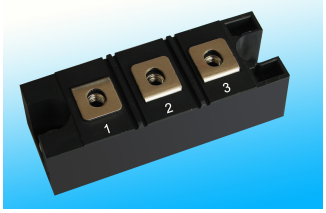
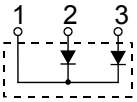
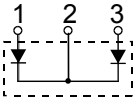
# SDKF/SDAF/SDEF2x300-06B1/B2

## Soft Recovery Behaviour Ultra Fast Recovery Epitaxial Diode Modules

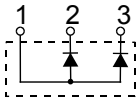


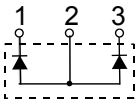

SDKF2X300-06B1
Side Common



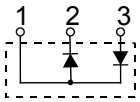

SDKF2X300-06B2
Center Common



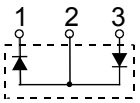

SDAF2X300-06B1
Side Common




SDAF2X300-06B2
Center Common

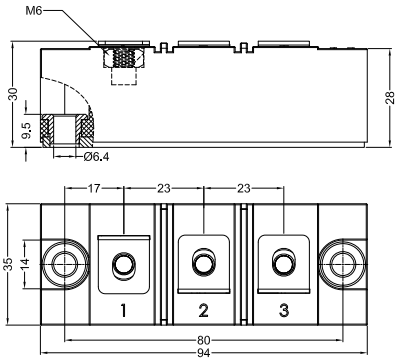



SDEF2X300-06B1
Side Common




SDEF2X300-06B2
Center Common

**Dimensions in mm (1mm=0.0394")**




| Symbol | Test Conditions | | Maximum Ratings | Unit |
|---|---|---|---|---|
| $I_{FRMS}$<br>$I_{FAVM}$<br>$I_{FRM}$ | $T_C$=75°C<br>$T_C$=75°C; rectangular, d=0.5<br>$t_p$<10us; rep. rating, pulse width limited by $T_{VJM}$ | | 430<br>2 x 300<br>1640 | A |
| $I_{FSM}$ | $T_{VJ}$=45°C | t=10ms (50Hz), sine<br>t=8.3ms (60Hz), sine | 2400<br>2640 | A |
| | $T_{VJ}$=150°C | t=10ms(50Hz), sine<br>t=8.3ms(60Hz), sine | 2160<br>2380 | |
| $I^2t$ | $T_{VJ}$=45°C | t=10ms (50Hz), sine<br>t=8.3ms (60Hz), sine | 28800<br>29300 | $A^2s$ |
| | $T_{VJ}$=150°C | t=10ms(50Hz), sine<br>t=8.3ms(60Hz), sine | 23300<br>23800 | |
| $T_{VJ}$<br>$T_{stg}$<br>$T_{Smax}$ | | | -40...+150<br>-40...+125<br>110 | °C |
| $P_{tot}$ | $T_C$=25°C | | 875 | W |
| $V_{ISOL}$ | 50/60Hz, RMS<br>$I_{ISOL}$≤1mA | t=1min<br>t=1s | 3000<br>3600 | V~ |
| $M_d$ | Mounting torque (M6)<br>Terminal connection torque (M6) | | 2.25-2.75/20-25<br>4.50-5.50/40-48 | Nm/lb.in. |
| $d_S$<br>$d_A$<br>a | Creeping distance on surface<br>Strike distance through air<br>Maximum allowable acceleration | | 12.7<br>9.6<br>50 | mm<br>mm<br>$m/s^2$ |
| Weight | | | 170 | g |

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# SDKF/SDAF/SDEF2x300-06B1/B2

