

DATA SHEET

SKY77518-21 TX-RX iPAC™ FEM for Dual-Band GSM/GPRS


Applications

- Dual-band cellular handsets encompassing
 - Class 4 GSM900
 - DCS1800
 - Class 12 GPRS multi-slot operation

Features

- High efficiency
 - GSM900 48%
 - DCS 41%
- Low transmit supply current
 - GSM900 1.26 A
 - DCS1800 0.9 A
- Internal ICC sense resistor for iPAC
- Closed loop iPAC
- 50 Ω matched Input/Output
- TX-VCO-to-antenna and antenna-to-RX-SAW filter RF interface
- TX harmonics below -33 dBm
- PHEMT RF switches afford high linearity, low insertion loss, and less than 20 μA supply current in receive modes
- Small outline: 6 mm x 8 mm
- Low profile: 1.2 mm
- Compatible with multiple logic families
- Low APC current: 25 μA

NEW Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.



Description

The SKY77518-21 is a transmit and receive front-end module (FEM) with Integrated Power Amplifier Control (iPAC™) for dual-band cellular handsets comprising GSM900 and DCS1800 operation. Designed in a low profile, compact form factor, the SKY77518-21 offers a complete Transmit VCO-to-Antenna and Antenna-to-Receive SAW filter solution. The FEM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.

The module consists of a GSM900 PA block and a DCS1800 PA block, impedance-matching circuitry for 50 Ω input and output impedances, TX harmonics filtering, high linearity and low insertion loss PHEMT RF switches, diplexer and a Power Amplifier Control (PAC) block with internal current sense resistor. A custom BiCMOS integrated circuit provides the internal PAC function and decoder circuitry to control the RF switches. The two Heterojunction Bipolar Transistor (HBT) PA blocks are fabricated onto a single Gallium Arsenide (GaAs) die. One PA block supports the GSM900 band and the other PA block supports the DCS1800 band. Both PA blocks share common power supply pads to distribute current. The output of each PA block and the outputs to the two receive pads are connected to the antenna pad through PHEMT RF switches and a diplexer. The GaAs die, PHEMT die, Silicon (Si) die and passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

Band selection and control of transmit and receive modes are performed using two external control pads. Refer to the functional block diagram in Figure 1 below. The band select pad (BS) selects between GSM and DCS modes of operation. The transmit enable (TX_EN) pad controls receive or transmit mode of the respective RF switch (TX = logic 1). Proper timing between transmit enable (TX_EN) and Analog Power Control (VRAMP) allows for high isolation between the antenna and TX-VCO while the VCO is being tuned prior to the transmit burst.

The SKY77518-21 is compatible with logic levels from 1.2 V to VCC for BS and TX_EN pads, depending on the level applied to the VLOGIC pad. This feature provides additional flexibility for the designer in the selection of FEM interface control logic.

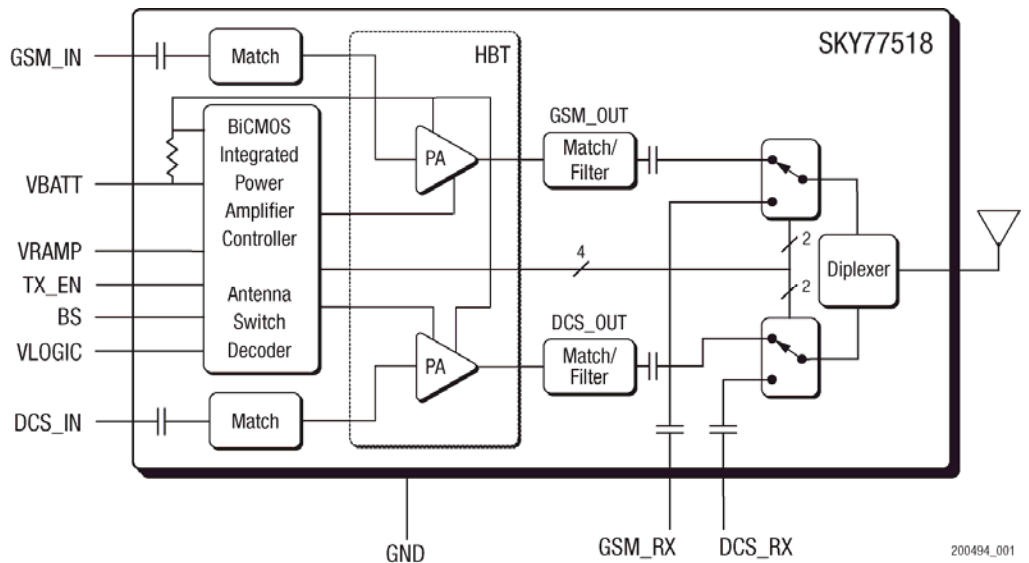


Figure 1. Functional Block Diagram

Electrical Specifications

The following tables list the electrical characteristics of the SKY77518-21 Front-End Module. The absolute maximum ratings and recommended operating conditions for the SKY77518-21 are listed in Table 1 and Table 2, respectively. Table 3 specifies the mode control logic and Table 4 contains the electrical characteristics of the SKY77518-21 for modes GSM900 and

DCS1800. Figure 2 presents an application schematic for the SKY77518-21.

The SKY77518-21 is a static-sensitive electronic device and should not be stored or operated near strong electrostatic fields. Detailed information on device dimensions, pad descriptions, packaging and handling can be found in later sections of this data sheet.

