

MFBA3V1005

Automotive high impedance multilayer chip ferrite bead



Product features

- AEC-Q200
- 0402 (1005 metric) surface mount package
- Impedance range 30 ohms to 1000 ohms
- Multilayer monolithic construction yields high reliability
- Moisture sensitivity level (MSL): 1

Applications

- Body electronics (keyless entry, ECU, antennas)
- Advanced driver assistance systems (ADAS)
- Infotainment and cluster electronics
- Safety electronics systems
- WLAN, WiFi, Bluetooth
- Portable medical devices
- Inventory management equipment
- Displays/monitors
- IoT, remote monitoring
- Testing equipment
- Automation equipment
- Sensors

Environmental compliance and general specifications

- Operating temperature range: -55 °C to +150 °C (ambient plus self-temperature rise)
- Storage temperature (component): -55 °C to +150 °C
- Solder reflow temperature: J-STD-020 (latest revision) compliant



Product specifications

Part number ²	Impedance (Ω) 100 MHz, $\pm 25\%$, @ +25 °C	DCR (Ω) maximum @ +25 °C	Rated current ¹ (mA) maximum
MFBA3V1005K-300-R	30	0.2	300
MFBA3V1005K-600-R	60	0.25	300
MFBA3V1005K-121-R	120	0.3	100
MFBA3V1005K-221-R	220	0.4	100
MFBA3V1005K-301-R	300	0.5	100
MFBA3V1005K-601-R	600	0.8	200
MFBA3V1005K-102-R	1000	1.2	200
MFBA3V1005M-600-R	60	0.2	500
MFBA3V1005M-121-R	120	0.35	300
MFBA3V1005M-221-R	220	0.45	250
MFBA3V1005M-301-R	300	0.6	200

1. Rated current: DC current for an approximate temperature rise of 40 °C without core loss.

2. Part number definition: MFBA3V1005y-xxx-R

MFBA3V1005y = Product code and size (y=Internal code)

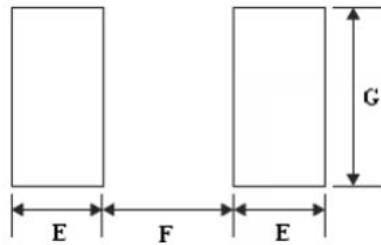
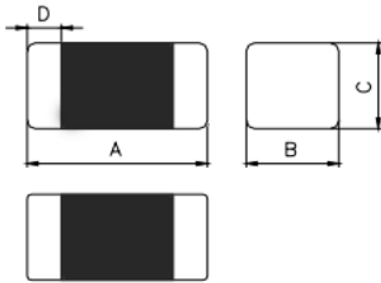
xxx = Impedance value in Ω , last character equals number of zeros

-R suffix = RoHS compliant

Mechanical parameters (mm)

Recommended pad layout

Schematic



Part number	A	B	C	D	E	F	G
MFBA3V1005y-xxx-R	1.00 $\pm$ 0.10	0.50 $\pm$ 0.10	0.50 $\pm$ 0.10	0.25 $\pm$ 0.10	0.50	0.40	0.60

