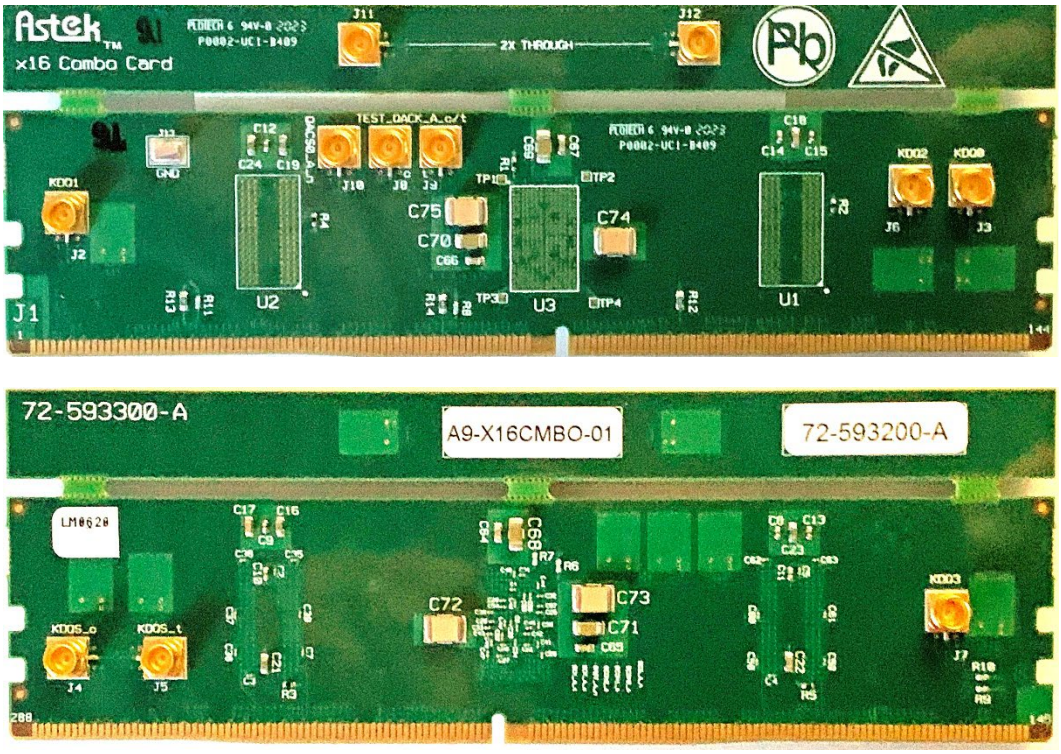
A9-X16 COMBO

Quick Start Guide

Transforming Technology into Customer Value



1. DDR5 X16 COMBO TEST CARD

A versatile DIMM test card with focus on receiver equalization and loopback BER testing. Including replica channels for calibration of stressed eyes. DRAMs can be configured by either RCD, signals from CTC2 or mother board. Compatible with Astek's A9-CTC2, Channel Test Card.

Features

- RCD interfaced to DRAM
- Direct CTC2 or Motherboard DRAM access

Configuration

- All critical passive Rs and Cs installed
- SMPs installed
- RCD and Memories must be provided by customer
- X2 Through 50 Ω Reference

