TLSR8368

Telink 2.4GHz RF System-On-Chip Solution

Product Brief

As one member of the low-power, high-integration family of Telink wireless SoC solution, the TLSR8368 is dedicated to 2.4GHz RF System-On-Chip solution, such as wireless keyboard, non-audio remote control applications, etc.

The TLSR8368 integrates an advanced 2.4GHz RF transceiver, a powerful 32-bit MCU, 16KB on-chip OTP, 6KB on-chip SRAM, a 10bit ADC, a quadrature decoder (QDEC), four-channel PWM, abundant I/O interfaces, and nearly all of the peripheral blocks needed to construct a powerful 2.4GHz RF System-On-Chip solution. Few external components are needed to satisfy customers' ultra-low cost requirements.

The TLSR8368 is RoHS-compliant and 100% lead (Pb)-free.

Target Applications:

- Wireless keyboard
- Non-audio remote control

Key Features:

— General features
  - Embed 32-bit high performance MCU with clock up to 48MHz
  - Program memory: 16KB on-chip OTP
  - Data memory: 6KB on-chip SRAM
  - 16/12MHz Crystal and 32KHz/32MHz embedded RC oscillator
  - Up to 38/14/9 GPIOs, with configurable internal pull-up or pull-down resistors
  - Debug interface: SWS (Single Wire Slave)
  - Supports MSPI interface (only for TLSR8368ET48 & TLSR8368ET24) and I2C Slave
  - Embeds a SAR ADC: Up to 10bit resolution and 4 input channels.
  - Embeds one quadrature decoder (QDEC)
  - Supports four-channel PWM output
  - Embeds three general 32-bit timers Timer0~Timer2.
  - Timer2 is programmable as watchdog

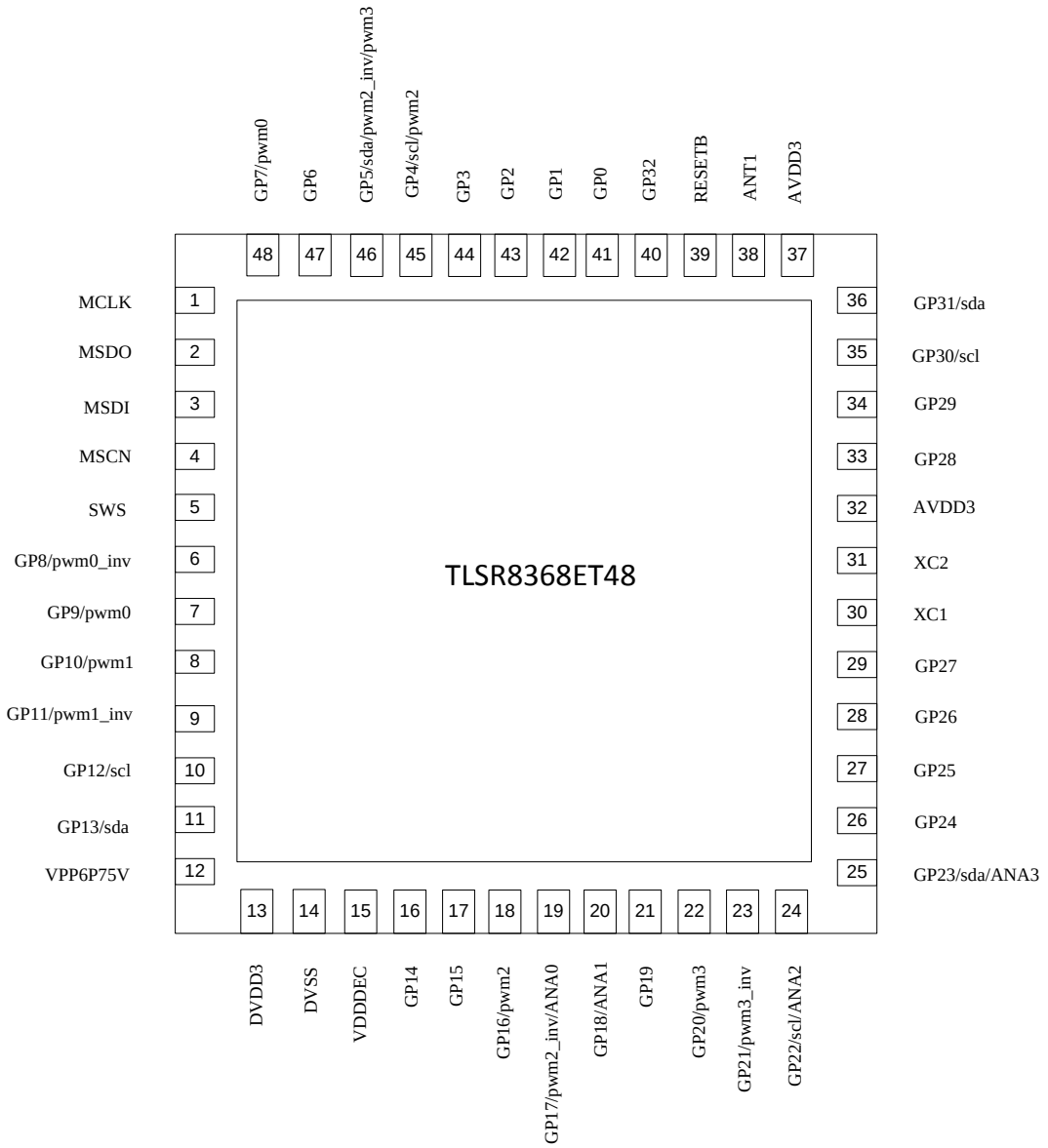
- Operating temperature: -40℃~+85℃ industrial temperature range

