

## 0.1-8.2 GHz SPDT Switch

### Features

- Broadband frequency range: 0.1 to 8.2GHz
- Large supply voltage range: 1.65V to 3.3V
- Low insertion loss: 0.40dB typical @ 2.4 GHz
- Low insertion loss: 0.50dB typical @ 5.8 GHz
- High isolation: 37 dB @ 2.4 GHz
- High  $P_{0.1dB}$  of 32 dBm
- DFN 1.0 mm x 1.0 mm x 0.45 mm-6L package

### Applications

- IEEE 802.11a/b/g/n/ac/ax/be WLAN Networks
- ISM band radios
- WLAN repeaters
- Low power transmit receive systems
- Smartphones

### Typical Application Circuit

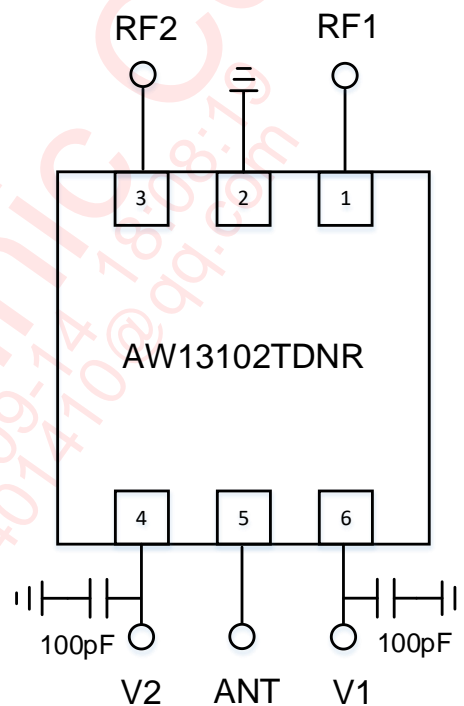


Figure 1 Typical Application Circuit of AW13102TDNR

All trademarks are the property of their respective owners.

## Pin Configuration And Top Mark

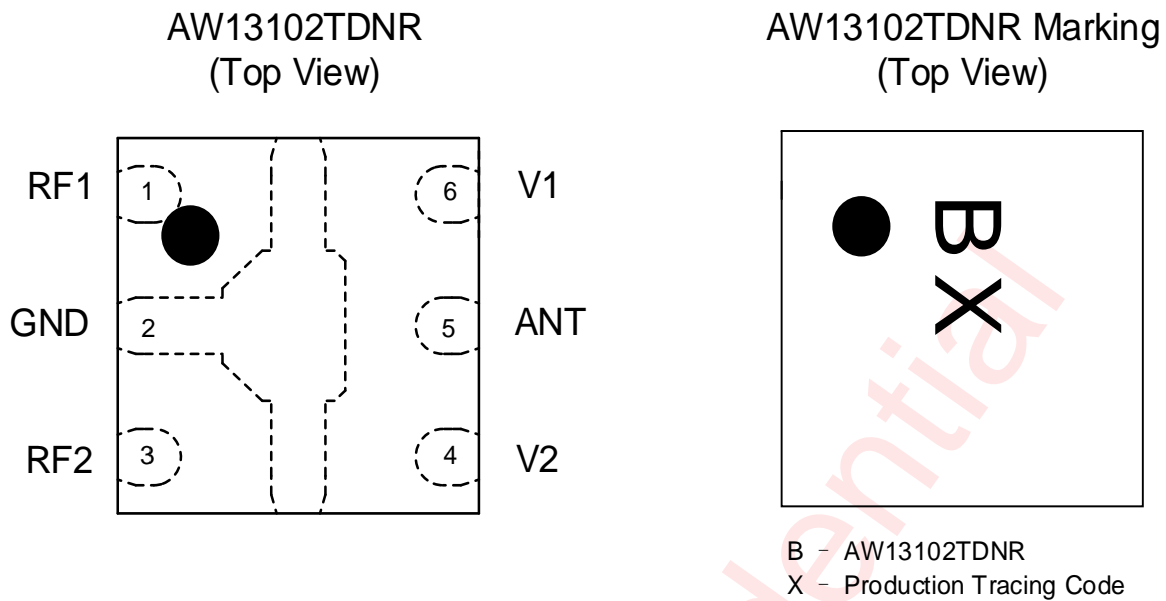


Figure 2 Pin Configuration and Top Mark

## Pin Definition

No.	NAME	DESCRIPTION
1	RF1	RF I/O path 1
2	GND	Ground
3	RF2	RF I/O path 2
4	V2	DC control voltage2
5	ANT	Antenna port
6	V1	DC control voltage1