Table 1. Absolute Maximum Ratings

Parameter	Minimum	Maximum	Unit
Input Power (P _{IN})	—	15	dBm
Supply Voltage (V _{CC}), Standby V _{RAMP} ≤ 0.3 V V _{LOGIC} ≤ 0.5 V	—	7	V
Control Voltage (V _{RAMP})	-0.5	V _{CC_MAX} - 0.2 V (See Table 4)	V
Storage Temperature	-55	150	°C

Table 2. Recommended Operating Conditions

Parameter	Minimum	Typical	Maximum	Unit
Supply Voltage (V _{CC})	2.7	3.3	4.8	V
Supply Current (I _{CC})	0		1.8	A
Operating Case Temperature (T _{CASE}) ¹	1-Slot (12.5% duty cycle)	-20	85	
	2-Slot (25% duty cycle)	-20	85	

¹ Case Operating Temperature refers to the temperature of the GROUND PAD on the underside of the package.

Table 3. SKY77518-21 Mode Control Logic

Mode	V _{LOGIC}	Input Control Bits	
		TX_En	BS
STANDBY	0	X 1	X 1
GSM_RX	1	0	0
DCS_RX	1	0	1
GSM_TX	1	1	0
DCS_TX	1	1	1

¹ X = don't care

Table 4. SKY77518-21 Electrical Specifications¹ (1 of 5)

General							
Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Units	
Supply voltage	VCC	—	2.7	3.3	4.8	V	
Power control impedance	ZVRAMP	—		300		kΩ	
VLOGIC control voltage	LOW	VLOGIC_LOW	—	−0.1	—	0.5	V
	HIGH	VLOGIC_HIGH		1.2	—	VCC	
VLOGIC current	IVLOGIC	VLOGIC ≤ 2.7 V TX_EN ≤ 0.4 V BS ≤ 0.4 V	—	1	20	μA	
Band Select control voltage	LOW	VBS_LOW	—	−0.1	—	30% VLOGIC	V
	HIGH	VBS_HIGH		70% VLOGIC	—	VLOGIC	
Band Select current	IBS	BS ≤ 2.7 V	—	8	20	μA	
TX_EN control voltage	LOW	VTX_EN_LOW	—	−0.1	—	30% VLOGIC	V
	HIGH	VTX_EN_HIGH		70% VLOGIC	—	VLOGIC	
TX_EN current	ITX_EN	TX_EN ≤ 2.7 V	—	8	20	μA	
Leakage current	Standby Mode	I _{QS}	VCC ≤ 4.8 V VLOGIC = VLOGIC_LOW VRAMP ≤ 0.1 V TX_EN ≤ 0.4 V BS ≤ 0.4 V BS ≥ VLOGIC − 0.4 V TCASE = 25 °C PIN ≤ −60 dBm	—	2	10	μA
	Receive Mode	I _{QRX}	VCC ≤ 4.8 V 1.2 V ≤ VLOGIC ≤ 2.7 V VRAMP ≤ 0.1 V TX_EN ≤ 0.4 V BS ≤ 0.4 V BS ≥ VLOGIC − 0.4 V TCASE = 25 °C PIN ≤ −60 dBm	—	15	50	

Table 4. SKY77518-21 Electrical Specifications ¹ (2 of 5)

GSM900 Mode (f = 880 to 915 MHz and P _{IN} = 0 to 6 dBm)							
Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Units	
Frequency range	F	—	880	—	915	MHz	
Input power	P _{IN}	—	0	—	6	dBm	
Analog power control voltage	V _{RAMP}	—	0.2	—	1.8	V	
Power Added Efficiency	PAE	V _{CC} = 3.3 V P _{OUT} = 33 dBm TX_EN = V _{TX_EN_HIGH} V _{RAMP} set for P _{OUT} = 33 dBm pulse width 577 μs duty cycle 1:8 T _{CASE} = 25 °C	41	48	—	%	
Supply Current @ Rated Power	I _{CC_33 dBm}	V _{CC} = 3.3 V P _{OUT} = 33 dBm P _{IN} = 3 dBm TX_EN = V _{TX_EN_HIGH} V _{RAMP} set for P _{OUT} = 33 dBm pulse width 577 μs duty cycle 1:8 T _{CASE} = 25 °C	—	1.26	1.48	A	
Supply Current @ Minimum Power	I _{CC_5 dBm}	V _{CC} = 3.3 V P _{OUT} = 5 dBm P _{IN} = 3 dBm TX_EN = V _{TX_EN_HIGH} V _{RAMP} set for P _{OUT} = 5 dBm pulse width 577 μs duty cycle 1:8 T _{CASE} = 25 °C	—	53	60	mA	
Harmonics	2nd to 13th	2f ₀ to 13f ₀	BW = 3 MHz 5 dBm ≤ P _{OUT} ≤ 33 dBm V _{RAMP} controlled ⁶	—	-40	-33	dBm
Output power	P _{OUT}	V _{CC} = 3.3 V T _{CASE} = 25 °C P _{IN} = 0 dBm	33.0	33.5	—	dBm	
	P _{OUT_MAX LOW VOLTAGE}	V _{CC} = 2.7 V TX_EN = V _{TX_EN_HIGH} T _{CASE} = -20 °C to 85 °C P _{IN} = 0 dBm	30.5	31.5	—		
	P _{OUT_MAX HIGH VOLTAGE}	V _{CC} = 4.8 V TX_EN = V _{TX_EN_HIGH} T _{CASE} = -20 °C to 85 °C P _{IN} = 0 dBm	30.5	34.5	—		
Input VSWR	Γ _{IN}	P _{OUT} = 5 to 33 dBm V _{RAMP} controlled ⁶	—	1.5:1	2.5:1		
Forward isolation ⁴	P _{OUT_RX}	P _{IN} = 6 dBm V _{RAMP} ≤ 0.1 V V _{LOGIC} = V _{LOGIC_HIGH} TX_EN = V _{TX_EN_LOW} Mode = GSM_RX (see Table 3)	—	-65	-45	dBm	
	P _{OUT_ENABLED_TX}	P _{IN} = 6 dBm V _{RAMP} ≤ 0.1 V V _{LOGIC} = V _{LOGIC_HIGH} TX_EN = V _{TX_EN_HIGH} Mode = GSM_TX (see Table 3)	—	-40	-5		
Coupling of GSM900 TX output (f ₀) to GSM_RX output pad ⁴	CG _{HL_TX-RX_F0}	5 dBm ≤ P _{OUT} ≤ 33 dBm Mode = GSM_TX (see Table 3)	—	3	11	dBm	
Coupling of GSM900 TX output (2f ₀ , 3f ₀) to DCS/PCS_RX output pad	CG _{HL_TX-DCS_RX}	5 dBm ≤ P _{OUT} ≤ 33 dBm Mode = GSM_TX (see Table 3)	—	-50	-36	dBm	

www.DataSheet4U.com

Table 4. SKY77518-21 Electrical Specifications ¹ (3 of 5)

