Description

The P9242-G-EVK Evaluation Board demonstrates the features of the P9242-G 15W Wireless Power Transmitter (TX) with a fixed frequency. It is intended to evaluate the functionality and performance of the P9242-G when combined with a Qi power receiver in a wireless charging system. The P9242-G-EVK offers the flexibility to select parameters, such as Q-factor threshold, LED pattern, power loss FOD threshold, and external temperature sensing function. The printed circuit board (PCB) has four layers. It can be used with the user's WPC-1.2.4 compliant receiver.

The high-efficiency, turnkey reference design is supported by comprehensive online, digital resources to significantly expedite the design-in effort and enable rapid prototyping.

Features

- P9242-G Evaluation Board with support for WPC-1.2.4
- Up to 15W output power
- Adjustable open Q-factor threshold
- Adjustable power loss FOD threshold
- Adjustable temperature shutdown
- Two programmable LED status indicators
- Four-layer PCB
- Fully assembled with test points and coil fixture

Kit Contents

- P9242-G-EVK Evaluation Board
- Adaptor: 18V/1.38A

P9242-G-EVK Mass-Market Evaluation Board

12V/1.38A AC Adapter (Not to scale)

```
┌─────────────────────────────────────────────────────────────────────────────────────────────┐
│ Important Notes                                                                               │
│                                                                                               │
│ Disclaimer                                                                                    │
│                                                                                               │
│ Integrated Device Technology, Inc. and its affiliated companies (herein referred to as "IDT") shall not be liable for any damages arising out of defects resulting from │
│                                                                                               │
│     (i)    delivered hardware or software                                                     │
│                                                                                               │
│     (ii)   non-observance of instructions contained in this manual and in any other documentation provided to user, or │
│                                                                                               │
│     (iii)  misuse, abuse, use under abnormal conditions, or alteration by anyone other than IDT. │
│                                                                                               │
│ TO THE EXTENT PERMITTED BY LAW, IDT HEREBY EXPRESSLY DISCLAIMS AND USER EXPRESSLY WAIVES ANY AND ALL WARRANTIES, WHETHER │
│ EXPRESS, IMPLIED, OR STATUTORY, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A │
│ PARTICULAR PURPOSE, STATUTORY WARRANTY OF NON-INFRINGEMENT, AND ANY OTHER WARRANTY THAT MAY ARISE BY REASON OF USAGE │
│ OF TRADE, CUSTOM, OR COURSE OF DEALING.                                                        │
│                                                                                               │
│ Restrictions in Use                                                                           │
│                                                                                               │
│ IDT's [Kit Name], consisting of the [Kit Contents and Software], is designed for [list of intended purposes] only. IDT's [Kit Name and Software] must not be used │
│ for [list of prohibited uses].                                                                │
└─────────────────────────────────────────────────────────────────────────────────────────────┘
```

Contents

List of Figures

List of Tables

1. Hardware Setup

1.1 Required or Recommended User Equipment

The following additional lab equipment is required for using the kit:

- P9221-G-EVK Transmitter Evaluation Board or any WPC-1.2.4 compliant receiver
- Power supply capable of 18V/1.38A

2. Usage Guide

2.1 Overview of the P9242-G-EVK

Figure 1.   P9242-G V3.8 Evaluation Board Features

Input Select Jumpers

Vin Power Connector: Micro-USB
Vin Connector: USB-C
Vin Power Connector: Barrel

Green LED and Red LED

Tx Coil

J4 I2C Connector   J5 IDT-Reserved Connector – Do Not Use
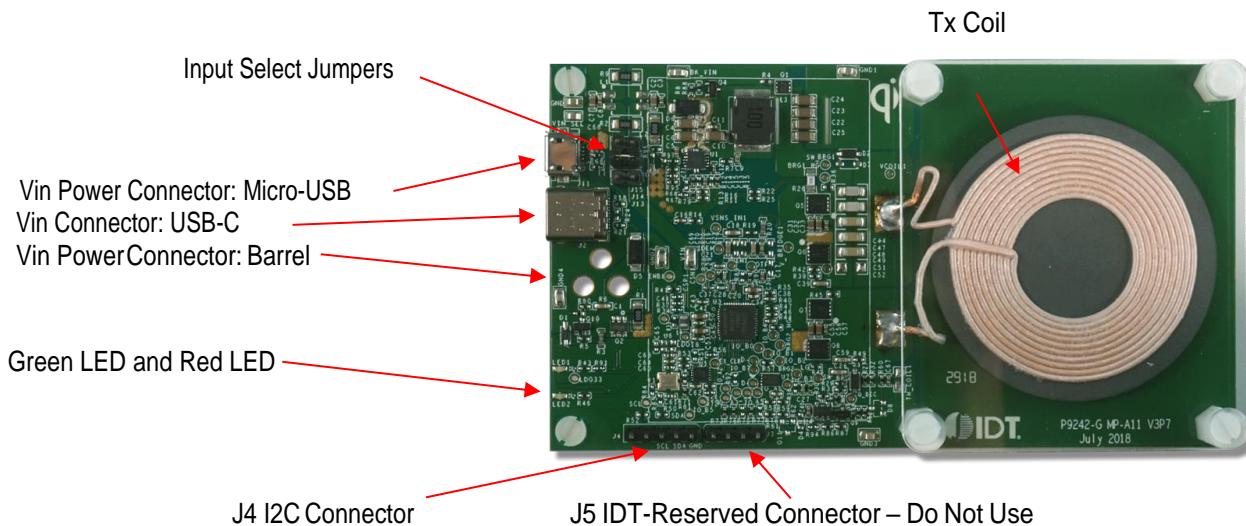
Figure 2.   P9242-G V3.8 Evaluation Board Detail
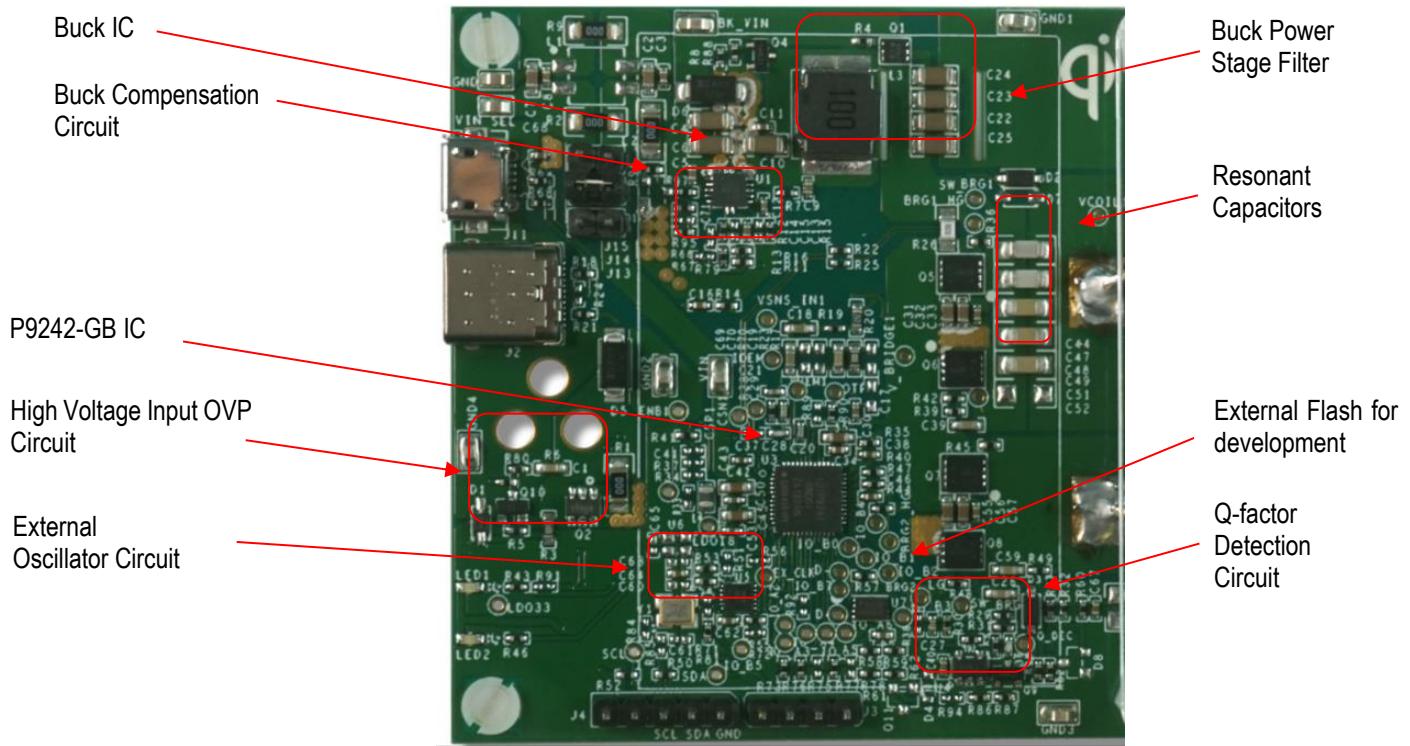
Note: The P9242-GB was used instead of the P9242-G IC on the P9242-G V3.8 Evaluation Board. The P9242-G has firmware pre-programmed into one-time programmable memory and does not let users customize the firmware. The P9242-GB also offers a pre-programmed bootloader that must be used in conjunction with an external flash. Firmware is loaded into the external flash. Users can customize the firmware in external flash. There is no functionality difference of the P9242-G V3.8 Evaluation Board using the P9242-G IC or the P9242-GB with external flash.

