Click here to ask about the production status of specific part numbers.

DG120X Evaluation Kit

Evaluates: DG1206, DG1207

General Description

The DG120X evaluation kit (EV kit) provides a proven design to evaluate the DG1206/DG1207, a low-leakage and low-charge-injection multiplexer device. The DG120XEVKIT# is fully assembled and tested, and comes populated with the DG1206EUI+, the 16-to-1 multiplexer device. Refer to the *DG120X EV Kit Board Picture*.

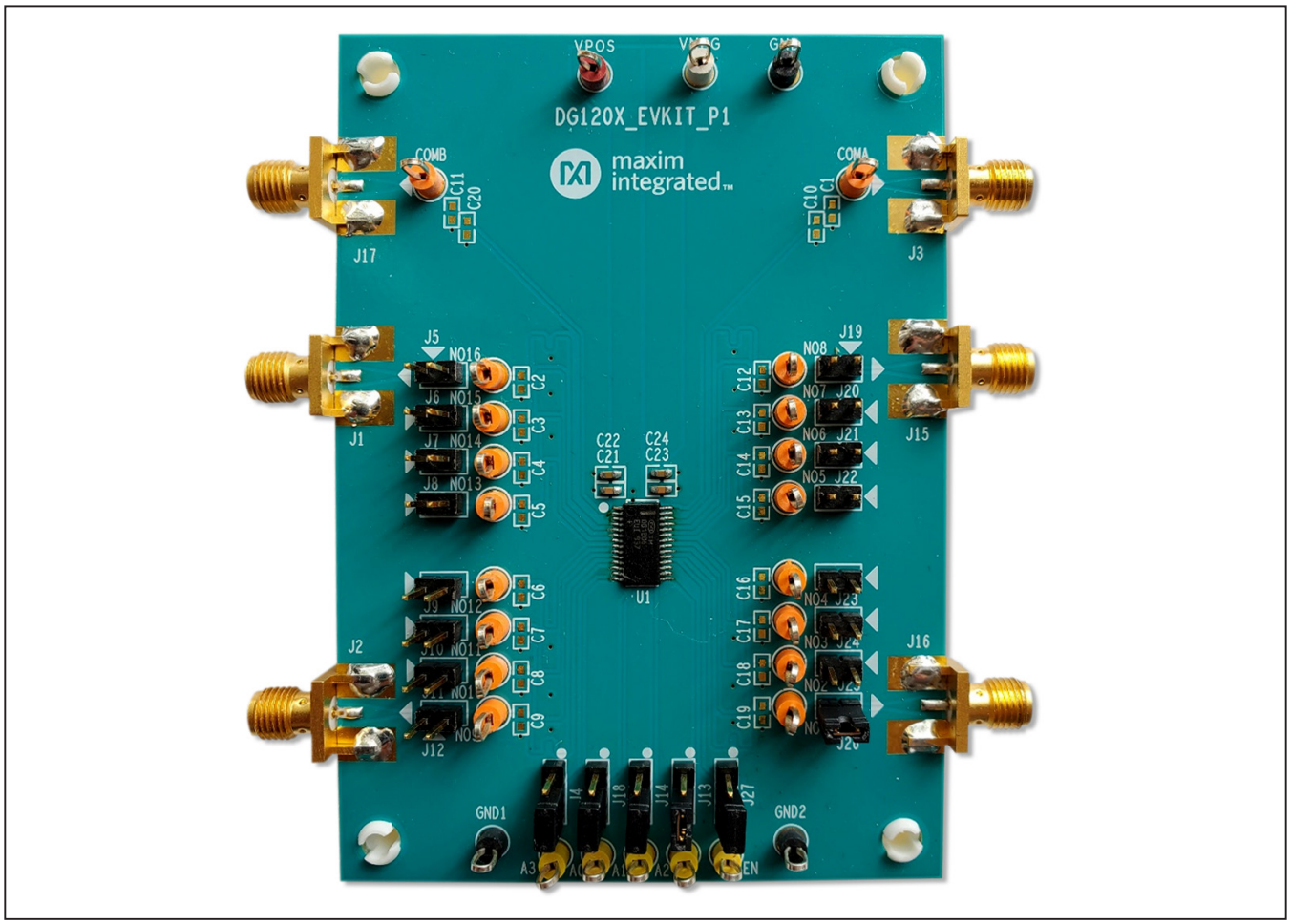
The DG120XEVKIT# can also be used to evaluate DG1207, the 8-to-1 device from the same multiplexer family. See the *Configure the DG120X EV Kit* section for more information.