GSM900 Mode (f = 880 to 915 MHz and P _{IN} = 0 to 6 dBm) [continued]						
Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Units
Spurious	Spur	All combinations of the following parameters: V _{RAMP} = controlled ² P _{IN} = min. to max. V _{CC} = 2.7 V to 4.8 V Load VSWR = 12:1, all phase angles	No parasitic oscillation > -36 dBm			
Load mismatch	Load	All combinations of the following parameters: V _{RAMP} = controlled ² P _{IN} = min. to max. V _{CC} = 2.7 V to 4.8 V Load VSWR = 20:1, all phase angles	No module damage or permanent degradation			
RX Band Spurious	RX_SPUR	At f _o + 20 MHz (935 to 960 MHz) RBW = 100 kHz V _{CC} = 3.3 V 5 dBm ≤ P _{OUT} ≤ 33 dBm T _{CASE} = 25 °C	—	-84	-83	dBm
		At f _o + 10 MHz (925 to 935 MHz) RBW = 100 kHz V _{CC} = 3.3 V T _{CASE} = 25 °C 5 dBm ≤ P _{OUT} ≤ 33 dBm	—	-80	-76	
		At 1805 to 1880 MHz RBW = 100 kHz V _{CC} = 3.3 V T _{CASE} = 25 °C 5 dBm ≤ P _{OUT} ≤ 33 dBm	—	-101	-84	
Power control dynamic range	PCDR		30	50	—	dB
Power control variation	PCv	P _{OUT} 13 to 33 dBm T _{CASE} = 25 °C	-1.0	—	1.0	dB
		P _{OUT} 13 to 33 dBm	-1.5	—	1.5	
		P _{OUT} 5 to 11 dBm T _{CASE} = 25 °C	-2.0	—	2.0	
		P _{OUT} 5 to 11 dBm	-3.5	—	3.5	
Power control slope	PCs	5 to 33 dBm	—	—	150	dB/V
GSM900 RECEIVE (f = 925 to 960 MHz) Mode = GSM_RX						
Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Units
Frequency range	F	—	925	—	960	MHz
Insertion Loss, ANT to GSM_RX ⁴	IL _{GSM_RX}	—	—	1.0	1.3	dB
VSWR ANT, GSM_RX ⁴	Γ _{IN} , Γ _{OUT}	—	—	1.2:1	1.5:1	

Table 4. SKY77518-21 Electrical Specifications ¹ (4 of 5)

DCS1800 Mode (f = 1710 to 1785 MHz and P _{IN} = 0 to 6 dBm)							
Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Units	
Frequency range	f	—	1710	—	1785	MHz	
Input power	P _{IN}	—	0	—	6	dBm	
Analog power control voltage	V _{RAMP}	—	0.2	—	1.8	V	
Power Added Efficiency	PAE	V _{CC} = 3.3 V P _{OUT} = 31 dBm TX_EN = V _{TX_EN_HIGH} V _{RAMP} set for P _{OUT} = 31 dBm pulse width 577 μs duty cycle 1:8 T _{CASE} = 25 °C	35	41	—	%	
Supply Current @ Rated Power	I _{CC_31 dBm}	V _{CC} = 3.3 V P _{OUT} = 31 dBm P _{IN} = 3 dBm TX_EN = V _{TX_EN_HIGH} V _{RAMP} set for P _{OUT} = 31 dBm pulse width 577 μs duty cycle 1:8 T _{CASE} = 25 °C	—	0.93	1.04	A	
Supply Current @ Minimum Power	I _{CC_0 dBm}	V _{CC} = 3.3 V P _{OUT} = 0 dBm P _{IN} = 3 dBm TX_EN = V _{TX_EN_HIGH} V _{RAMP} set for P _{OUT} = 0 dBm pulse width 577 μs duty cycle 1:8 T _{CASE} = 25 °C	—	40	55	mA	
Harmonics	2 nd to 4 th , 7 th	2f ₀ to 4f ₀ , 7f ₀	BW = 3 MHz, 0 dBm ≤ P _{OUT} ≤ 31 dBm V _{RAMP} controlled ⁵	—	-40	-33	dBm
	5 th , 6 th	5f ₀ , 6f ₀		—	-35	-25	
Output power	P _{OUT}	V _{CC} = 3.3 V T _{CASE} = 25 °C P _{IN} = 0 dBm	31.0	32.0	—	dBm	
	P _{OUT_MAX LOW VOLTAGE}	V _{CC} = 2.7 V TX_EN = V _{TX_EN_HIGH} T _{CASE} = -20 °C to 85 °C P _{IN} = 0 dBm	28.5	30.0	—		
	P _{OUT_MAX HIGH VOLTAGE}	V _{CC} = 4.8 V TX_EN = V _{TX_EN_HIGH} T _{CASE} = -20 °C to 85 °C P _{IN} = 0 dBm	28.5	32.5	—		
Input VSWR	Γ _{IN}	P _{OUT} = 0 to 31 dBm V _{RAMP} controlled ⁵	—	1.5:1	2.5:1	—	
Forward isolation ⁴	P _{OUT_RX}	P _{IN} = 6 dBm V _{RAMP} ≤ 0.1 V V _{LOGIC} = V _{TX_EN_HIGH} TX_EN = V _{TX_EN_LOW} Mode = DCS_RX (see Table 3)	—	-65	-53	dBm	
	P _{OUT_ENABLED_TX}	P _{IN} = 6 dBm V _{RAMP} ≤ 0.1 V V _{LOGIC} = V _{LOGIC_HIGH} TX_EN = V _{TX_EN_HIGH} Mode = DCS_TX (see Table 3)	—	-35	-5		
Coupling of DCS TX output to Receive RF output pad ⁴	CDCS_TX-RX_F0	0 dBm ≤ P _{OUT} ≤ 31 dBm Mode = DCS_TX (see Table 3)	—	2	9	dBm	

