



SMD CERAMIC ANTENNA

Data Sheet

TS1608E245D02

For 2400-2500MHz

1.6x0.8x0.8mm [EIA1608]

Address: 6th Floor, Building 5, Nantai Cloud Innovation Valley Center, Guangming District, Shenzhen

Feature

- Light weight, compact
- Wide bandwidth, low cost
- Built-in antenna with high gain
- Operating Temp. : -40°C~+85°C

Application

- Bluetooth
- WLAN 2.4
- WiFi 5/6/6E
- UWB



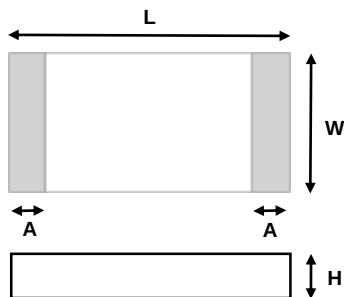
TS1608E245D02

Electrical Characteristics per line(TA=25°C)

Parameter	Specification	Units
Frequency Band	2400~2500	MHz
Polarization	Linear	
*Peak Gain	2.78	dBi
*Peak Efficiency	80.25	%
Impedance	50	Ω

Test condition: Test board size 70*60 mm;
Matching circuit: Pi matching circuit will be required.

Product Dimension

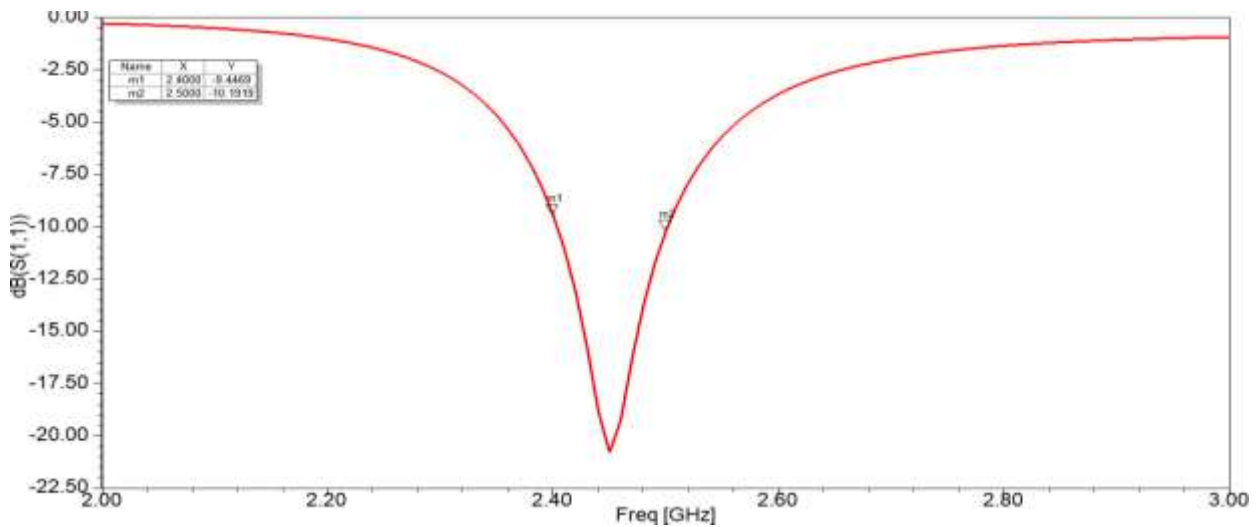


Units:mm

L	W	A	H
1.60±0.20	0.80±0.20	0.30±0.20	0.80±0.20

Typical Characteristics

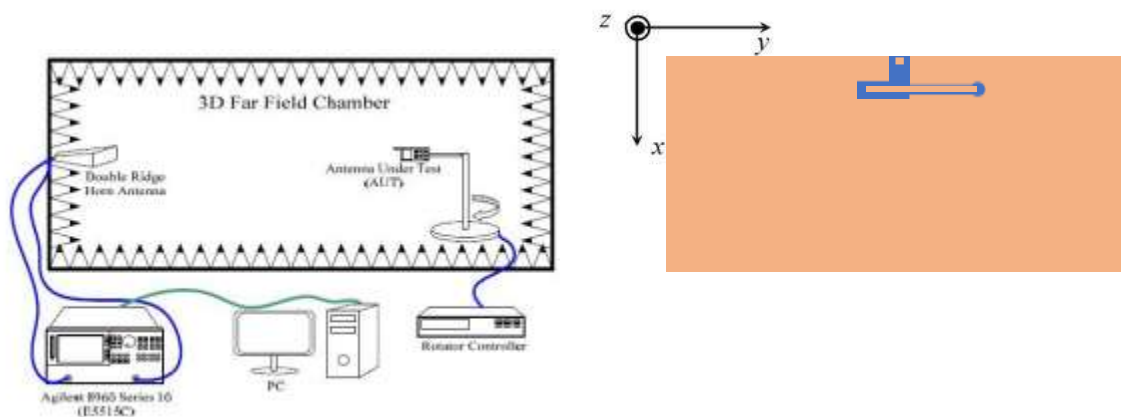
Fig. 1 Return Loss



Radiation Pattern

The Gain pattern is measured in FAR -field chamber. DUT is placed on the table of rotator, a standard horn antenna and Vector Network Analyzer is used to collect data.

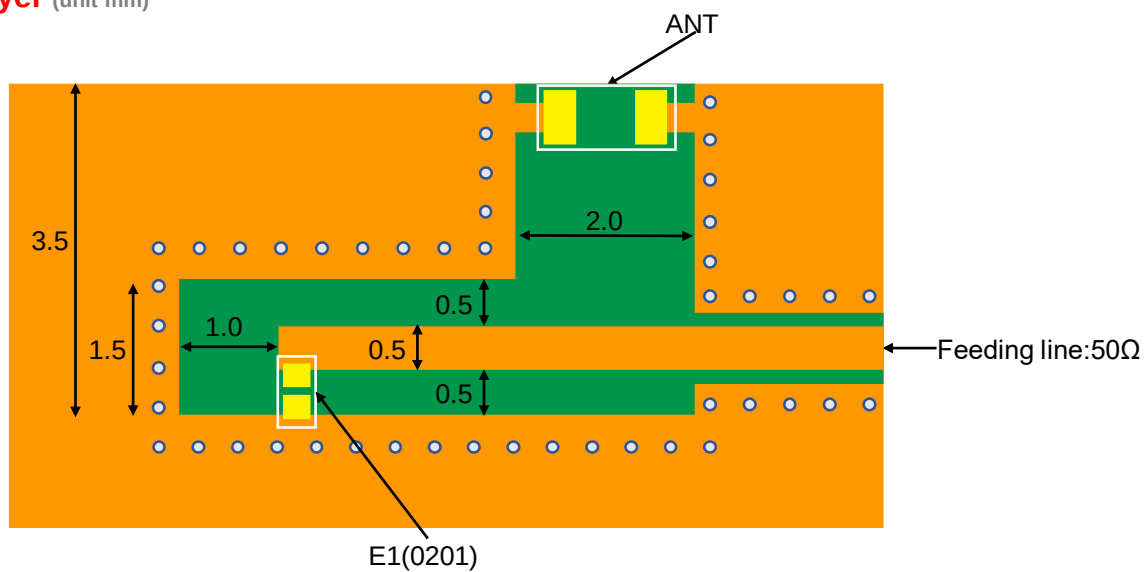
Fig.2 FAR-field Chamber



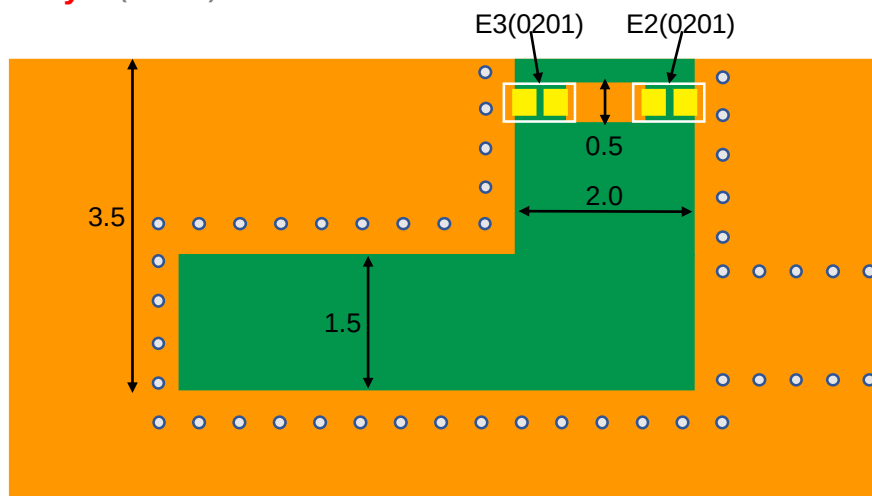
Recommend PCB Layout1

Test condition: Test board size 70*60 mm;