2. Operating Combo Card

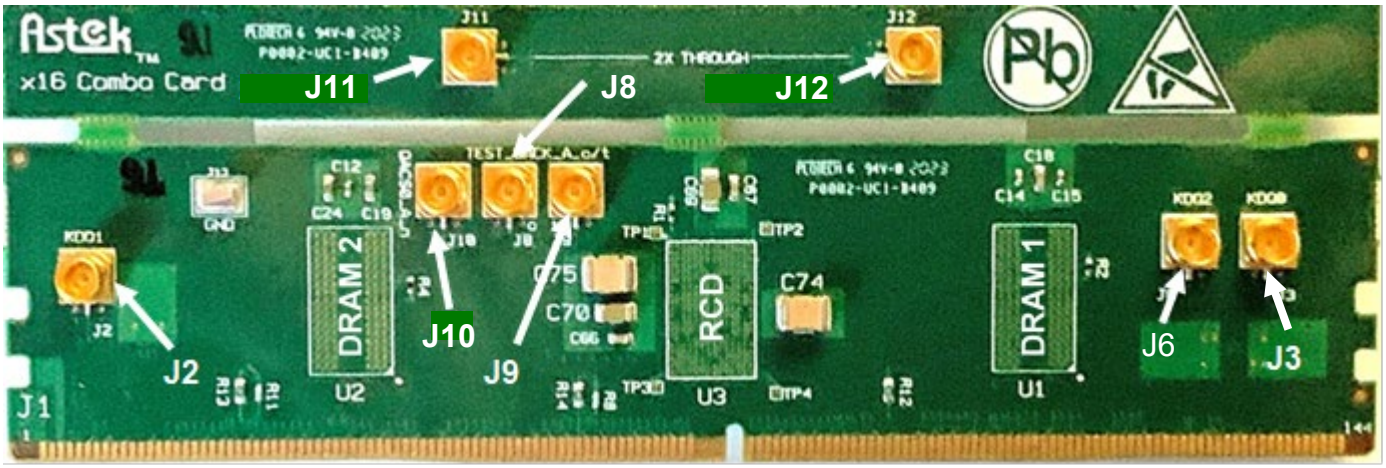
Before Powering On

- Turn Power Supplies OFF
- Remove USB Connector from CTC2
- Insert Combo Card into CTC2 DIMM connector completely before applying power

Before Removing Combo Card

- Turn Power Supplies OFF
- Remove USB Connector from CTC2

3. Pin Out Definition



CTC2	DIMM	RCD	Signal	SMP
DQ0_A	7		KDQ1	J2
DQ22_B	274		KDQ0	J3
DQ20_B	129		KDQ2	J6
		M5	Test_QACK_A_c	J9
		M6	Test_QACK_A_t	J8
		N1	QACS0_A_n	J10
			2X Through (left)	J11
			2X Through (right)	J12

Table 1: Top CTC2 Connections, Test Points and SMP's

CTC2	DIMM	Signal	SMP
DQ2_A	152	KDQ3	J7
DQS2_B_c	127	KDQS_c	J5
DQS2_B_t	126	KDQS_c	J4

Table 2: CTC2 connections and SMP's

RCD

RCD to DIMM contacts

Pin	Signal	DIMM pin	CTC2
U6	ALERT_N	62	ALERT_n
U1	CA0_A	66	CA0_A
W8	CA0_B	78	CA0_B
V1	CA1_A	211	CA1_A
V9	CA1_B	223	CA1_B
W2	CA2_A	68	CA2_A
W10	CA2_B	80	CA2_B
V3	CA3_A	213	CA3_A
V11	CA3_B	225	CA3_B
W4	CA4_A	70	CA4_A
W12	CA4_B	82	CA4_B
W6	CA5_A	215	CA5_A
W13	CA5_B	227	CA5_B
V7	CA6_A	72	CA6_A
V14	CA6_B	84	CA6_B
T8	CK_c	218	CK_c
T7	CK_t	217	CK_t
U3	CS0_A_N	64	CS0_A_n
T11	CS0_B_N	76	CS0_B_n
T4	CS1_A_N	209	CS1_A_n
U12	CS1_B_N	221	CS1_B_n
V5	PAR_A	74	PAR_A
U14	PAR_B	229	PAR_B
H5	QECK_A_t	87	LBS/RSP_B_n
H6	QECK_A_c	86	BD/RSP_A_n
H10	QECK_B_c	231	RFU_4
H9	QECK_B_t	232	RFU_5
P7	QLBD	89	CB1_A
P8	QLBS	234	CB3_A
U9	RESET_n	207	RESET_n

