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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.

$I_a = 10\text{-}11$  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 another „bonus" on current peaks.

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

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## File Attachments

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- 1) [graf1.tif](#), downloaded 1191 times
  - 2) [graf2.tif](#), downloaded 1110 times
  - 3) [graf3.tif](#), downloaded 1144 times
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