

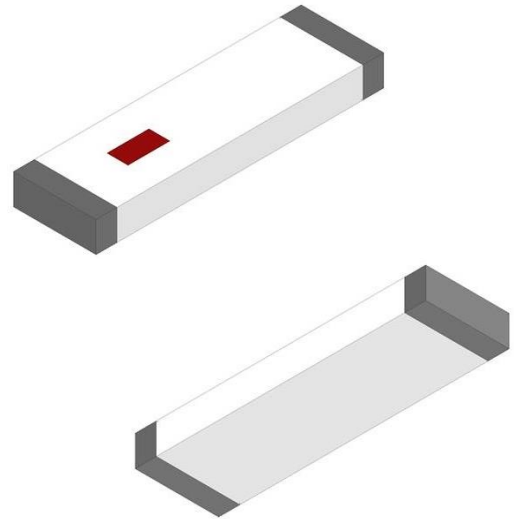
## 868 MHz RF Chip Antenna, AEC-Q200 Qualified

Johanson Technology, Inc. (JTI) miniature RF ceramic chip antennas are made using Low Temperature Co-fired Ceramic (LTCC) technology which has the ability to embed low and high dielectric constants inside our antenna. This enables our components to have high detuning resilience and stability over extreme temperatures (~2ppm).

Recommended mounting locations for this antenna

PCB End

PCB Corner



### General Specifications<sup>1 2</sup>

Frequency Range (MHz)	858 - 878
Impedance ( $\Omega$ )	50
Return Loss (dB)	9.5 Min.
Peak Gain (dBi)	-2.5 Typ.
Average Gain (dBi)	-6.0 Typ.
Average Radiated Efficiency (%)	26

### Maximum Ratings

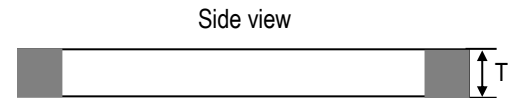
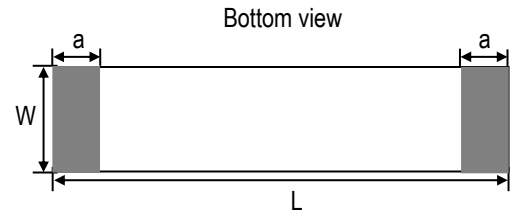
Power Capacity (W)	2 Max. (CW)
Operating Temperature ( $^{\circ}\text{C}$ )	-40 to +105
Recommended Storage Conditions post-installation ( $^{\circ}\text{C}$ )	-40 to +105
Recommended Storage Conditions and Period for Unused T&R Product	45% - 75% RH +5 to +35 $^{\circ}\text{C}$ 18 Months Max.

<sup>1</sup> Typical value represents average measurement at 25 $^{\circ}\text{C}$ . Min./Max. values represent measurements over specified operating temperature.

<sup>2</sup> General specifications measured on Johanson's evaluation board PN 0868AT43A0020001CE1.

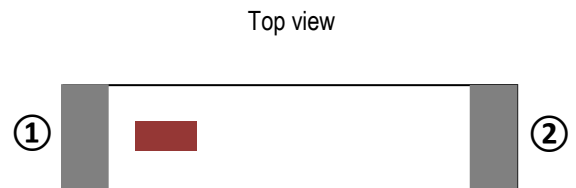
**Mechanical Dimensions**

	Inches			Millimeters		
<b>L</b>	0.276	±	0.008	7.00	±	0.20
<b>W</b>	0.079	±	0.008	2.00	±	0.20
<b>T</b>	0.031	+0.004/-	0.008	0.80	+0.10/-	0.20
<b>a</b>	0.020	±	0.012	0.50	±	0.30