Part marking: No marking

All soldering surfaces to be coplanar within 0.1 millimeters

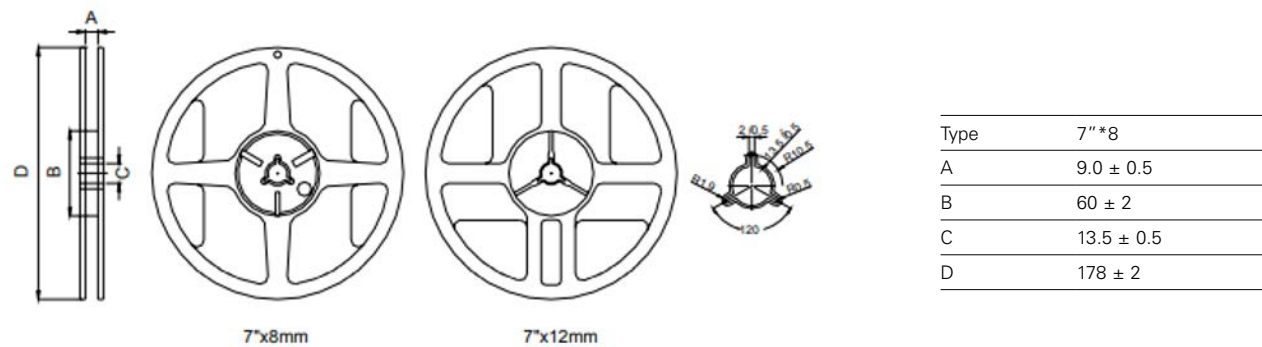
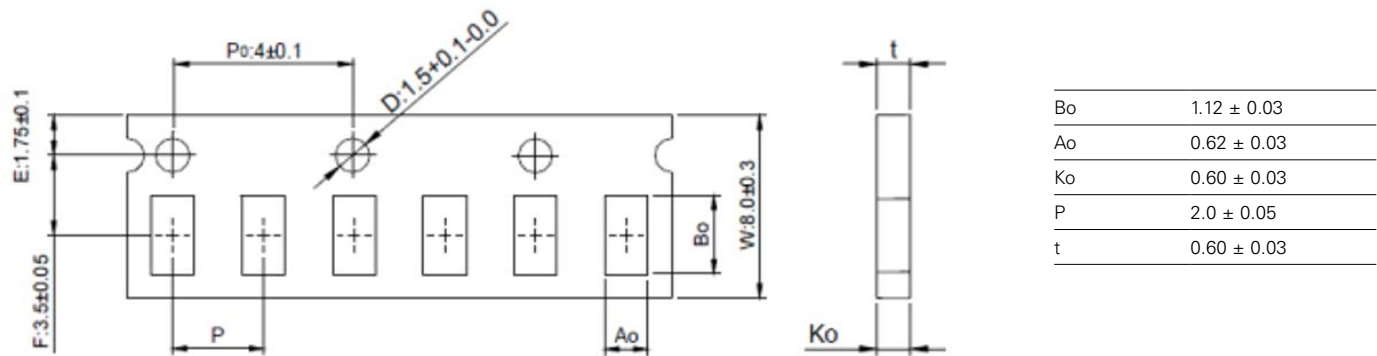
Tolerances are ± 0.1 millimeters unless stated otherwise

Pad layout dimensions are reference only

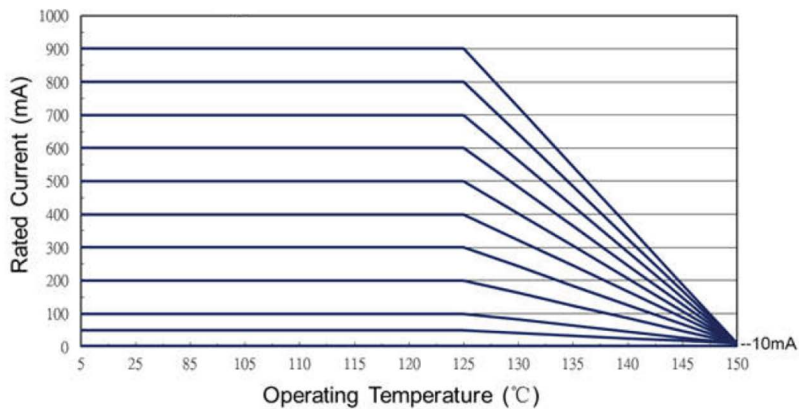
Traces or vias underneath the inductor is not recommended

Packaging information (mm)

Drawing not to scale
Supplied in tape and reel packaging, 10000 parts per 7" diameter reel (EIA-481 compliant)

