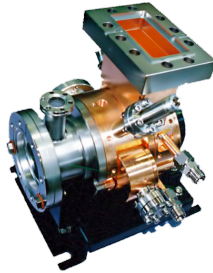


# RF Guns

AET has successfully developed various microwave/RF electron guns in the past. They are high gradient RF guns with a thermionic cathode, a triode type microwave electron gun and a micro-miniature microwave/RF electron gun using a coaxial resonator. The triode type microwave electron gun is an epoch-making product which is able to simultaneously eliminate the back bombardment phenomenon, reduce emittance of the electron beam and enables excellent control of the pulse width. While the novel micro-miniature microwave/RF electron gun with a diameter of only 5mm can be used as an electron or X-ray source for industrial and medical applications.

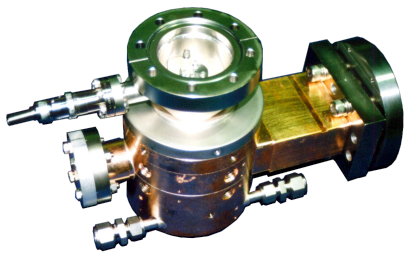
## $\pi/2$ Mode Side Coupled RF Gun



|                 |                            |
|-----------------|----------------------------|
| Structure       | Side Coupled Standing Wave |
| Frequency       | 2856MHz                    |
| RF coupling     | $\beta=3.0\pm 0.5$         |
| Shunt impedance | 90M $\Omega$ /m            |
| Beam Energy     | 2MeV                       |
| Beam Current    | 500mA                      |

To : Argonne National Laboratory / Stanford University

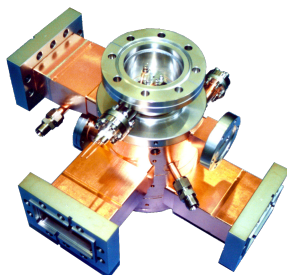
## $\pi/2$ Mode On-Axis Coupled RF Gun



|                 |                               |
|-----------------|-------------------------------|
| Structure       | On-Axis Coupled Standing Wave |
| Frequency       | 2856MHz                       |
| RF coupling     | $\beta=2.5\pm 0.5$            |
| Shunt impedance | 60M $\Omega$ /m               |
| Beam Energy     | 2MeV                          |
| Beam Current    | 1A                            |

To : Kawasaki Heavy Industries, Ltd.