## Soft Recovery Behaviour Ultra Fast Recovery Epitaxial Diode Modules

| Symbol | Test Conditions | Characteristic Values typ. | max. | Unit |
|---|---|---|---|---|
| $I_R$ | $T_{VJ}$=25°C; $V_R$=$V_{RRM}$<br>$T_{VJ}$=25°C; $V_R$=0.8·$V_{RRM}$<br>$T_{VJ}$=125°C; $V_R$=0.8·$V_{RRM}$ | | 12<br>3<br>80 | mA |
| $V_F$ | $I_F$=150A; $T_{VJ}$=125°C<br>$T_{VJ}$=25°C<br>$I_F$=260A; $T_{VJ}$=125°C<br>$T_{VJ}$=25°C | | 1.05<br>1.27<br>1.19<br>1.36 | V |
| $V_{TO}$ | For power-loss calculations only | | 0.85 | V |
| $r_T$ | | | 1.34 | mΩ |
| $R_{thJH}$<br>$R_{thJC}$ | DC current<br>DC current | | 0.228<br>0.143 | K/W |
| $t_{rr}$<br>$I_{RM}$ | $I_F$=300A; $T_{VJ}$=100°C<br>$V_R$=300V; $T_{VJ}$=25°C<br>-di/dt=400A/us; $T_{VJ}$=100°C | 250 | 300<br>44<br>66 | ns<br>A<br>A |

### *FEATURES*

* International standard package
* Copper base plate
* Glass passivated chips
* Short recovery time
* Low switching losses
* Soft recovery behaviour
* Isolation voltage 3600 V~
* RoHS compliant

### *APPLICATIONS*

* Antiparallel diode for high frequency switching devices
* Free wheeling diode in converters and motor control circuits
* Inductive heating and melting
* Uninterruptible power supplies (UPS)
* Ultrasonic cleaners and welders

### *ADVANTAGES*

* High reliability circuit operation
* Low voltage peaks for reduced protection circuits
* Low noise switching
* Low losses

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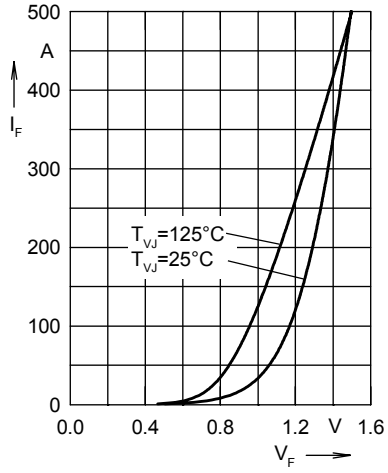