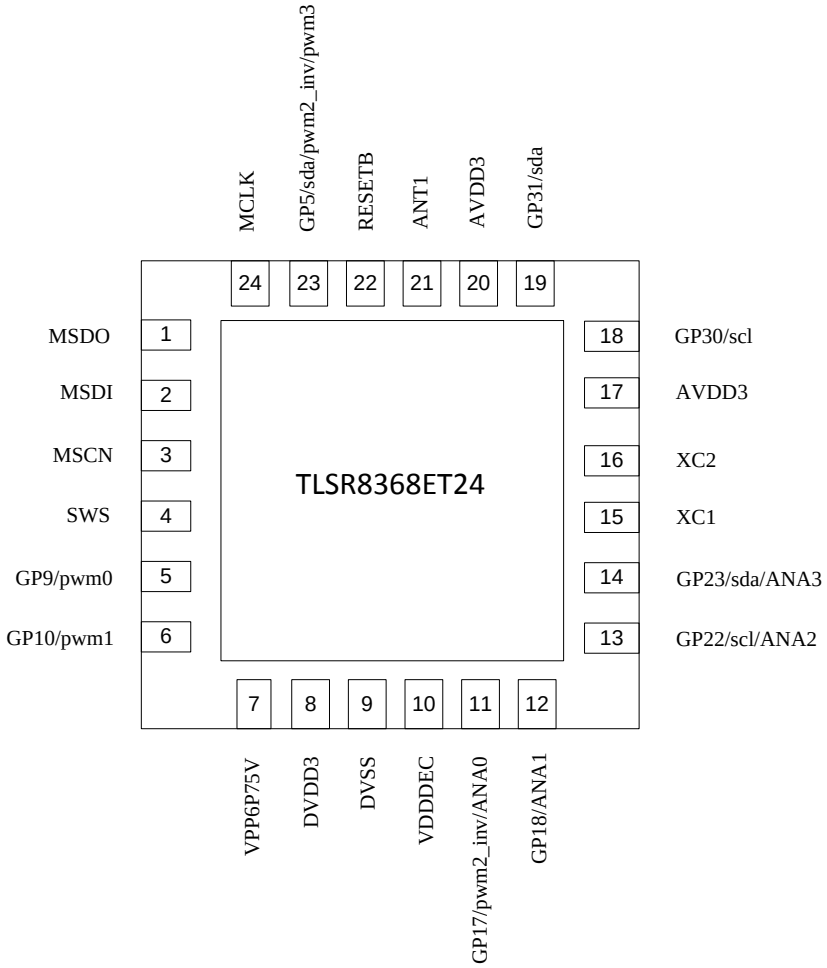
— RF features
  - 2.4GHz RF transceiver, working in worldwide 2.4GHz ISM band
  - Adaptive frequency hopping
  - RF link data rate: Configurable as 2Mbps or 250Kbps
  - Rx Sensitivity: -88dBm at 2Mbps mode, -97dBm at 250Kbps mode
  - Tx Output power: up to +6dBm
  - Auto acknowledgement and retry
  - Single-pin antenna interface
  - RSSI monitoring

