KSZ8021/KSZ8031 to KSZ8081/KSZ8091 (24-QFN) -- Hardware Differences

Hardware Pin Differences: Tabulated are only pin differences between parts (pins common to all parts are not shown)
Internal pull-up/pull-down values for the strapping pins are indicated after table

** For unmanaged mode (power-up default setting),*

KSZ8021RNL, KSZ8081RND, KSZ8091RND takes in the 50MHz clock
KSZ8031RNL, KSZ8081RNA, KSZ8091RNA takes in the 25MHz crystal / clock

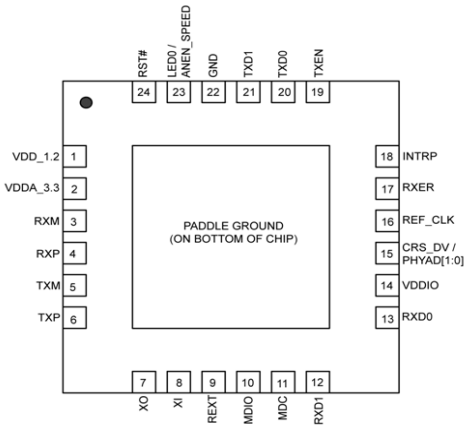
After power-up, **All Parts** can be programmed via PHY register 1Fh bit [7] to either 25MHz mode or 50MHz mode.

Rev 1.0 Created

	KSZ8021RNL (0.13um) KSZ8031RNL (0.13um)			KSZ8081RND (0.11um) KSZ8081RNA (0.11um)			KSZ8091RND (0.11um) KSZ8091RNA (0.11um)		
Pin #	**Name**	**Type**	**Function**	**Name**	**Type**	**Function**	**Name**	**Type**	**Function**
17	RXER	Ipd/O	RMII Receive Error Output	RXER	Ipd/O	**MII mode: MII Transmit Clock output** **Note:** **At the de-assertion of reset, this pin needs to latch in a pull-down value for normal operation. If MAC side pulls this pin high, PHY will goes to factory test mode, see Register 16h, set Bit [15]='0' for solution. Or an external pull-down resistor is recommended.**	RXER / PME_EN	Ipd/O	RMII Mode: RMII Receive Error Output Config Mode: The pull-up/pull-down value is latched as PME_EN at the de-assertion of reset.
18	INTRP	Ipu/Opu	Interrupt Output: Programmable Interrupt Output This pin has a weak pull-up, is open drain like, and requires an external 1.0KΩ pull-up resistor.	INTRP	Ipu/Opu	**Sames as KSZ8021RNL (0.13um) and KSZ8031RNL (0.13um)**	INTRP / PME_N2	Ipu/Opu	Interrupt Output: Programmable Interrupt Output PME_N Output: Programmable PME_N Output (pin option 2) This pin has a weak pull-up, is open drain like, and requires an external 1.0KΩ pull-up resistor.
23	LED0 / ANEN_SPEED	Ipu/O	LED Output: Programmable LED0 Output / Config Mode: Latched as Auto-Negotiation Enable (register 0h, bit [12]) and SPEED (register 0h, bit [13]) at the de-assertion of reset.	LED0 / ANEN_SPEED	Ipu/O	**Sames as KSZ8021RNL (0.13um) and KSZ8031RNL (0.13um)**	LED0 / PME_N1 / ANEN_SPEED	Ipu/O	LED Output: Programmable LED0 Output / PME_N Output: Programmable PME_N Output (pin option 1) In this mode, this pin has a weak pull-up, is open drain like, and requires an external 1.0KΩ pull-up resistor. Config Mode: Latched as Auto-Negotiation Enable (register 0h, bit [12]) and SPEED (register 0h, bit [13]) at the de-assertion of reset.

