

8-CHANNEL TOUCH SENSOR CONTROLLER

Name		Description	
CCTSC8CH40A		8-channel Touch Sensor Controller	
Category	Type	Status	
RF/Analog Front-Ends	Touch Sensor	GDS	
Foundry	Technology	Process Node	Year
TSMC	CMOS	40 nm	2025
Deliverables (preferable IP merge model)			
<ul style="list-style-type: none"> ◆ Datasheet ◆ Characterization report ◆ Encrypted Flat Extracted netlist with parasitic ◆ Behavioral models 		<ul style="list-style-type: none"> ◆ Abstract View ◆ Timing View ◆ DRC, LVS and antenna report ◆ Integration guidelines and support 	

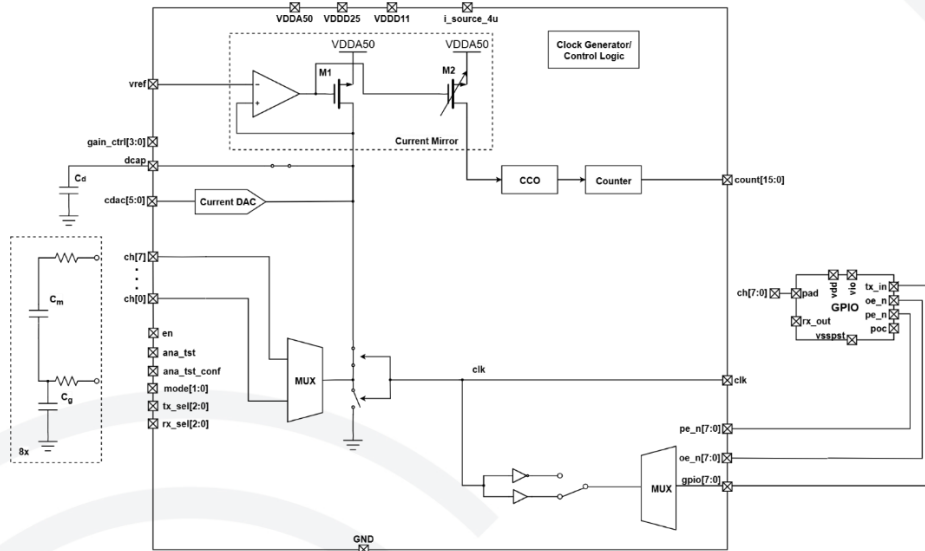


Figure 1. Simplified block diagram.

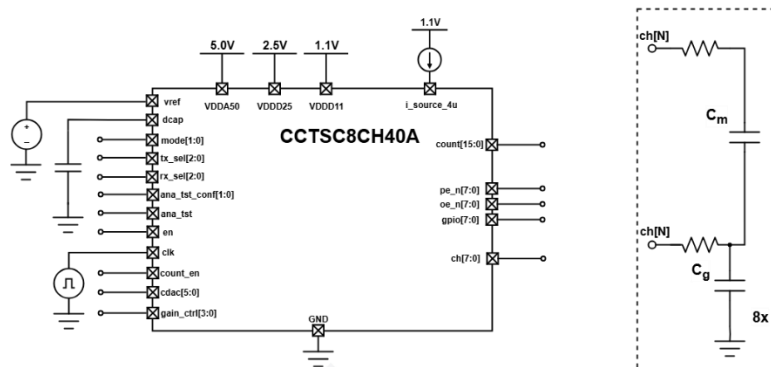


Figure 2. Typical use case.

Table 1. Pin description.

Pin name	Direction	Type	Active	Description
VDDA50	I/O	Power	IO	5.0 V power supply voltage, tolerance 3.5 V to 5.5 V
VDDD11	I/O	Power	Core	1.1 V core voltage, tolerance 0.99 V to 1.21 V
VDDD25	I/O	Power	IO	2.5 V power supply voltage, tolerance 2.25 V to 2.75 V
GND	I/O	Power		Ground
dcap	I/O	Analog	IO	Decoupling capacitor – recommended 10 nF
ch[7:0]	I/O	Analog	IO	Capacitor sensor measurement input/output pin – used for both mutual and ground capacitance measurement
vref	I/O	Analog	IO	Reference voltage input
cdac[5:0]	I	Digital	Core	Current DAC control
gain_ctrl[3:0]	I	Digital	Core	M1-M2 current mirror control
clk	I	Digital	Core	Input clock signal – nominal 1 MHz
count_en	I	Digital	Core	Enable counter
count[15:0]	O	Digital	Core	Counter output – core voltage domain
mode[1:0]	I	Digital	Core	Mode selection
tx_sel[2:0]	I	Digital	Core	Select channel to work as TX in mutual measurement mode. Setting tx_sel = rx_sel is forbidden.
rx_sel[2:0]	I	Digital	Core	Select channel to work as RX. Setting rx_sel = tx_sel is forbidden.

Table 2. Specification.

Parameter	Description	Min.	Typ.	Max.	Unit
T_j	Operating junction temperature	-40	27	85	°C
VDDA50	Supply voltage	4.5	5.0	5.5	V
VDDD11	Core supply voltage	0.99	1.1	1.21	V
VDDD25	Supply voltage	2.25	2.5	2.75	V
V_{ref}	Reference voltage	0.99	1.1	1.21	V
C_m	Measured mutual capacitance range	0.1		10p	pF
C_g	Ground capacitance range			100 pF	
f_{clk}	Input clock frequency	1	4	10	MHz
f_{cco}	Current Controlled Oscillator frequency range for expected measured capacitance range	50	400	800	MHz
I_{DAC}	Current DAC output current	0		1638	μA
N_{count}	Counter bits number		16		bits
I_{dd}	Active current consumption			3.7	mA
I_{off}	Power down current			400	nA