대외비 2급

Description

- **Model : TWFS-B005D**
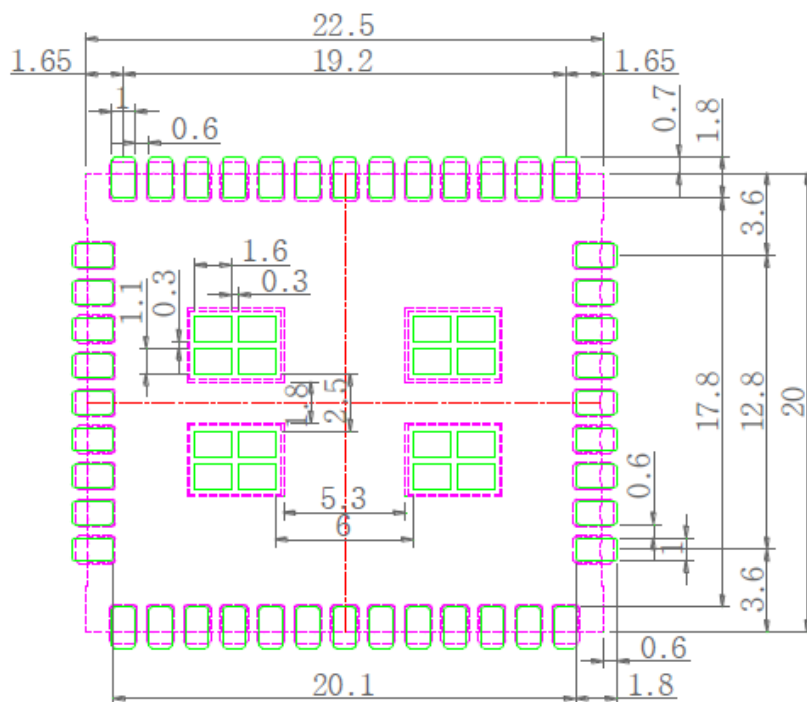- **WLAN : 802.11 a/b/g/n/ac**
- **Frequency Range : 2400MHz ~ 5835MHz**

Features

- **Dimension : 22.5mm x 20.0mm x 2.7mm**
- **Temperature Range : -20℃ ~ +85℃**
- **Supply Voltage : VBAT 3.3V to 3.9V**
- **Output Power**
  WLAN : 17.0dBm(b), 14dBm(g), 14dBm(n 2.4G), 13dBm(a), 12dBm(n 5G), 10dBm(ac)
- **Interface : SDIO(WLAN)**

Application

- **Home appliance (Outdoor Device)**

Dimensions

- **Power Supply Specification**

One Buck regulator, multiple LDO regulators, and a power management unit(PMU) are integrated into the CYW88359.
All regulators are programmable via the PMU. These blocks simplify power supply design for WLAN functions in embedded designs.
A single VBAT(3.3V to 3.9V DC max) and VIO supply (1.8V to 3.3V) can be used, with all additional voltages being provided by the regulators in the CYW88359.
Three control signals, BT_REG_ON, WL_REG_ON, and WPT_REG_ON(that is, WPT_1P8), are used to power-up the regulators and take the respective section out of reset.
The CBUCK CLDO and LNLDO power up available. All regulators are powered down only when both BT_REG_ON an WL_REG_ON are de-asserted.
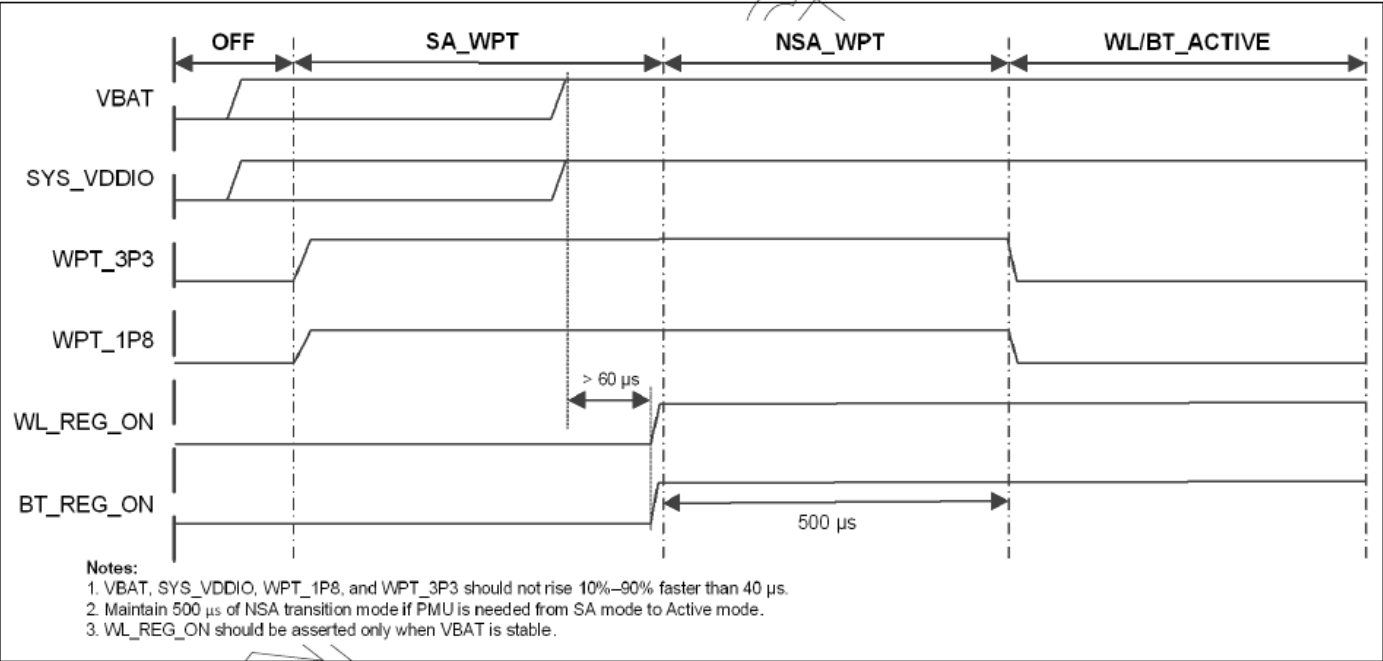The CLDO and LNLDO may be turned off/on based on the dynamic demands of the digital baseband.
The CYW88359 allows for an extremely low power-consumption mode by completely shutting down the CBUCK, CLDO, and LNLDO regulators. When in this state, MEMLPLDO and LPLDO(which is a low-power linear regulator supplied by the system VIO supply) provide the CYW88359 with all the voltage it requires, further reducing leakage currents.