Benefits and Features

- SMA Connectors for Analog Inputs and Outputs
- Jumpers at A3-A0 and EN Digital Inputs for Easy Configuration
- Test Points for All Digital and Analog Signals
- Fully Assembled and Tested
- Proven PCB Layout

***Ordering Information* appears at end of data sheet.**

DG120X EV Kit Board Picture



Quick Start

Recommended Equipment

- DG120XEVKIT#
- ±20V, 100mA tri-output DC power supply
- Digital multimeter

Procedure

The DG120X EV kit is fully assembled and tested. Follow the steps below to verify board operation:

1) Connect the three-output power supply to the DG120XEVKIT#:
   Set the positive voltage supply to +15V and connect to the VPOS test point.
   Set the negative voltage supply to -15V and connect to the VNEG test point.
   Connect the return of the power supply to the GND test point.
2) Verify that all jumpers are in their default positions as shown in Table 1.
3) Turn on the power supply. Ensure that both positive and negative supplies have less than 1mA (max).
4) Move shunt at J27 to position 1–2 to enable the device. Verify the voltage at the EN test point is 15V.
5) Measure the on-resistance of channel 1 between COMA and NO1 at 100Ω (typ).
6) Move the shunt at J18 from position 2–3 to position 1–2. Verify the voltage at the A0 test point is 15V.
7) Measure the on-resistance of channel 2 between COMA and NO2 at 100Ω (typ).
8) Repeat steps 6 and 7 to test all 16 channels. Verify the on-resistance of each channel is 100Ω (typ). Use the relations in Table 2 to set the jumpers at A3–A0 selection inputs.

Example to measure channel 8:

1) Set shunt J4 to the 2–3 (A3 = 0) position.
2) Set shunt J13 to the 1–2 (A2 = 1) position.
3) Set shunt J14 to the 1–2 (A1 = 1) position.
4) Set shunt J27 to the 1–2 (A0 = 1) position.
5) Measure the on-resistance of channel 8 between the NO8 and COMA test points.

Table 1. DG120X EV Kit Shunt Positions

JUMPER	SHUNT POSITION	DESCRIPTION
NO_ CHANNELS		
J26	Open	Disconnect NO1 to SMA connector J16
	1-2*	Connect NO1 to SMA connector J16
J25	Open*	Disconnect NO2 to SMA connector J16
	1-2	Connect NO2 to SMA connector J16
J24	Open*	Disconnect NO3 to SMA connector J16
	1-2	Connect NO3 to SMA connector J16
J23	Open*	Disconnect NO4 to SMA connector J16
	1-2	Connect NO4 to SMA connector J16
J22	Open*	Disconnect NO5 to SMA connector J15
	1-2	Connect NO5 to SMA connector J15
J21	Open*	Disconnect NO6 to SMA connector J15
	1-2	Connect NO6 to SMA connector J15

Table 1. DG120X EV Kit Shunt Positions (continued)