**Terminal Configuration<sup>3</sup>**

Pin Number	Function
1	Feed
2	NC*

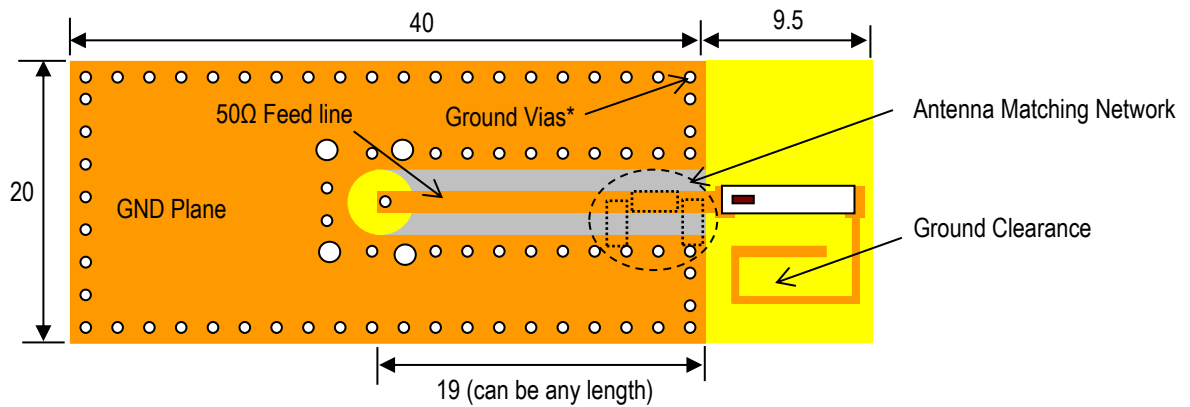


<sup>3</sup> The termination type is Nickel Tin. Go to: <https://www.johansontechnology.com/ipcsoldering-profile> for Typical Soldering Profile.

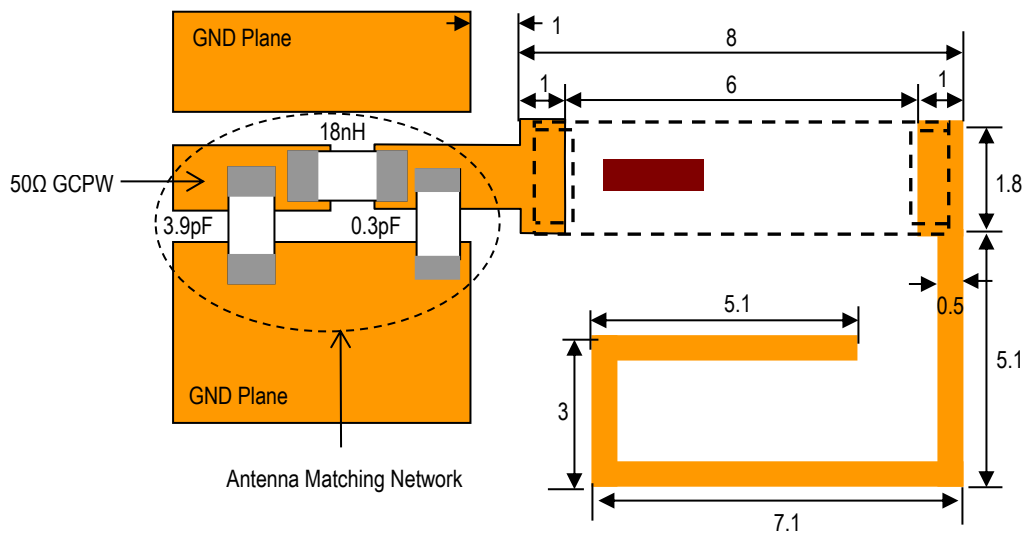
\* This terminal must be soldered for anchoring and mechanical stability.

**Evaluation Board and Recommended Mounting Configuration 1 (P/N 0868AT43A0020001CE1)**

All units in mm



\*Note: Ground Vias are highly recommended to have better antenna efficiency.