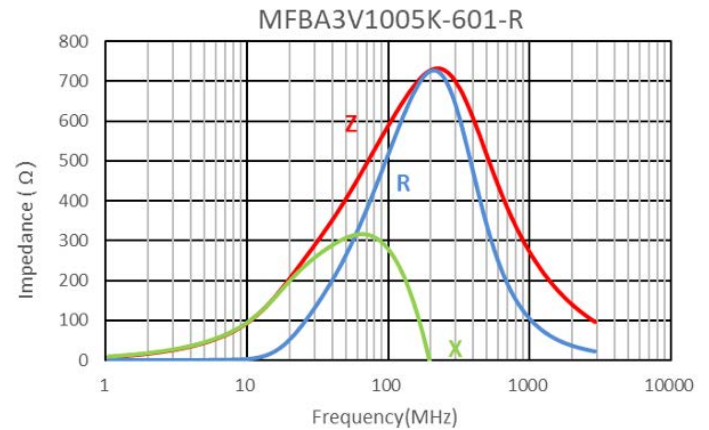
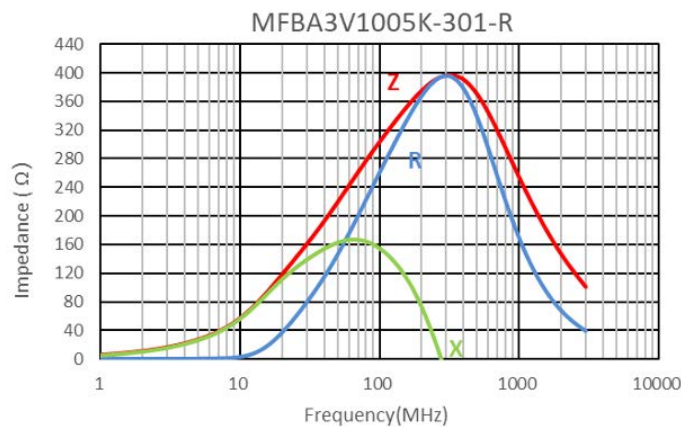
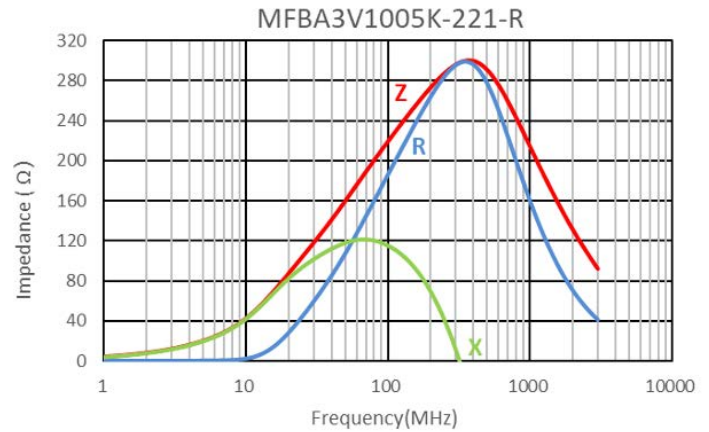
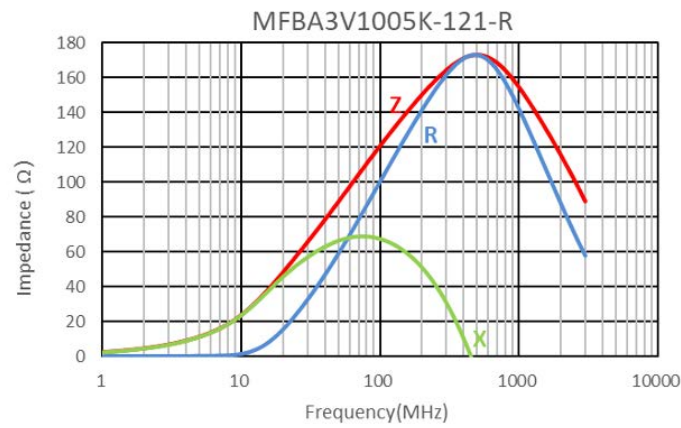
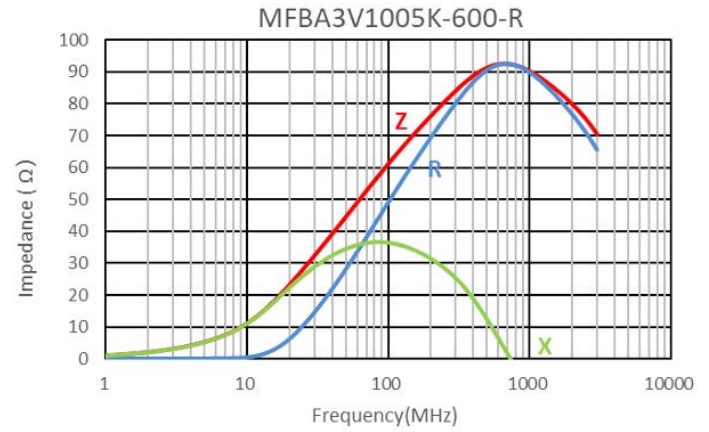
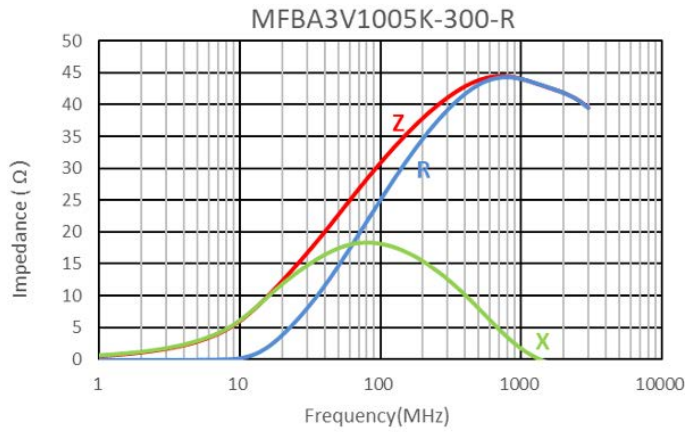


