

World First, World Best. !

AMO RF Package

Oct. 2020



| Strength of AMO RF Power Transistor Packages

☑ Total Solution

- Base Metal, Ceramic Materials & Process Technology
- Sintering (HTCC), Brazing, Plating, Quality Assurance

☑ Base Metal

- Flexible Thermal Conductivity & CTE Control
- CTE Matched with Ceramic Windows
- Unique Pedestal Base Metal : 3~8GHz Wide Band

☑ Ceramic Window

- Dielectric Constant : Min. 9.2 at 1~9GHz
- No Electro Run Down & Pull Back

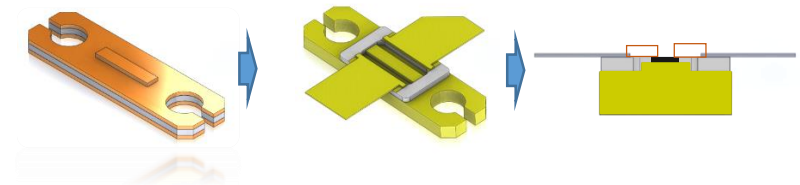
☑ Lead Frame

- CTE Matching to the ceramic
- Warpage Control

☑ High Frequency RF Packages



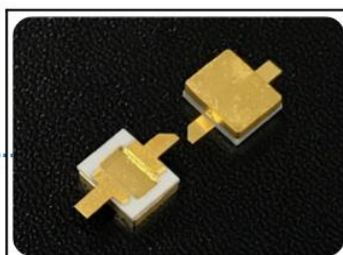
☑ AMO RF Package Pedestal Base Metal



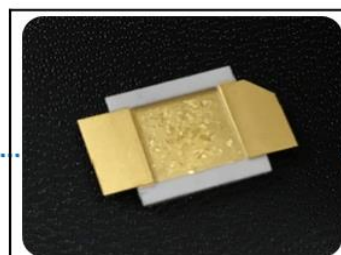
| Product Line up



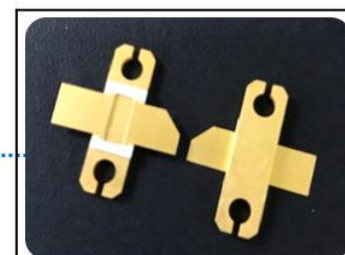
AMO 160



AMO 200



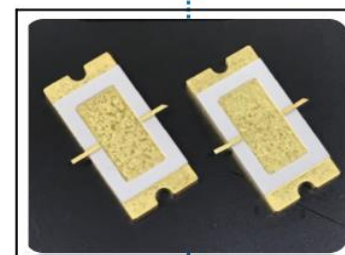
AMO 400



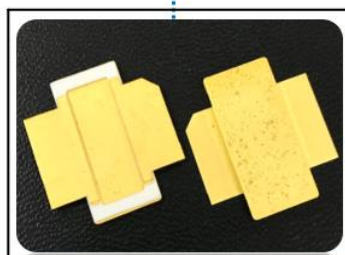