J20	Open*	Disconnect NO7 to SMA connector J15
	1-2	Connect NO7 to SMA connector J15
J19	Open*	Disconnect NO8 to SMA connector J15
	1-2	Connect NO8 to SMA connector J15
JUMPER	**SHUNT POSITION**	**DESCRIPTION**
J12	Open*	Disconnect NO9 to SMA connector J2
	1-2	Connect NO9 to SMA connector J2
J11	Open*	Disconnect NO10 to SMA connector J2
	1-2	Connect NO10 to SMA connector J2
J10	Open*	Disconnect NO11 to SMA connector J2
	1-2	Connect NO11 to SMA connector J2
J9	Open*	Disconnect NO12 to SMA connector J2
	1-2	Connect NO12 to SMA connector J2
J8	Open*	Disconnect NO13 to SMA connector J1
	1-2	Connect NO13 to SMA connector J1
J7	Open*	Disconnect NO14 to SMA connector J1
	1-2	Connect NO14 to SMA connector J1
J6	Open*	Disconnect NO15 to SMA connector J1
	1-2	Connect NO15 to SMA connector J1
J5	Open*	Disconnect NO16 to SMA connector J1
	1-2	Connect NO16 to SMA connector J1
CONTROL INPUTS		
J4	1-2	Connect the selection input A3 to high
	2-3*	Connect the selection input A3 to low
J13	1-2	Connect the selection input A2 to high
	2-3*	Connect the selection input A2 to low
J14	1-2	Connect the selection input A1 to high
	2-3*	Connect the selection input A1 to low
J18	1-2	Connect the selection input A0 to high
	2-3*	Connect the selection input A0 to low
J27	1-2	Enable the device
	2-3*	Disable the device; all channels are switched off

Detailed Description

The DG1206/DG1207 is the first member in the Maxim low-leakage and low-charge-injection multiplexer family. The DG120X EV kit has multiple SMA connectors, test points, and jumpers for inputs and outputs, allowing easy configuration and evaluation.

The DG120X EV kit can be powered from either a bipolar supply or a single supply with nominal voltage up to 20V. Digital Inputs A3–A0, and EN can be configured high or low using on-board jumpers, or directly from the test points. Each analog input and output can be accessed from the SMA connector as well as the test point associated with them.

Configure the DG120X EV Kit

The DG120XEVKit# can be used to evaluate either DG1206 or DG1207. The EV kit is populated with DG1206EUI+ by default. Engineers can request a sample of DG1207EUI+ that can be soldered on the EV kit.

Every analog and digital channel has their own test points. The two output channels have dedicated SMA connectors; each four input channels share an SMA connector. See Table 1 for the shunt positions to connect SMA to correct analog channels.

Use the relations in Table 3 to find the test point functions when evaluating the DG1206 or DG1207.

Control Logic

The DG120X EV kit uses four selection inputs A3, A2, A1, A0, and an enable input (EN) to determine the switching logic. See the Control Logic section in *DG1206/DG1207 data sheet* for more information.

Table 2. DG120X EV Kit Control Logic

A3	A2	A1	A0	EN	CH. SWITCH ON
X	X	X	X	0	All Channel Switched Off
0	0	0	0	1	1
0	0	0	1	1	2
0	0	1	0	1	3
0	0	1	1	1	4
0	1	0	0	1	5
0	1	0	1	1	6
0	1	1	0	1	7
0	1	1	1	1	8
1	0	0	0	1	9
1	0	0	1	1	10
1	0	1	0	1	11
1	0	1	1	1	12
1	1	0	0	1	13
1	1	0	1	1	14
1	1	1	0	1	15
1	1	1	1	1	16

Table 3. DG120XEVKIT# Test Points

TEST POINTS	EVALUATE DG1206	EVALUATE DG1207
COMA	COM output channel	COMA output channel
COMB	Do not use	COMB output channel
GND	Ground reference	Ground reference
VPOS	Positive power supply	Positive power supply
VNEG	Negative power supply	Negative power supply
A3	Address selection inputs A3	Do not use
A2, A1, A0	Address selection inputs A2–A0	Address selection inputs A2–A0
EN	Enable input	
NO16 – NO9	NO16–NO9 input channels.	NO8B–NO1B input channels
NO8 – NO1	NO8–NO1 input channels.	NO8A–NO1A input channels
SMA CONNECTORS	**EVALUATE DG1206**	**EVALUATE DG1207**
J1, J2, J15, J16	SMA connectors for NO_ inputs	SMA connectors for NO_ inputs
J3, J17	SMA connectors for COM outputs	SMA connectors for COM outputs