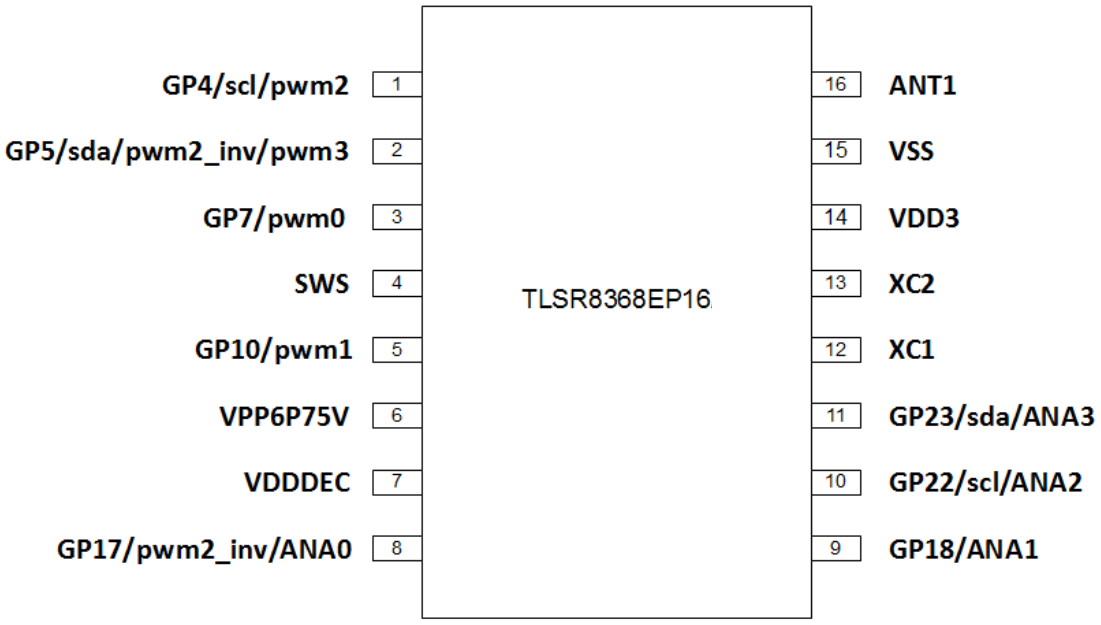
— Power management features
  - Power supply of 1.9V~3.6V
  - Embedded low battery detection
  - Multiple stage power management to minimize power consumption
  - Low power consumption:
    - ✧ Transmitter mode current: 15mA @ 0dBm power
    - ✧ Receiver mode current: 12mA
    - ✧ Suspend mode current: 10uA
    - ✧ Deep sleep mode current: 0.7uA

— Package
  - TLSR8368ET48, 48-pin QFN 7×7 mm
  - TLSR8368ET24, 24-pin QFN 4 X 4 mm
  - TLSR8368EP16, 16-pin SOP16L_10X6 mm
  - DICE: TLSR8368ED

Pin layout:


TLSR8368ET48
1 MCLK
2 MSDO
3 MSDI
4 MSCN
5 SWS
6 GP8/pwm0_inv
7 GP9/pwm0
8 GP10/pwm1
9 GP11/pwm1_inv
10 GP12/scl
11 GP13/sda
12 VPP6P75V
13 DVDD3
14 DVSS
15 VDDDEC
16 GP14
17 GP15
18 GP16/pwm2
19 GP17/pwm2_inv/ANA0
20 GP18/ANA1
21 GP19
22 GP20/pwm3
23 GP21/pwm3_inv
24 GP22/scl/ANA2
25 GP23/sda/ANA3
26 GP24
27 GP25
28 GP26
29 GP27
30 XC1
31 XC2
32 AVDD3
33 GP28
34 GP29
35 GP30/scl
36 GP31/sda
37 AVDD3
38 ANT1
39 RESETB
40 GP32
41 GP0
42 GP1
43 GP2
44 GP3
45 GP4/scl/pwm2
46 GP5/sda/pwm2_inv/pwm3
47 GP6
48 GP7/pwm0


MCLK
GP5/sda/pwm2_inv/pwm3
RESETB
ANT1
AVDD3
GP31/sda
24
23
22
21
20
19
MSDO
1
MSDI
2
MSCN
3
SWS
4
GP9/pwm0
5
GP10/pwm1
6
TLSR8368ET24
18
GP30/scl
17
AVDD3
16
XC2
15
XC1
14
GP23/sda/ANA3
13
GP22/scl/ANA2
7
8
9
10
11
12
VPP6P75V
DVDD3
DVSS
VDDDEC
GP17/pwm2_inv/ANA0
GP18/ANA1


GP4/scl/pwm2
1
GP5/sda/pwm2_inv/pwm3
2
GP7/pwm0
3
SWS
4
GP10/pwm1
5
VPP6P75V
6
VDDDEC
7
GP17/pwm2_inv/ANA0
8
TLSR8368EP16
16
ANT1
15
VSS
14
VDD3
13
XC2
12
XC1
11
GP23/sda/ANA3
10
GP22/scl/ANA2
9
GP18/ANA1

Development tools:

A full set of development tools for the 2.4GHz RF System-On-Chip solution are provided, which include EVB, reference design and SDK for customers to perform evaluation, quick application prototyping and firmware development.

Company Profile:

Telink Semiconductor Co., Limited is a fabless semiconductor company that provides highly integrated radio-frequency and mixed-signal System-On-Chip (SoC) solutions for a variety of communication and control applications. We serve numerous markets including consumer electronics, medical instruments, industrial control, home automation and smart energy etc.

Our product portfolio currently includes 2.4GHz standard and proprietary wireless SoC, touch screen and touch button controller, and generic wireless MCU, all offering high performance, small silicon area, and low power consumption. We integrate high performance radio frequency, analog and mixed signal front end with efficient digital signal processing, digital communication and control functions into our SoC solutions in standard CMOS process technology.

We provide our customers with world leading level of wireless performance at a price level that is appealing to even the most cost-sensitive products. Our proprietarily optimized hardware and software platform makes it extremely easy to design into existing or emerging products, offering our customers rapid time-to-market and exceptional system design value.