www.DataSheet4U.com

Table 4. SKY77518-21 Electrical Specifications ¹ (5 of 5)

DCS1800 Mode (f = 1710 to 1785 MHz and P _{IN} = 0 to 6 dBm) [continued]						
Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Units
Spurious	Spur	All combinations of the following parameters: V _{RAMP} = controlled ³ P _{IN} = min. to max. V _{CC} = 2.7 V to 4.8 V Load VSWR = 12:1, all phase angles	No parasitic oscillation > -36 dBm			
Load mismatch	Load	All combinations of the following parameters: V _{RAMP} = controlled ³ P _{IN} = min. to max. V _{CC} = 2.7 V to 4.8 V Load VSWR = 20:1, all phase angles	No module damage or permanent degradation			
RX Band Spurious	RX_SPUR	At f ₀ + 20 MHz (1805 to 1880 MHz) RBW = 100 kHz V _{CC} = 3.3 V T _{CASE} = 25 °C 0 dBm ≤ P _{OUT} ≤ 31 dBm	—	-83	-78	dBm
		925 to 960 MHz RBW = 100 kHz V _{CC} = 3.3 V T _{CASE} = 25 °C 0 dBm ≤ P _{OUT} ≤ 31 dBm	—	—	-87	
Power control dynamic range	PCDR		35	50	—	dB
Power control variation	PCV	Control level 0-8 V _{CC} ≥ 3.3 V P _{OUT} 14 to 31 dBm T _{CASE} = 25 °C	-1.5	—	1.5	dB
		P _{OUT} 14 to 31 dBm	-2.0	—	2.0	
		Control level 9-13 P _{OUT} 4 to 12 dBm T _{CASE} = 25 °C	-2.5	—	2.5	
		P _{OUT} 4 to 12 dBm	-3.5	—	3.5	
		Control level 14-15 P _{OUT} 0 to 2 dBm T _{CASE} = 25 °C	-3.0	—	3.0	
		P _{OUT} 0 to 2 dBm	-4.5	—	4.5	
Power control slope	PCs	0 to 30 dBm	—	—	150	dB/V
DCS 1800 RECEIVE (f = 1805 to 1880 MHz) Mode = DCS_RX						
Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Units
Frequency range	f	—	1805	—	1880	MHz
Insertion Loss, ANT to DCS_RX ⁴	IL _{DCS_RX}	—	—	1.2	1.5	dB
VSWR ANT, DCS_RX ⁴	Γ _{IN} , Γ _{OUT}	—	—	1.2:1	1.5:1	

¹ Unless specified otherwise:
T_{CASE} = -20 °C to max. operating temperature (see Table 2), RL = 50 Ω, pulsed operation with pulse width ≤ 1154 μs and duty cycle ≤ 2:8, V_{CC} = 2.7 V to 4.8 V.

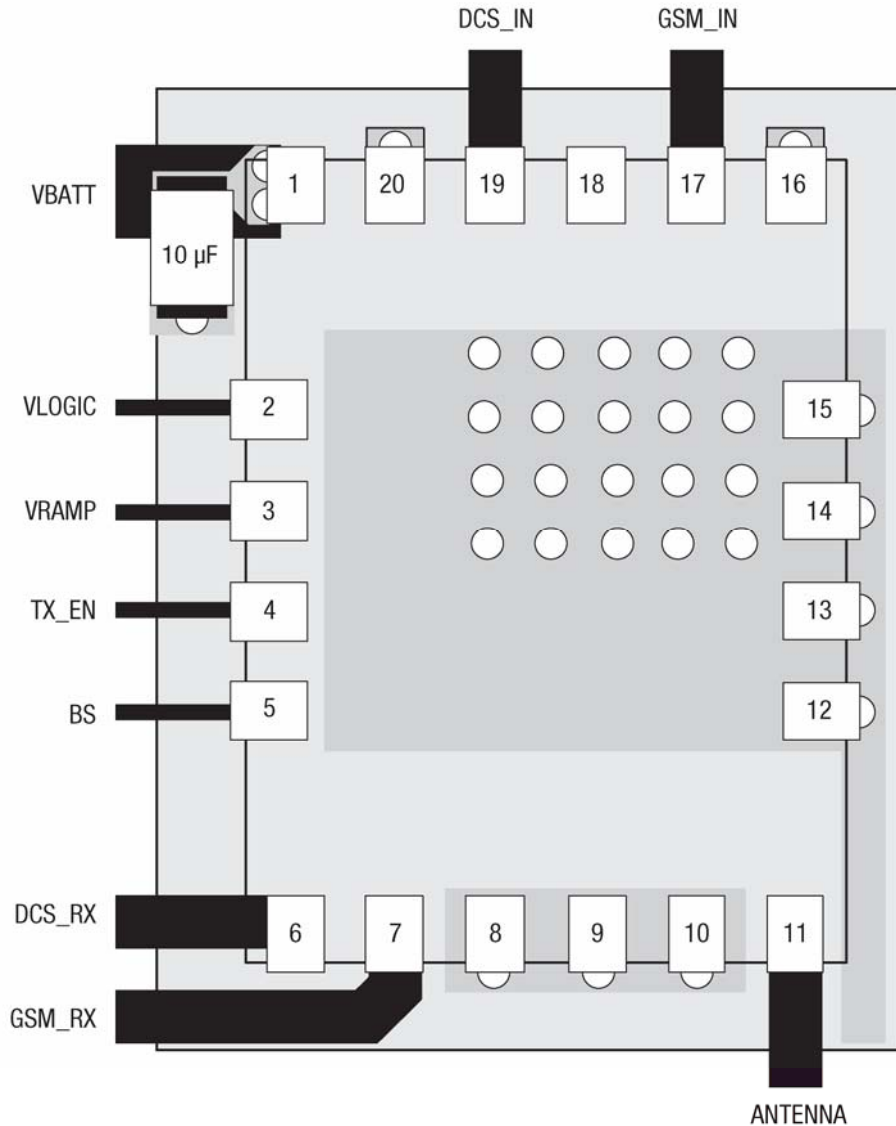
² ICC = 0A to xA, where x = current at P_{OUT} = 33 dBm, 50 Ω load, and V_{CC} = 3.3 V.

