

EM35x Reference Design Skyworks SE2432L, Revised **Sept 17, 2010**
EM35X_REF_DES_SE2432L Revision **A1**

Bill of Materials

Vendor Part Numbers Revised **May 23, 2014**

Item #	QTY	RefDes	Description	Manufacturer	Part Number
1 ¹	2	AT5-AT6	ANTENNA, CERAMIC CHIP DIELECTRIC, 3.2X1.6X0.5MM, 2.45GHZ	Johanson Technology	2450AT18B100E
2	5	C1,C14,C16,C20,C37	CAPACITOR, CERAMIC, 10NF, +/-10%, 25V, X7R, 0402 (1005 METRIC)	MURATA	GRM155R71E103KA01D
3 ²	1	C10	CAPACITOR, CERAMIC, 22PF, +/-5%, 50V, -55C TO 125C, 0402 (1005 METRIC)	MURATA	GRM1555C1H220JA01D
4	2	C11-C12	CAPACITOR, CERAMIC, 22PF, +/-5%, 50V, -55C TO 125C, 0402 (1005 METRIC)	MURATA	GRM1555C1H220JA01D
5	3	C13,C15,C40	CAPACITOR, CERAMIC, 8PF, +/-0.5PF, 50V, COG, NP0, 0402	MURATA	GRM1555C1H8R0DA01D
6	1	C2	CAPACITOR, CERAMIC, 0.47UF, +/-10%, 10V, -55C TO 85C, 0402 (1005 METRIC)	MURATA	GRM155R61A474KE15D
7	1	C17	CAPACITOR, 0402, DO NOT INSTALL		
8	5	C3-C5,C7,C39	CAPACITOR, CERAMIC, 100NF, +/-10%, 16V, -55C TO 125C, 0402 (1005 METRIC)	MURATA	GRM155R71C104KA88D
9	2	C41,C43	CAPACITOR, CERAMIC, 10PF, +/-5%, 50V, -55C TO 125C, 0402 (1005 METRIC)	MURATA	GRM1555C1H100JA01D
10	1	C42	CAPACITOR, 0603, DO NOT INSTALL		
11	1	C6	CAPACITOR, CERAMIC, 1.0UF, +/-10%, 6.3V, X5R, 0402 (1005 METRIC)	MURATA	GRM155R60J105KE19D
12	1	C8	CAPACITOR, 2.2UF, +/-10%, 16V, X5R, 0603	MURATA	GRM188R61C225KE15D
13 ²	1	C9	CAPACITOR, CERAMIC, 33PF, +/-5%, 50V, -55C TO 125C, COG, NP0, 0402 (1005 METRIC)	MURATA	GRM1555C1H330JA01D
14 ³	1	DS1	LED, 0402, RED, 2.0V, 20MA	ROHM	SML-P12UTT86
15 ³	1	DS2	LED, 0402, YELLOW, 2.1V, 20MA	ROHM	SML-P12YTT86
16 ⁴	1	J1	CONNECTOR, HEADER, SHROUDED, 10 POSITION, DUAL ROW, VERTICAL, 0.050"	SAMTEC	FTSH-105-01-L-DV-K
17 ¹	2	J14-J15	CONNECTOR, RF, SWITCHED, SMD	MURATA	MM8130-2600RA2
18 ⁵	1	J2	CONNECTOR, RECEPTACLE, BD075-19, SURFACE MOUNT VERTICAL	Global Connector Technology	BD075-19-A-1-L-C
19 ⁵	1	J3	CONNECTOR, RECEPTACLE, BD075-14, SURFACE MOUNT VERTICAL	Global Connector Technology	BD075-14-A-1-L-C
20	1	L13	INDUCTOR, MULTI-LAYER FILM, 3.3NH, +/-0.3NH, 300MA, -55C TO 125C, 0402 (1005 METRIC)	MURATA	LQG15HS3N3S02D
21	1	L14	INDUCTOR, METAL FILM, 3NH, +/-0.1NH, 190MA, 0402	MURATA	LQP15MN3N0B02D
22 ¹	2	L19-L20	INDUCTOR, METAL FILM, 2.0NH, +/-0.1NH, 220MA, -40C TO 85C, 0402 (1005 METRIC)	MURATA	LQP15MN2N0B02D
23 ¹	2	L26-L27	INDUCTOR, METAL FILM, 1.5NH, +/-0.1NH, 280MA, -40C TO 85C, 0402 (1005 METRIC)	MURATA	LQP15MN1N5B02D
24	1	PCB3	MECHANICAL, PCB, EM35X/RF6525 4 LAYER REFERENCE DESIGN		
