
Subject: CSD01060 DIODE I_f / U_f and I_f / r_D CURVES

Posted by [FL152](#) on Thu, 05 Apr 2018 18:46:54 GMT

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Forward Voltage U_f vs. Forward Current I_f values of one (randomly selected) CSD01060 HV SiC Schottky diode are measured with regulated lab DC supply and quality (Fluke 87V) multimeter. The aim was determining of suitability for tube cathode bias (instead of $R_k // C_k$ „standard" solution). Two things are of interest here:

- 1.) Values of U_f vs. changing I_f for low currents, typical for many tubes (say 1-70 mA)
- 2.) Dynamic resistance r_D (for AC) values for various I_f . We need really low numbers here,

with C_k for AC) state. Especially when we'd need 2-3-4 (or even more) diodes in series, because of relative low U_f per diode.

$I_a = 10-11$ mA. Biased with two CSD01060 in series ($U_k = 2 \times U_f = 1,74$ V), anode resistance is how much) it matters depends of implementation. One example where it is critical is RIAA stage.

Figure 1: Forward current vs. Forward Voltage Curve for CSD01060, SiC Schottky diode

Determining of Dynamic Resistance r_D at a certain forward current, example 10 mA:

- At $I_f = 10$ mA (reads $U_f = 0,87$ V) point on I_f / U_f graph draw the tangent line

Figure 2: Graphic determining of Dynamic Resistance r_D - Tangent line to the I_f / U_f slope

Several r_D values vs. I_f gives a new graph, where we can see how r_D shifts with changing I_f .
It is obvious that diode is quite capable of acceptable low r_D when we are

Another example: Eleven diodes in series would be suitable for (cathode) bias PP EL84 output stage. About 58,5 mA DC standing current, $11 \times 0,934$ V = 10,27 V, where r_D would be $11 \times 0,5 = 5,5$ Ohms. Large current „reserve" (2 A for CSD1060) is a another „bonus" on current peaks.

Figure 3: Dynamic Resistance r_D vs. forward current I_f curve of CSD01060 diode

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