JTI P/N's for Matching Network<sup>4</sup>

Cap (3.9pF): QSCF500Q3R9B1GV001T

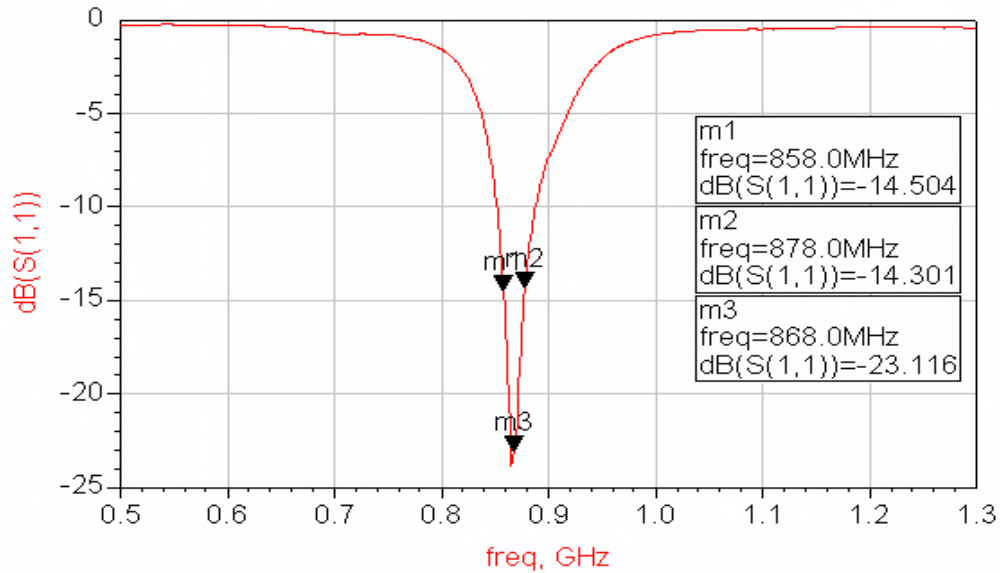
Inductor (18nH): LRC0402CJ18NGV001T

Cap (0.3pF): QSCF500Q0R3B1GV001T

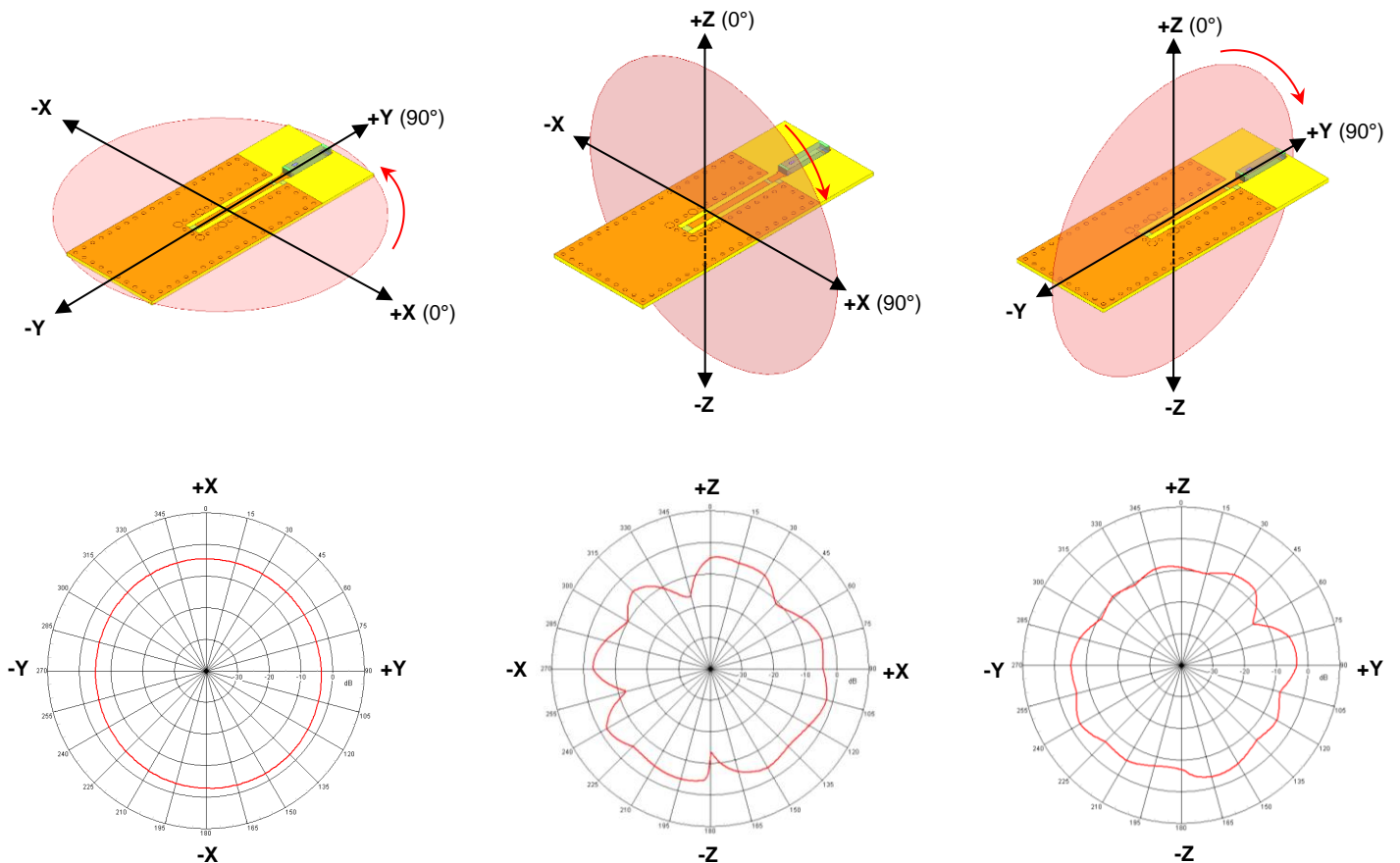
If you'd like the CAD PCB layout or have any questions,  
contact our application engineers at <https://www.johansontechnology.com/ask-a-question>

