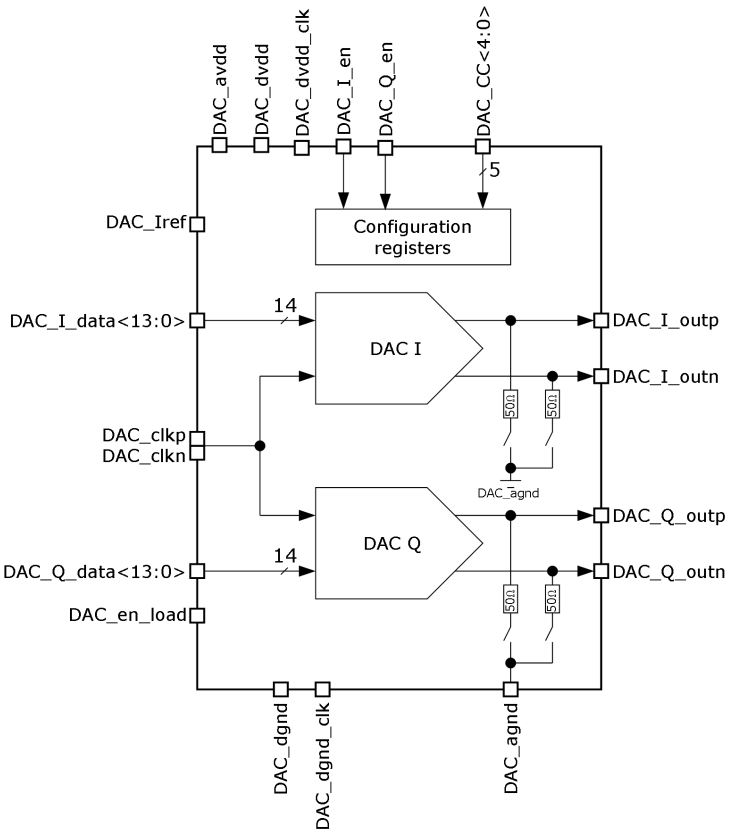
14-bit 2-channel 40-500 MSPS current steering DAC

OVERVIEW

065STM_DAC_01 is a two-channel high-speed 14-bit digital-to-analog converter (DAC) designed to convert a digital signal into an analog differential signal. The DAC is based on a segmented current steering architecture combined with dynamic element matching algorithm to achieve high dynamic range, statistical response, and wide bandwidth.

IP technology: STM CMOS 65nm
IP status: pre-silicon verification
Area: 0.708mm^2



ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions		Value min	Value typ.	Value max	Units
Supply voltage	V_{avdd}	-		2.375	2.5	2.625	V
	V_{dvdd}	-		1.08	1.2	1.32	
	V_{dvdd_clk}	-		1.08	1.2	1.32	
Operating temperature range	T_j	-		-40	+25	+85	°C
Current consumption	I	per channel	V_{avdd}	-	23	-	mA
			V_{dvdd}	-	1.2	-	
			V_{dvdd_clk}	-	1.4	-	
Output resistance	R_{out}	DAC_en_load = "0"		-	625	-	kOhm
		DAC_en_load = "1"		-	50	-	Ohm
External load resistance	R_{load}	DAC_en_load = "0" DAC_CC<4:0> = "10010"		-	25	-	Ohm
Input logic-high level	V_{IH}	-		$0.9V_{dvdd}$	-	V_{dvdd}+0.3	V
Input logic-low level	V_{IL}	-		-0.3	-	+0.3	V
Resolution	N	-		-	14	-	bit
Bandwidth	BW	-		0	-	250	MHz
Full-scale output current range	A_{out}	DAC_CC<4:0> = "10010"		-	20.48	-	mA
		DAC_CC<4:0> = "11111"		-	33.8	-	
Sampling rate	F_{SR}	-		40	-	500	MSPS
Differential nonlinearity	DNL	-		-	-	±0.5	LSB
Integral nonlinearity	INL	-		-	-	±1	LSB
Output rise time	t_R	-		-	142.3	186.6	ps
Output fall time	t_F	-		-	57.4	69.6	ps
Spurious-free dynamic range	SFDR	F_{clk} = 500MHz	F_{out} = 145MHz	-	70.3	-	dB
			F_{out} = 42.87MHz	-	83.8	-	