

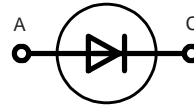
# Gallium Arsenide Schottky Rectifier

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

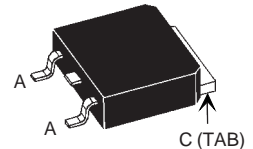
$$V_{RRM} = 100 \text{ V}$$

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

$V_{RSM}$ 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

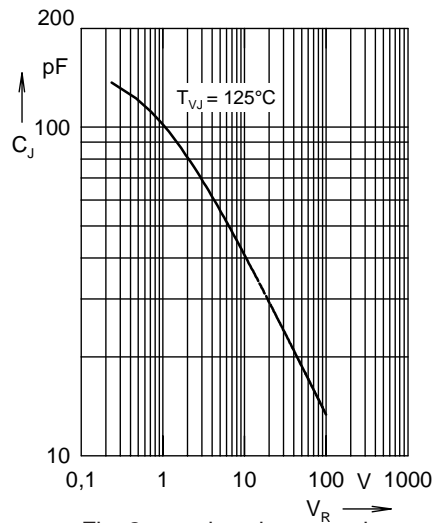


Fig. 1 typ. forward characteristics

Fig. 2 typ. junction capacity versus blocking voltage

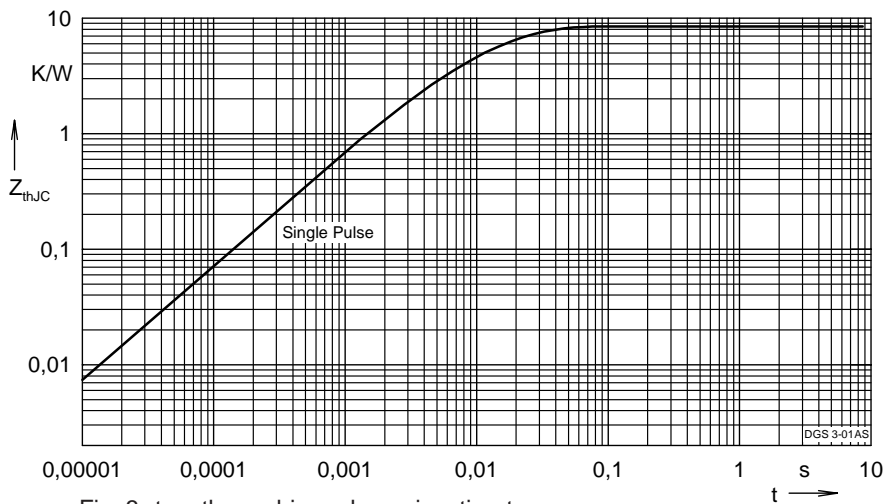


Fig. 3 typ. thermal impedance junction to case

**TO-252 AA**

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.19	2.38	0.086	0.094
A1	0.89	1.14	0.035	0.045
A2	0	0.13	0	0.005
b	0.64	0.89	0.025	0.035
b1	0.76	1.14	0.030	0.045
b2	5.21	5.46	0.205	0.215
c	0.46	0.58	0.018	0.023
c1	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
D1	4.32	5.21	0.170	0.205
E	6.35	6.73	0.250	0.265
E1	4.32	5.21	0.170	0.205
e	2.28 BSC		0.090 BSC	
e1	4.57 BSC		0.180 BSC	
H	9.40	10.42	0.370	0.410
L	0.51	1.02	0.020	0.040
L1	0.64	1.02	0.025	0.040
L2	0.89	1.27	0.035	0.050
L3	2.54	2.92	0.100	0.115

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.