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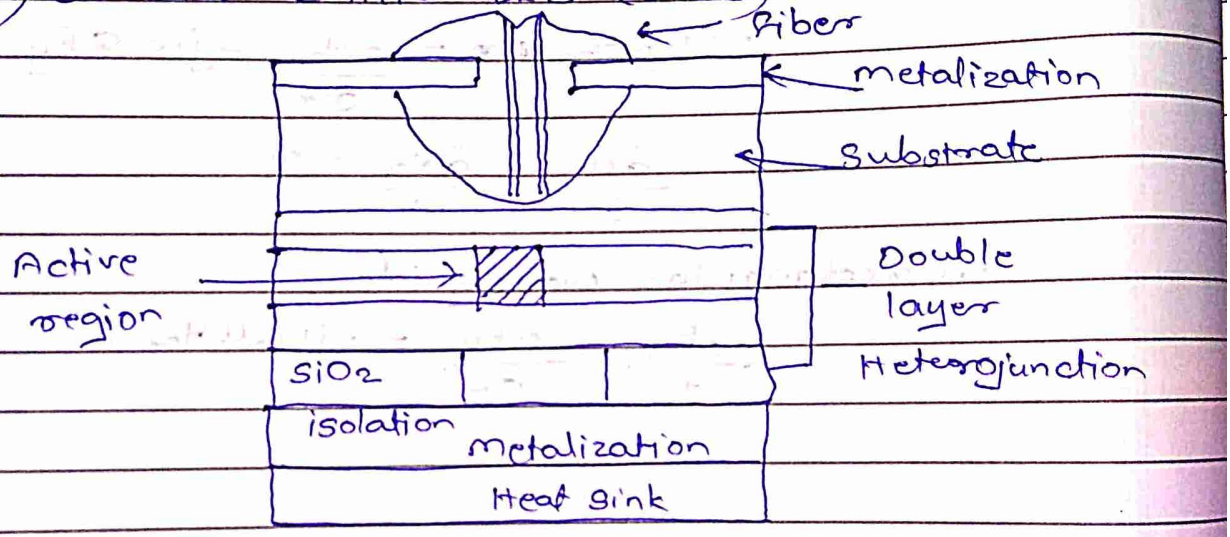
Q.1) LED structure:

1) There are five major types of LED structure and although only two have found extensive use in optical fiber combination. These are the surface emitter, the edge emitter, and the super luminescent LED respectively. The other two structures, the planar and dome LED.

2) Surface Emitter LED (SLED)



Surface emitting LED

3) Working:

i) Surface emitter LED (SLED) operates at 850nm wavelength. SLED is five layered double heterojunction on device consisting of GaAs and GaAlAs layers.

2) The design of SLED was based on massive electron enjection with into a thin active layer for recombination of electron and holes and enhanced focus of emitted light into optical fiber.

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iii) The plane of the active light emitting region is oriented perpendicularly to axis of fiber. From the substance of the device, well is etched. Fibers are connected in the well to accept ~~in~~ to the emitted light.

iv) The circular active area in partical surface emitters in normally 50 um in diameter and up to 2.5 um thick SLED has low thermal impedance the active region which allow high current densities and give high radiance emission into optical fiber.

v) The isotropic pattern from a SLED is lamberitian pattern. In this pattern source is equally bright when viewed from any direction; but the power diminishes as $\cos\theta$.

i.e. $P = P_0 \cos\theta$

where θ is the angle between viewing direction and normal surface and P_0 is the value of power P at $\theta = 0°$

Nishavan