Rating	Symbol	Value	Unit
DC supply for VBAT and PA driver supply	VBAT	−0.5 to +6.0	V
DC supply voltage for digital I/O	VDDIO	−0.5 to 3.9	V
DC supply voltage for RF switch I/Os	VDDIO_RF	−0.5 to 3.9	V
DC input supply voltage for CLDO and LNLDO	–	−0.5 to 1.575	V
DC supply voltage for RF analog	VDDRF	−0.5 to 1.32	V
DC supply voltage for core	VDDC	−0.5 to 1.32	V
WRF_TCXO_VDD	–	−0.5 to 3.63	V
Maximum undershoot voltage for I/O[a]	$V_{undershoot}$	−0.5	V
Maximum overshoot voltage for I/O[a]	$V_{overshoot}$	VDDIO + 0.5	V
Maximum junction temperature	T_j	125	°C
DC supply voltage for wireless charging	WPT_3p3	−0.5 to 3.9	V
DC supply voltage for wireless charging	WPT_1p8 V	−0.5 to 3.9	V
DC supply voltage for WCC I/O	WCC_VDDIO V	−0.5 to 3.9	V

    a. Duration not to exceed 25% of the duty cycle.

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*Boot sequence

OFF | SA_WPT | NSA_WPT | WL/BT_ACTIVE

VBAT

SYS_VDDIO

WPT_3P3

WPT_1P8

WL_REG_ON

> 60 µs

BT_REG_ON

500 µs

Notes:
1. VBAT, SYS_VDDIO, WPT_1P8, and WPT_3P3 should not rise 10%–90% faster than 40 µs.
2. Maintain 500 µs of NSA transition mode if PMU is needed from SA mode to Active mode.
3. WL_REG_ON should be asserted only when VBAT is stable.

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General Features

TWFS-B005D satisfies the following standards

1) WLAN RF band & modulation Features
   - Dual-band 2.4GHz and 5GHz 802.11 a/b/g/n/ac(802.11ac compliant)
   - Dual-stream up to 866Mbps data rate
   - Supports 20, 40 and 80MHz channels with optional SGI(256 QAM modulation)
   - Tx and Rx low-density parity check(LDPC)
   - Supports IEEE 802.11ac/n beamforming
   - Supports two antennas with WLAN MIMO
   - Supports standard SDIO V3.0 (up to SDR104 mode at 208MHz, 4-bit and 1-bit)
   - Backward compatibility with SDIO v2.0 host interface
   - WPA and WPA2(Personal) support for powerful encryption and authentication
   - AES and TKIP in hardware for faster data encryption and IEEE 802.11i compatibility
   - Reference WLAN subsystem provides Wi-Fi protected Setup(WPS)
2) WLAN MAC features
   - Enhanced MAC for supporting IEEE 802.11ac features
   - Transmission and reception of aggregated MPDUs(A-MPDU) for high throughput(HT)
   - Support for power management schemes, including WMM power-save multi-poll(PSMP) and multiphase PSMP operation
   - Support for immediate ACK and block-ACK policies
   - Inter-frame space timing support, including RIFS
   - Back-off counters in hardware for supporting multiple priorities as specified in the WMM specification
   - Timing synchronization function(TSF), network allocation vector(NAV) maintenance, and target beacon transmission time(TBTT) generation in hardware
   - Hardware offload for AES-CCMP, legacy WPA TKIP, legacy WEP ciphers, WAPI, and support for key management
   - Programmable independent basic service set(IBSS) or infrastructure basic service set functionality