## Functional Block Diagram

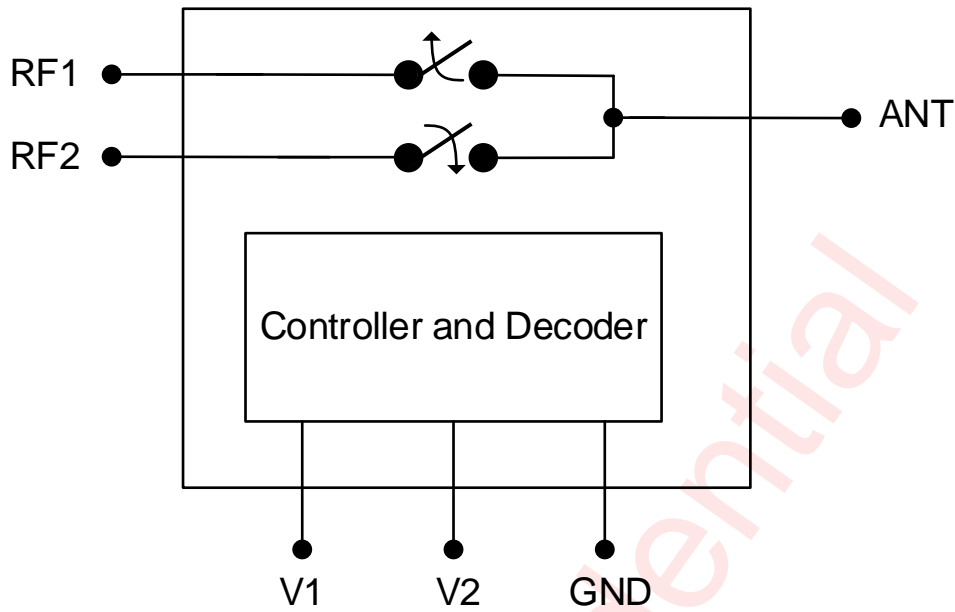


Figure 3 Functional Block Diagram

## Ordering Information

Part Number	Temperature	Package	Marking	Moisture Sensitivity Level	Environmental Information	Delivery Form
AW13102TDNR	-40°C~90°C	DFN 1.0mmX1.0mm X0.45mm-6L	B	MSL1	ROHS+HF	3000 units/ Tape and Reel

**Absolute Maximum Ratings**(NOTE1)

PARAMETERS		RANGE
Control Voltage Range	V1,V2	-0.3V to 3.6V
RF input power(RF1/RF2)		32 dBm
Operating Free-air Temperature Range		-40°C to 90°C
Storage Temperature T <sub>STG</sub>		-65°C to 150°C
Lead Temperature (Soldering 10 Seconds)		260°C
ESD (NOTE 2)		
HBM		±1000V
CDM		±500V

NOTE1: Conditions out of those ranges listed in "absolute maximum ratings" may cause permanent damages to the device. In spite of the limits above, functional operation conditions of the device should within the ranges listed in "recommended operating conditions". Exposure to absolute-maximum-rated conditions for prolonged periods may affect device reliability.

NOTE2: The human body model is a 100pF capacitor discharged through a 1.5kΩ resistor into each pin. HBM Test method: ESDA/JEDEC JS-001-2017. CDM Test method: ESDA/JEDEC JS-002-2018.