³ ICC = 0A to xA, where x = current at P_{OUT} = 31 dBm, 50 Ω load, and V_{CC} = 3.3 V

⁴ Terminate all unused RF ports with 50 Ω loads

⁵ Max V_{RAMP} = V_{RAMP} @ P_{OUT} = 31 dBm, 50 Ω load, T_{CASE} 25 °C, P_{IN} = 3 dBm

⁶ Max V_{RAMP} = V_{RAMP} @ P_{OUT} = 33 dBm, 50 Ω load, T_{CASE} 25 °C, P_{IN} = 3 dBm



NOTES:

1. The value of 10 µF cap is dependent on the noise level on the phone board.
2. Ensure sufficient number of vias to supply battery current to Vbatt.
3. VBATT trace width should be ≥ 1 mm.
4. Ground terminal of bypass capacitor connected to ground plane with vias.
5. Layer 2 should be solid ground plane under SKY77518 and any RF trace interconnect.

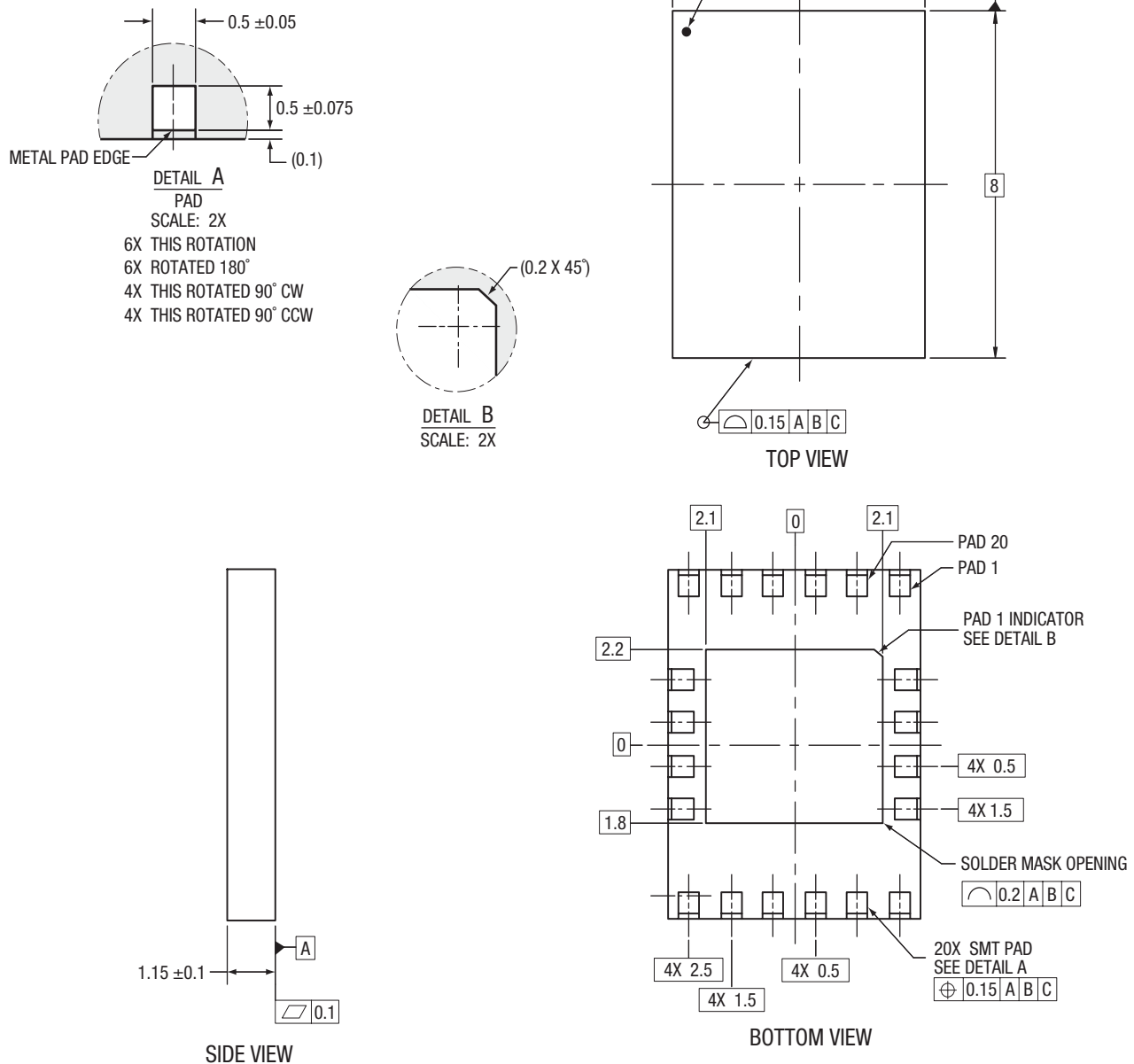
200472_002

Figure 2. SKY77518-21 Application Schematic Diagram

Package Dimensions and Pad Descriptions

Figure 3 is a mechanical diagram of the pad layout for the SKY77518-21, a 20-pad leadless dual-band FEM. Figure 4 provides a recommended phone board layout footprint for the FEM to help the designer attain optimum thermal conductivity, good grounding, and minimum RF discontinuity for the 50-ohm

terminals. Figure 5 illustrates the device pad configuration and the numbering convention which starts with pad 1 at the upper left, as indicated, and increments counter-clockwise around the package. Table 5 lists the pad names and the associated signal descriptions. Figure 6 interprets typical case markings.