2.2   LED Pattern Selection

The P9242-G-EVK uses two LEDs (LED1 and LED2; see Figure 1) to indicate the power transfer status, faults, and operating modes. The LEDs are connected to the LED1 and LED2 pins as shown in the P9242-G-EVK schematics.

Table 1.   LED Pattern Selection

Option	Voltage on GPIO_A3 Pin	LED1/LED2 Pin	Status			
			Standby	Transfer	Complete	Fault
1	$0V \le V_{GPIO\_A3} < 0.1V$; $0.7V < V_{GPIO\_A3} < 0.8V$; $1.4V < V_{GPIO\_A3} < 1.5V$; $2.1V < V_{GPIO\_A3} < 2.4V$	LED2	Off	On	Off	Off
		LED1	Off	Off	Off	Blink 4Hz
2	$0.1V < V_{GPIO\_A3} < 0.2V$; $0.8V < V_{GPIO\_A3} < 0.9V$; $1.5 V< V_{GPIO\_A3} < 1.6V$	LED2	On	On	Off	Off
		LED1	On	Off	Off	Blink 4Hz
3	$0.2V < V_{GPIO\_A3} < 0.3V$; $0.9V < V_{GPIO\_A3} < 1.0V$; $1.6V < V_{GPIO\_A3} < 1.7V$	LED2	Off	Blink 1Hz	On	Blink 4Hz
		LED1	Off	Off	Off	Off
4	$0.3V < V_{GPIO\_A3} < 0.4V$; $1.0V < V_{GPIO\_A3} < 1.1V$; $1.7V < V_{GPIO\_A3} < 1.8V$	LED2	Off	On	Off	Blink 4Hz
		LED1	Off	Off	Off	Off
5	$0.4V < V_{GPIO\_A3} < 0.5V$; $1.1V < V_{GPIO\_A3} < 1.2V$; $1.8V < V_{GPIO\_A3} < 1.9V$	LED2	On	Blink 1Hz	On	Off
		LED1	On	Off	Off	Blink 4Hz
6	$0.5V < V_{GPIO\_A3} < 0.6V$; $1.2V < V_{GPIO\_A3} < 1.3V$; $1.9V < V_{GPIO\_A3} < 2.0V$	LED2	Off	Off	On	Off
		LED1	Off	On	Off	Blink 4Hz
7	$0.6V < V_{GPIO\_A3} < 0.7V$; $1.3V < V_{GPIO\_A3} < 1.4V$; $2.0V < V_{GPIO\_A3} < 2.1V$	LED2	Off	Blink 1Hz	On	Off
		LED1	Off	Off	Off	Blink 4Hz

The LED patterns can be selected by setting the voltage on the GPIO_A3 pin through the resistor divider R61 and R62 (for options, see Table 1). On the evaluation board, the GPIO_A3 pin is pulled up to GND through R62. R61 is unpopulated; therefore, option 1 is the default option.

**Figure 3.   R61 and R62 Schematic Location**
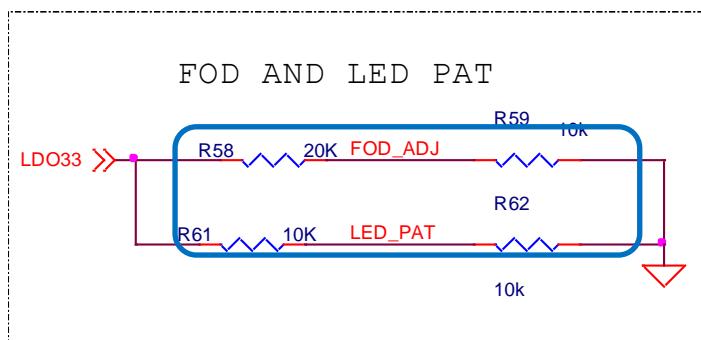
Figure 4.   R61 and R62 PCB Location
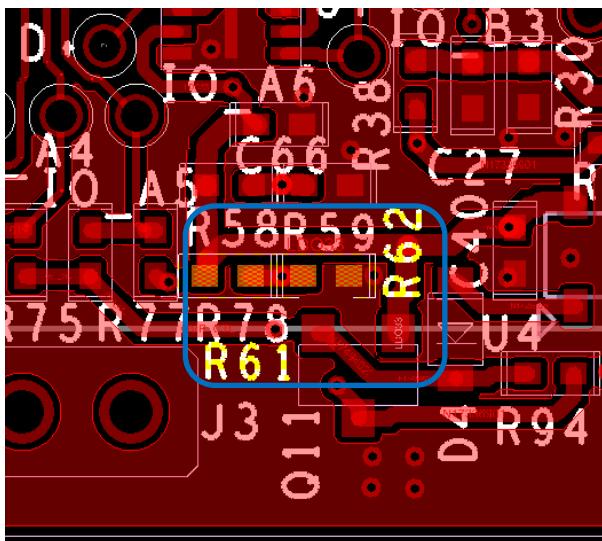
2.3   External Temperature Sensing (TS)

The P9242-G includes an optional temperature sense input pin, TS, that is used to monitor a remote temperature, such as for a coil or a battery charger. The TS pin voltage can be calculated using Equation 1.

$$V_{TS} = V_{LDO33} \times \frac{NTC}{R60 + NTC}$$

Equation 1

Where NTC is the thermistor's resistance (RTH1) and R60 is the pull-up resistor connected to the 3.3V supply voltage on the P9242-G Evaluation Board. The over–temperature shutdown is triggered if the voltage on the TS pin is lower than 0.6V, and recovers at 0.8V. The RTH1 is not populated on the P9242-G Evaluation Board.

**Figure 5.   TH_COIL1, R60, and RC67 Schematic Location**
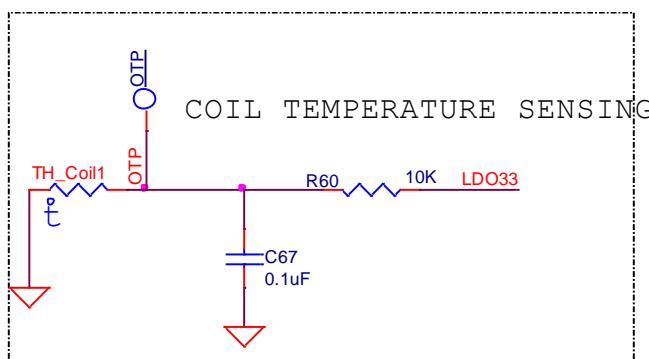
Figure 6.   TH_COIL1, R60, and RC67 PCB Location
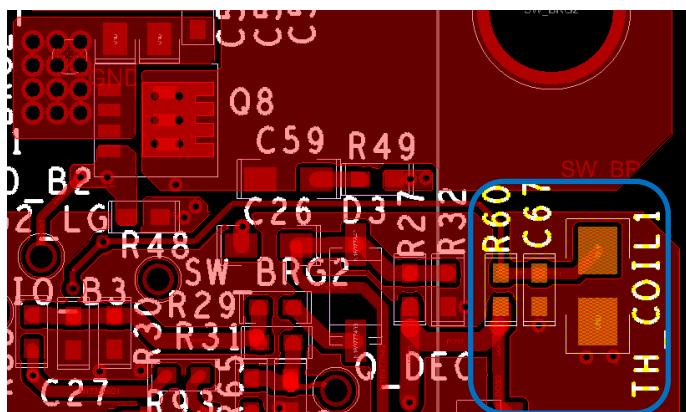
2.4   External Buck Regulator

To operate at a fixed 127.7kHz frequency, the P9242-G-EVK has adopted an MP2229 Buck IC to adjust the power transfer between the transmitter and receiver. GPIO_A4 and GPIO_B4 are assigned to adjust the MP2229 FB control. The MP2229 is operating at a fixed 500kHz frequency on the board. The Buck regulator power stage is designed to accommodate a wide range of input voltages. The feedback loop combined with the external PWM signal are designed for the MP2229, and are not recommended to be changed. The resolution of the MP2229 is about 35mV. The Buck and external components in the PCB layout should be isolated from any noise generating circuits.