Ordering Information

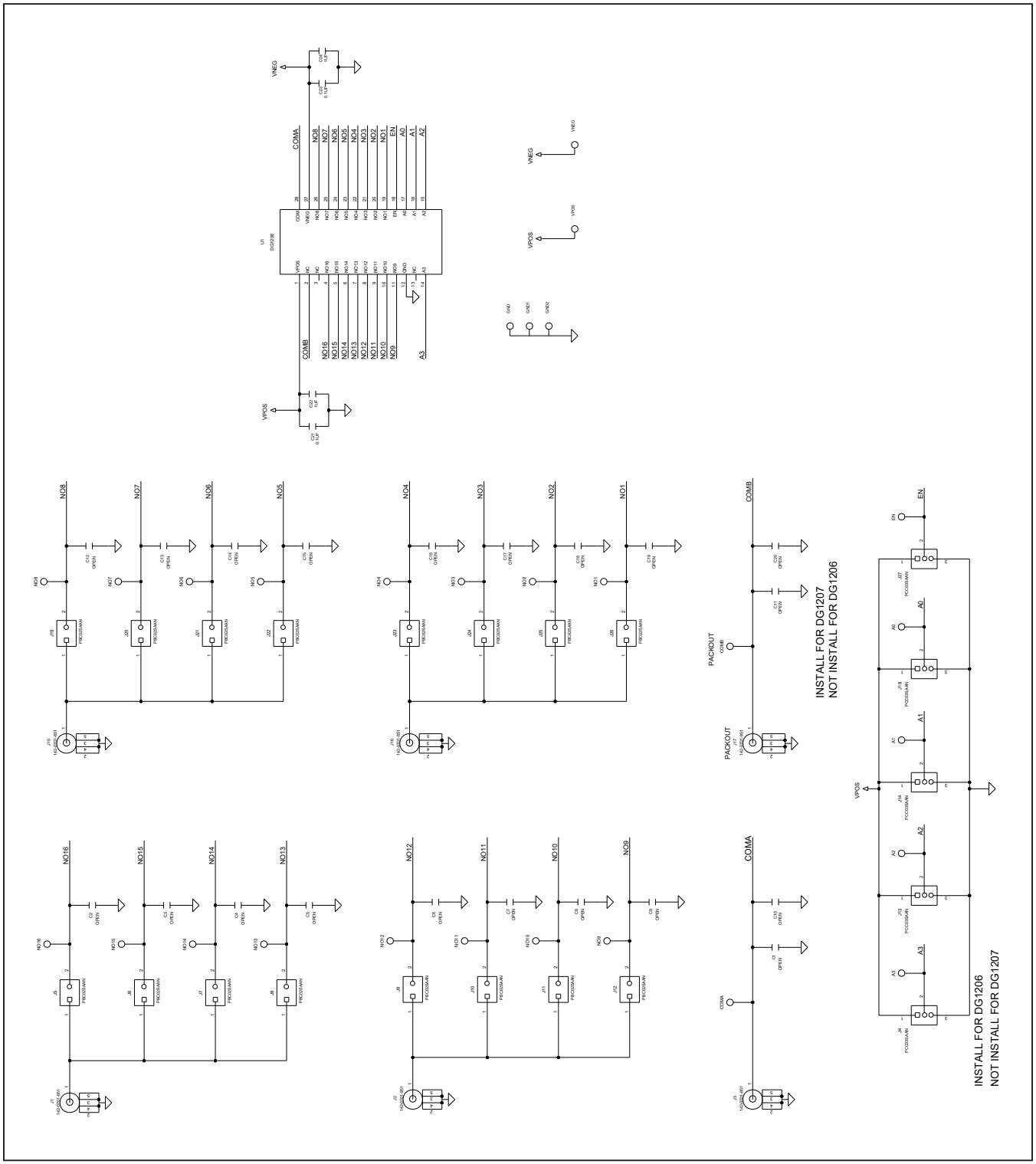
PART	TYPE
DG120XEVKIT#	EV Kit

#Denotes RoHS compliant.