Derating curve for rated current < 1000 mA



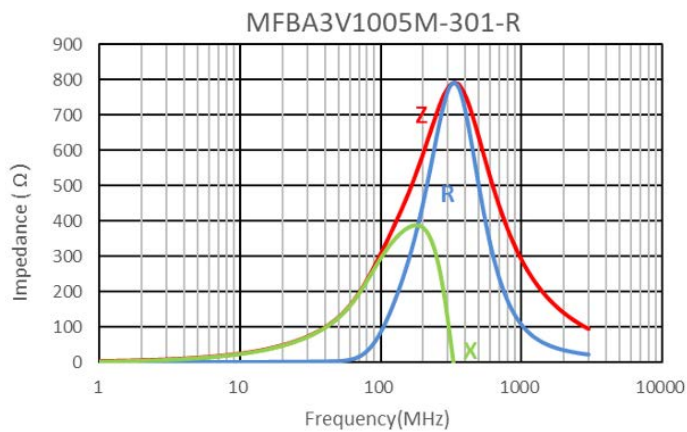
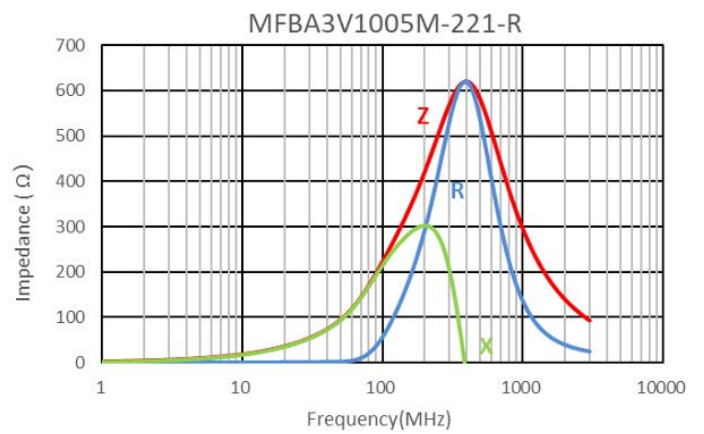
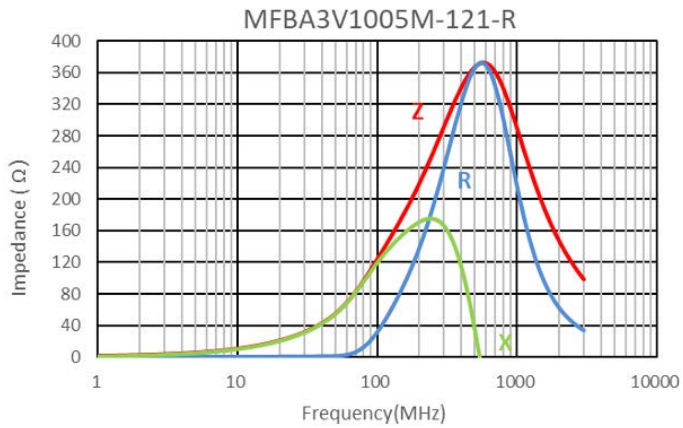
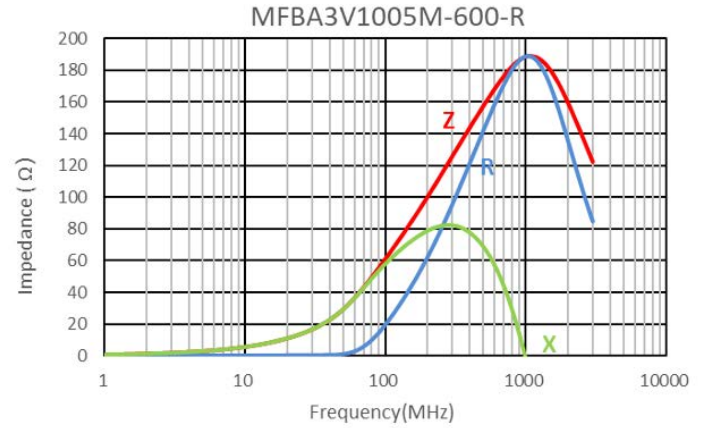
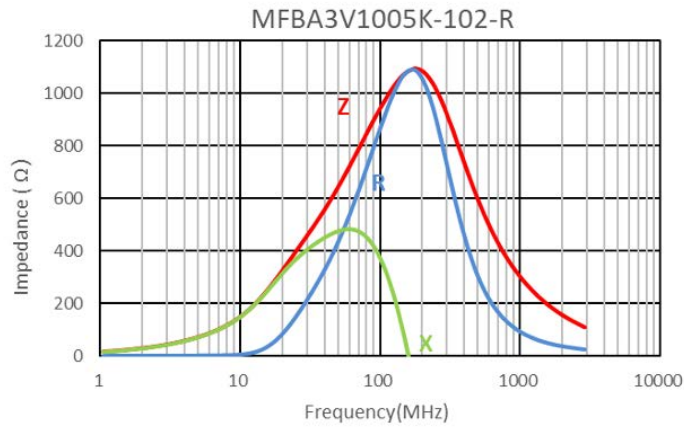
Impedance vs frequency