Figure 7.   Buck Regulator Schematic Location
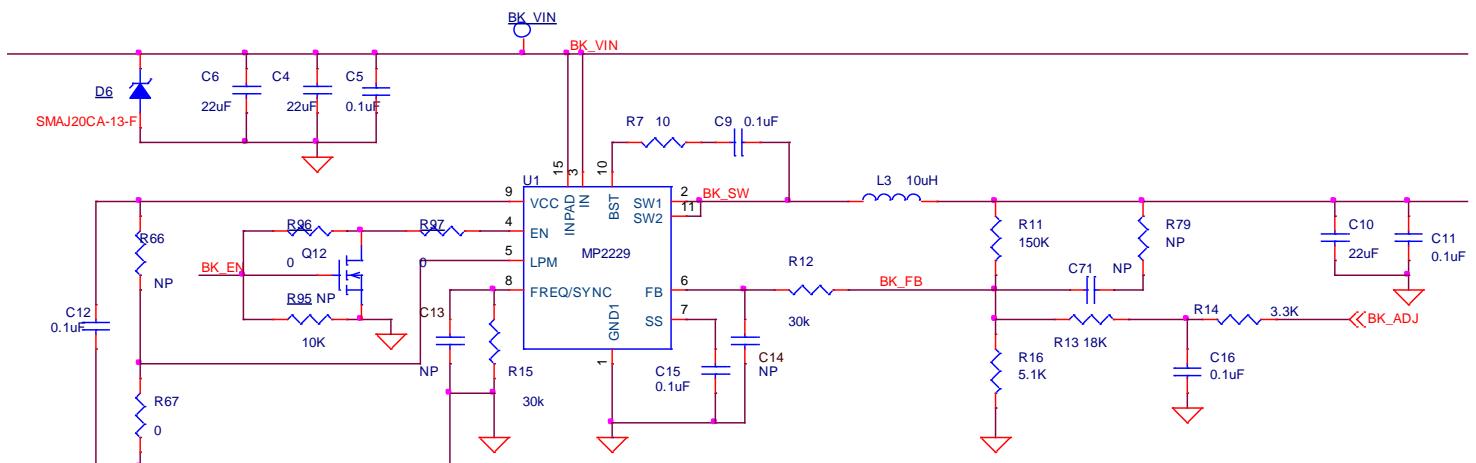
Figure 8. Buck Regulator PCB Location
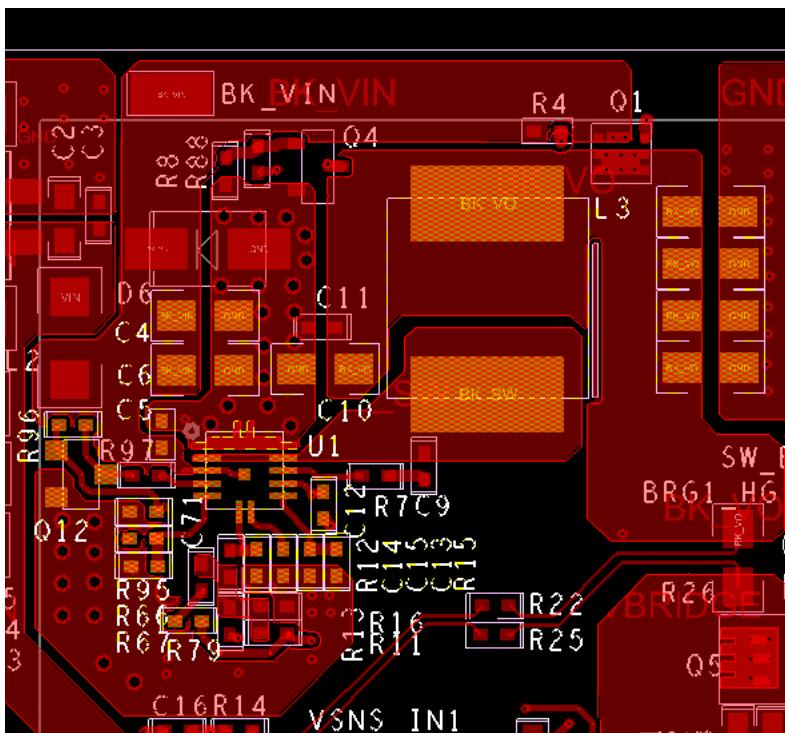
2.5   Bypass Path of the External Buck Regulator

When the adaptor voltage is 5V only (such as USB DCP or legacy USB 5V adaptors), the P9242-G-EVK supports such adaptors by turning off the Buck regulator, and then enable a bypass path. The P9242-G will be operating in a variable frequency mode, to adjust the total power transferred. GPIO_A4 is used to turn on the bypass path.

**Figure 9.   Bypass Path Schematic Location**
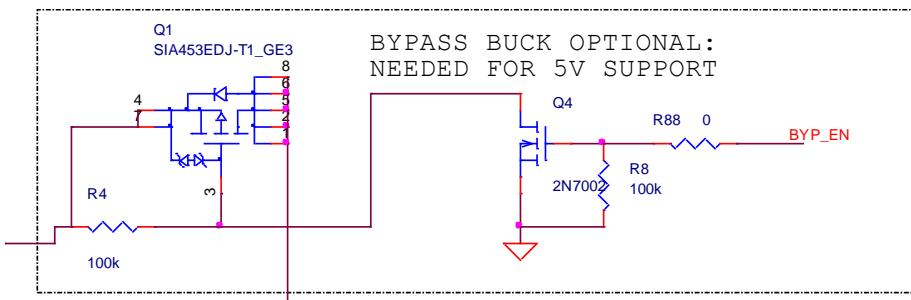
Figure 10. Buck Regulator PCB Location
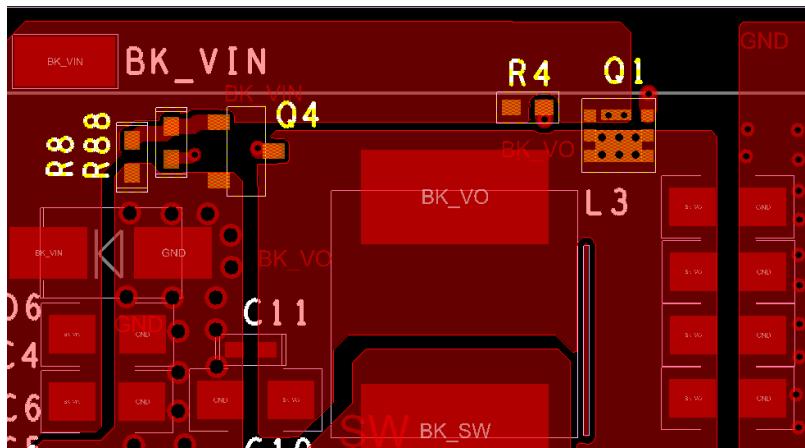
2.6 External Oscillator

To guarantee that the switching frequency is fixed at an accurate 127.7kHz ±6Hz, an external clock IC and a crystal is used to guarantee that the frequency will be in the range displayed in Table 2. The frequency of the clock IC or MEMS oscillator must be precisely 6.16791MHz to work with the P9242-G. GPIO_B6 is used to synchronize with the external clock, and GPIO_B5 is recommended to be connected to GND when the external oscillator is used. Table 2 contains a list of the recommended devices for clock/MEMS.

Table 2. External Oscillator Selection

Type	Vendor	Part Number	Typical Frequency (MHz)
Crystal + Clock IC	IDT	6P40369	6.16791
	TXC	7M25000083	25
MEMS Oscillator		ASTMLP-101-6.167910MHZ-T3	6.16791
MEMS Oscillator		DSC6111MI2A-006.1679	6.16791

