Slim SMA with Low Thermal Resistance

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Sirect Semiconductor Inc. announced that the slim, high power density and low thermal resistance SMA-F & SMA-FS instead of the standard SMA package (DO-214AC).

On account of the lower thermal resistance of SMA-F & SMA-FS than SMA package and the total power loss, T_J and Tc all already reduced in force.

$T_J = T_C + P_D*[R_{\theta JC} + R_{\theta CS} + R_{\theta SA}]$ ... Formula 1

$T_J = T_A + [R_{\theta JA} * P_R]$ ... Formula 2

T_J : Temperature of semiconductor junction

Tc : Temperature of case

T_A : Temperature of ambient

P_D: Power disipated in semiconductor

P_R: Reverse Power

$R_{\theta CS}$: Thermal resistance of case to heat-sink

$R_{\theta SA}$: Thermal resistance of heat-sink to ambient

$R_{\theta JC}$: Thermal resistance of junction to case

$R_{\theta JA}$: Thermal Resistance of junction to ambient

Power Loss = Conduction Loss + Reverse Loss + Switching Loss

$= (I_F*V_F*T) + (H_{TIR}*V_R*T) + (I_{RRM}*V_{RM}*T)$ ... Formula 3

Since the lower $R_{\theta JC}$ and $R_{\theta JA}$ with SMA-F and SMA-FS packages, and then we obtained the lower junction temperature (T_J) on semiconductor (see formula 1 & 2). Therefore, the reverse leakage current at rated temperature (H_{TIR}) had reduced indeed, and the power loss had reduced too (see formula 3).

Besides, the flat lead-frame of SMA-F & SMA-FS instead of bended shearwater's type SMA package, and the stress of physics between assembly and manufacture can be keep off. Therefore, the reliability of improved slim SMA is better than standard SMA package indeed.

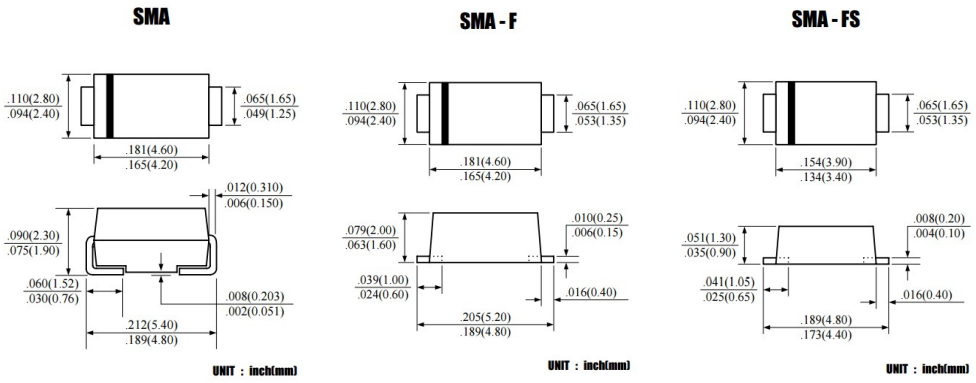

Fig.1 Dimensions of SMA, SMA-F & SMA-FS

To summarize the advantages of the improved slim SMA series are:

-Low thermal resistance and power loss

-High efficiency and reliability

-Slim package and high density of power

For further details, please contact Sirect at the location nearest you.

Sirect Semiconductor Inc., Delaware,

Sales Representatives:

U.S.A. -
Suite 806, 1220 N. Market Street, Wilmington, DE 19801, County of New Castle, Delaware, U.S.A.
e-mail: ben@sirect.com

China -
Room 302, Block A, Nanfangguoji Plaza, Yitian Rd. 3013, Futian district, Shenzhen, China
e-mail: leo@sirect.com

Taiwan -
19F-3, NO. 75, Sec. 1, Xintai 5th Rd., Xixhi City, Taipei, Taiwan
e-mail: ernest@sirect.com

Thailand -
29/123 F.8 Siam Condo. Rama 9 Rd., Huaykwang, Bangkok 10310, Thailand
e-mail: th@sirect.com