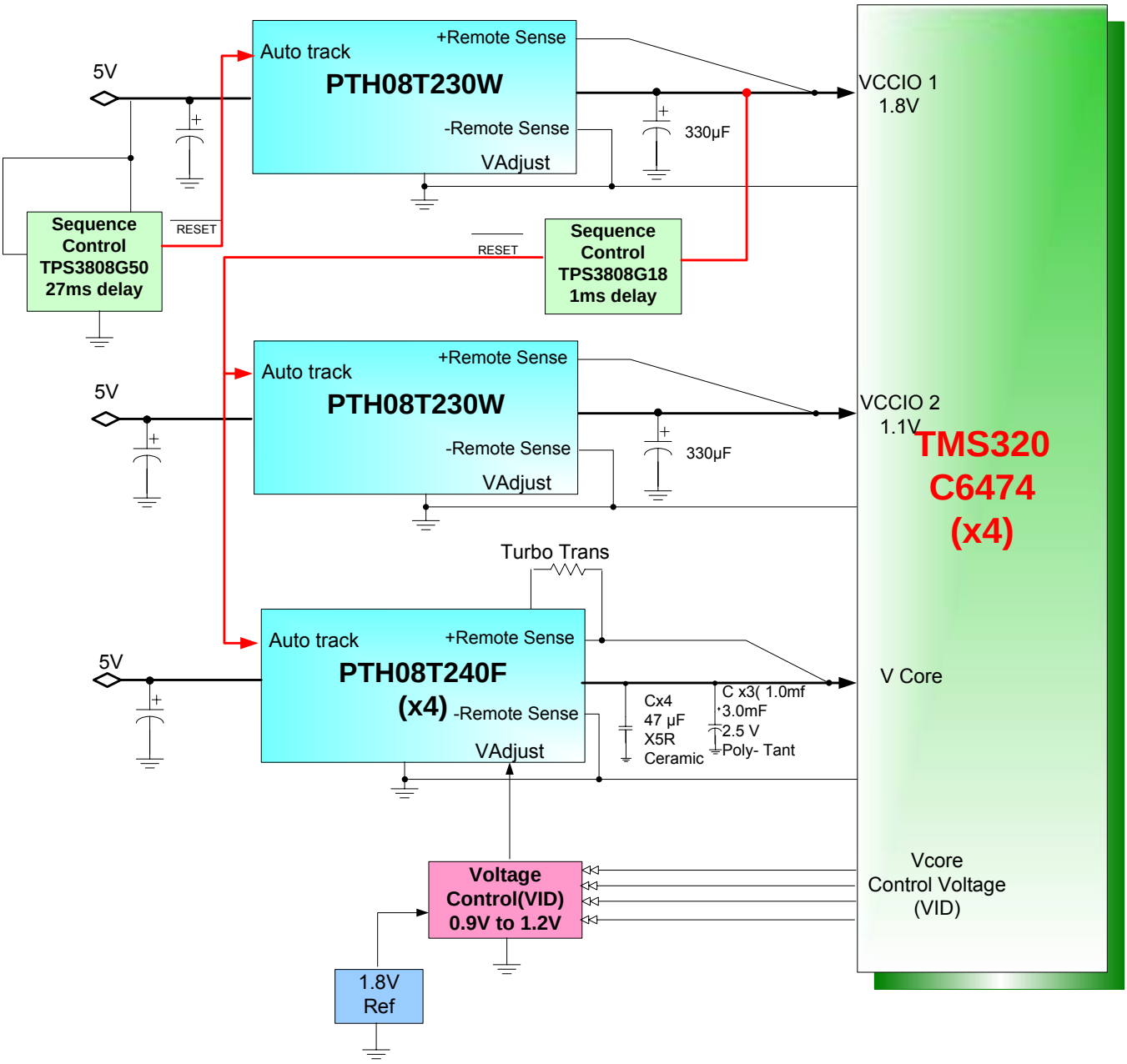
TMS320C6474 DSP Reference Design



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