**Figure 11. Bypass Path Schematic Location**
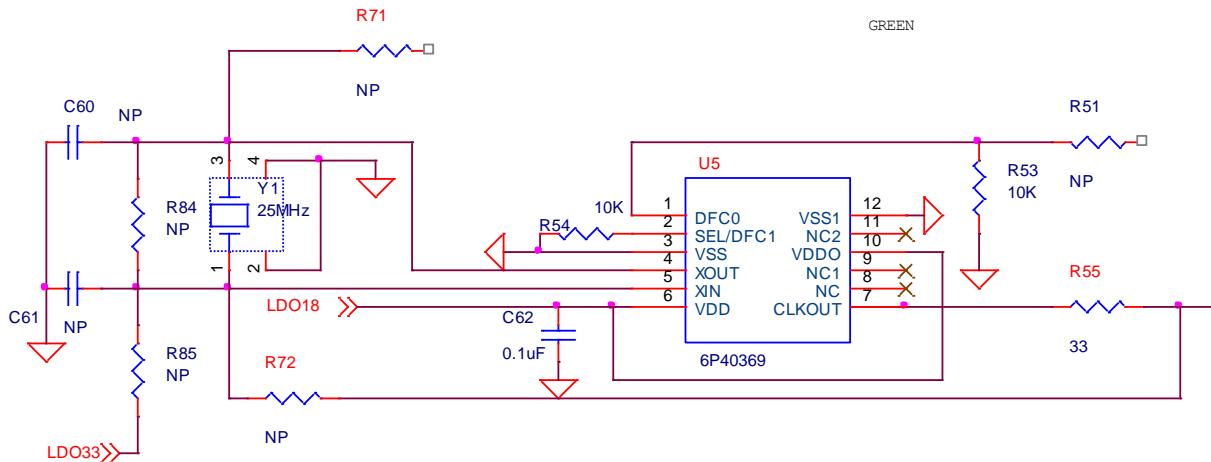
Figure 12. Buck Regulator PCB Location
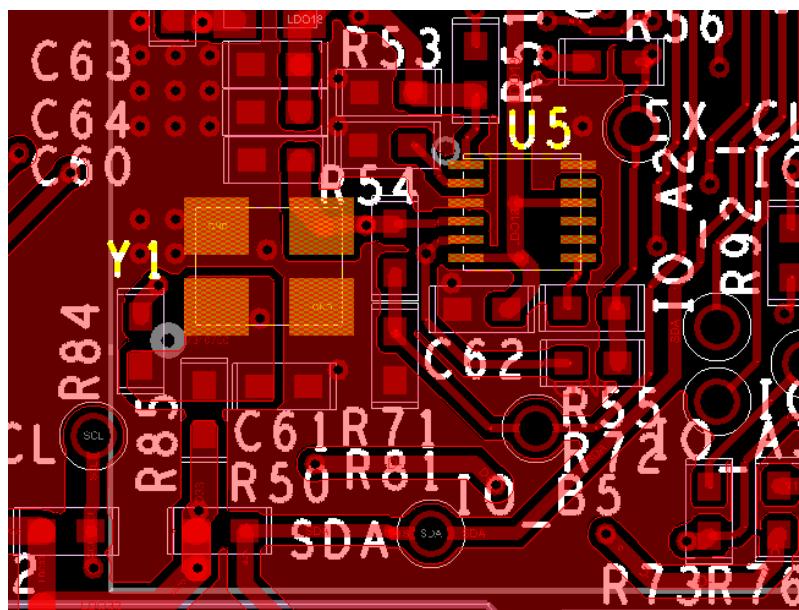
2.7 Resonant Capacitor

The P9242-G-EVK uses multi-layer ceramic capacitors as the resonant caps. A combination of 100nF/250V/X7R/1206 capacitors and 100nF/100V//C0G/1206 capacitors are used. If class II ceramic capacitors are used as the resonant capacitors, they need to be carefully selected. The important considerations include the following:

- High voltage rating
- Stable DC characteristic
- Stable AC characteristic
- Stable temperature characteristic

2.8 Q-factor Detection and Open Advanced Q-factor

The P9242-G-EVK has implemented the Q-factor detection for WPC EPP receivers. The Q_DEC pin is used to sample the voltage on the coil. Figure 13 shows the Q-factor detection circuits.

**Figure 13. Q-factor Detection Schematic Location**
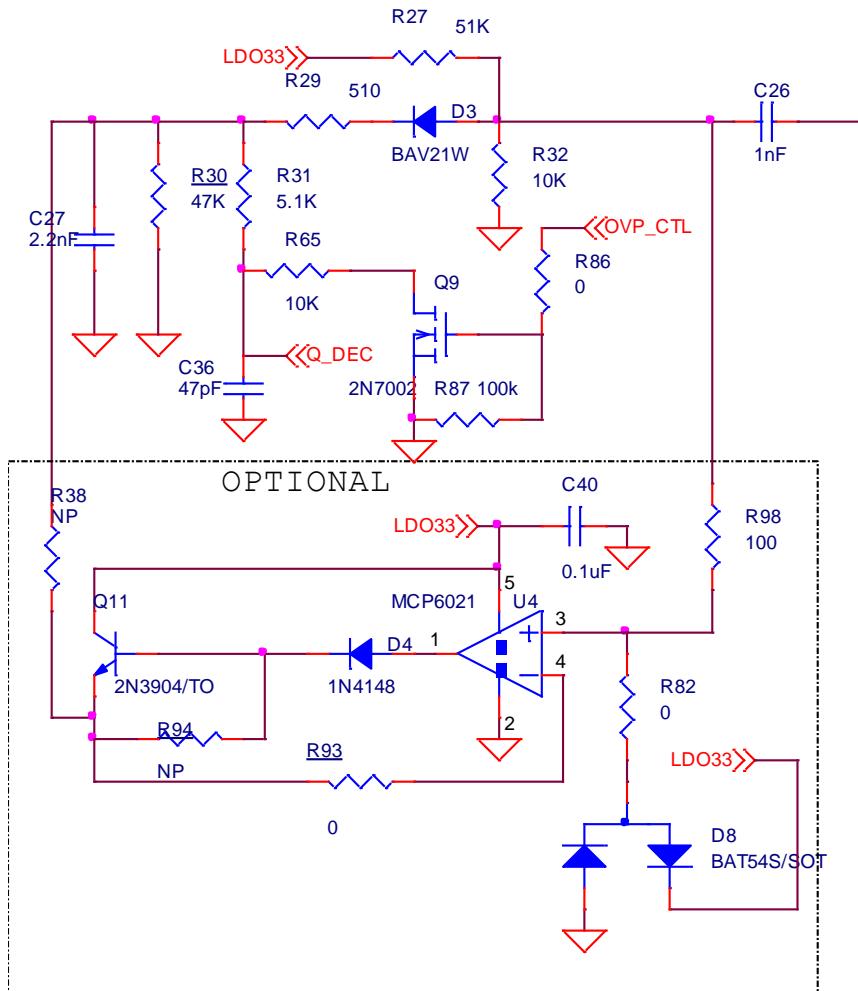
Figure 14. Q-factor PCB Location
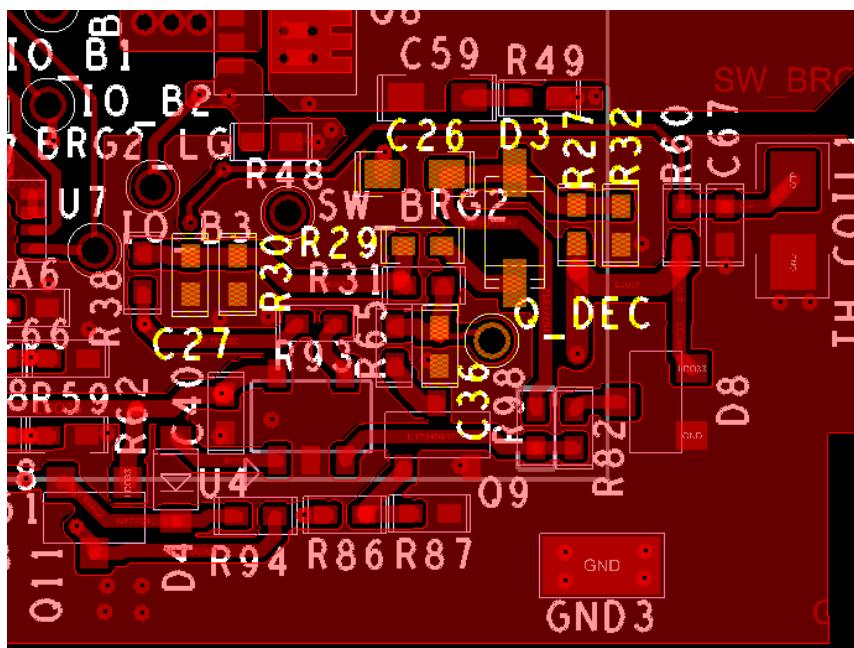
Table 3 shows how to set up the Advanced Q-factor threshold.

Table 3.   Voltage on GPIO_A2 vs. Advanced Q-factor Threshold

Voltage on GPIO_A2	Advanced Open Q-Factor Threshold
0V ≤ VGPIO_A2 < 0.4V	Feature Disabled
0.4V < VGPIO_A2 < 0.5V	13
0.5V < VGPIO_A2 < 0.6V	16
0.6V < VGPIO_A2 < 0.7V	19
0.7V < VGPIO_A2 < 0.8V	22
0.8V < VGPIO_A2 < 0.9V	25
0.9V < VGPIO_A2 < 1V	28
1V < VGPIO_A2 < 1.1V	31
1.1V < VGPIO_A2 < 1.2V	34
1.2V < VGPIO_A2 < 1.3V	37
1.3V < VGPIO_A2 < 1.4V	40
1.4V < VGPIO_A2 < 1.5V	43
1.5V < VGPIO_A2 < 1.6V	46
1.6V < VGPIO_A2 < 1.7V	49
1.7V < VGPIO_A2 < 1.8V	52
1.8V < VGPIO_A2 < 1.9V	55

Voltage on GPIO_A2	Advanced Open Q-Factor Threshold
1.9V < VGPIO_A2 < 2V	58
2V < VGPIO_A2 < 2.1V	61
2.1V < VGPIO_A2 < 2.2V	64
2.2V < VGPIO_A2 < 2.3	67
2.3V < VGPIO_A2 < 2.4V	70

2.9   Selection of Input Source and Operation Mode

The P9242-G-EVK supports different types of AD/DC adaptors and connectors. By selecting the jumpers in Figure 15, you can select the USB-Micro connector, USB-C connector, or DC jack adaptor.