AMO 580



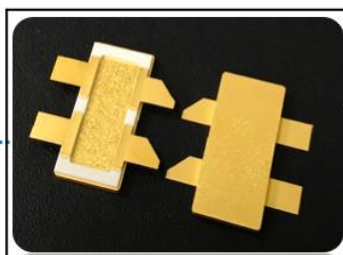
AMO 580B



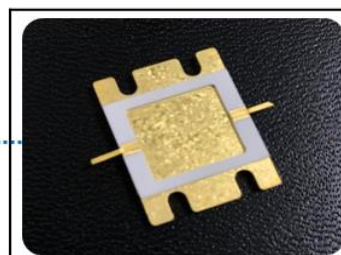
AMO 695



AMO 780



AMO 780-4L

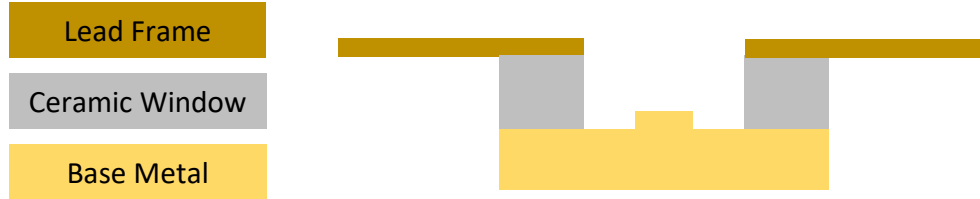


AMO 795

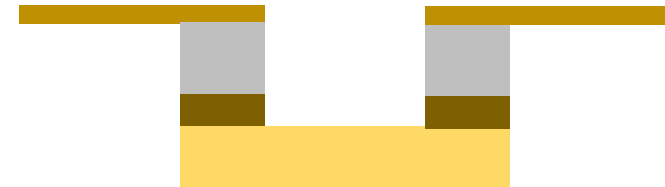


M 246

☑ AMO Simple 3-part structure



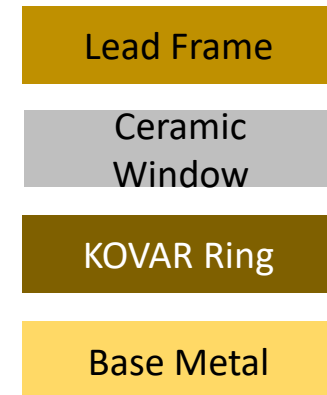
AMOGREENTECH



Competition

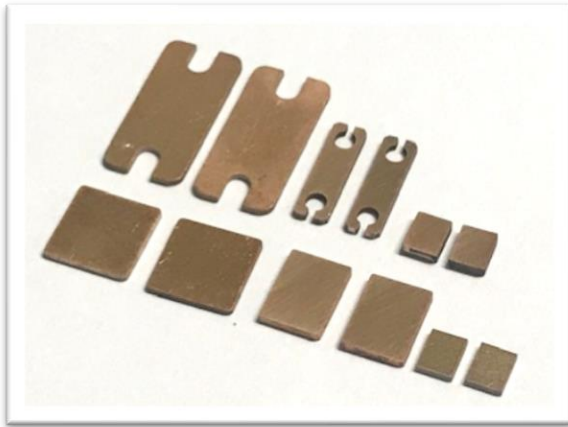
AMO RF Packages without KOVAR rings

- Easier production process
- RF Noise Reduction
- No Rundown Failure
- Higher reliability
- Lower profile

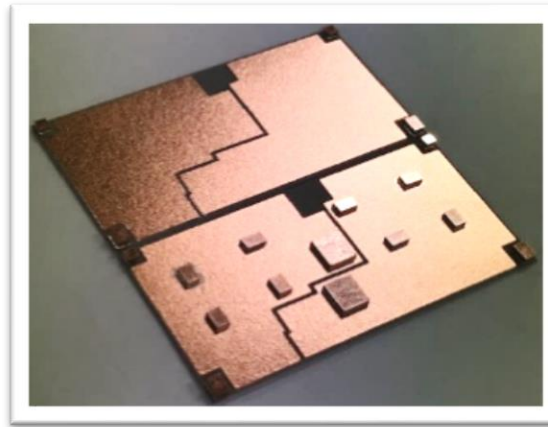


| AMO Base Metal, CQC Series

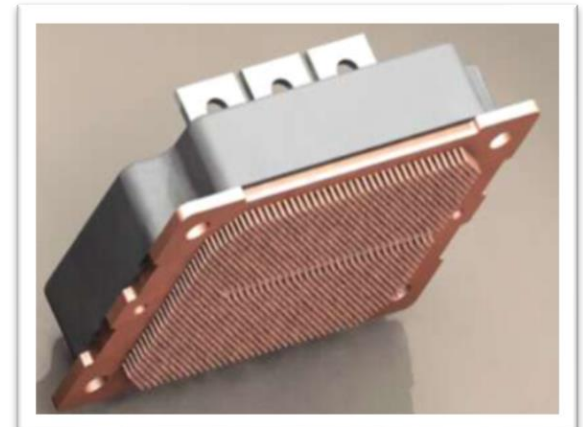
- Various Composition and Thickness Available.
: 0.52mm ~ 3.02mm (Competitors : 0.92mm, 1.02mm)
- Flexible Composition Design for Thermal Characteristics
- Application : RF Package, Pole & Spacer for EV Power Circuit, Base Plate for 5G Power Module