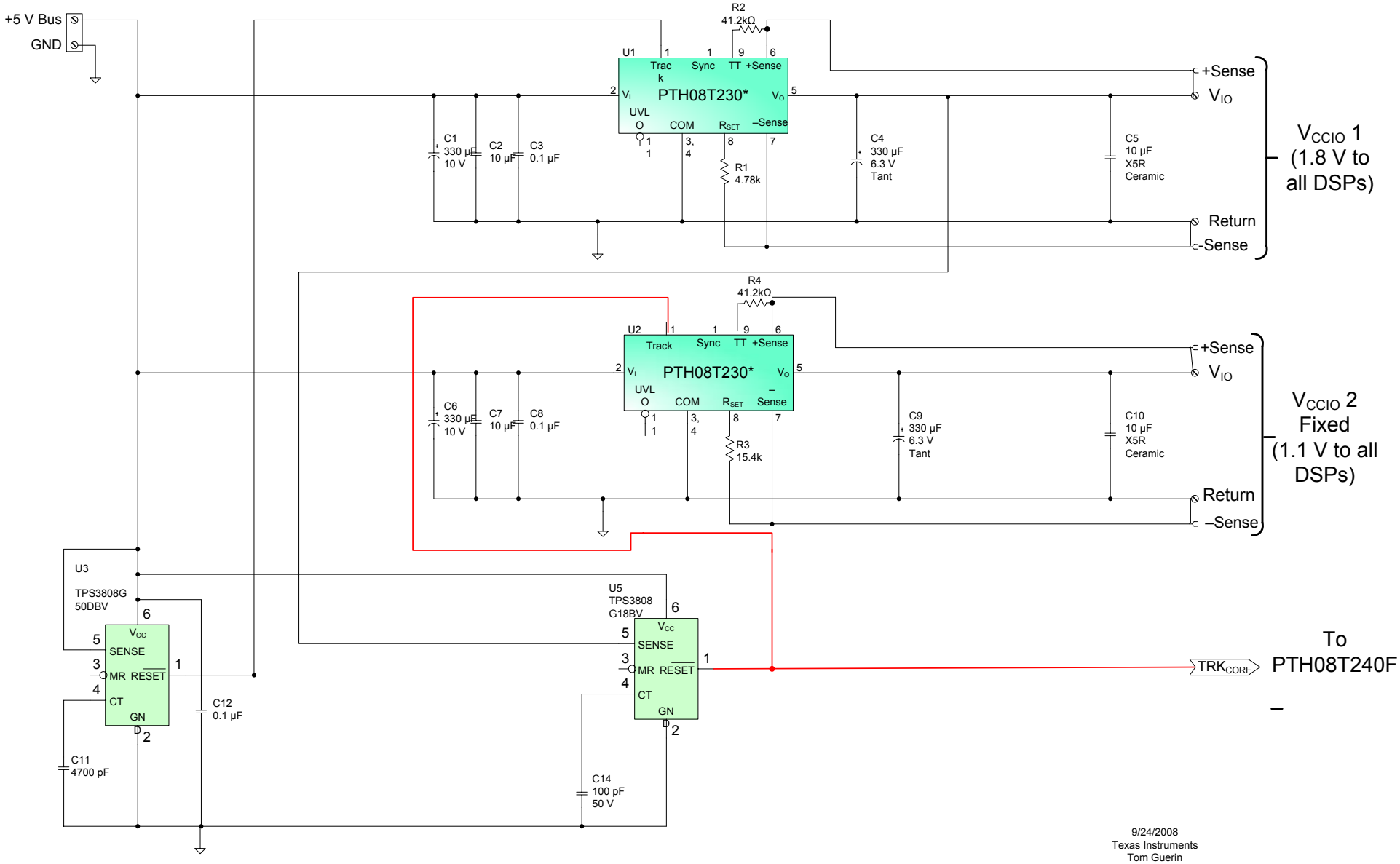
4 xTMS320C6474 DSPs
1.8V, 1.1V Fixed , Sequencing