## Electrical Characteristics

V1=3.3V/0V, V2=0V/3.3V, PIN=0dBm, TEMP=+25°C, Z<sub>0</sub>=50Ω. (unless otherwise noted)

PARAMETER		TEST CONDITION	MIN	TYP	MAX	UNIT
<b>DC Specifications</b>						
VCTL_H VCTL_L	Control Voltage					
	High		2.8		3.3	V
	Low		0		0.3	
ICTL	Control Current	VCTL = 3.3V		25	50	μA
<b>RF Specifications</b>						
IL	Insertion loss(ANT pin to RF1/RF2)	0.1-0.96GHz		0.27	0.33	dB
		0.96-1.9GHz		0.37	0.46	
		1.9-3.0GHz		0.39	0.55	
		3.0-5.8GHz		0.48	0.65	
		5.8-7.125GHz		0.55	0.75	
		7.125-8.2GHz		0.7	0.9	
ISO	Isolation (ANT pin to RF1/RF2)	0.1-0.96GHz	38	41		dB
		0.96-1.9GHz	30	34		
		1.9-3.0GHz	29	34		
		3.0-5.8GHz	25	29		
		5.8-7.125GHz	20	24		
		7.125-8.2GHz	18	21		
RL	Input return loss (ANT pin to RF1/RF2)	0.1-0.96GHz	25	30		dB
		0.96-1.9GHz	20	25		
		1.9-3.0GHz	17	20		
		3.0-5.8GHz	16	19		
		5.8-7.125GHz	15	18		
		7.125-8.2GHz	12	16		
P <sub>0.1dB</sub>	0.1dB Compression Point (ANT pin to RF1/RF2)	0.1-6GHz, 25% DC		32		dBm
2f <sub>0</sub>	Second Harmonics	f <sub>0</sub> =2.4GHz, PIN=+26dBm,CW		91		dBc
3f <sub>0</sub>	Third Harmonics	f <sub>0</sub> =2.4GHz, PIN=+26dBm,CW		96		dBc
Tsw	Switching On/Off Time	50% of final control voltage to 10%/90% of final RF power, switching between RF1/2		190	270	ns

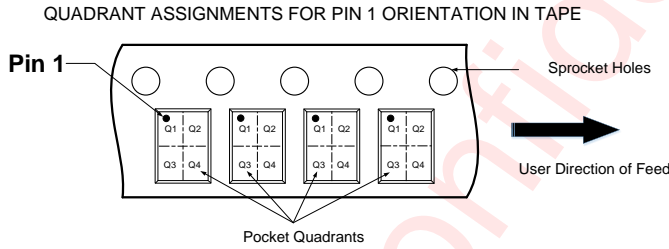
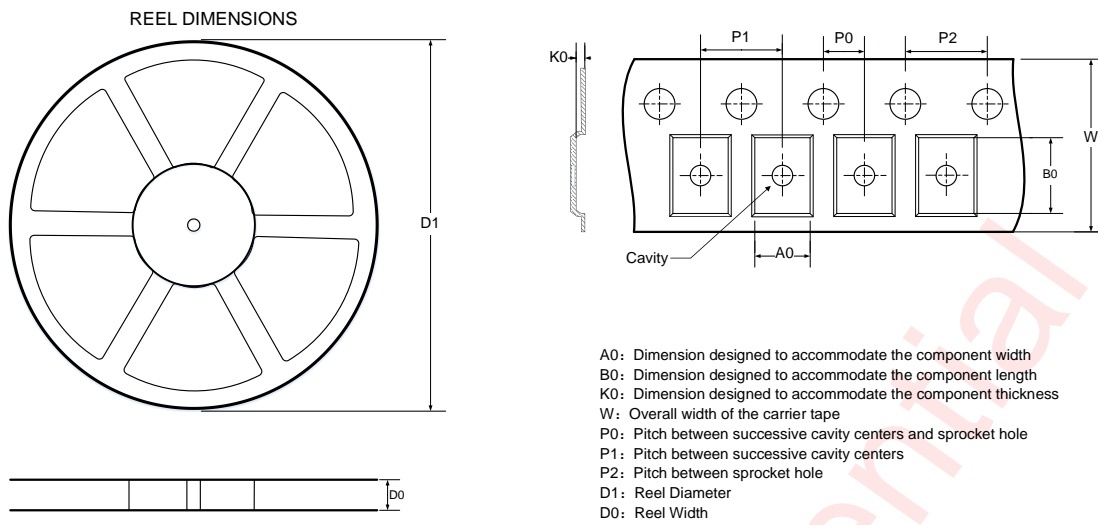
V1=1.8V/0V, V2=0V/1.8V, PIN=0dBm, T<sub>A</sub>=+25°C, Z<sub>0</sub>=50Ω. (unless otherwise noted)