Z=Impedance, R=Resistance, X=Reactance



Impedance vs frequency, continued

Z=Impedance, R=Resistance, X=Reactance



Solder reflow profile

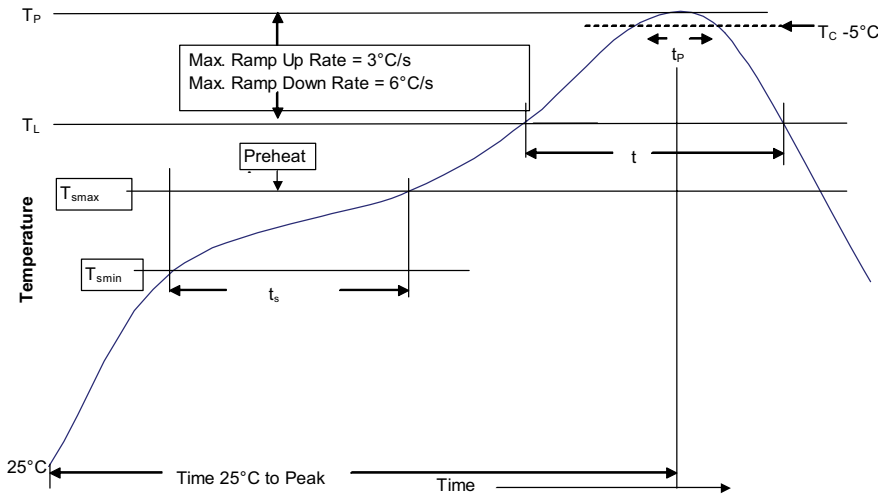


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) free solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak		
• Temperature min. (T_{smin})	100 °C	150 °C
• Temperature max. (T_{smax})	150 °C	200 °C
• Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds	60-120 seconds
Ramp up rate T_L to T_P	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T_L)	183 °C	217 °C
Time (t_L) maintained above T_L	60-150 seconds	60-150 seconds
Peak package body temperature (T_P)*	Table 1	Table 2
Time (t_P)* within 5 °C of the specified classification temperature (T_C)	20 seconds*	30 seconds*
Ramp-down rate (T_P to T_L)	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

* Tolerance for peak profile temperature (T_P) is defined as a supplier minimum and a user maximum.

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