www.DataSheet4U.com

NOTES: UNLESS OTHERWISE SPECIFIED.

1. Dimensioning and Tolerancing in accordance with ASME Y14.5-1994.
2. Pads are solder mask defined on 3 edges.
3. All dimensions are in millimeters.

200472_003

Figure 3. SKY77518-21 FEM Package Dimensions – 20-Pad Leadless (All Views)

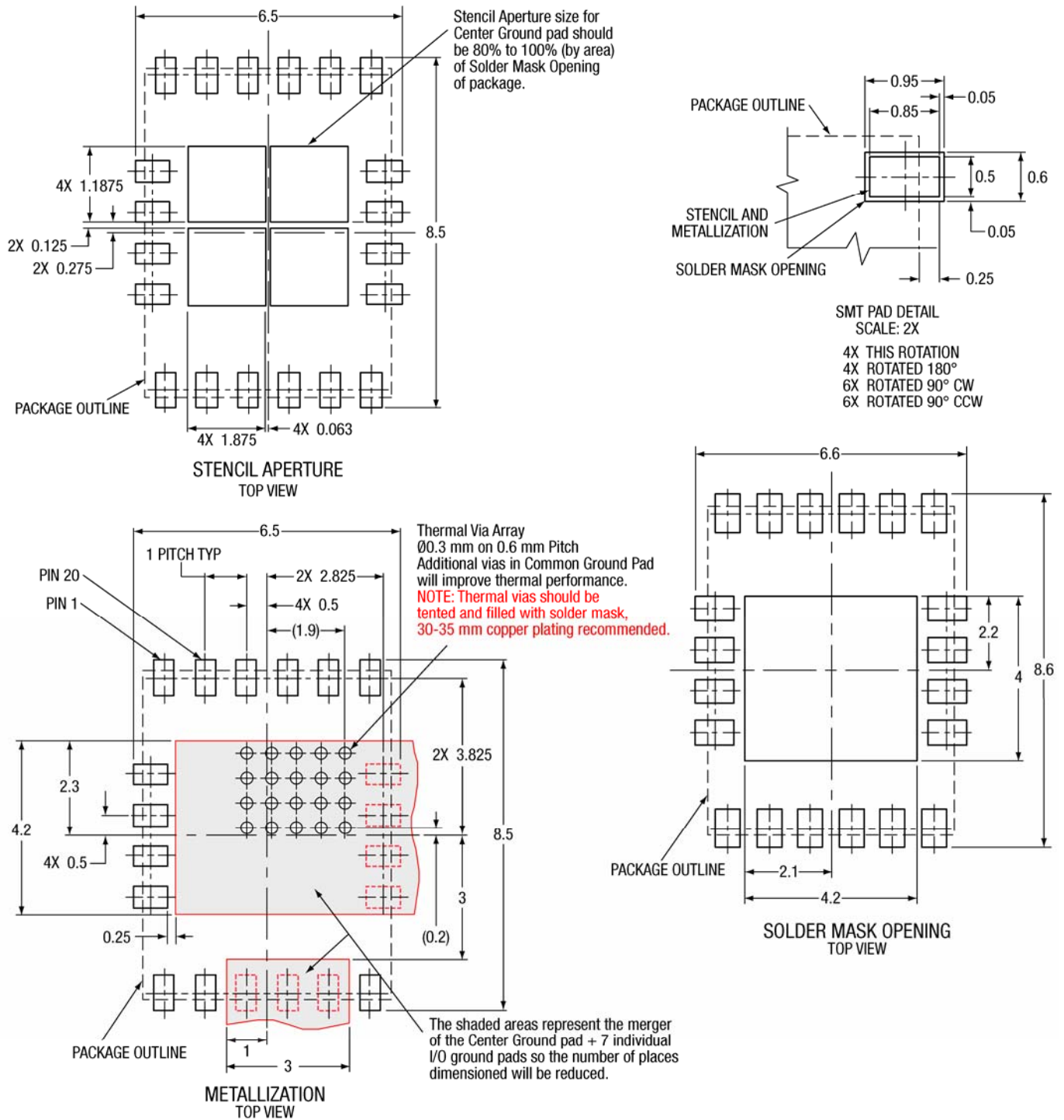
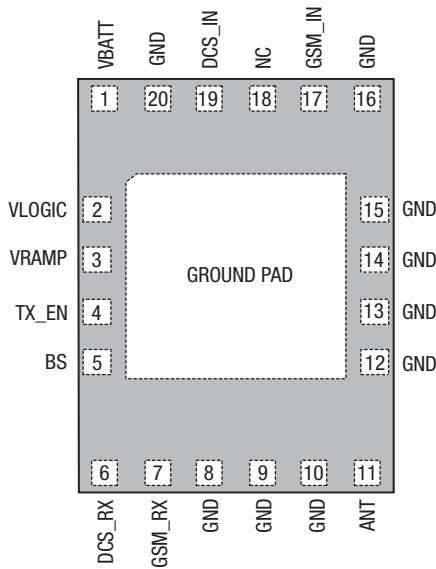


Figure 4. Phone PCB Layout Footprint for 6 x 8 mm, 20-Pad Package with Grid-Bottom Solder Mask – SKY77518-21 Specific.