Figure 15. Input Source Selection Jumpers on the PCB
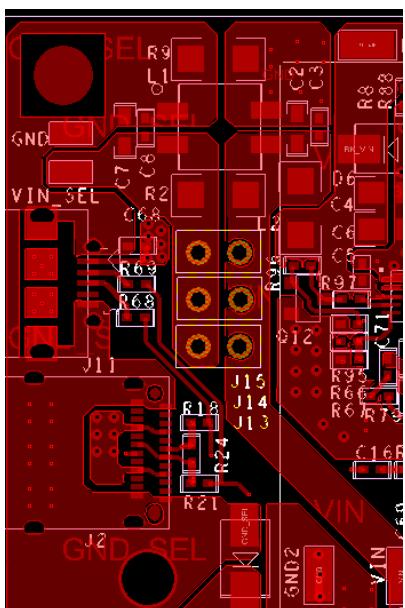
The P9242-G-EVK supports a wide range of input DC sources from 5V to 19V. Based on the input source, the P9242-G-EVK supports different types of receivers. Table 4 lists the P9242-G-EVK operation modes.

Table 4.   P9242-G-EVK Operation Modes

Input Voltage	Rx	Operating Frequency
5V	BPP (Bypass Buck)	110k – 148k
9V	BPP 5W	120kHz – 127.7kHz
	EPP 8W	120kHz – 127.7kHz
	iPhone 7.5W	127.7kHz
12V	BPP 5W	120kHz – 127.7kHz
	EPP 10W	120kHz – 127.7kHz
	Samsung AFC	120kHz - 127.7kHz
	iPhone 7.5W	127.7kHz
16-19V	BPP 5W	120kHz – 127.7kHz
	EPP 15W	120kHz – 127.7kHz
	Samsung AFC	120kHz – 127.7kHz
	iPhone 7.5W	127.7kHz

2.10 Transmitter Coil

The MP-A11 coils in Table 5 are recommended to be used with the P9242-G transmitter for 15W applications for optimum performance. The recommended vendor has been tested and verified.

Table 5.   Recommend Coil Manufacturer

Output Power	Vendor	Part Number	Inductance at 100kHz	Typical DCR at 25ºC
15W	SUNLORD	MQQTC505030S6R3	6.3uH	38mΩ
15W	CYNTEC	WTCL05054F-6R3ABKS-70	6.3uH	38mΩ

3. P9242-G Evaluation Board Schematic

IDT P9242-G MP-A11 DEMO SCHEMATIC V3P8
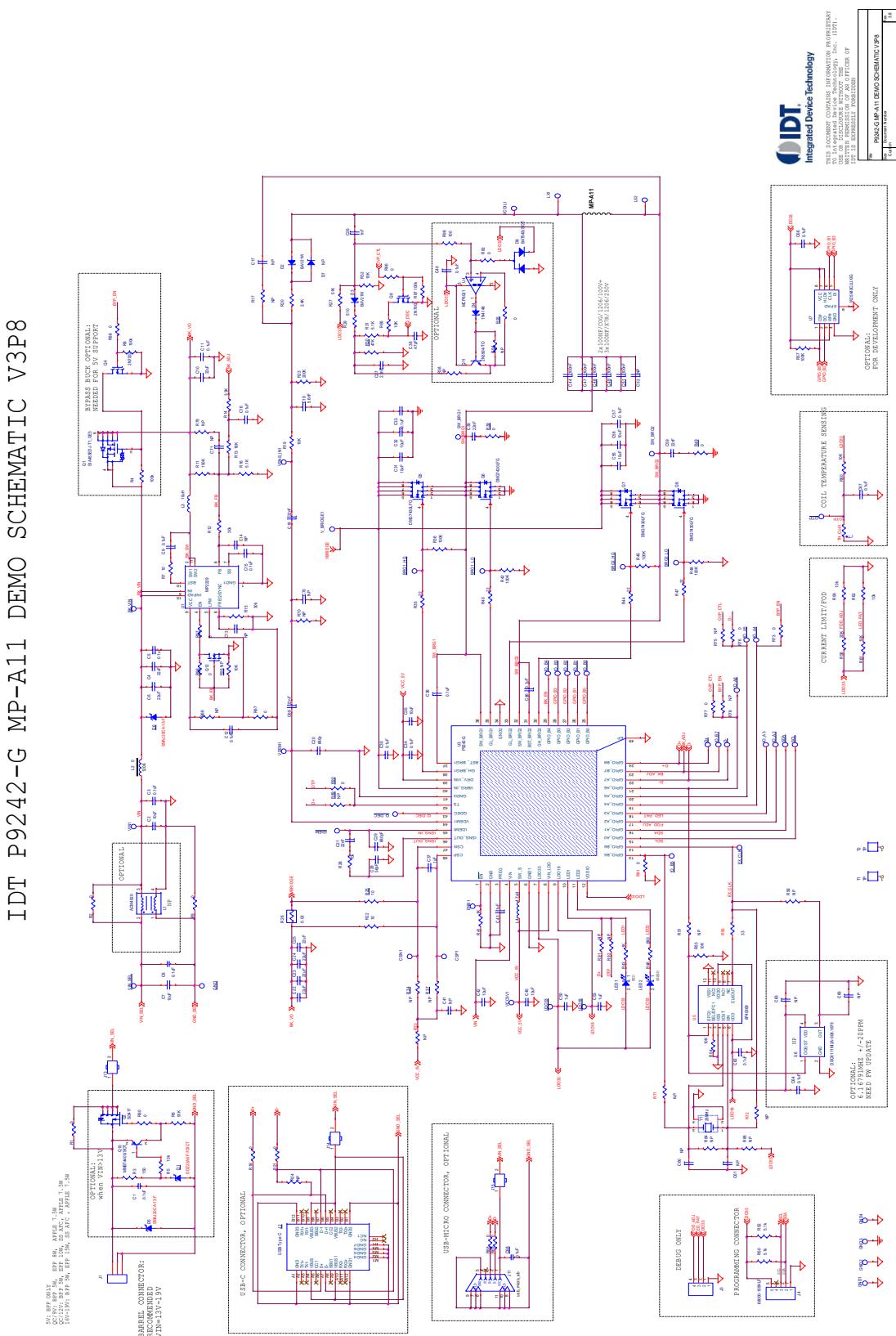
4. Bill of Materials (BOM)

Table 3. P9242-G-EVK BOM

Item	Quantity	Reference	Value	Description	Part Number	PCB Footprint
1	8	VIN1,GND1,GND2,GND3,GND4, BK_VIN,VIN_SEL,GND	TP	TEST POINT PC MINIATURE SMT	5015	test_pt_sm_ 135x70
2	36	V_BRIDGE1,VSNS_IN1,VDEM1, VCOIL1,SW_BRG1,IO_B1,ENB1, CSP1,CSN1,BRG1_LG,BRG1_H G,SW_BRG2,IO_B2,IO_A2,BRG2 _LG,BRG2_HG,IO_B3,IO_A3,IO_ B4,IO_A4,IO_B5,IO_A5,IO_A6,IO _B7,LDO18,LDO33,VCC5V1,SDA ,SCL,Q_DEC,OTP,IO_B0,IDEM,E X_CLK,D-,D+	NP	30 GAUGE WIRE PAD		TEST_PT30 DPAD
3	1	C1	0.1uF	CAP CER 0.1uF 25V X7R 0603	GCM188R71E104K A57D	603
4	9	C2,C7,C31,C32,C35,C42,C45,C5 5,C56	10uF	CAP CER 10uF 25V X5R 0603	C1608X5R1E106M0 80AC	603
5	19	C3,C5,C8,C9,C11,C15,C16,C30, C33,C34,C38,C40,C46,C57,C62, C64,C66,C67,C68	0.1uF	CAP CER 0.1uF 25V X7R 0402	C1005X7R1E104K0 50BB	402
6	7	C4,C6,C10,C22,C23,C24,C25	22uF	CAP CER 22uF 25V X5R 1206	GRT21BR61E226M E13L	1206
7	1	C12	0.1uF	CAP CER 100nF 50V X5R 0402	GRM155R71H104K E14J	402
8	11	C13,C14,C17,C41,C52,C60,C61, C63,C65,C70 C71	NP			402
9	2	C18,C69	22nF	CAP CER 0.022uF 100V X7R 0603	GCM188R72A223K A37D	603
10	1	C19	5.6nF	CAP CER 5600pF 100V X7R 0603	GRM188R72A562K A01D	603
11	2	C20,C29	680pF	CAP CER 680pF 50V X7R 0402	CL05B681KB5NNN C	402
12	1	C21	22nF	CAP CER 22nF 25V X7R 0402	GRM155R71E223J A61D	402
13	1	C26	1nF	CAP CER 1nF 100V X7R 0603	GCM188R72A102K A37D	603
14	1	C27	2.2nF	CAP CER 2.2nF 50V X7R 0402	04025C222KAT2A	402
15	1	C28	56pF	CAP CER 56pF 50V NP0 0402	CL05C560JB5NNN C	402
16	1	C29	680pF	CAP CER 680pF 50V X7R 0402	CL05B681KB5NNN C	402
17	1	C36	47pF	CAP CER 47pF 50V X7R 0402	04025C470KAT2A	402