Fig. 1 Forward current $I_F$ versus max. voltage drop $V_F$ per leg

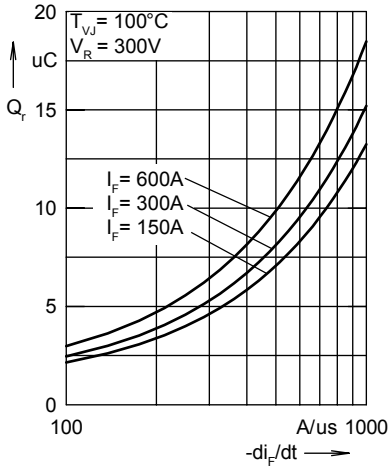


Fig. 2 Typ. reverse recovery charge $Q_r$ versus $-di_F/dt$

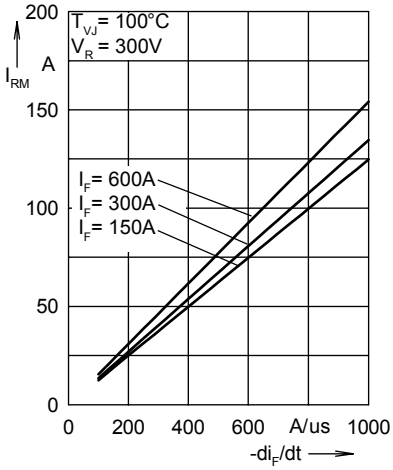


Fig. 3 Typ. peak reverse current $I_{RM}$ versus $-di_F/dt$

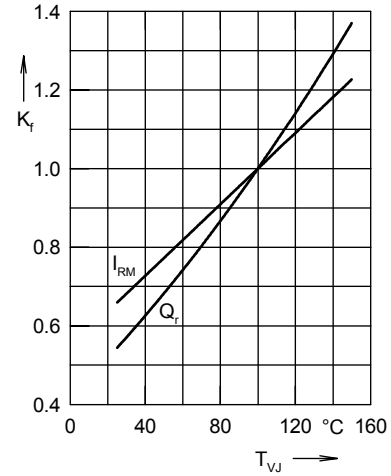


Fig. 4 Dynamic parameters $Q_r$, $I_{RM}$ versus junction temperature $T_{VJ}$

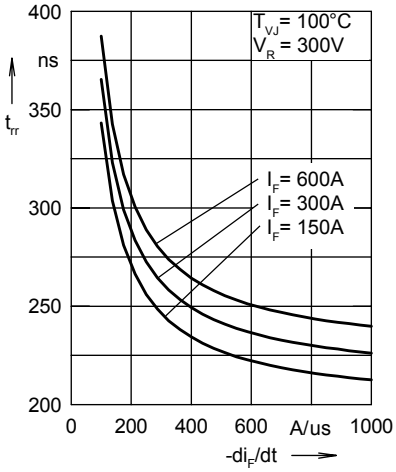


Fig. 5 Typ. recovery time $t_{rr}$ versus $-di_F/dt$

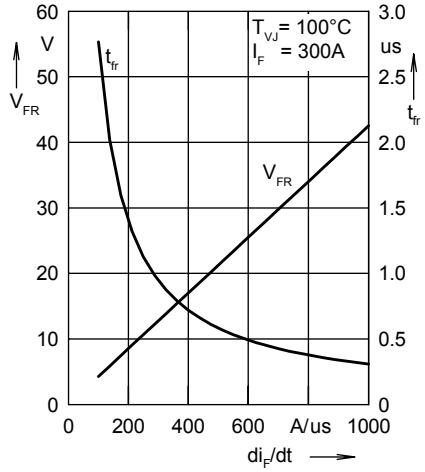


Fig. 6 Typ. peak forward voltage $V_{FR}$ and $t_{fr}$ versus $di_F/dt$

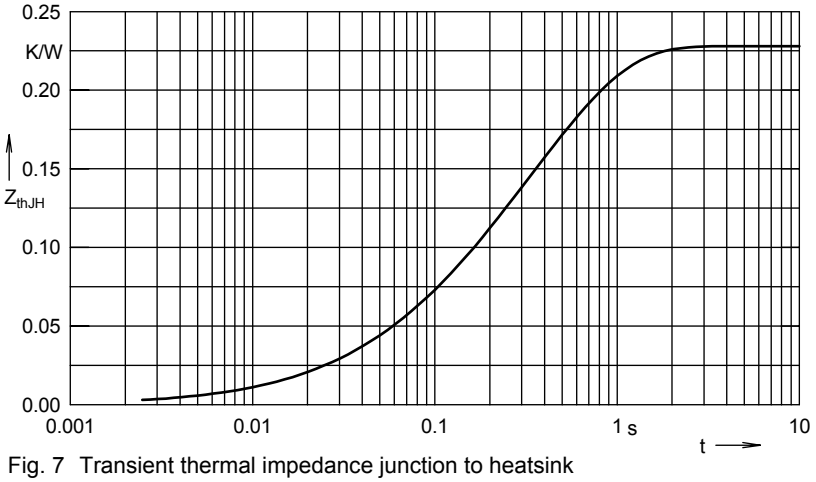


Fig. 7 Transient thermal impedance junction to heatsink

Constants for $Z_{thJS}$ calculation:

| i | $R_{thi}$ (K/W) | $t_i$ (s) |
|---|---|---|
| 1 | 0.002 | 0.08 |
| 2 | 0.008 | 0.024 |
| 3 | 0.054 | 0.112 |
| 4 | 0.164 | 0.464 |





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