25	1	Q3	MOSFET, N-CHANNEL LOGIC LEVEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR, 1.7A, 460MW, 30V, SOT-23	FAIRCHILD	NDS355N
26	1	R1	RESISTOR, 10 OHM, 5%, 1/16W, 0402	PANASONIC	ERJ-2GEJ100X
27	2	R19,R36	RESISTOR, THICK FILM, 100K, +/-5%, 0.1W, 1/10W, 0402 (1005 METRIC)	PANASONIC	ERJ-2GEJ104X
28	1	R2	RESISTOR, THICK FILM, 1 OHM, +/-5%, 0.1W, 1/10W, 0402 (1005 METRIC)	PANASONIC	ERJ-2GEJ1R0X
29	2	R3,R35	RESISTOR, 1.2K OHM, 5%, 1/16W, 0402	PANASONIC	ERJ-2GEJ122X
30	1	R5	RESISTOR, DNI, 0402		
31 ²	2	R12-R13	RESISTOR, DNI, 0402		
32 ³	2	R7-R8	RESISTOR, 510 OHM, 5%, 1/16W, 0402	PANASONIC	ERJ-2GEJ511X
33	1	U1	IC, COMMUNICATIONS, EM357, ZIGBEE/802.15.4 RF TRANSCEIVER, ARM CORTEX-M3, 12K RAM, 192K FLASH, -40C TO 85C, 48-QFN	Silicon Laboratories	EM357-RTR
34	1	U2	IC, 2.4 GHZ SMART ENERGY/ZIGBEE FRONT END MODULE, -40C TO 85C, 24-QFN	Skyworks	SE2432L
35	1	U3	IC - PROGRAMMABLE MEMORY - BLANK, SERIAL FLASH, 2M (1024 PAGES X 264 BYTES), 2.7 V - 3.6 V, -40C TO 85C, 8-SOIC (0.154", 3.90MM WIDTH)	ATMEL	AT45D8021E-SSHN-T
36	1	Y1	CRYSTAL, 24.000MHZ, +/-10PPM TOLERANCE, +/-25PPM STABILITY, 18PF, -40 TO +85C	Abrakon Corporation ILSI America Oscilent Corporation	ABM38-24.000MHZ-D-R60-1-W-T ILSI-C-1753 290-24.0M-18-10W-TR
37 ²	1	Y2	OSCILLATOR, CRYSTAL, 32.768KHZ, 12.5PF, +/-20PPM, -40C TO 85C, 2-SMD	Abrakon Corporation Fox Crystals ILSI America	ABS07-32.768KHz-T FX135A-327 IL3X-HX5-12.5-32.768KHz

Notes:

Parts highlighted are not required for the Reference Design. Substitutions of non-highlighted parts can be made for cost or availability reasons, but should be avoided as they may impact functionality and RF performance.

¹ The antenna port components AT5, AT6, J14, J15, L19, L20, L26 and L27, can be replaced with a preferred 50 ohm RF solution.

² C9, C10, R12, R13 and Y2 can be omitted when using the internal 10 KHz RC oscillator for a sleep timer

³ DS1, DS2, R7 and R8 are debug indicators and can be omitted on most designs and production modules

⁴ The J1 Packet Trace Port interface is required to make use of Ember Desktop software tools and enables a direct connection to an Ember Debug Adapter (ISA3). This part can be made 'Do Not Install' in production.

⁵ The J2 and J3 connector interface is intended for use with the EM35x Development Kit and can be replaced with a different board to board interface arrangement, or removed entirely to facilitate a merger into an already existing PCB layout design.