Item	Quantity	Reference	Value	Description	Part Number	PCB Footprint
18	4	C37,C43,C50,C53	1uF	CAP CER 1uF 25V X5R 0402	C1005X5R1E105M050BC	402
19	2	C39,C59	22nF	CAP CER 22nF 50V X7R 0603	GCM188R71H223KA37D	603
20	2	C44,C47,	100nF	CAP CER 100nF 100V C0G 1206	GRM31C5C2A104JA01L	1206
21	3	C48,C49,C51	100nF	CAP CER 100nF 250V X7R 1206	GRM31CR72E104KW03L	1206
22	1	D1	DDZ22ASF-7DICT	DIODE 300mW Zener	DDZ22ASF-7DICT-ND	sod123
23	2	D2,D3	BAV21W	DIODE 80V 125mA	BAV21W	sod123
24	1	D4	1N4148	DIODE 75V 200mA	1N4148WX-TP	sod-323
25	2	D5,D6	SMAJ20CA-13-F	DIODE 300mW Zener	SMAJ20CA-13-F	SMAJ20CA
26	1	D7	NP	DIODE 80V 125MA	BAV21W	sod123
27	1	D8	BAT54S	DIODE ARRAY SCHOTTKY 30V	BAT54S	SOT-23
28	1	J1	AC_Adapter	CONN POWER JACK 2.5X5.5MM	PJ-002AH	CONN_POWER_JACK 5_5MM
29	1	J2	USB Type C	CONN USB-C	12401610E4#2ACT-ND	USB-C12401610E4
30	1	J3	SIP con	4 Pin Header	961104-6404-AR	sip-4
31	1	J4	68000-105HLF	5 Pin Header	68000-105HLF	sip5
32	1	J11	5P	CONN USB Micro	90080004	usb_micro_ab
33	3	J13,J14,J15	JUMPER	BERGSTIK STRAIGHT	68000-102HLF	sip2
34	1	LED1	LED	LED RED	150060RS75000	0603_diode
35	1	LED2	LED	LED GREEN	150060GS75000	0603_diode
36	2	LX1,LX2	PTH_TP	30 GAUGE WIRE PAD	NP	TP_TXCoil
37	1	L1	NP	Common mode EMI choke	ACM4520-901-2P-T-000	EMI_TDK_ACM4520L
38	1	L2	0	0	0	1206
39	1	L3	10uH	FIXED IND 10uH 3.6A 29mOhm	SWPA8040S100MT	8 x 8
40	1	L4	4.7uH	FIXED IND 4.7uH 620mA 500 mOHM	CIG10W4R7MNC	L0603
41	1	L5	6.3uH	MP-A11 coil 6.3uH	MQQTC505030S6R3/ WTCL05054F-6R3ABKS-70	

February 17, 2019

Item	Quantity	Reference	Value	Description	Part Number	PCB Footprint
42	1	Q1	SIA453EDJ-T1_GE3	MOSFET P-CH 30V	SIA453EDJ-T1-GE3	Powerdi3333_8ld_fet
43	1	Q2	Si3417	MOSFET P-CH 30 V	Si3417DV-T1-GE3	SOT-23-6
44	2	Q4,Q9	2N7002	MOSFET N-CH 60V	2N7002KT1G	SOT23_3
45	4	Q5,Q6,Q7,Q8	DMG7430LFG	MOSFET N-CH 30V	DMG7430LFG-7	powerdi3333_8ld_fet
46	1	Q10	MMBT4403/SOT	TRANS PNP 40V 0.6A	SMMBT4403LT1G	SOT-23
47	1	Q11	2N3904/TO	TRANS NPN 40V 0.2A	MMBT3904	SOT-23
48	1	Q12	NP	MOSFET N-CH 60V	2N7002KT1G	SOT-23
49	3	R1,R2,R9	0	RES SMD 0.0 OHM 1% 1/4W 1206	RC1206JR-070R	1206
50	1	R3	150	RES SMD 150 OHM 1% 1/4W 0603	RC0603FR-07150RL	603
51	3	R4,R8,R87	100k	RES SMD 100K OHM 1% 1/10W 0402	RC0402FR-07100KL	402
52	12	R5,R19,R28,R32,R53,R54,R59,R60,R61,R62,R65,R95	10K	RES SMD 10K OHM 1% 1/10W 0402	RC0402FR-0710KL	402
53	1	R6	91K	RES SMD 91K OHM 1% 1/10W 0402	RC0402FR-0791K	402
54	3	R7,R22,R25	10	RES SMD 10 OHM 1% 1/10W 0402	RC0402FR-0710RL	402
55	1	R11	150K	RES SMD 150K OHM 1% 1/10W 0402	RC0402FR-07150K	402
56	2	R12,R15	30k	RES SMD 30K OHM 1% 1/10W 0402	RC0402FR-0730KL	402
57	1	R13	18K	RES SMD 18K OHM 0.1% 1/10W 0402	RP73PF1E1K18BTD	402
58	1	R14	3.3K	RES SMD 3.3K OHM 1% 1/16W 0402	RC0402FR-073K3P	402
59	4	R16,R31,R50,R52	5.1k	RES SMD 5.1K OHM 1% 1/10W 0402	ERJ-2RKF5101X	402
60	2	R17,R70	NP	RES SMD 1% 1/10W 0402		402
61	19	R18,R21,R39,R49,R67,R68,R69,R73,R76,R77,R80,R81,R82,R86,R88,R90,R93,R96,R97	0	RES SMD 0.0 OHM 1% 1/16W 0402	RC0402JR-070RL	402
62	1	R20	2.4K	RES SMD 2.4K OHM 5% 1/16W 0402	RC0603FR-072K4L	603
63	1	R23	200K	RES SMD 200K OHM 1% 1/10W 0603	RC1608F204CS	603

Item	Quantity	Reference	Value	Description	Part Number	PCB Footprint
64	19	R24,R33,R34,R37,R38,R51,R56, R66,R71,R72,R75,R78,R79,R84, R85,R89,R91,R92,R94	NP			402
65	1	R26	0.02	RES SMD 0.02 OHM 1% 1/3W 0805	UCR10EVHFSR020	805
66	1	R27	51K	RES SMD 51K OHM 1% 1/16W 0402	RC0402FR-0751K	402
67	1	R29	510	RES SMD 510 OHM 1% 1/16W 0402	RC0402FR-07510RL	402
68	1	R30	47K	RES SMD 47K OHM 1% 1/5W 0402	RCS040247K0FKED	402
69	4	R35,R40,R44,R47	22	RES SMD 22 OHM 1% 1/16W 0402	RC0402FR-0722RL	402
70	5	R36,R42,R45,R48,R57	100K	RES SMD 100K OHM 5% 1/10W 0402	ERJ-2GEJ104X	402
71	2	R41,R43	1K	RES SMD 1K OHM 5% 1/16W 0402	RC0402JR-071KL	402
72	1	R46	680	RES SMD 680 OHM 5% 1/16W 0402	RC0402JR-07680RL	402
73	1	R55	33	RES SMD 33 OHM 0.5% 1/16W 0402	ERA-2AKD330X	402
74	1	R58	20K	RES SMD 20K OHM 1% 1/10W 0402	RC0402FR-0710KL	402
75	1	R98	100	RES SMD 100 OHM 1% 1/10W 0402	TNPW0402100RBEED	402
76	1	TH_Coil1	NP			805
77	1	U1	MP2229	Buck Converter Chip	MP2229GQ	QFN-14
78	1	U3	P9242-GB	Medium Power Transmitter	P9242-G	QFN-48
79	1	U4	MCP6021	OPA, 10MHz R2R	MCP6021	SOT23-5
80	1	U5	6P40369	Clock Generator	6P40369NDGI	5X2503
81	1	U6	NP	MEMS oscillator	DSC6111MI2A-006.1679	ASTMLPA-33
82	1	U7	W25X20CL UXIG	SPIFLASH 4M-BIT 4KB UNIFORM SECT	W25X20CL	uson_2x3_8 LD

