SPICA, Mass ---> 10.3 solar-masses , Luminosity ---> 12100 solar-luminosities
ACHERNAR, Mass ---> 6.7 solar-masses , Luminosity ---> 3150 solar-luminosities
REGULUS, Mass ---> 3.8 solar-masses , Luminosity ---> 341 solar-luminosities
SIRIUS A, Mass ---> 2.0 solar-masses , Luminosity ---> 25.4 solar-luminosities
VEGA, Mass ---> 2.1 solar-masses , Luminosity ---> 40.1 solar-luminosities
FOMALHAUT, Mass ---> 1.9 solar-masses , Luminosity ---> 17.9 solar-luminosities
PROCYON, Mass ---> 1.4 solar-masses , Luminosity ---> 6.9 solar-luminosities
α CENTAURI A, Mass ---> 1.1 solar-masses , Luminosity ---> 1.5 solar-luminosities
α CENTAURI C, Mass ---> 0.12 solar-masses , Luminosity ---> 0.002 solar-luminosities
BARNARD'S STAR, Mass ---> 0.2 solar-masses , Luminosity ---> 0.003 solar-luminosities

We know that,

Main-sequence stars have a relation of - $M \propto L^\alpha$

So,

$\alpha = \log L/\log M$; where both are in solar units

so for SPICA, $\alpha = \log(12100)/\log(10.3) = 4.031$

ACHERNAR, $\alpha = \log(3150)/\log(6.7) = 4.235$

REGULUS, $\alpha = \log(341)/\log(3.8) = 4.368$

SIRIUS A, $\alpha = \log(25.4)/\log(2.0) = 4.667$

VEGA, $\alpha = \log(40.1)/\log(2.1) = 4.975$

FOMALHAUT, $\alpha = \log(17.9)/\log(1.9) = 4.494$

PROCYON, $\alpha = \log(6.9)/\log(1.4) = 5.741$

α CENTAURI A, $\alpha = \log(1.5)/\log(1.1) = 4.254$

α CENTAURI C, $\alpha = \log(0.002)/\log(0.12) = 2.931$

BARNARD'S STAR, $\alpha = \log(0.003)/\log(0.02) = 3.609$

In these data, We find, 3.609, 2.931, 4.975 and 5.741 as outliers
So, we don't consider them for our calculations

So,

$\alpha = 4.342 \pm 0.202$;

and this is valid for masses 1 to 10 solar masses.

So,

For masses between 1 and 10 solar masses, the period luminosity relationship is,

$$M \propto L^{(4.342 \pm 0.202)}. \quad \text{------------->} (1)$$