Table 3: RCD to CTC2 Signal to SMP connector Mapping

DRAM #1

DRAM connected to RCD and DIMM contacts for RCD/DRAM Test

Pin	Signal	DIMM Pin	RCD Pin	CTC2
G2	DQ0_B	263		DQ14_B
G8	DQ1_B	98		CB5_B
F3	DQ2_B	118		DQ12_B
F7	DQ3_B	243		CB7_B
J2	DQ4_B	120		DQ13_B
J8	DQ5_B	241		CB6_B
J3	DQ6_B	265		DQ5_B
J7	DQ7_B	96		CB4_B
C2	DQ8_B	256		DQ10_B
C8	DQ9_B	102		DQ1_B
B3	DQ10_B	111		DQ8_B
B7	DQ11_B	107		DQ4_B
E2	DQ12_B	113		DQ9_B
E8	DQ13_B	100		DQ0_B
E3	DQ14_B	258		DQ11_B
E7	DQ15_B	245		DQ2_B
C3	DQS1_B_t	250		DQS5_B_t
D3	DQS1_B_c	249		DQS5_B_c
G3	DQS0_B_t	105		DQS0_B_t
H3	DQS0_B_c	104		DQS0_B_c
T7	QBCA13_B		A11	
T3	QBCA12_B		A9	
T8	QBCA11_B		A10	
T2	QBCA10_B		A8	
R7	QBCA9_B		B12	
R3	QBCA8_B		C12	
P8	QBCA7_B		A13	
P2	QBCA6_B		C14	
N8	QBCA5_B		D14	
N2	QBCA4_B		E12	
P7	QBCA3_B		A12	
P3	QBCA2_B		D12	
N7	QBCA1_B		B14	
N3	QBCA0_B		E14	
L7	CK1_t	217		CK_t
M7	CK1_c	218		CK_c
M3	QBCS0_B_n		F14	
T1	CAI	-	VDD	
L1	CA_ODT	-	PULLUP	
T9	RESET_N1	168		DQS6_A_t
L2	MIR	-	VSS	
M1	ALERT_N0	236	PULLUP	CB3_B
A1	LBDQ0	254		DQ7_B
A9	LBDQS0	247		DQ3_B

DRAM #2

DRAM connected to DIMM contacts (only) for DRAM Test

Pin	Signal	DIMM Pin		CTC2
G2	DQ16_B	192		DQ30_A
G8	DQ17_B	27		DQ13_A
F3	DQ18_B	47		DQ28_A
F7	DQ19_B	172		DQ15_A
J2	DQ20_B	49		DQ19_B
J8	DQ21_B	170		DQ14_A
J3	DQ22_B	194		DQ31_A
J7	DQ23_B	25		DQ12_A
C2	DQ24_B	185		DQ26_A
C8	DQ25_B	31		DQ17_A
B3	DQ26_B	40		DQ24_A
B7	DQ27_B	36		DQ20_A
E2	DQ28_B	42		DQ25_A
E8	DQ29_B	29		DQ16_A
E3	DQ30_B	187		DQ27_A
E7	DQ31_B	174		DQ18_A
G3	DQS3_B_t	34		DQS2_A_c
H3	DQS3_B_c	33		DQS2_A_t
C3	DQS2_B_t	179		DQS7_A_t
D3	DQS2_B_c	178		DQS7_A_c
T7	CA13	159		DQ6_A
T3	CA12	205		CB7_A
T8	CA11	18		DQ8_A
T2	CA10	60		CB5_A
R7	CA9	161		DQ7_A
R3	CA8	203		CB6_A
P8	CA7	18		DQ8_A
P2	CA6	58		DQ9_A
N8	CA5	20		DQ9_A
N2	CA4	53		CB1_A
P7	CA3	163		DQ10_A
P3	CA2	198		CB3_A
N7	CA1	165		DQ11_A
N3	CA0	196		CB2_A
L7	CK1_t	22		DQS1_A_t
M7	CK1_c	23		DQS1_A_c
M3	CS_n	51		CB0_A
T1	CAI	-	VSS	
L1	CA_ODT	-	PULLUP	
T9	RESET_N1	168		DQS6_A_t
L2	MIR	-	VSS	
M1	ALERT_N1	167	PULLUP	DQS6_A_c
A1	LBDQ2	183		DQ23_A
A9	LBDQS2	176		DQ19_A

Table 4: DRAM1 & DRAM2 Signal to SMP connector Mapping

4. Ordering Information

The following part numbers may be ordered from Astek. Contact Astek for quotation and availability.

Part Number	Description
A9-CTC2-01	DDR5 CTC2 with high-performance socket installed
A9-CTC2-02	DDR5 CTC2 with standard socket installed
A9-CTC2-03	DDR5 CTC2 with NO socket installed
A9-AUTO-01	Reset Automation Kit. Includes GPIO cable

Additional products related to the CTC2 available from Astek.

Part Number	Description
A9-DIMM-01	DDR5 Parametric Test Card
A9-CNTL-01	DDR5 Controller Board w/ RCD
A9-RCD-01	DDR5 Registering Clock Driver (RCD) Test Card
A9-CMBO-01	DDR5 X8 Combination Test Card
A9-X16CMB-01	DDR5 X16 Combination Test Card
A9-A2PCBL-1000	SMA to SMP cable, 1.0m
A9-A2PCBL-1000P	SMA to SMP cable, 1.0m, matched pair
A9-A2PCBL-0500	SMP to SMP cable, 0.5m
A9-A2PCBL-0500P	SMP to SMP cable, 0.5m, matched pair