RF Package

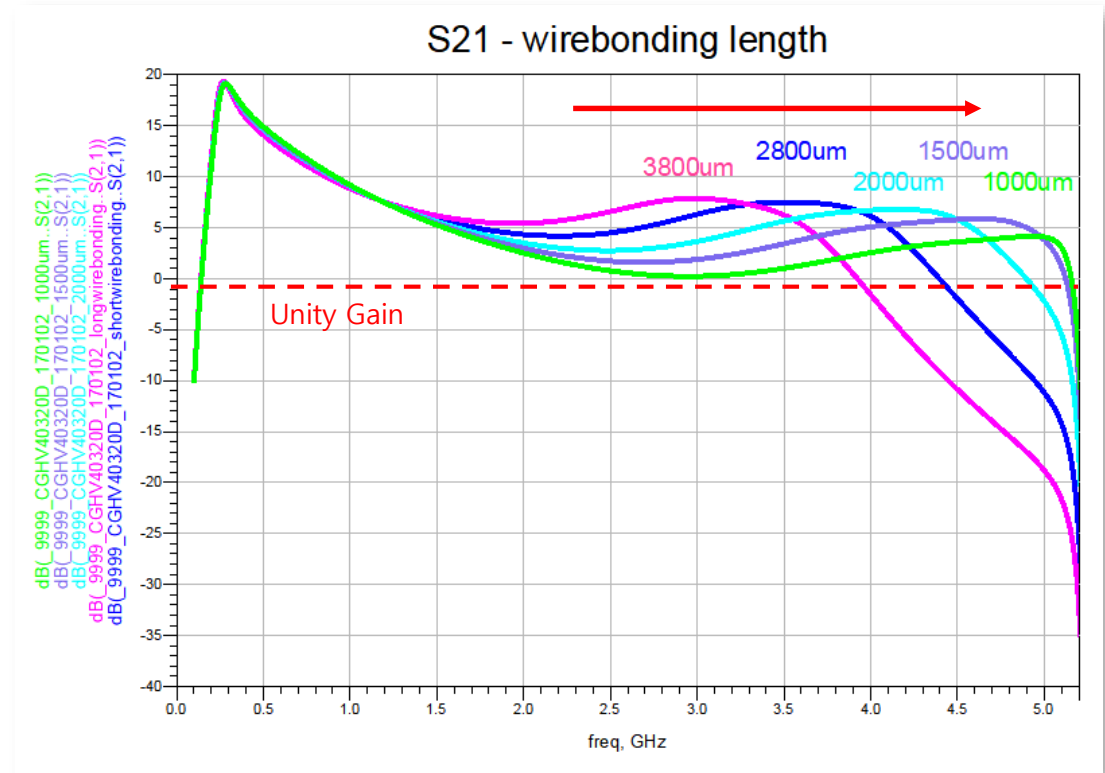
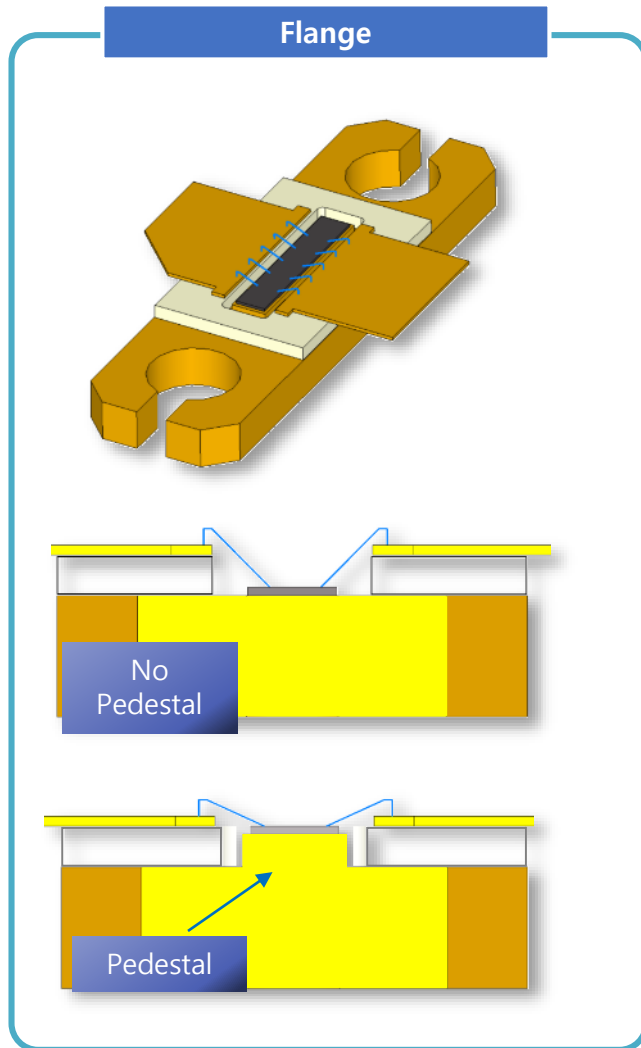


