

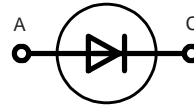
Gallium Arsenide Schottky Rectifier

$$I_{FAV} = 12 \text{ A}$$

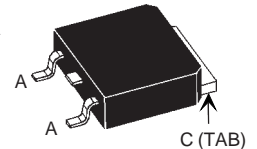
$$V_{RRM} = 100 \text{ V}$$

$$C_{Junction} = 19 \text{ pF}$$

| V_{RSM} V | V_{RRM} V | Type | Marking on product |
|----------------|----------------|------------|-----------------------|
| 100 | 100 | DGS 3-01AS | 3A010AS |



TO-252 AA



A = Anode, C = Cathode, TAB = Cathode

| Symbol | Conditions | Maximum Ratings | |
|-----------|---|-----------------|------------------|
| I_{FAV} | $T_C = 25^\circ\text{C}$; DC | 12 | A |
| I_{FAV} | $T_C = 90^\circ\text{C}$; DC | 8.5 | A |
| I_{FSM} | $T_{VJ} = 45^\circ\text{C}$; $t_p = 10 \text{ ms}$ (50 Hz); sine | 10 | A |
| T_{VJ} | | -55...+175 | $^\circ\text{C}$ |
| T_{stg} | | -55...+150 | $^\circ\text{C}$ |
| P_{tot} | $T_C = 25^\circ\text{C}$ | 18 | W |

Features

- Low forward voltage
- Very high switching speed
- Low junction capacity of GaAs
- low reverse current peak at turn off
- Soft turn off
- Temperature independent switching behaviour
- High temperature operation capability
- Epoxy meets UL 94V-0

| Symbol | Conditions | Characteristic Values | |
|------------|---|-----------------------|---------|
| | | typ. | max. |
| I_R ① | $V_R = V_{RRM}$; $T_{VJ} = 25^\circ\text{C}$ | | 0.7 mA |
| | $V_R = V_{RRM}$; $T_{VJ} = 125^\circ\text{C}$ | 0.7 | mA |
| V_F | $I_F = 2 \text{ A}$; $T_{VJ} = 125^\circ\text{C}$ | 0.54 | V |
| | $I_F = 2 \text{ A}$; $T_{VJ} = 25^\circ\text{C}$ | 0.62 | 0.8 V |
| C_J | $V_R = 50 \text{ V}$; $T_{VJ} = 125^\circ\text{C}$ | 19 | pF |
| R_{thJC} | | | 8.5 K/W |
| Weight | | 0.3 | g |

Pulse test: ① Pulse Width = 5 ms, Duty Cycle < 2.0%
Data according to DIN/IEC 747 and per diode unless otherwise specified

Applications

- MHz switched mode power supplies (SMPS)
- Small size SMPs
- High frequency converters
- Resonant converters

tbd

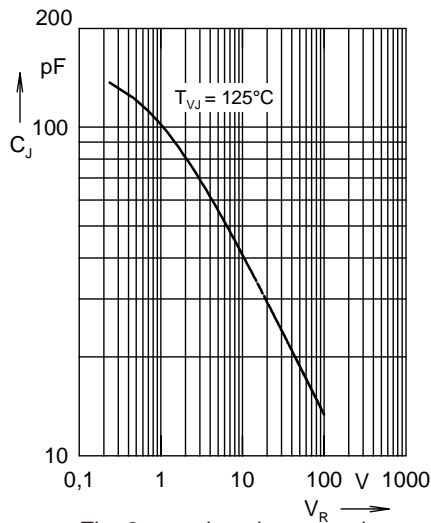


Fig. 1 typ. forward characteristics

Fig. 2 typ. junction capacity versus blocking voltage

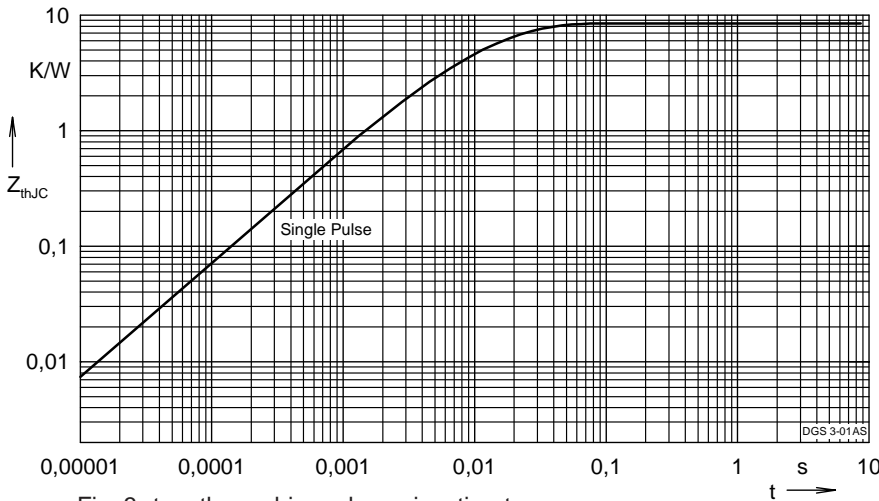
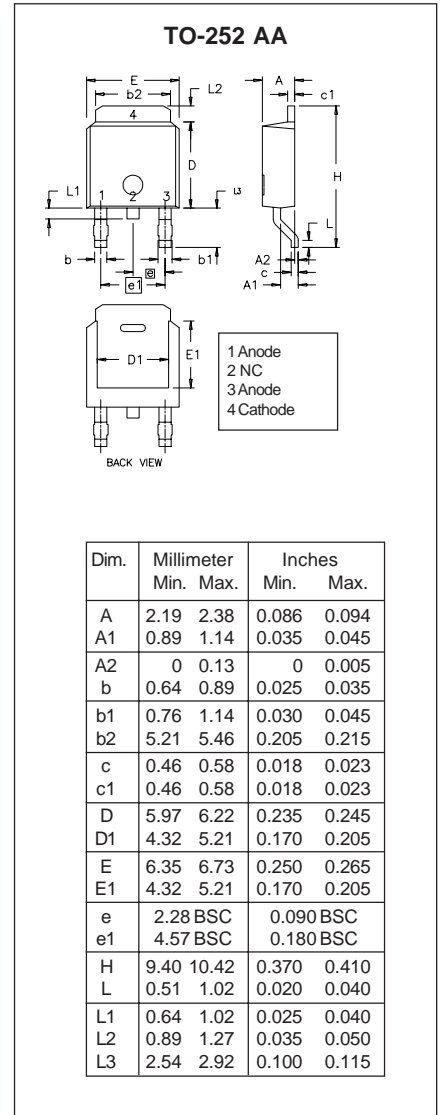


Fig. 3 typ. thermal impedance junction to case



Note:
explanatory comparison of the basic operational behaviour of rectifier diodes and Gallium Arsenide Schottky diodes:

| | Rectifier Diode | GaAs Schottky Diode |
|--------------------------|--|---|
| conduction | by majority + minority carriers | by majority carriers only |
| forward characteristics | $V_F(I_F)$ | $V_F(I_F)$, see Fig. 1 |
| turn off characteristics | extraction of excess carriers causes temperature dependant reverse recovery (t_{rr} , I_{RM} , Q_{rr}) | reverse current charges junction capacity C_J , see Fig. 2; not temperature dependant |
| turn on characteristics | delayed saturation leads to V_{FR} | no turn on overvoltage peak |

IXYS reserve the right to change limits, conditions and dimensions.