5. Board Layout

**Figure 16. Silkscreen – Top of Board**
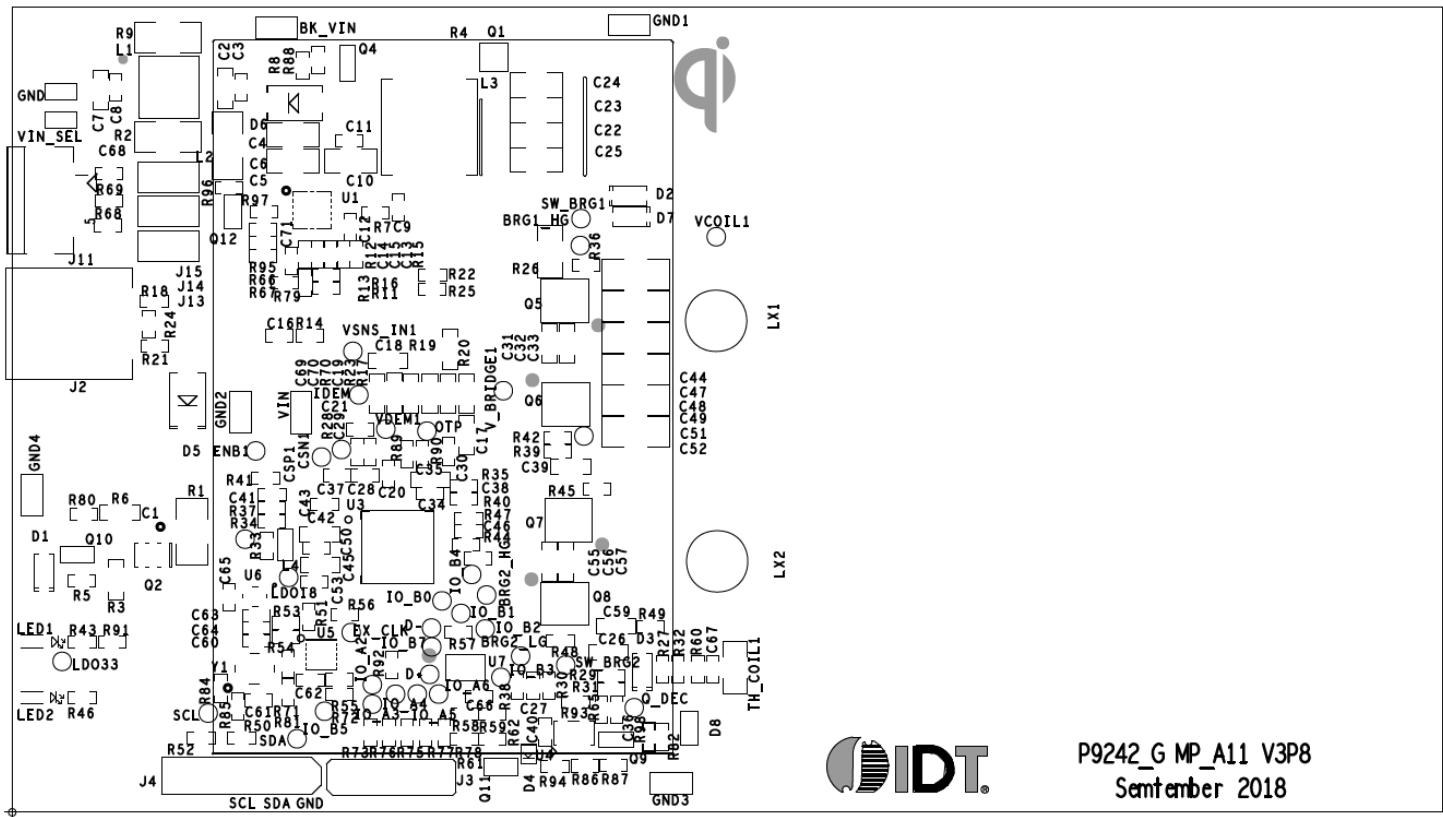
Figure 17. Copper – Top Layer
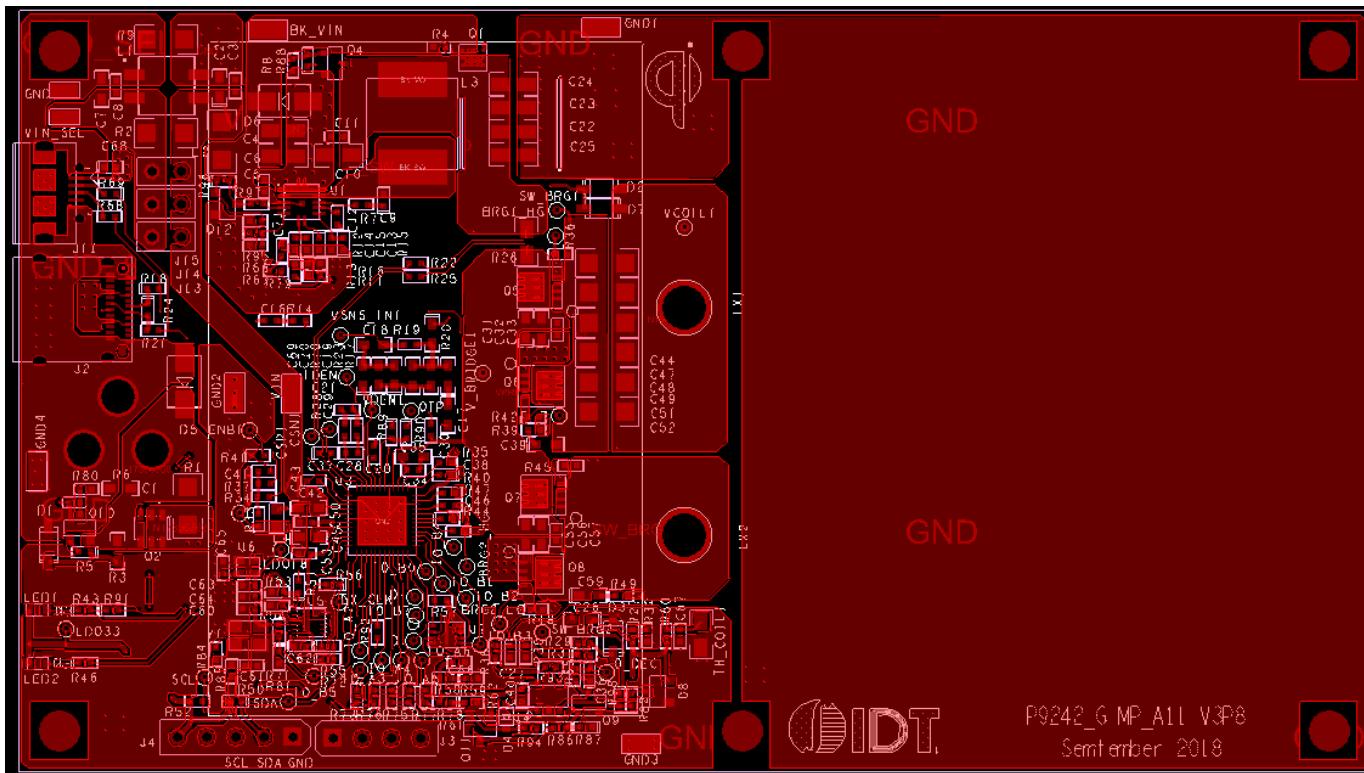