EV Power Circuit



5G Power Module

☑ One-Body Flange Pedestal Enables High Q & Wide Band Frequency Response



- The pedestal reduces the length of the wire bonds.
- Shorter wire bonds reduces the bond wire inductance.
- One-Body Flange Pedestal & Optimized Wire-Bond Lengths enables High Q & broad band frequency response

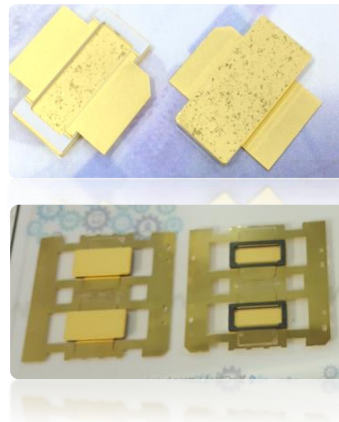
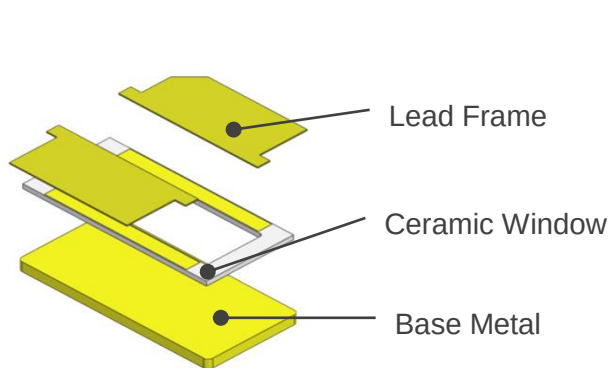
[Thermal Conductivity]

CQC 131	240 W/m·K at 25°C
CQC 141	220 W/m·K at 25°C
CQC 232	250 W/m·K at 25°C
CQC 111	260W/m·K at 25°C
CQC 212	280 W/m·K at 25°C

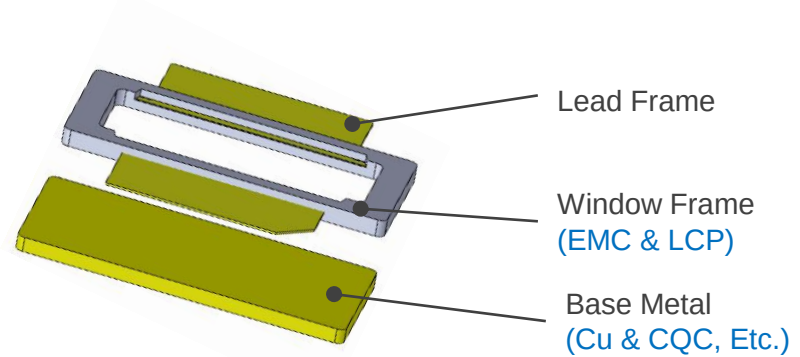
[Coefficient of Linear Thermal Expansion]

CQC 131	7.0 ppm/K at 30°C ~ 450°C
CQC 141	7.3 ppm/K at 30°C ~ 450°C
CQC 232	7.5 ppm/K at 30°C ~ 400°C
CQC 111	8.9 ppm/K at 30°C ~ 400°C
CQC 212	10.8 ppm/K at 30°C ~ 400°C