Pin layout as seen from top view looking through the package.

200472_005

Figure 5. SKY77518-21 FEM Package Pad Configuration – 20-Pad Leadless (Top View)

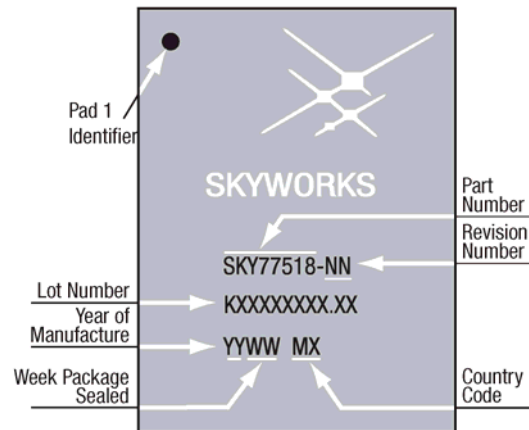


Figure 6. Typical Case Markings

200472_006

Table 5. SKY77518-21 Pad Names and Signal Descriptions

Pad	Name	Description
1	VBATT	Battery input voltage
2	VLOGIC	Control logic level selection/Standby control
3	VRAMP	Analog power control voltage input
4	TX_EN	TX / RX select (mode control)
5	BS	Band Select (mode control)
6	DCS_RX	DCS Receive RF Output (1805-1880 MHz)
7	GSM_RX	GSM Receive RF Output (920-960 MHz)
8	GND	RF and DC Ground
9	GND	RF and DC Ground
10	GND	RF and DC Ground
11	ANT	RF_IN / RF_OUT to Antenna
12	GND	RF and DC Ground
13	GND	RF and DC Ground
14	GND	RF and DC Ground
15	GND	RF and DC Ground
16	GND	RF and DC Ground
17	GSM_IN	RF input 880–915 MHz
18	NC	No Connect
19	DCS_IN	RF input 1710–1785 MHz
20	GND	RF and DC Ground
GND PADS	GROUND GRID	Ground Pads, module underside

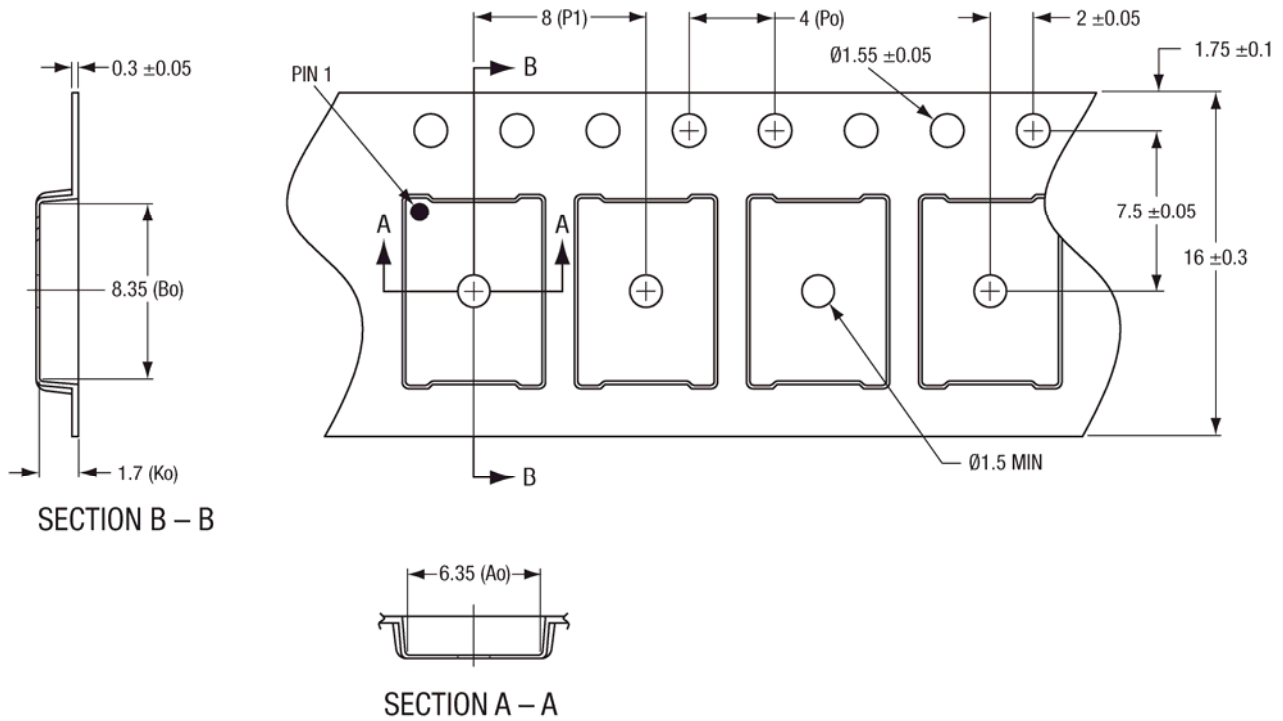
www.DataSheet4U.com

Package and Handling Information

Because of its sensitivity to moisture absorption, this device package is baked and vacuum-packed prior to shipment. Instructions on the shipping container label must be followed regarding exposure to moisture after the container seal is broken, otherwise, problems related to moisture absorption may occur when the part is subjected to high temperature during solder assembly.