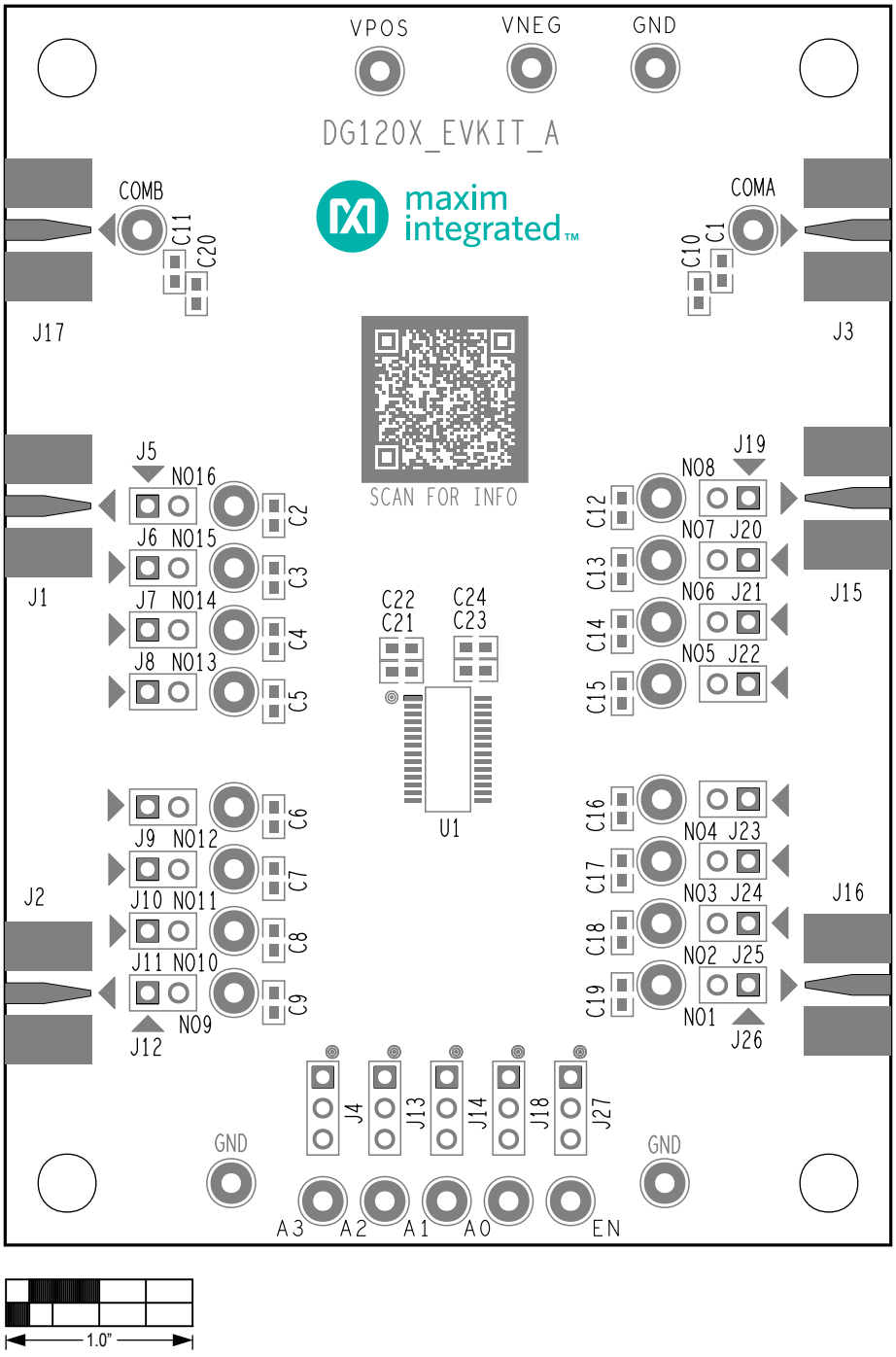
DG120X EV Kit Bill of Materials

ITEM	REF_DES		QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	A0-A3, EN		5	5014	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.125IN; TOTAL LENGTH = 0.445IN; BOARD HOLE = 0.063IN; YELLOW; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
2	C21, C23		2	GCJ188R71H104KA12; GCM188R71H104K; CGA3E2X7R1H104K080AA	MURATA; MURATA;TDK	0.1µF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.1µF; 50V; TOL = 10%; TG = -55°C TO +125°C; TC = X7R; AUTO
3	C22, C24		2	UMK107AB7105KA; CC0603KRX7R9BB105	TAIYO YUDEN; YAGEO	1µF	CAPACITOR; SMT (0603); CERAMIC CHIP; 1µF; 50V; TOL = 10%; TG = -55°C TO +125°C; TC = X7R
4	COMA, NO1-NO16		17	5013	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.125IN; TOTAL LENGTH = 0.445IN; BOARD HOLE = 0.063IN; ORANGE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
5	GND, GND1, GND2		3	5011	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.125IN; TOTAL LENGTH = 0.445IN; BOARD HOLE = 0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
6	J1-J3, J15, J16		5	142-0701-851	JOHNSON COMPONENTS	142-0701-851	CONNECTOR; END LAUNCH JACK RECEPTACLE; BOARDMOUNT; STRAIGHT THROUGH; 2PINS;
7	J4, J13, J14, J18, J27		5	PCC03SAAN	SULLINS	PCC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 3PINS; -65°C TO +125°C