PARAMETER		TEST CONDITION	MIN	TYP	MAX	UNIT
<b>DC Specifications</b>						
VCTL_H VCTL_L	Control Voltage					
	High		1.65		3.3	V
	Low		0		0.3	
ICTL	Control Current	VCTL = 1.8V		20	40	μA
<b>RF Specifications</b>						
IL	Insertion loss(ANT pin to RF1/RF2)	0.1-0.96GHz		0.31	0.35	dB
		0.96-1.9GHz		0.40	0.50	
		1.9-3.0GHz		0.42	0.60	
		3.0-5.8GHz		0.54	0.70	
		5.8-7.125GHz		0.58	0.75	
		7.125-8.2GHz		0.75	1	
ISO	Isolation (ANT pin to RF1/RF2)	0.1-0.96GHz	37	41		dB
		0.96-1.9GHz	29	34		
		1.9-3.0GHz	28	33		
		3.0-5.8GHz	24	29		
		5.8-7.125GHz	20	24		
		7.125-8.2GHz	18	21		
RL	Input return loss (ANT pin to RF1/RF2)	0.1-0.96GHz	25	30		dB
		0.96-1.9GHz	19	24		
		1.9-3.0GHz	16	20		
		3.0-5.8GHz	15	19		
		5.8-7.125GHz	14	18		
		7.125-8.2GHz	12	16		
P <sub>0.1dB</sub>	0.1dB Compression Point (ANT pin to RF1/RF2)	1.0–6GHz, 25% DC		32		dBm
2f <sub>0</sub>	Second Harmonics	f <sub>0</sub> =2.4GHz, PIN=+26dBm,CW		88		dBc
3f <sub>0</sub>	Third Harmonics	f <sub>0</sub> =2.4GHz, PIN=+26dBm,CW		86		dBc
T <sub>sw</sub>	Switching On/Off Time	50% of final control voltage to 10%/90% of final RF power, switching between RF1/2		200	300	ns

## Control Logic

State	Active Path	V1	V2
0	ANT to RF1	0	1
1	ANT to RF2	1	0

### Tape And Reel Information



Note: The above picture is for reference only. Please refer to the value in the table below for the actual size