<sup>4</sup> It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values above are used when antenna is mounted on Johanson's evaluation board. The matching values on client's PCB will be different, depending on the layout, thickness, material, etc. Go to: <https://www.johansontechnology.com/tuning> and see how to obtain the new values.

**Evaluation Board Typical Return Loss Measurement (P/N 0868AT43A0020001CE1)**



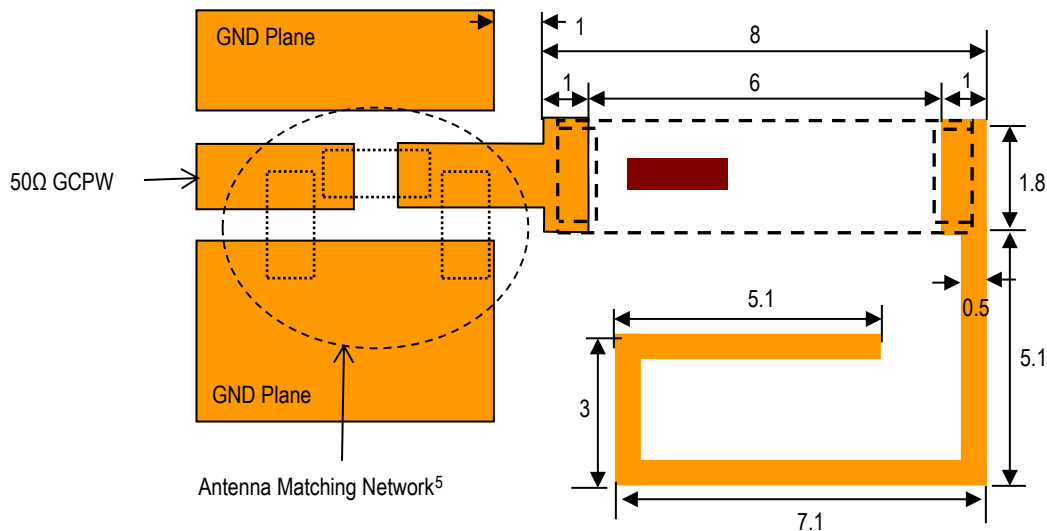
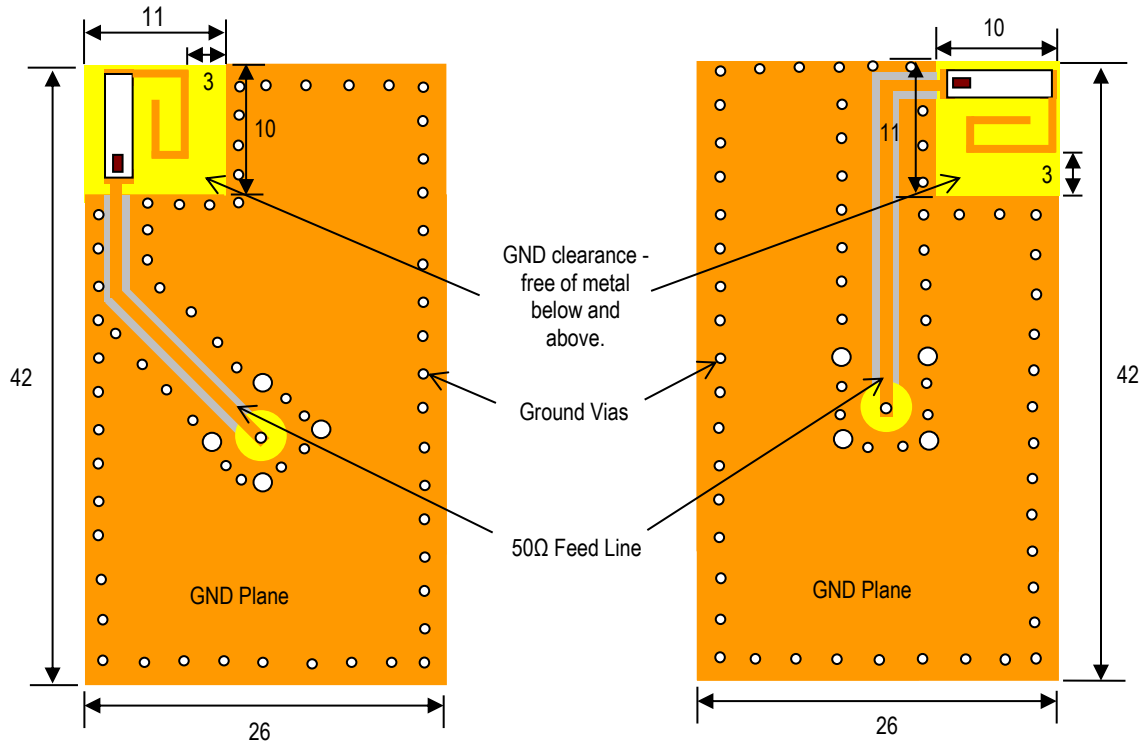
**Evaluation Board Typical 2D Radiation Patterns @868MHz (P/N 0868AT43A0020001CE1)**