8	J5-J12, J19-J26		16	PBC02SAAN	SULLINS ELECTRONICS CORP.	PBC02SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 2PINS
9	SPACER1-SPACER4		4	9032	KEYSTONE	9032	MACHINE FABRICATED; ROUND-THRU HOLE SPACER; NO THREAD; M3.5; 5/8IN; NYLON
10	SU1-SU6		6	S1100-B; SX1100-B; STC02SYAN	KYCON;KYCON; SULLINS ELECTRONICS CORP.	SX1100-B	TEST POINT; JUMPER; STR; TOTAL LENGTH = 0.24IN; BLACK; INSULATION = PBT; PHOSPHOR BRONZE CONTACT = GOLD PLATED
11	U1		1	DG1206	MAXIM	DG1206	EVKIT PART -IC; MUX; LOW LEAKAGE 16:1 AND DUAL 8:1 MULTIPLEXER; TSSOP28
12	VNEG		1	5012	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.125IN; TOTAL LENGTH = 0.445IN; BOARD HOLE = 0.063IN; WHITE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
13	VPOS		1	5010	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.125IN; TOTAL LENGTH = 0.445IN; BOARD HOLE = 0.063IN; RED; PHOSPHOR BRONZE WIRE SIL;
14	PCB		1	MAXDG120X	MAXIM	PCB	PCB:MAXDG120X
15	COMB	DNI	1	5013	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.125IN; TOTAL LENGTH = 0.445IN; BOARD HOLE = 0.063IN; ORANGE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
16	J17	DNI	1	142-0701-851	JOHNSON COMPONENTS	142-0701-851	CONNECTOR; END LAUNCH JACK RECEPTACLE; BOARDMOUNT; STRAIGHT THROUGH; 2PINS;
17	C1-C20	DNP	0	N/A	N/A	OPEN	PACKAGE OUTLINE 0603 NON-POLAR CAPACITOR
	TOTAL		71				