Top Layer (unit mm)



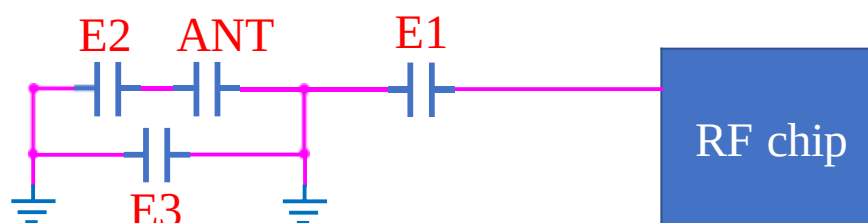
Bottom Layer (unit mm)



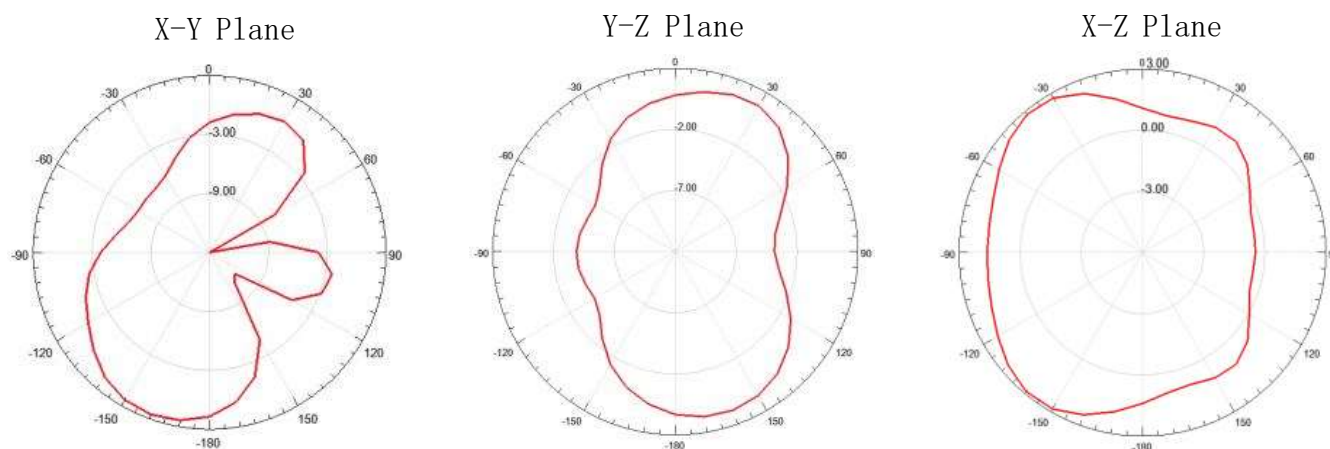
Test condition: Test board size 70*60 mm;

The diagram shows a rectangular domain with a central green region and a surrounding orange region. The green region has a width of 1.5 and a height of 0.5. The orange region has a width of 10. The domain is discretized with a grid of points. Two specific points are highlighted: E3(0201) and E2(0201).

Equivalent circuit:



2D Gain Pattern



Radiation Performance:

Frequency	2400MHz	2450MHz	2500MHz
Avg. gain	-1.92	-1.35	-1.56
Peak gain	1.79	2.78	2.66
Efficiency	74.55	80.25	76.98

• Dependability Test

Test Temperature	25°C ± 5°C
Operating Temperature	-25°C~+125°C
Temperature	5~40°C
Relative Humidity	20~70%