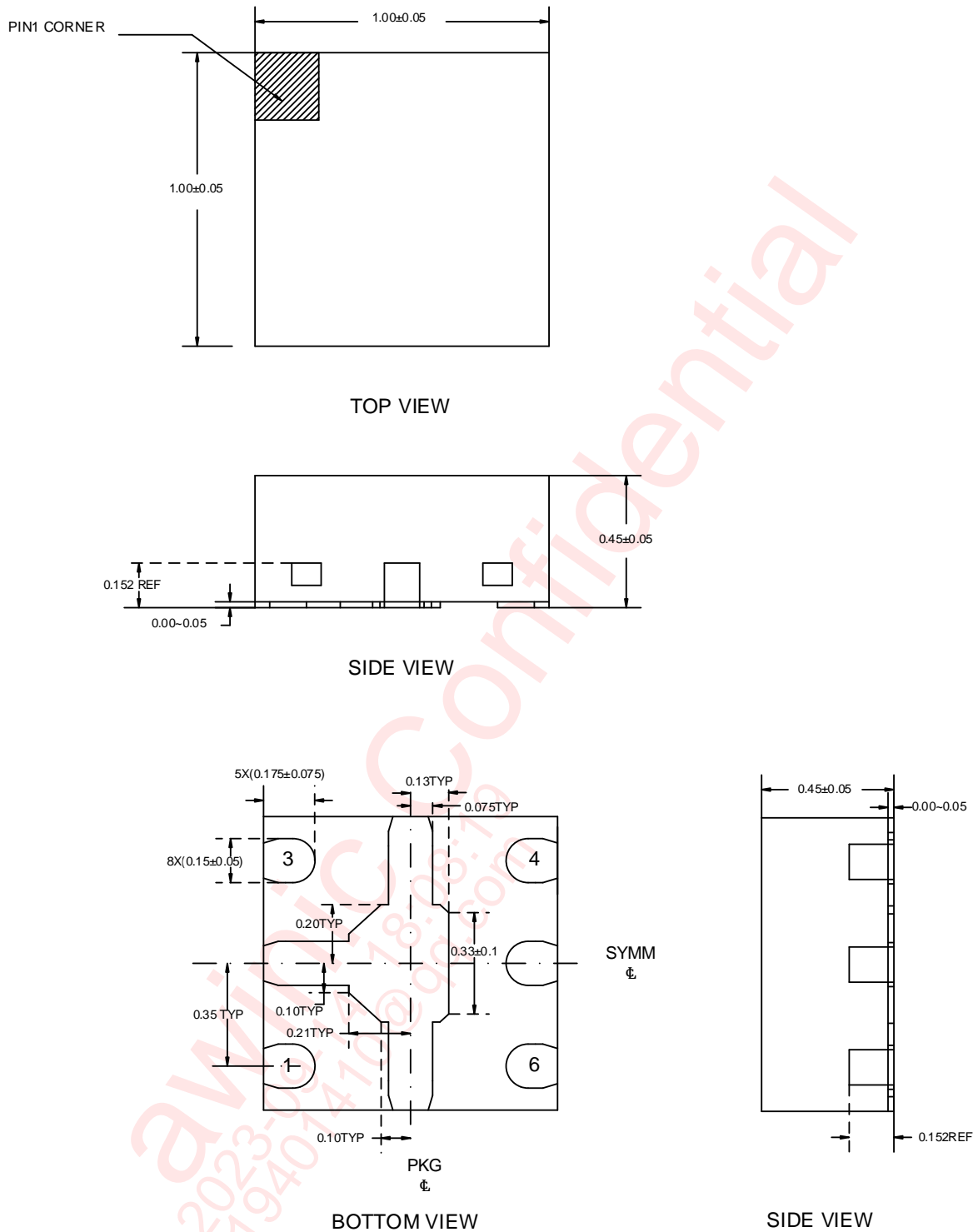
DIMENSIONS AND PIN1 ORIENTATION

D1 (mm)	D0 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
178	8.4	1.14	1.17	0.56	2	4	4	8	Q1