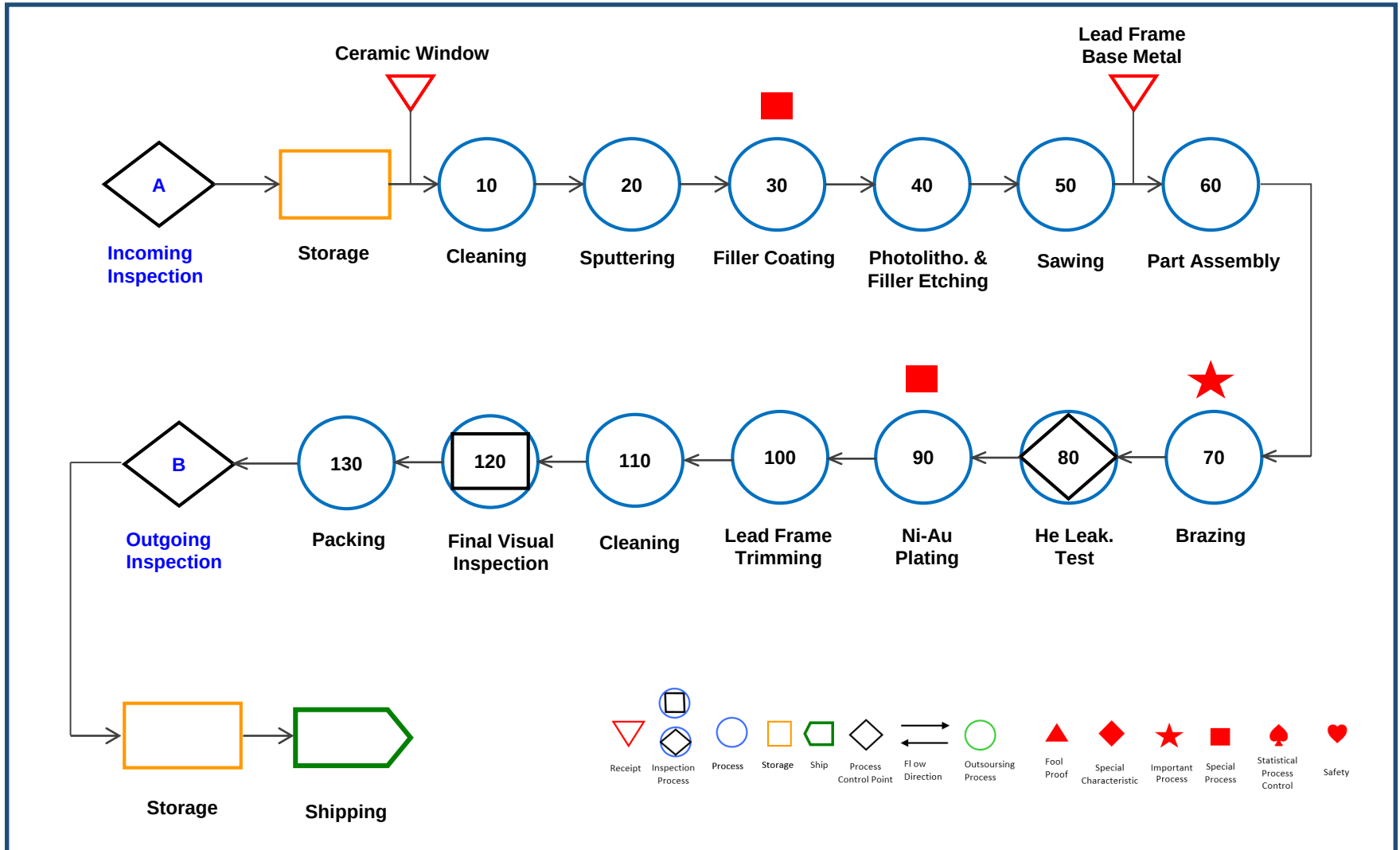
| Air Cavity Ceramic RF Package



| Air Cavity Plastic RF Package



RF Package Process Flow chart



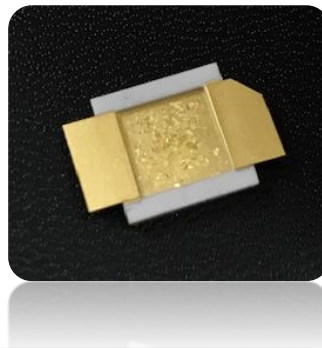


Amogreentech Production facility at Cheon An City, KOREA

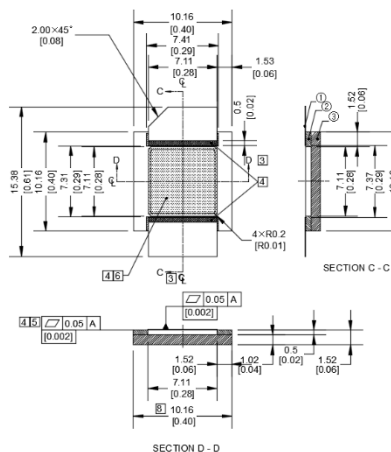
- Production capacity : ~ 100K / Month**

AMO 400

Div.	Overview	
Model Type	High Power Amp.	
Package Type	10.16mm X 10.16mm X 1.52mm	
Frequency	1.8 ~ 3.5GHz	
Power Output	25W ~ 100W	
FETs	LDMOS & GaN	

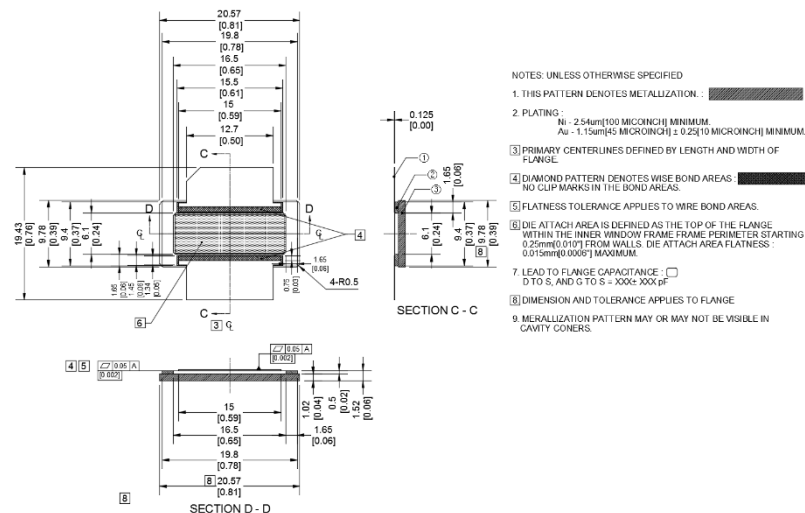


AMO 400 Series Inspection Standards



- NOTES: UNLESS OTHERWISE SPECIFIED
- THIS PATTERN DENOTES METALLIZATION: [Pattern]
 - PLATING:
Ni - 2.54um(100 MICRONS) MINIMUM
Au - 1.15um(45 MICRONS) ± 0.25(10 MICRONS) MINIMUM
 - PRIMARY CENTERLINES DEFINED BY LENGTH AND WIDTH OF FLANGE.
 - DIAMOND PATTERN DENOTES WIRE BOND AREAS: [Pattern]
NO CLIP MARKS IN THE BOND AREAS.
 - FLATNESS TOLERANCE APPLIES TO WIRE BOND AREAS.
 - DIE ATTACH AREA IS DEFINED AS THE TOP OF THE FLANGE WITHIN THE INNER WINDOW FRAME PERIMETER STARTING 0.25mm(0.010") FROM WALLS. DIE ATTACH AREA FLATNESS: 0.15mm(0.006") MAXIMUM.
 - LEAD TO FLANGE CAPACITANCE:
D TO S, AND G TO S = 300±300 pF
 - DIMENSION AND TOLERANCE APPLIES TO FLANGE
 - METALLIZATION PATTERN MAY OR MAY NOT BE VISIBLE IN CAVITY CORNERS.