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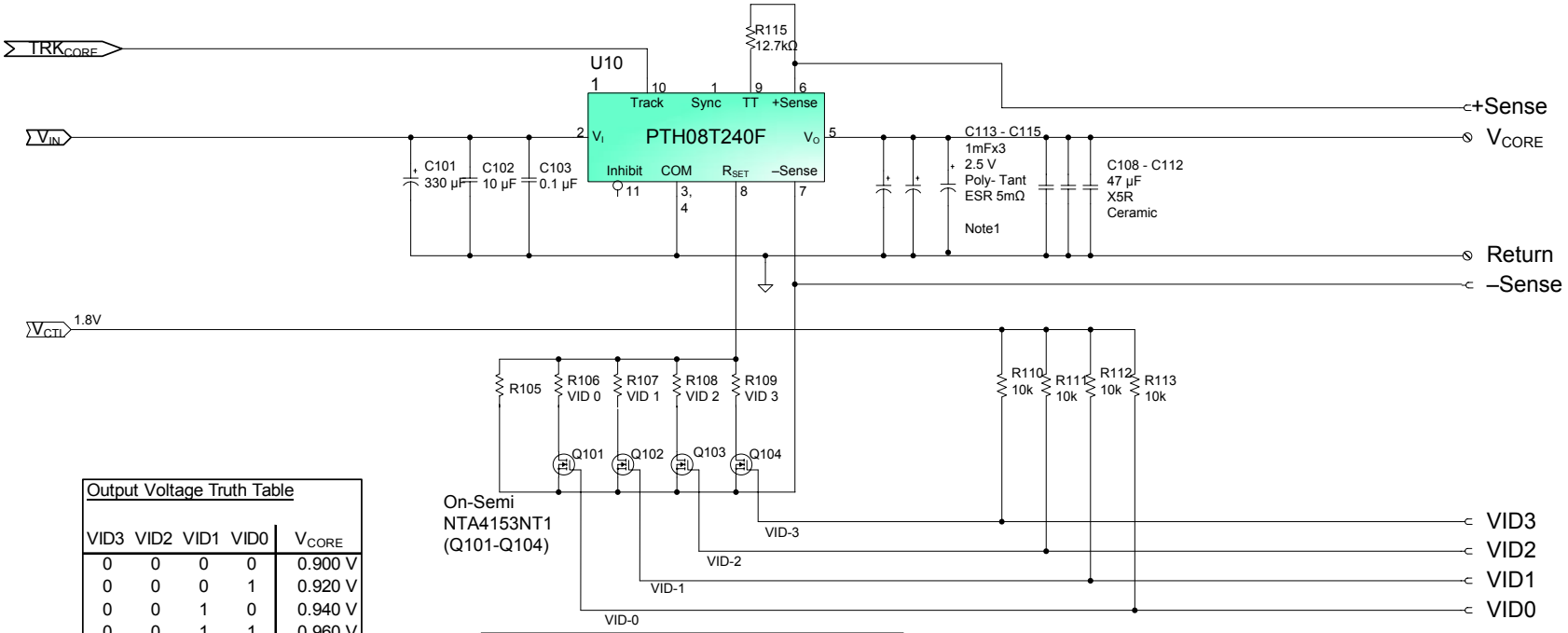
TMS320C6474 (1) DSP
Scaled Core Expanded Design
0.9V~1.2V



Regulation Circuit per each DSP Core x4

Output Voltage Truth Table				
VID3	VID2	VID1	VID0	V_{CORE}
0	0	0	0	0.900 V
0	0	0	1	0.920 V
0	0	1	0	0.940 V
0	0	1	1	0.960 V
0	1	0	0	0.980 V
0	1	0	1	1.000 V
0	1	1	0	1.020 V
0	1	1	1	1.040 V
1	0	0	0	1.060 V
1	0	0	1	1.080 V
1	0	1	0	1.100 V
1	0	1	1	1.120 V
1	1	0	0	1.140 V
1	1	0	1	1.160 V
1	1	1	0	1.180 V
1	1	1	1	1.200 V

	VID Identification Resistor	
	Component	
VID Code	Designator	Resistor 0.50%
no code	R105	31.2kΩ
VID 0(LSB)	R106	332kΩ
VID 1	R107	150kΩ
VID 2	R108	75kΩ
VID 3(MSB)	R109	37.4kΩ

Note1;
The 3000µF is preliminary Output capacitance.. Subject to final design;/ out bus requirements.