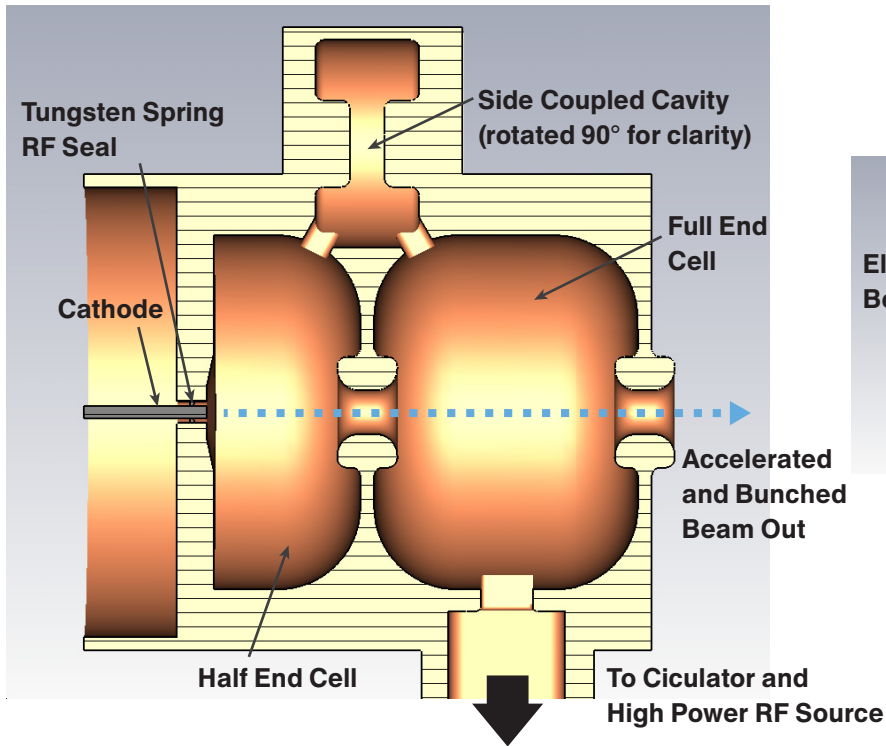
## Multi Feed Multi Cavity RF Gun



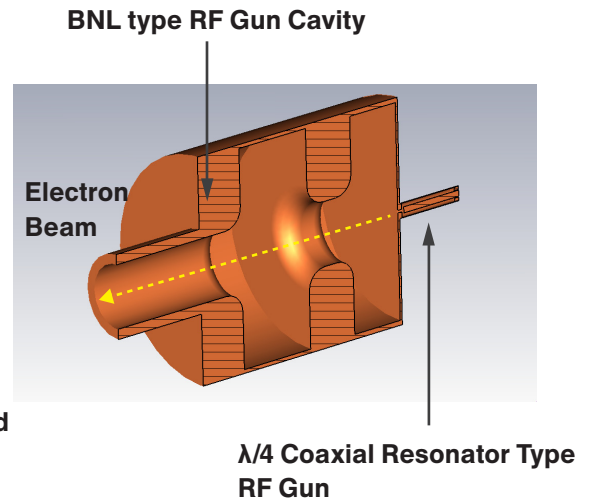
|                 |                         |
|-----------------|-------------------------|
| Structure       | Multi Feed Multi Cavity |
| Frequency       | 2856MHz                 |
| RF coupling     | $\beta=2.0\sim 4.0$     |
| Shunt impedance | 55M $\Omega$ /m         |
| Beam Energy     | 3MeV                    |
| Beam Current    | 500mA                   |

To : Argonne National Laboratory

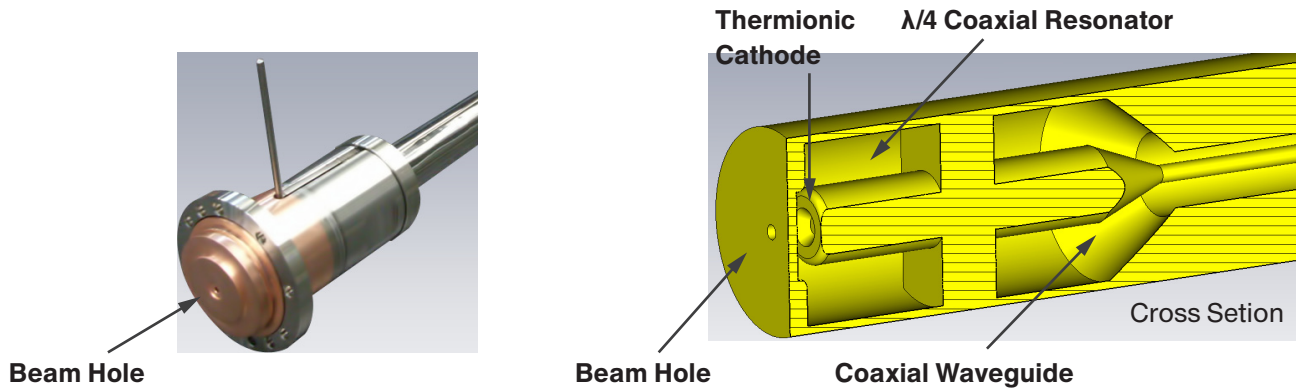
## Side coupled RF Gun Structure



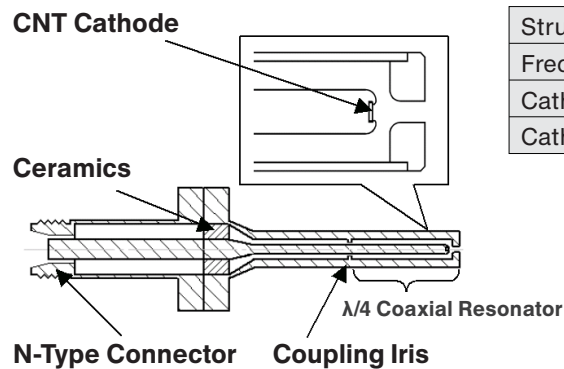
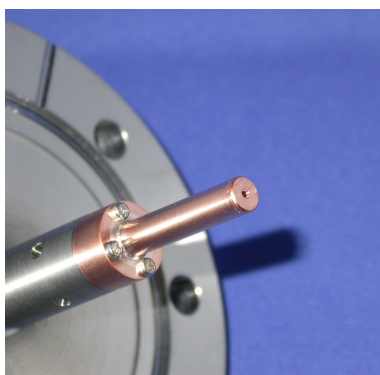
## Triode Type RF Gun



## λ/4 Coaxial Resonator Type RF Gun



## Micro-Miniature RF Gun



|                  |                       |
|------------------|-----------------------|
| Structure        | λ/4 Coaxial Resonator |
| Frequency        | 2856MHz               |
| Cathode Diameter | 1mm                   |
| Cathode Material | CNT                   |

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