**Recommended Mounting Configuration 2 (Evaluation Board Unavailable)**

We have conducted internal studies to show that the following corner placements provide antenna efficiency results with minimal detrimental effects.

All units in mm

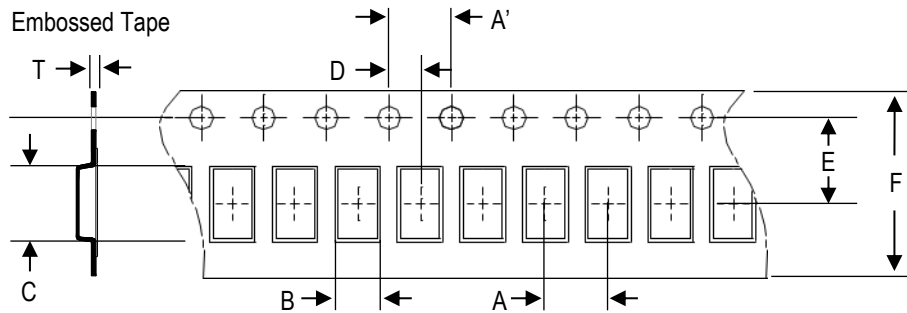


If you'd like the CAD PCB layout or have any questions, contact our application engineers at <https://www.johansontechnology.com/ask-a-question>

<sup>5</sup> It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The optimal matching values will vary depending on the layout, thickness, material, etc. Go to: <https://www.johansontechnology.com/tuning> for more information.