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
KSZ8021/31RNL	All Pull-Up / Pull-Down Pins (including Strapping Pins)					
pu	Internal Pull-Up Resistance	V_{DDIO} = 3.3V	29	43	76	KΩ
		V_{DDIO} = 2.5V	37	59	102	
		V_{DDIO} = 1.8V	57	100	187	
pd	Internal Pull-Down Resistance	V_{DDIO} = 3.3V	27	43	76	KΩ
		V_{DDIO} = 2.5V	35	60	110	
		V_{DDIO} = 1.8V	55	100	190	

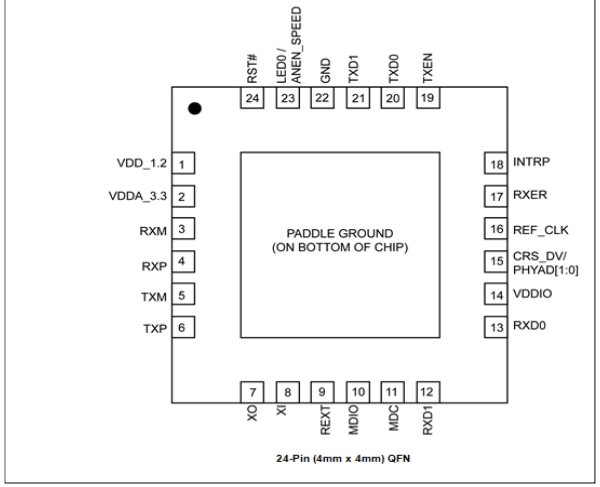
Pin Configuration – KSZ8021RNL / KSZ8031RNL



24-Pin (4mm x 4mm) QFN

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
KSZ8081RND/RNA	All Pull-Up/Pull-Down Pins (including Strapping Pins)					
pu	Internal Pull-Up Resistance	V_{DDIO} = 3.3V	30	45	73	kΩ
		V_{DDIO} = 2.5V	39	61	102	kΩ
		V_{DDIO} = 1.8V	48	99	178	kΩ
pd	Internal Pull-Down Resistance	V_{DDIO} = 3.3V	26	43	79	kΩ
		V_{DDIO} = 2.5V	34	59	113	kΩ
		V_{DDIO} = 1.8V	53	99	200	kΩ

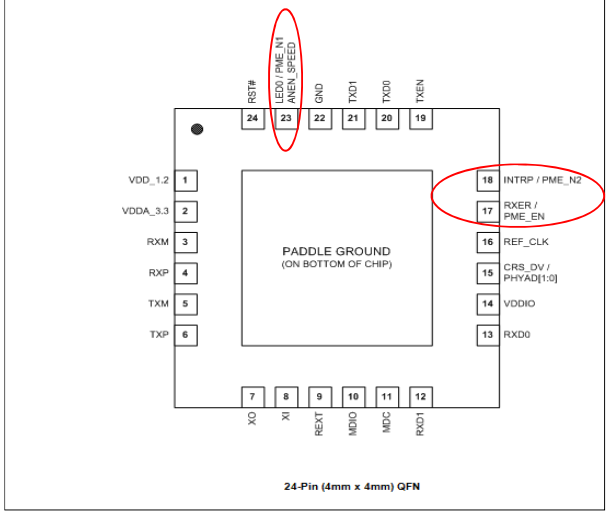
Pin Configuration – KSZ8081RND / KSZ8081RNA



24-Pin (4mm x 4mm) QFN

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
KSZ8091RND/RNA	All Pull-Up/Pull-Down Pins (including Strapping Pins)					
pu	Internal Pull-Up Resistance	V_{DDIO} = 3.3V	30	45	73	kΩ
		V_{DDIO} = 2.5V	39	61	102	kΩ
		V_{DDIO} = 1.8V	48	99	178	kΩ
pd	Internal Pull-Down Resistance	V_{DDIO} = 3.3V	26	43	79	kΩ
		V_{DDIO} = 2.5V	34	59	113	kΩ
		V_{DDIO} = 1.8V	53	99	200	kΩ

Pin Configuration – KSZ8091RND / KSZ8091RNA



24-Pin (4mm x 4mm) QFN