Figure 18. Copper L1 Layer
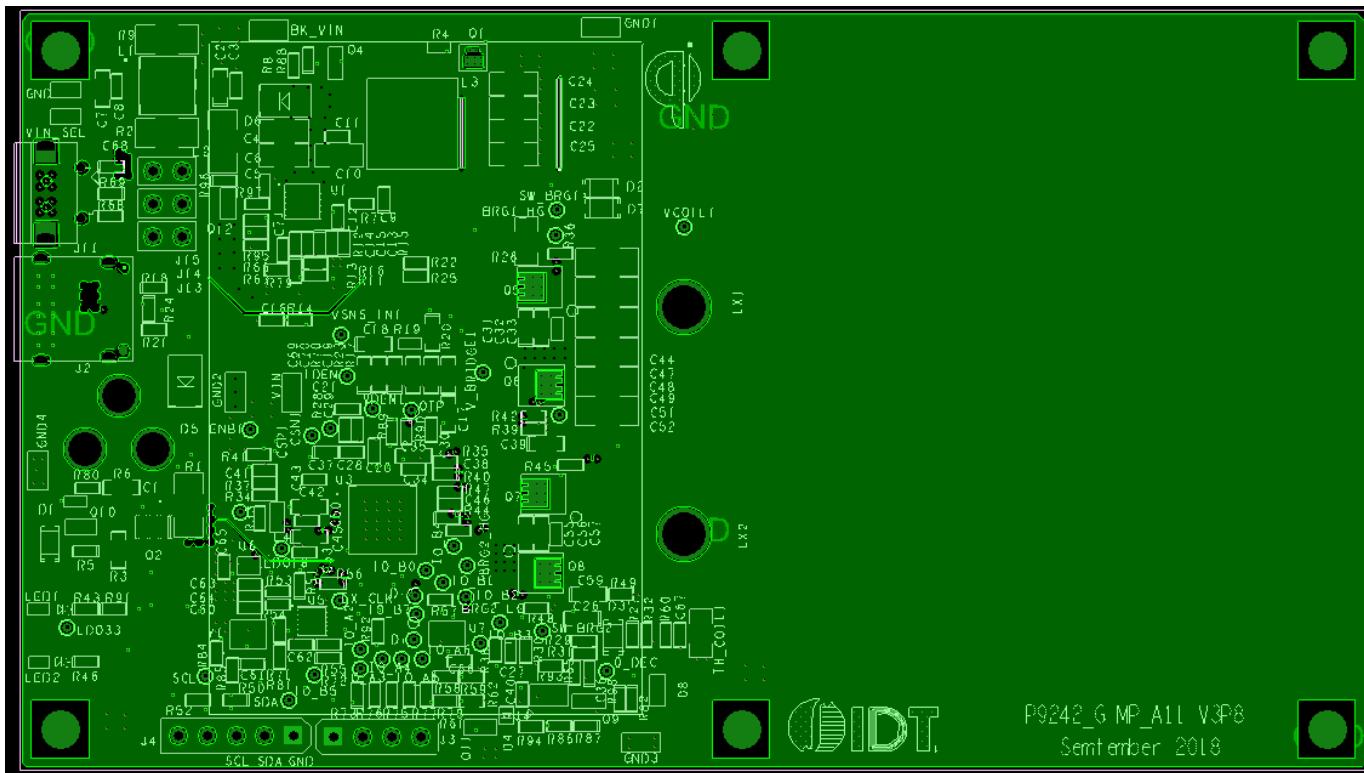
Figure 19. Copper L2 Layer
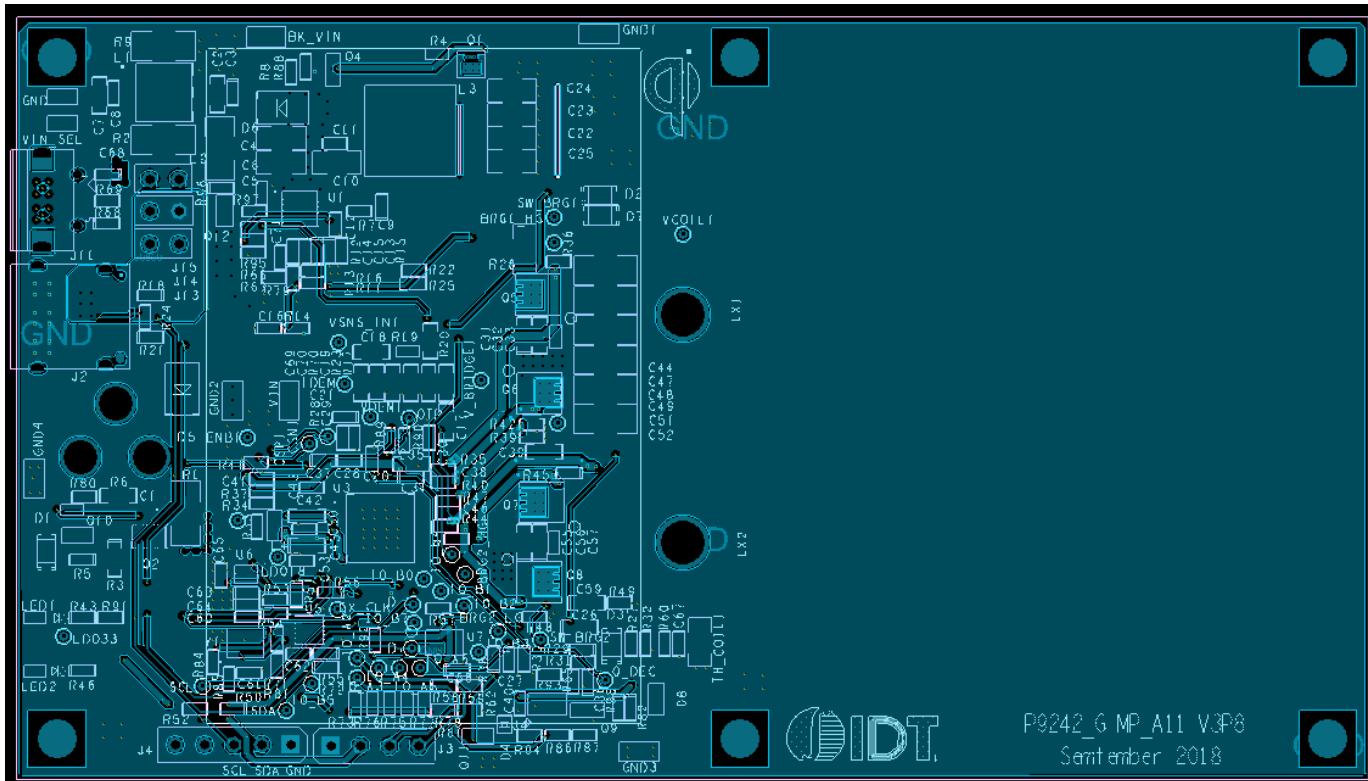
**Figure 20. Copper Bottom**

34
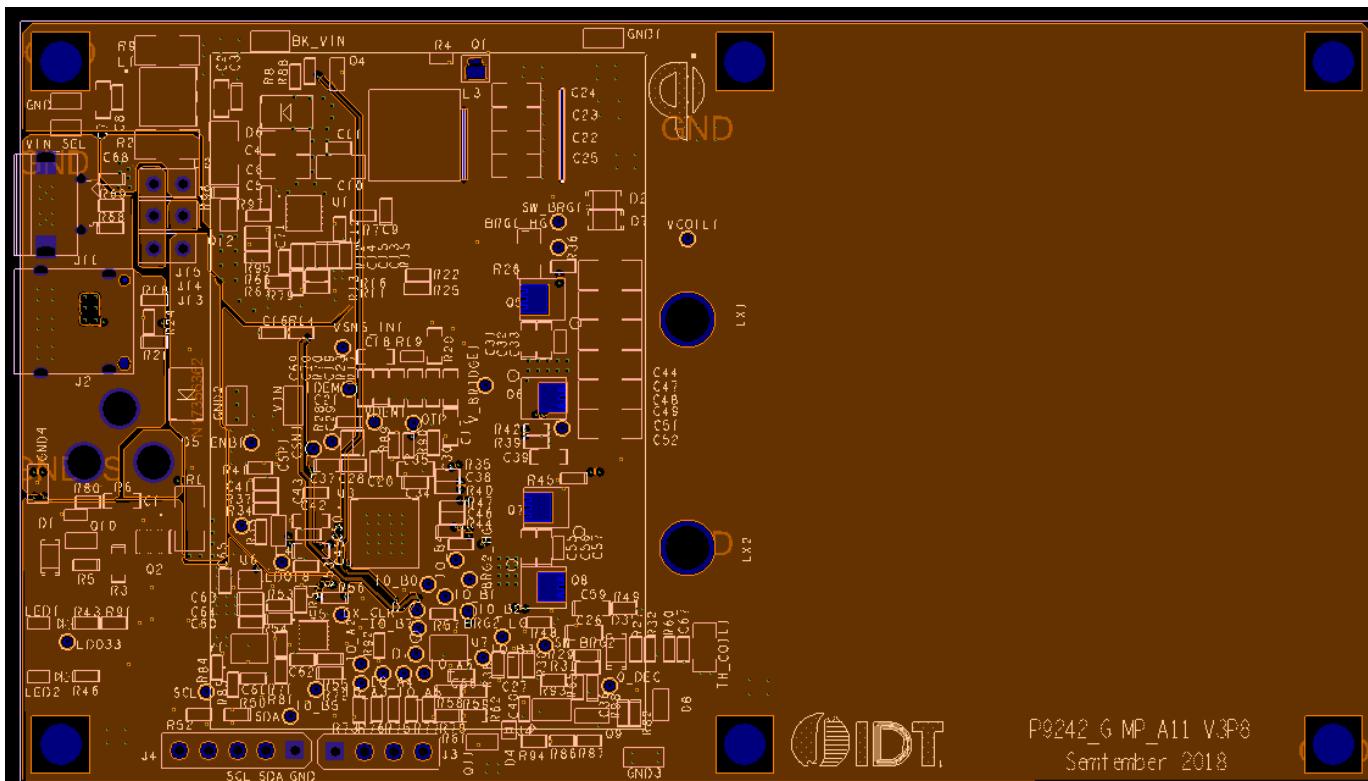
6. Ordering Information

Orderable Part Number	Description
P9242-G-EVK	P9242-G-EVK Evaluation Board

7. Revision History

Revision Date	Description of Change
February 17, 2019	Updated the description and part number of Item 59 in "Bill of Materials (BOM)"
November 15, 2018	Initial release.

IMPORTANT NOTICE AND DISCLAIMER

RENESAS ELECTRONICS CORPORATION AND ITS SUBSIDIARIES ("RENESAS") PROVIDES TECHNICAL SPECIFICATIONS AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for developers who are designing with Renesas products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. Renesas grants you permission to use these resources only to develop an application that uses Renesas products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Renesas intellectual property or to any third-party intellectual property. Renesas disclaims responsibility for, and you will fully indemnify Renesas and its representatives against, any claims, damages, costs, losses, or liabilities arising from your use of these resources. Renesas' products are provided only subject to Renesas' Terms and Conditions of Sale or other applicable terms agreed to in writing. No use of any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.01 Jan 2024)

Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

Contact Information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit www.renesas.com/contact-us/.