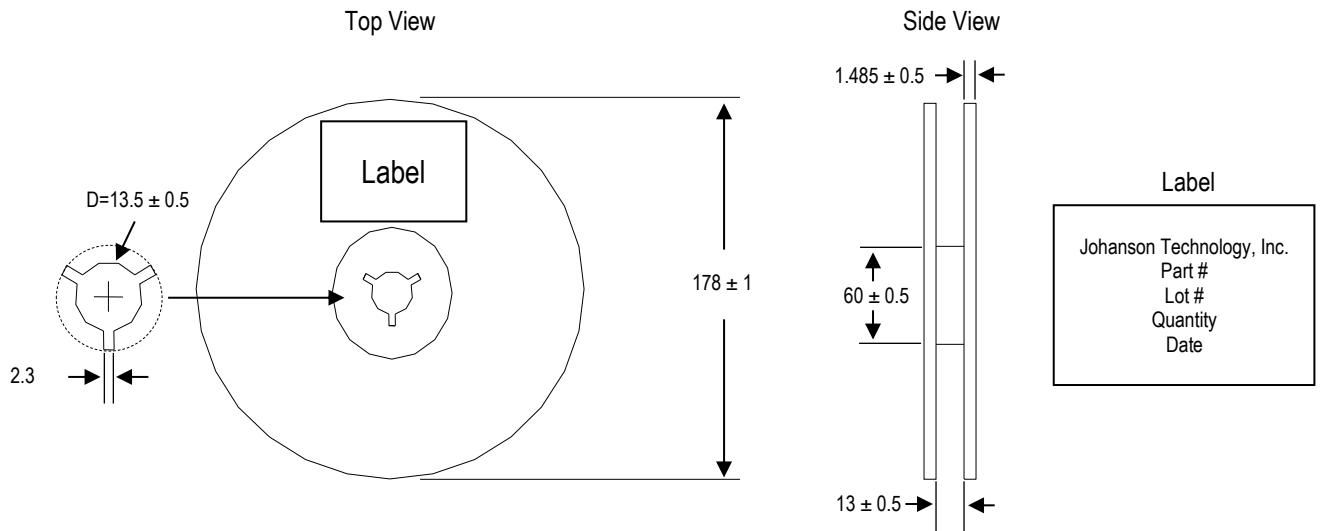
**Tape and Reel Specification (Units in mm)**

**Tape Dimensions**

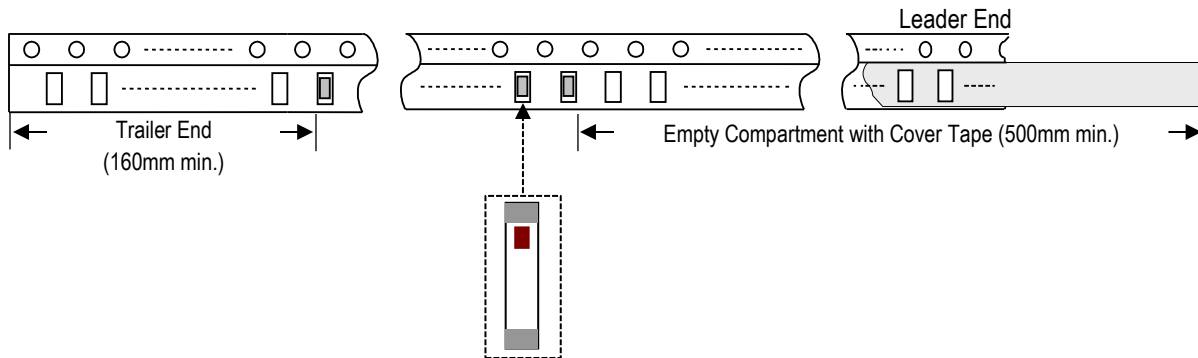


A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
4.0±0.1	4.0±0.1	2.4±0.1	7.3±0.1	2.0±0.05	5.5±0.1	12.0±0.1	1.45±0.1	1,000pcs	Plastic (Embossed)

**Reel Dimensions**



**Leader and Trailer Dimensions**



**Orderable Part Number**

Packaging Style	Part Number	Termination
Bulk (loose pcs.)	0868AT43A0020002B	Nickel Tin
T & R (7" Reel Embossed Tape)	0868AT43A0020002E (Qty: 1,000 pcs/reel)	
Evaluation Board with 1 SMA Connector	0868AT43A0020001CE1	

**Important Links**

[0868AT43A0020002E Product Page](#)

[More Chip Antennas](#)

[Antenna Tuning, Optimization, and Validation Services](#)

[Soldering Information](#)

[MSL Information](#)

[Packaging Information](#)

[Recommended Storage Condition and Max Shelf Life](#)

[RoHS Compliance](#)

*Contact our application engineers for a PCB layout review!*

**Johanson Technology, Inc. reserves the right to make design changes without notice.  
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