The SKY77518-21 is capable of withstanding an MSL3/250 °C solder reflow. Care must be taken when attaching this product, whether it is done manually or in a production solder reflow environment. If the part is attached in a reflow oven, the temperature ramp rate should not exceed 3 °C per second; maximum temperature should not exceed 250 °C. If the part is manually attached, precaution should be taken to insure that the part is not subjected to temperatures exceeding 250 °C for more than 10 seconds. For details on attachment techniques, precautions, and handling procedures recommended by Skyworks, please refer to Skyworks Application Note: *PCB Design and SMT Assembly/Rework*, Document Number 101752. Additional information on standard SMT reflow profiles can also be found in the JEDEC *Joint Industry Standard J-STD-020*.

Production quantities of this product are shipped in the standard tape-and-reel format (see Figure 7). For additional packaging details, refer to Skyworks Application Note: *Tape and Reel Information – RF Modules*, Document Number 101568.



NOTES:

1. CARRIER TAPES MUST MEET ALL REQUIREMENTS OF SKYWORKS GP01-D232 PROCUREMENT SPEC FOR TAPE AND REEL SHIPPING.
2. CARRIER TAPE SHALL BE BLACK CONDUCTIVE POLYSTYRENE.
3. COVER TAPE SHALL BE TRANSPARENT CONDUCTIVE PRESSURE SENSITIVE ADHESIVE (PSA) MATERIAL W/13.3 mm WIDTH.
4. ESD-SURFACE RESISTIVITY SHALL BE $\leq 1 \times 10^{10}$ OHMS/SQUARE PER EIA, JEDEC TNR SPECIFICATION.
5. Po / P1, 10 PITCHES CUMULATIVE TOLERANCE ON TAPE: ± 0.2 mm.
6. Ao & Bo MEASUREMENT POINT TO BE 0.3 mm FROM BOTTOM POCKET.
7. ALL DIMENSIONS ARE IN MILLIMETERS.
8. PART NO.: eC3-MCM0608-16-8-F1-L REV. 0. PLEASE INDICATE ON PURCHASE ORDER.
9. NUMBER OF PARTS per 13 inch (DIAMETER) x 16 mm wide REEL: 2500.

ePAK CARRIER TAPE

CARRIER TAPE OVERMOLD MCM 6 x 8 x 1.4 mm BODY SIZE GP01-D232-081C
101568_019

Figure 7. Tape and Reel Dimensional Diagram for 6 x 8 x 1.2 mm Package SKY77518-21 Specific

Electrostatic Discharge Sensitivity

The SKY77518-21 is a Class 1 device. The ESD testing was performed in compliance with JEDEC JESD22-A114B Human Body Model (HBM) and JEDEC JESD22-A115B Machine Model (MM) requirements.

Various failure criteria can be utilized when performing ESD testing. Many vendors employ relaxed ESD failure standards that fail devices only after “the pad fails the electrical specification limits” or “the pad becomes completely non-functional”.

Skyworks employs stringent criteria, rejecting devices as soon as the pad begins to show any degradation on a curve tracer.

To avoid ESD damage, both latent and visible, it is very important that the product assembly and test areas follow the Class 1 ESD handling precautions listed below.

- Personnel Grounding
 - Wrist Straps
 - Conductive Smocks, Gloves and Finger Cots
 - Antistatic ID Badges
- Protective Workstation
 - Dissipative Table Top
 - Protective Test Equipment (Properly Grounded)
 - Grounded Tip Soldering Irons
 - Solder Conductive Suckers
 - Static Sensors
- Facility
 - Relative Humidity Control and Air Ionizers
 - Dissipative Floors (less than $10^9 \Omega$ to GND)
- Protective Packaging and Transportation
 - Bags and Pouches (Faraday Shield)
 - Protective Tote Boxes (Conductive Static Shielding)
 - Protective Trays
 - Grounded Carts
 - Protective Work Order Holders

Ordering Information

Model Number	Manufacturing Part Number	Product Revision	Package	Operating Temperature
SKY77518-21	SKY77518-21		6x8 MCM-20	-20 °C to +85 °C

Revision History

Revision	Level	Date	Description
A		November 6, 2007	Initial Issue

References

Application Note: PCB Design and SMT Assembly/Rework, Document Number 101752

Application Note: Tape and Reel Information – RF Modules, Document Number 101568

Application Note: BiCMOS iPAC™ Front-End Modules Implementation, Document Number 200576

Application Note: SKY77517 / SKY77518 Evaluation Board Information, Document Number 200574

Standard SMT Reflow Profiles: JEDEC Standard J-STD-020

JEDEC JESD22-A114B Human Body Model (HBM)

JEDEC JESD22-A115B Machine Model (MM)

©2007, Skyworks Solutions, Inc. All Rights Reserved

Information in this document is provided in connection with Skyworks Solutions, Inc. ("Skyworks") products. These materials are provided by Skyworks as a service to its customers and may be used for informational purposes only. Skyworks assumes no responsibility for errors or omissions in these materials. Skyworks may make changes to its products, specifications and product descriptions at any time, without notice. Skyworks makes no commitment to update the information and shall have no responsibility whatsoever for conflicts, incompatibilities, or other difficulties arising from future changes to its products and product descriptions.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as may be provided in Skyworks' Terms and Conditions of Sale for such products, Skyworks assumes no liability whatsoever.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF SKYWORKS® PRODUCTS INCLUDING WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, PERFORMANCE, QUALITY OR NON-INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. SKYWORKS FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. SKYWORKS SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THESE MATERIALS.

Skyworks® products are not intended for use in medical, lifesaving or life-sustaining applications. Skyworks' customers using or selling Skyworks® products for use in such applications do so at their own risk and agree to fully indemnify Skyworks for any damages resulting from such improper use or sale.

The following are trademarks of Skyworks Solutions, Inc.: Skyworks®, the Skyworks symbol, and "Breakthrough Simplicity"®. Product names or services listed in this publication are for identification purposes only, and may be trademarks of third parties. Third-party brands and names are the property of their respective owners.

Additional information, posted at www.skyworksinc.com, is incorporated by reference.