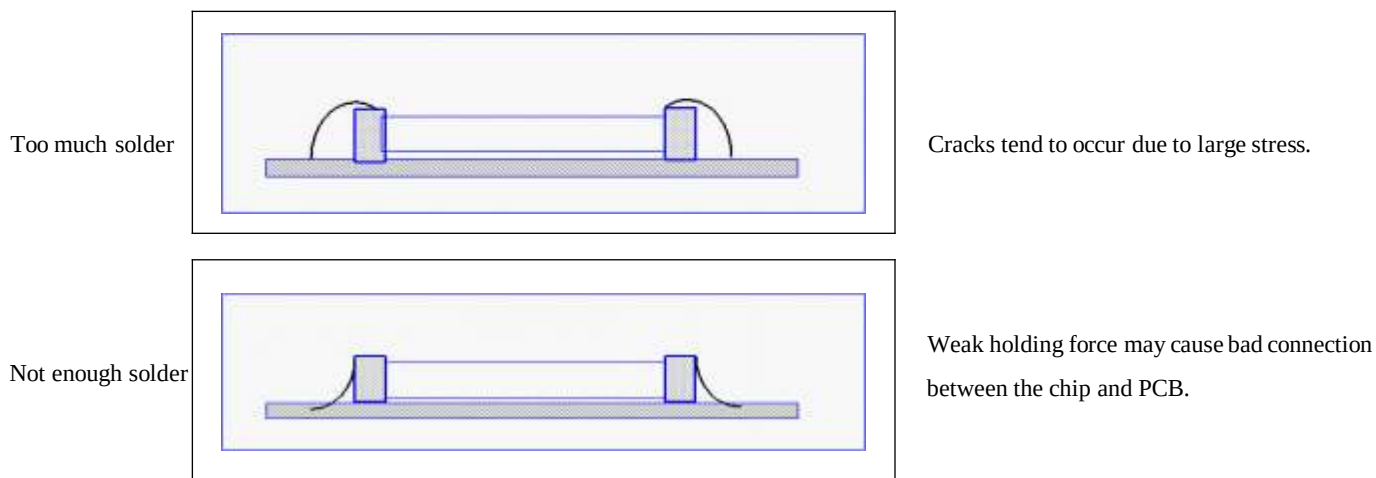
• Moisture Proof

Temperature: 40 ± 2°C Humidity: 90~95%RH
 Duration: 500h
 Recovery conditions: Room temperature Recovery Time: 24h (Class1) or 48h (Class2)

• Solderability

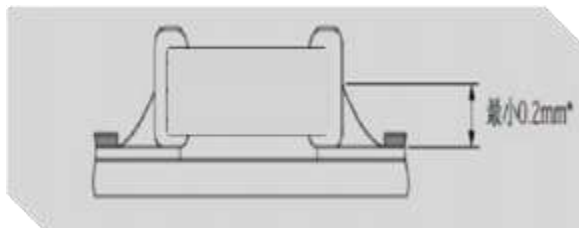
At least 95% of the terminal electrode is covered by new solder.
 Preheating conditions: 80 to 120°C; 10~30s.
 Solder Temperature: 235 ± 5°C Duration: 2 ± 0.5s, Solder Temperature: 245 ± 5°C Duration: 2 ± 0.5s

• Optimum Solder Amount for Reflow Soldering

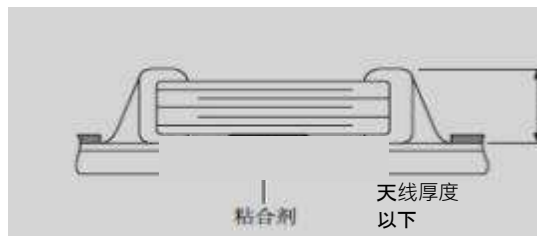


Recommended Soldering Amounts

The optimal solder fillet amounts for re-flow soldering



The optimal solder fillet amounts for wave soldering



• Temperature Cycle Test

$10 \pm 1S$ Applied Force: 5N Duration: $10 \pm 1S$

Preheating conditions: up-category temperature, 1h

Recovery time: $24 \pm 1h$

Initial Measurement

Cycling Times: 5 times, 1 cycle, 4 steps:

Stage	Temperature(°C)	Time (minutes)
Step 1	Lower temperature limit "	30
Step 2	normal atmospheric temperature(+20)	2-3
Step 3	Upper line temperature	30
Step 4	normal atmospheric temperature(+20)	2-3

• Resistance to Soldering Heat

Preheating 80 to 120°C; 10~30s.SolderTemperature: $235 \pm 5^\circ C$; Duration: $2 \pm 0.5s$;

SolderTemperature: $245 \pm 5^\circ C$ Duration: $2 \pm 0.5s$; Preheating 100 to 200°C; $10 \pm 2min$.