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PIN Description

<TOP View>
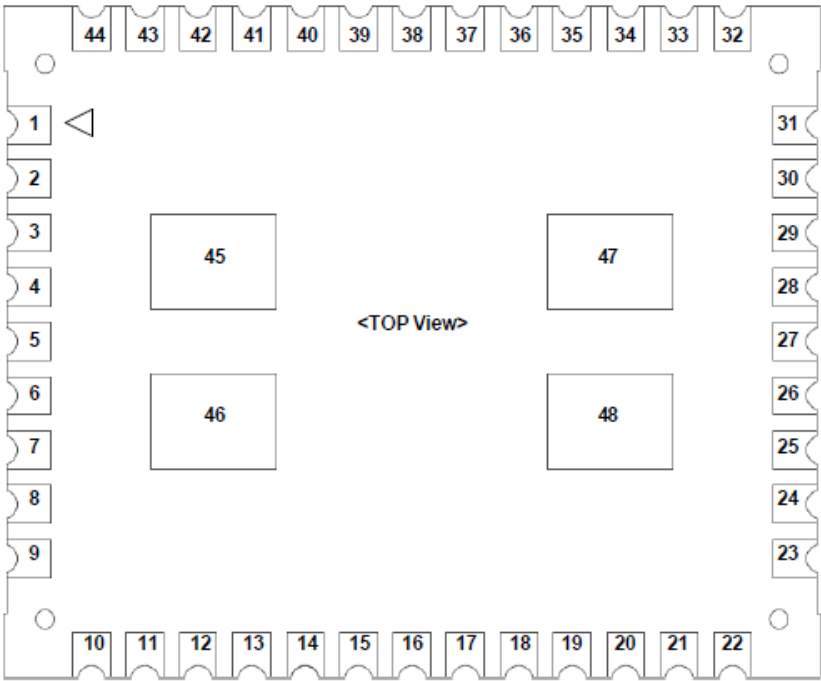
No.	Pin Name	I/O	Description
1	N.C.	-	Not Connected (Reserved)
2	N.C.	-	Not Connected (Reserved)
3	N.C.	-	Not Connected (Reserved)
4	N.C.	-	Not Connected (Reserved)
5	SDIO_CLK	I/O	SDIO clock line
6	SDIO_CMD	I/O	SDIO command line
7	SDIO_DATA3	I/O	SDIO data line 3
8	SDIO_DATA2	I/O	SDIO data line 2
9	SDIO_DATA1	I/O	SDIO data line 1
10	SDIO_DATA0	I/O	SDIO data line 0
11	N.C.	-	Not Connected (Reserved)

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PIN Description

No.	Pin Name	I/O	Description
12	N.C.	-	Not Connected (Reserved)
13	VBAT	I	Positive supply - Supply voltage : Typical 3.3V.
14	VBAT	I	Positive supply - Supply voltage : Typical 3.3V.
15	GND	-	Ground
16	N.C.	-	Not Connected (Reserved)
17	WL_REG_ON	I	WLAN Power on reset(Power rail : VDDIO) - Internal 200KΩ pull-down
18	N.C.	-	Not Connected (Reserved)
19	N.C.	-	Not Connected (Reserved)
20	N.C.	-	Not Connected (Reserved)
21	N.C.	-	Not Connected (Reserved)
22	N.C.	-	Not Connected (Reserved)
23	WL_ANT_CORE0	RF	WLAN RF ANT 0
24	GND	-	Ground
25	LPO	I	Low power clock input(32.768KHz, 0V ~ 1.8V peak to peak)
26	GND	-	Ground
27	WL_DEV_WAKE	I	WLAN device wake from host
28	WL_HOST_WAKE	O	WLAN host wake from device
29	GND	-	Ground