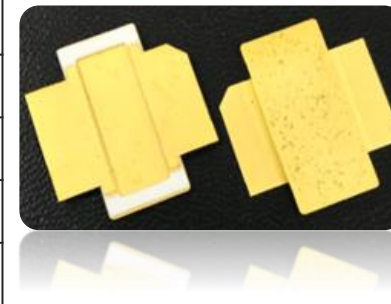
AMO 780 Series Inspection Standards



- NOTES: UNLESS OTHERWISE SPECIFIED
- THIS PATTERN DENOTES METALLIZATION: [Pattern]
 - PLATING:
Ni - 2.54um(100 MICRONS) MINIMUM
Au - 1.15um(45 MICRONS) ± 0.25(10 MICRONS) MINIMUM
 - PRIMARY CENTERLINES DEFINED BY LENGTH AND WIDTH OF FLANGE.
 - DIAMOND PATTERN DENOTES WIRE BOND AREAS: [Pattern]
NO CLIP MARKS IN THE BOND AREAS.
 - FLATNESS TOLERANCE APPLIES TO WIRE BOND AREAS.
 - DIE ATTACH AREA IS DEFINED AS THE TOP OF THE FLANGE WITHIN THE INNER WINDOW FRAME PERIMETER STARTING 0.25mm(0.010") FROM WALLS. DIE ATTACH AREA FLATNESS: 0.15mm(0.006") MAXIMUM.
 - LEAD TO FLANGE CAPACITANCE:
D TO S, AND G TO S = 300±300 pF
 - DIMENSION AND TOLERANCE APPLIES TO FLANGE
 - METALLIZATION PATTERN MAY OR MAY NOT BE VISIBLE IN CAVITY CORNERS.

AMO 780

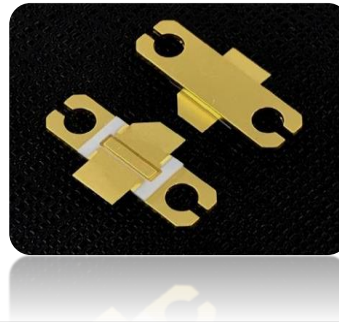
Div.	Overview	
Model Type	High Power Amp.	
Package Type	20.7mm X 19.43mm X 1.52mm	
Frequency	1.4 ~ 3.5GHz	
Power Output	45W ~ 500W	
FETs	LDMOS & GaN	



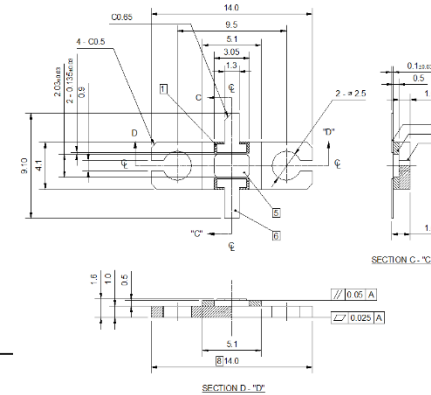
APPENDIX : AMO RF Package

AMO 580

Div.	Overview
Model Type	High Power Amp.
Package Type	20.3mm X 5.8mm X 2.08mm
Frequency	4.4~5.0GHz
Power Output	200W
FETs	GaN