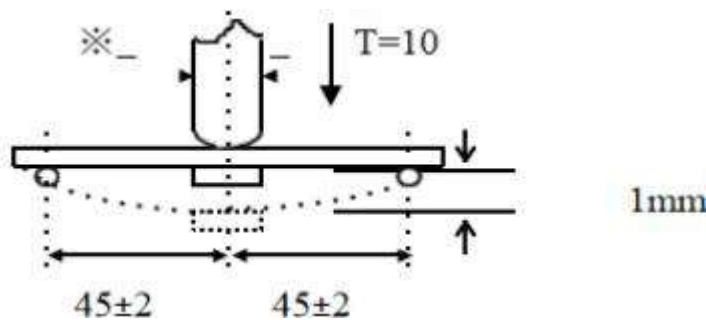
Solder Temperature: $265 \pm 5^\circ C$; Duration: $10 \pm 1s$

Clean the capacitor with solvent and examine it with a 10X(min.) microscope.

Recovery Time: $24 \pm 2h$

Recovery condition: Room temperature

• Resistance to Flexure of Substrate



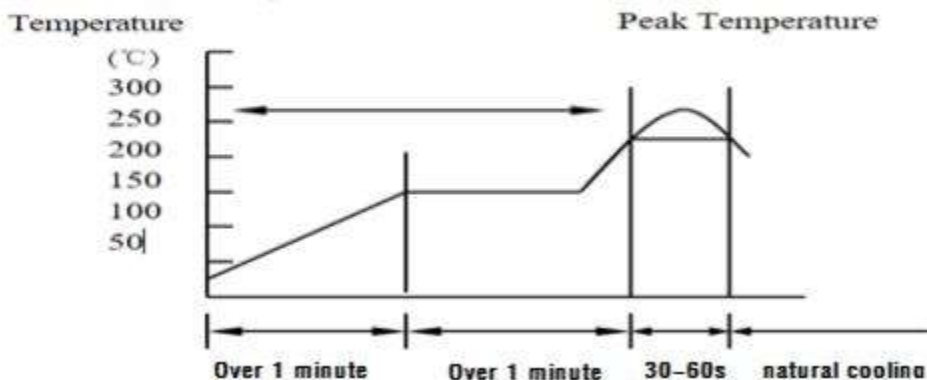
Test Board: Al_2O_3 or PCB Warp: 1mm Speed: 0.5mm/sec.

Unit: mm

The measurement should be made with the board in the bending position.