All dimensions are nominal

Figure 4 Tape and Reel

Package Description



Unit: mm

Figure 5 Package Outline



Land Pattern Data

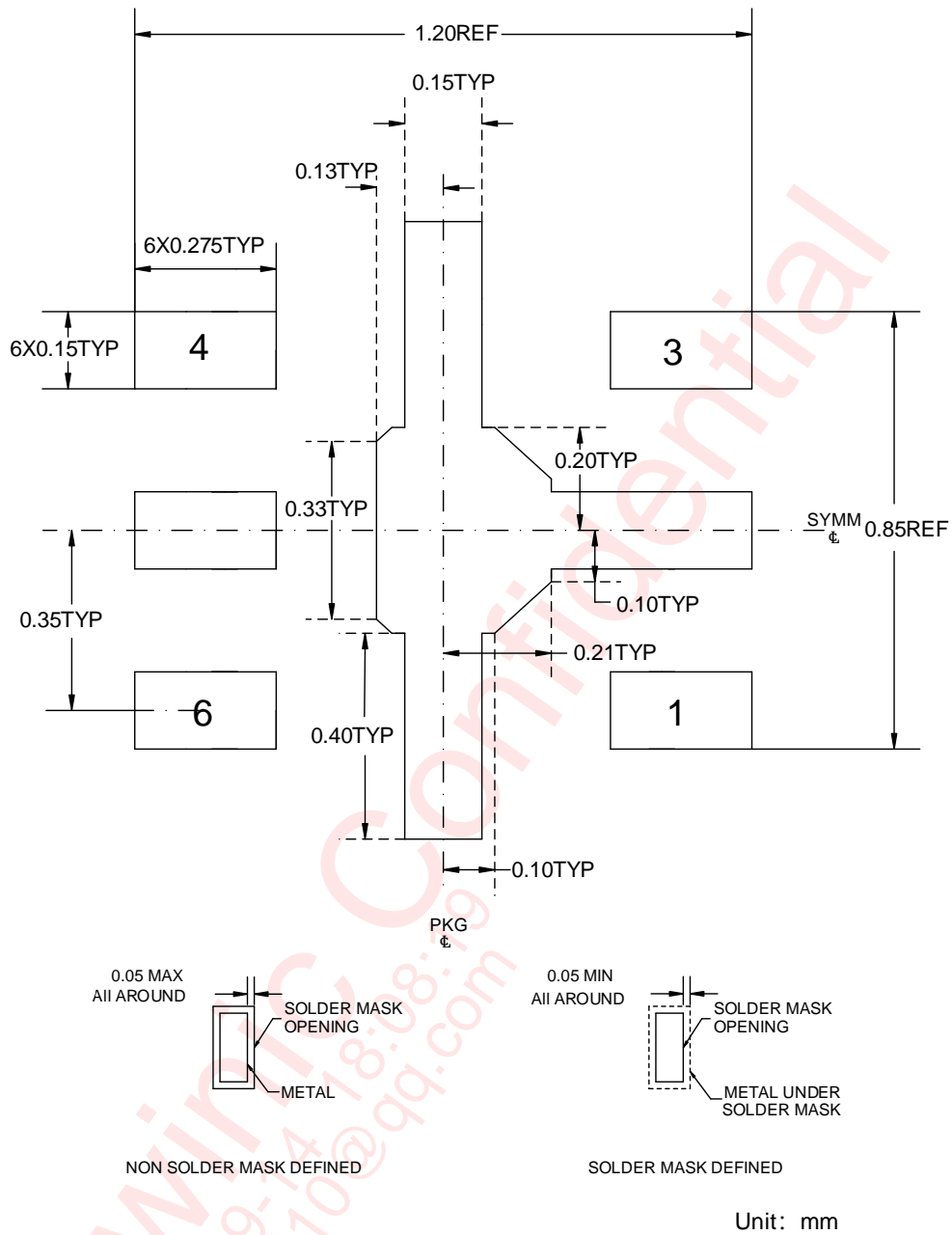


Figure 6 Land Pattern

Unit: mm

## Revision History

Vision	Date	Change Record
V1.0	Sep. 2021	Officially Released
V1.1	Aug. 2022	Update Ordering Information and Electrical Characteristics
V1.2	Aug. 2022	Update AMR
V1.3	Nov. 2022	Update Electrical Characteristics
V1.4	Jun. 2023	Update the description of applications

awinic Confidential  
2023-09-14 18:08:19  
1119401410@qq.com

## Disclaimer

Information in this document is believed to be accurate and reliable. However, Shanghai AWINIC Technology Co., Ltd (AWINIC Technology) does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

AWINIC Technology reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. Customers shall obtain the latest relevant information before placing orders and shall verify that such information is current and complete. This document supersedes and replaces all information supplied prior to the publication hereof.

AWINIC Technology products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of an AWINIC Technology product can reasonably be expected to result in personal injury, death or severe property or environmental damage. AWINIC Technology accepts no liability for inclusion and/or use of AWINIC Technology products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Applications that are described herein for any of these products are for illustrative purposes only. AWINIC Technology makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

All products are sold subject to the general terms and conditions of commercial sale supplied at the time of order acknowledgement.

Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

Reproduction of AWINIC information in AWINIC data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. AWINIC is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of AWINIC components or services with statements different from or beyond the parameters stated by AWINIC for that component or service voids all express and any implied warranties for the associated AWINIC component or service and is an unfair and deceptive business practice. AWINIC is not responsible or liable for any such statements.

单击下面可查看定价，库存，交付和生命周期等信息

[>>AWINIC\(艾为\)](#)