DG120X EV Kit Schematic Diagram

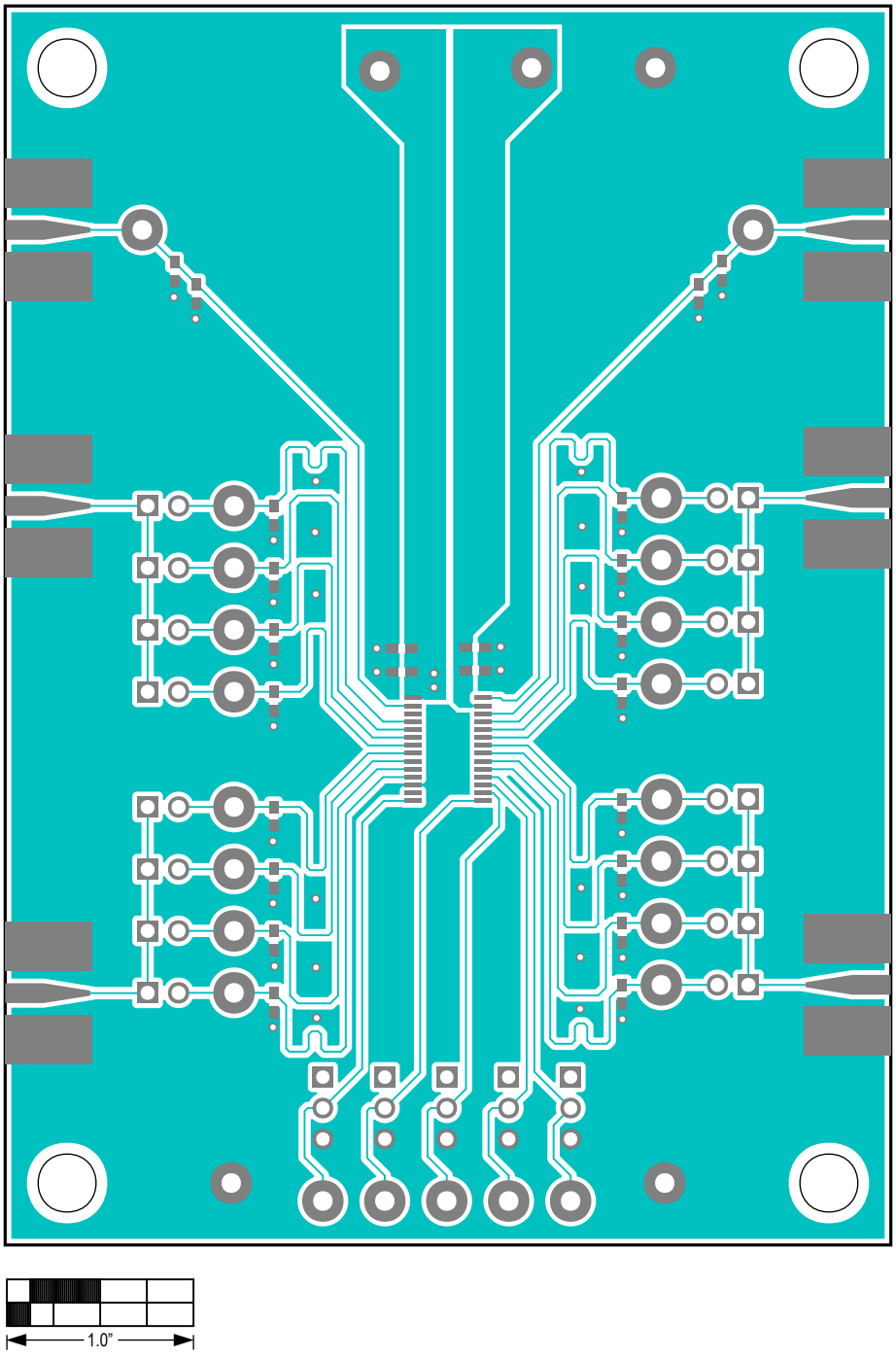


DG120X EV Kit PCB Layout Diagrams



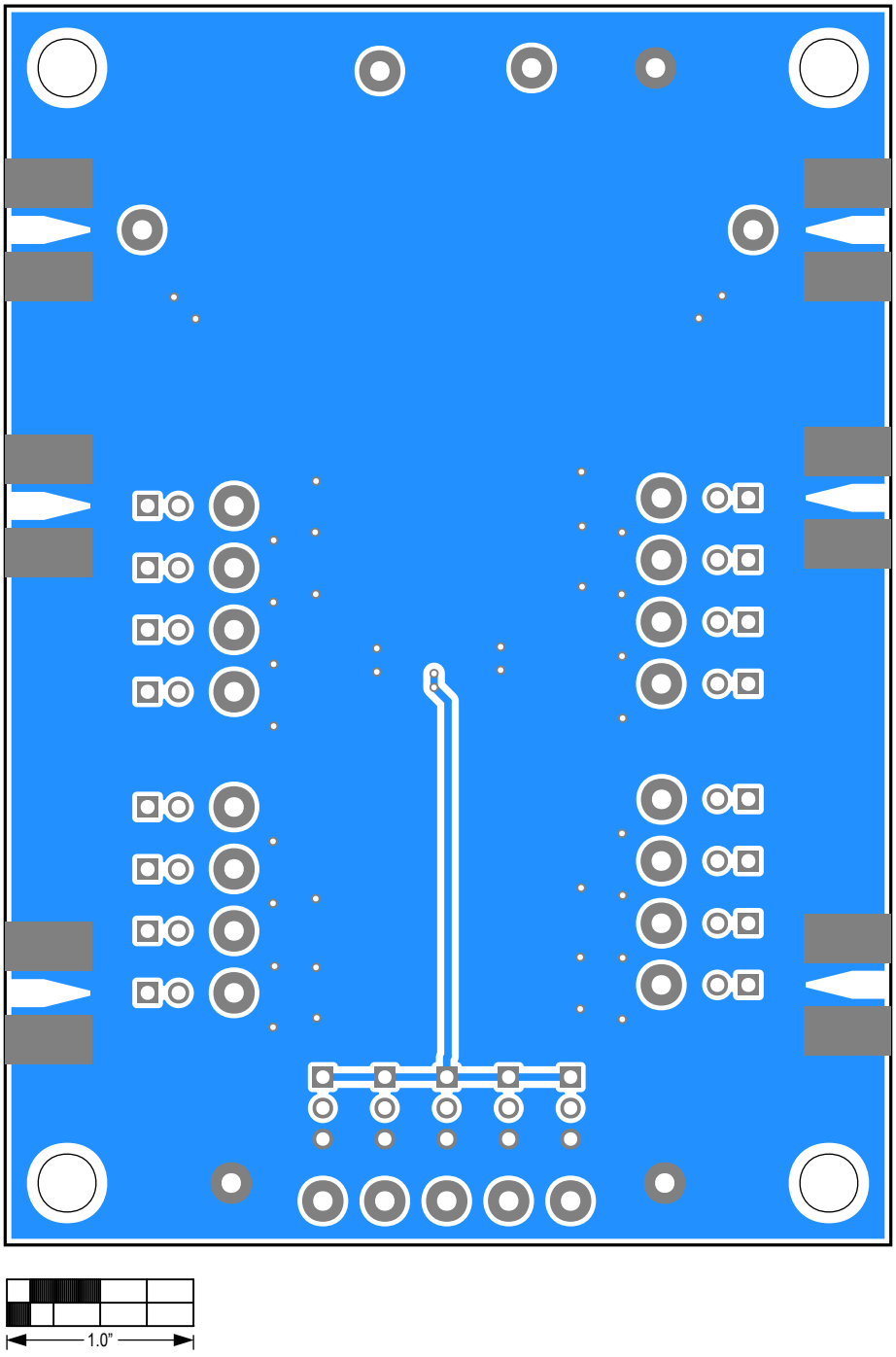
DG1206-1207 EV Kit PCB Layout — Top Silkscreen

DG120X EV Kit PCB Layout Diagrams (continued)



DG1206-1207 EV Kit PCB Layout — Top View

DG120X EV Kit PCB Layout Diagrams (continued)



DG1206-1207 EV Kit PCB Layout — Bottom View

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	9/20	Initial release	—

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