The temperature profile for soldering

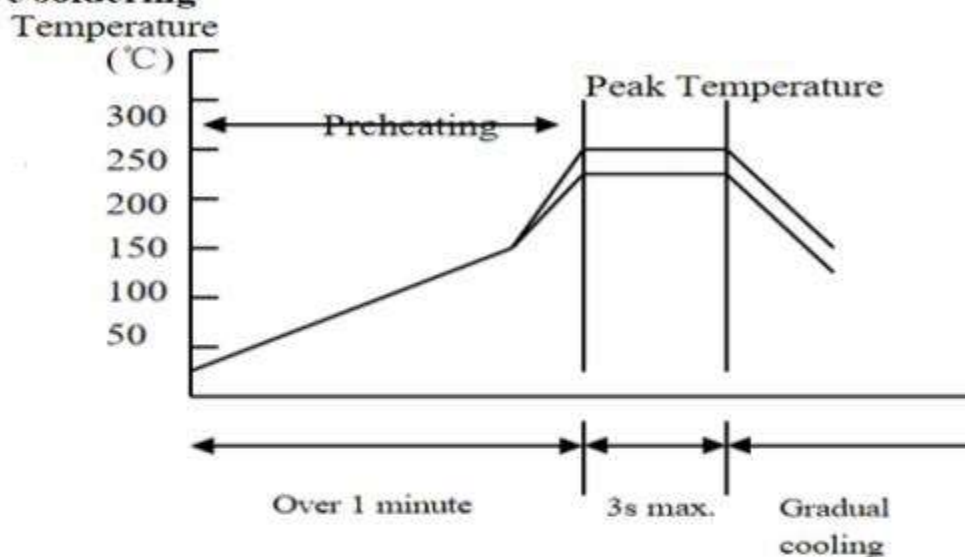
Re-flow soldering



	Pb-Sn soldering	Lead-free soldering
Peak temperature	230°C ~ 250°C	240°C ~ 260°C

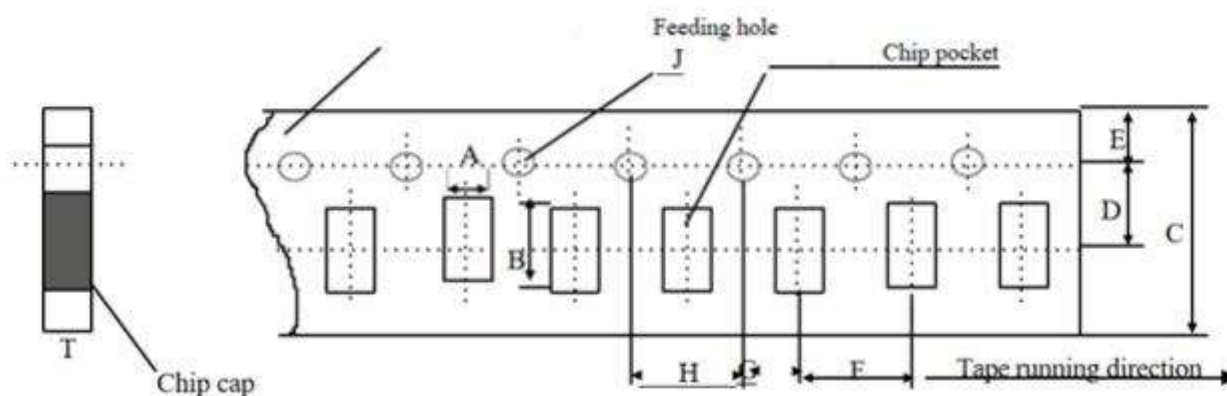
While in preheating, please keep the temperature difference between soldering temperature and surface temperature of chips as: $T \leq 150^{\circ}\text{C}$.

Wave soldering



	Pb-Sn soldering	Lead-free soldering
Peak temperature	230°C ~ 260°C	240°C ~ 270°C

• Dimensions of paper taping

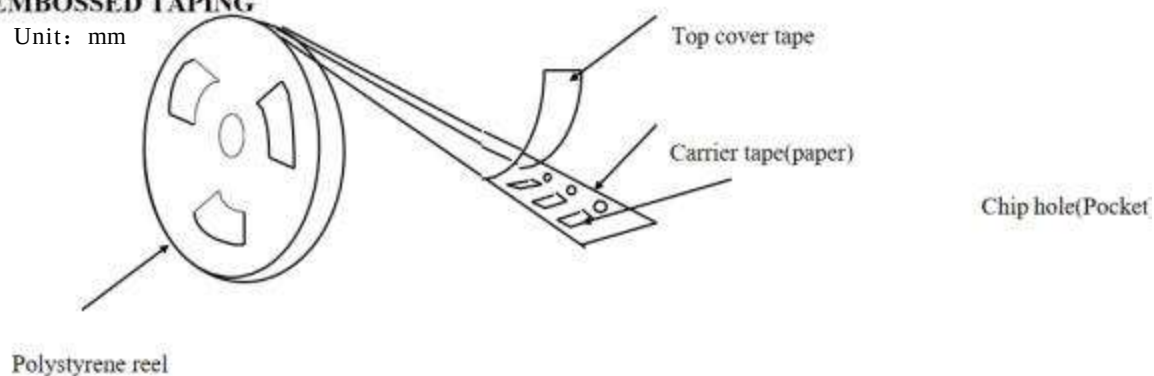


Code	A	B	C	D*	E	F	G*	H	J	T
papersize										
Size	1.10 ±0.10	1.90 ±0.10	8.00 ±0.10	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.10	4.00 ±0.10	1.50 -0/+0.10	1.10 Max

Reel (4000 pcs/Reel)

EMBOSED TAPING

Unit: mm



• Storage Period

The guaranteed period for solderability is 6 months (Under deliver package condition).
Temperature: 5~40°C /Relative Humidity: 20~70%

Part Number System

TS - 1608 - E - 2450 - D - 02

Brand Dimension Material Frequency Feeding mode Type

订货信息 Order Information

Device	Package	Carrier	Quantity	HSF Status
TS1608E245D02	1608	Tape&Reel	4000pcs	RoHS compliant

Revision history

Date	Revision	Description of changes
2023-1-15	1.0	First Version

The contents of this data sheet are subject to change without notice .
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