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PIN Description

No.	Pin Name	I/O	Description
30	GND	-	Ground
31	WL_ANT_CORE1	RF	WLAN RF ANT 1
32	SDIO_PAD	I	SDIO_PADVDDIO :If VIO_SD=1.8V→high, If VIO_SD=3.3V→low
33	N.C.	-	Not Connected (Reserved)
34	N.C.	-	Not Connected (Reserved)
35	N.C.	-	Not Connected (Reserved)
36	N.C.	-	Not Connected (Reserved)
37	VIO	I	BT, WLAN VDDIO supply voltage.(3.3V or 1.8V) - BT and WLAN should be same power rail
38	SDIO_DIS	I	SDIO_DIABLE : Low : SDIO Enabled, High : SDIO Disabled
39	PCIE_EN	I	PCIE_ENABLE : Low : PCIE Disabled, High : PCIE Enabled
40	N.C.	-	Not Connected (Reserved)
41	N.C.	-	Not Connected (Reserved)
42	N.C.	-	Not Connected (Reserved)
43	N.C.	-	Not Connected (Reserved)
44	N.C.	-	Not Connected (Reserved)
45	GND	-	Ground
46	GND	-	Ground
47	GND	-	Ground
48	GND	-	Ground

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Company Name : LG Inntoek
Model Name : TWFS-B005D
FCC ID : YZP-TWFS-B005D
IC : 7414C-TWFSB005D
Web Site : WWW.LGINNOTEK.COM
Address : 2540 N 1st ST STE 400 SAN JOSE, CA 95131-1016

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning&Caution:
Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void user's authority to operate the equipment. Antenna shall be mounted in such a manner to minimize the potential for human contact during normal operation. The antenna should not be contacted during operation to avoid the possibility of exceeding the FCC radio frequency exposure limit.
A minimum separation distance of 20 cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirement.

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This device complies with Industry Canada license-exempt RSS standard(s). Operation in subject to The following two conditions:
  (1) this device may not cause interference, and
  (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Cet appareil est conforme avec Industrie Canada RSS standard exempts de licence(s), Son utilisation est soumise à Les deux conditions suivantes: (1) cet appareil ne peut pas provoquer d'interférences et (2) cet appareil doit accepter Toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

※ This device is going to be operated in 5 150 MHz ~ 5 250 MHz frequency range, it is restricted in indoor environment only.

This device is intended only for OEM integrators under the following conditions:
  1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
  2) The transmitter module may not be co-located with any other transmitter or antenna.

[End product labelling]
The label for end product must include "Contains FCC ID: YZP-TWFS-B005D, Contains IC: 7414C-TWFSB005D".

[CAUTION: Exposure to Radio Frequency Radiation]
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. "This equipment should be installed and operated with minimum distance of 20cm between the radiator and your body. This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users."

C E [RED Information]

(LG) LG Innotek Co, Ltd

Manufacturer
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Operating frequency

2.4 GHz Band
802.11b/g/n(HT20) : 2 412 MHz ~ 2 472 MHz
802.11n(HT40): 2 422 MHz ~ 2 462 MHz

5 GHz Band (5 725 MHz ~ 5 850 MHz)
802.11a/n(HT20): 5 745 MHz ~ 5 825 MHz
802.11n(HT40): 5 755 MHz ~ 5 795 MHz
802.11ac(VHT80): 5 775 MHz

RF Output Power

[Antenna 0]
 2.4 GHz Band
17.63 dBm(802.11b), 16.23 dBm(802.11g), 15.27 dBm(802.11n_HT20), 14.75 dBm(802.11n_HT40)
 5 GHz Band (5 725 MHz ~ 5 850 MHz)
13.51 dBm(802.11a), 11.42 dBm(802.11n_HT20), 11.23 dBm(802.11ac_VHT20),
11.86 dBm(802.11n_HT40), 11.64 dBm(802.11ac_VHT40), 10.02 dBm(802.11ac_VHT80)

[Antenna 1]
 2.4 GHz Band
18.54 dBm(802.11b), 16.42 dBm(802.11g), 15.33 dBm(802.11n_HT20), 14.88 dBm(802.11n_HT40)
 5 GHz Band (5 725 MHz ~ 5 850 MHz)
12.69 dBm(802.11a), 10.83 dBm(802.11n_HT20), 9.76 dBm(802.11ac_VHT20),
10.66 dBm(802.11n_HT40), 10.73 dBm(802.11ac_VHT40), 9.23 dBm(802.11ac_VHT80)

[Multiple Antenna]
 2.4 GHz Band
18.39 dBm(802.11n_HT20), 17.91 dBm(802.11n_HT40)
 5 GHz Band (5 725 MHz ~ 5 850 MHz)
10.42 dBm(802.11n_HT20), 11.00 dBm(802.11ac_VHT20), 10.60 dBm(802.11n_HT40), 10.88 dBm(802.11ac_VHT40)
9.29 dBm(802.11ac_VHT80)

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