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TMS320C6474 DSP
Reference Design bom

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TMS320C6474" DSP				
Reference Design				
Designator	Material part number	vendor	alternate 1st vendor	2nd Vendor Material number
PTH08T230WAZ	PTH08T230WAZ	Texas Instruments		
PTH08T230WAZ	PTH08T230WAZ	Texas Instruments		
PTH08T240FAZ	PTH08T240FAZ	Texas Instruments		
TPS3808G50DBRG4	TPS3808G50	Texas Instruments		
TPS3808G18DBVRG4	TPS3808G18	Texas Instruments		
Q101, Q102, Q103, Q104	NTA4153NT1	On- Semi Semi Conductor		
C1, C6, C101,	T520 X337M010ASE025	Kemet	T520D227M010ATE025 x2	10TPE330MF
C4, C9	T520D337M006ATE015	Kemet		4TPE100MZB
C108-C112	Ceramic capacitors to 47µF	Murata	GRM32ER60J476M	C3225X5R0J476MT
C113-C115	T530X108M2R5ASE005 x3	Kemet	T530X158M003ATE008 X2	
C2, C3,C5, C7, C8,C10, C11,C12,C102, C103, C11, C12, C14	Ceramic capacitors to 10µF to 0.1µF	Murata. TDK		
R105-R109, R1, R3 , R115 , R110-R113(5% tolerance)	Resistors1/8W and 1% tolerance	Mutliple vendors		

TMS320C6474" DSP			Material listed					
Reference Design								
				cost / 1K estimate	Qunatity	extended		
Designator	Description	Function	Location					
PTH08T230WAZ	4.5-14V Input voltage to 1.8V Output voltage Power Module 6A	VCCIO 2 1.8V	1.8V	$10.80	1	$10.80		
PTH08T230WAZ	4.5-14V Input voltage to 1.1V Output voltage Power Module 6A	VCCIO 1 1.1V	1.1V	$7.90	1	$7.90		
PTH08T240FAZ	4.5-14V Input voltage to Core voltage range 0.9V to 1.1V	Vcore Control Voltage (VID)	0.9V to 1.1V	$7.90	1	$7.90		
TPS3808G50DBRG4	Sequence control Supervisor 27ms delay 1.8V	SVS 5V VCCIO-1	5V SVS	$0.70	1	$0.70		
TPS3808G18DBVRG4	Sequence control Supervisor 27ms delay 1.8V	svs 1.8v VCCIO-2 AND Core	1.8V SVS	$0.70	1	$0.70		
Q101, Q102, Q103, Q104	NTA4153NT1 On semi- FET for control circuitry			$0.08	4	$0.32		
C1, C6, C101,	330µF10V polytantalum polarized capacitor or 220uF x 2	Input capacitors	Input Bus 5V	$1.00	6	$6.00		
C4, C9	330µF≤ 4V polytantalum polarized capacitor	Output capacitor VCCIO 1, 2	Output bus	$0.80	2	$1.60		
C108-C112	47µF cerawmic capacitors	Core Output Filter		$0.22	3	$0.66		
C113-C115	3000uF required	Core bus Output capacitors	Core Filter	$2.85	2	$5.70	10K PRICE	
C2, C3,C5, C7, C8,C10, C11,C12,C102, C103, C11, C12, C14	Ceramic capacitors	Filters Noise		$0.08	8	$0.64		
R105-R109, R1, R3 , R115 , R110-R113(5% tolerance)	47µF ceramic capacitors	Core bus Voltage filters		$0.06	14	$0.84		
	resistors with 100ppm tolerance 1% to 5%	Voltage control locations 1% or less tolerance		$0.02	12	$0.24		
						$44.00		

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