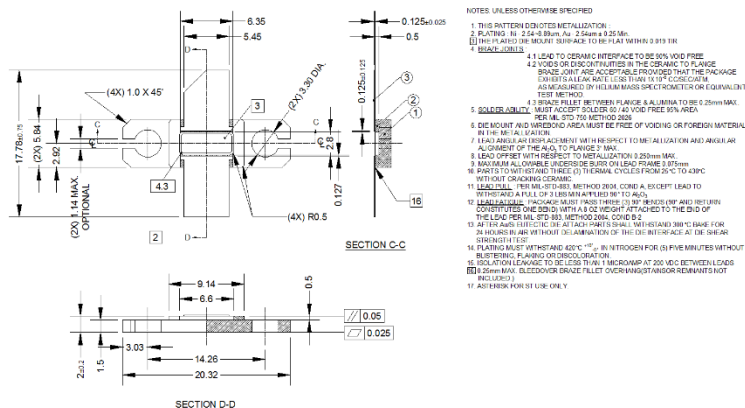


AMO 160 Series Inspection Standards



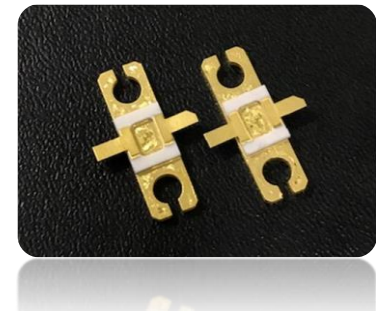
- NOTES: UNLESS OTHERWISE SPECIFIED
- THIS PATTERN DENOTES METALLIZATION :
 - PLATING:
Ni - 4.0um ~ 7.5um
Au - 1.5um Min
 - PRIMARY CENTERLINES DEFINED BY LENGTH AND WIDTH OF BASE METAL
 - FLATNESS TOLERANCE APPLIES TO WIRE BOND AREAS
 - DIE ATTACH AREA IS DEFINED AS THE TOP OF THE FLANGE WITHIN THE INNER WINDOW FRAME PERIMETER STARTING 0.25mm FROM WALLS
DIE ATTACH AREA FLATNESS: 0.025mm MAXIMUM
(Ra: 1.0um Max. OTHERS Ra: 1.6um Max.)
 - LEAD FULL STRENGTH 90°: Min. 0.9kg.f
 - HEAT RESISTANCE TEST: 350°C, HEATING IN AIR 5MINUTES
NO BLISTER OR PEELING OF THE PLATING LAYER.
 - DIMENSION AND TOLERANCE APPLIES TO FLANGE
 - METALLIZATION PATTERN MAY OR MAY NOT BE VISIBLE IN CAVITY CONERS

AMO 580 Series Inspection Standards

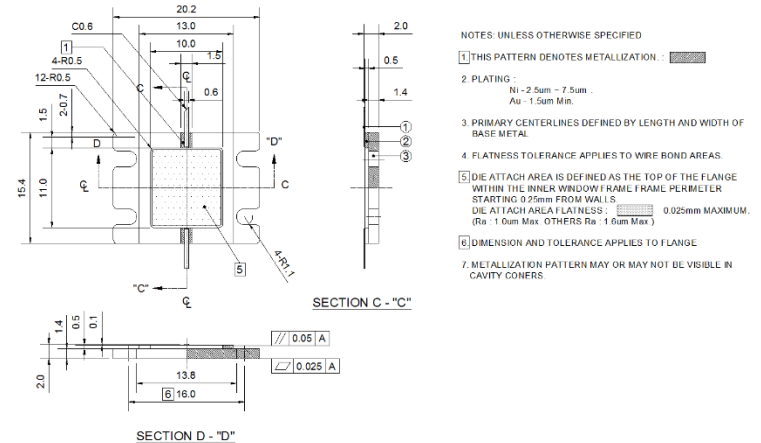


AMO 160

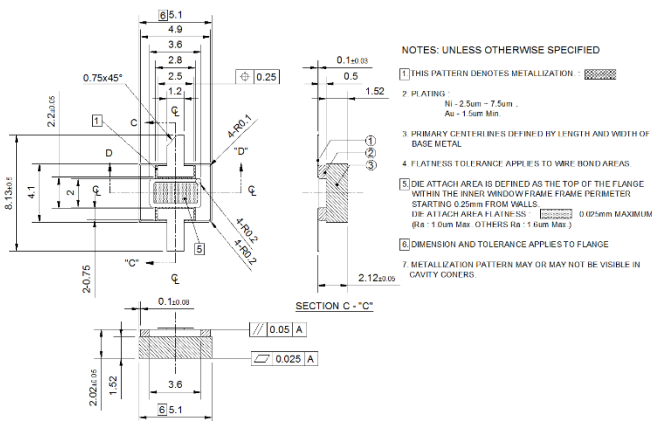
Div.	Overview
Model Type	Div. Amp.
Package Type	14.0mm X 4.1mm X 2.12mm
Frequency	> 3.5GHz
Power Output	12W ~ 24W
FETs	GaN



AMO 795 Series Inspection Standards



| AMO 795



THANK YOU

