

# Gallium Arsenide Schottky Rectifier

$I_{FAV} = 7\text{ A}$   
 $V_{RRM} = 180\text{ V}$   
 $C_{Junction} = 8.8\text{ pF}$

Type	Marking on product	Circuit	Package
DGS 3-018AS	3A180AS		TO-252 AA

A = Anode, C = Cathode, TAB = Cathode

Symbol	Conditions	Maximum Ratings	
$V_{RRM/RSM}$		180	V
$I_{FAV}$	$T_C = 25^\circ\text{C}$ ; DC	7	A
$I_{FAV}$	$T_C = 90^\circ\text{C}$ ; DC	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

### Applications

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

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
$V_F$	$I_F = 2\text{ A}$ ; $T_{VJ} = 125^\circ\text{C}$	0.85	V
	$I_F = 2\text{ A}$ ; $T_{VJ} = 25^\circ\text{C}$	0.85	1.1 V
$C_J$	$V_R = 100\text{ V}$ ; $T_{VJ} = 125^\circ\text{C}$	8.8	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

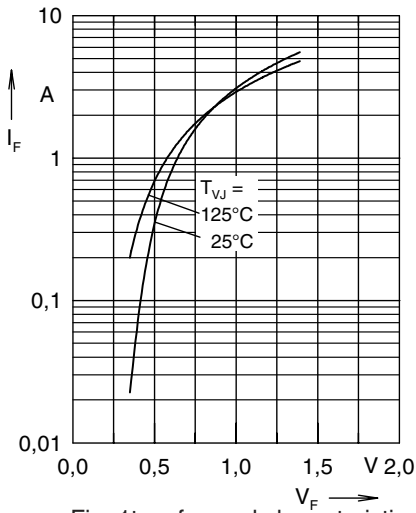


Fig. 1 typ. forward characteristics

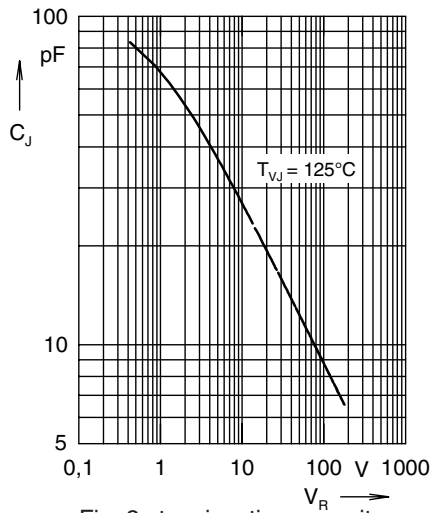


Fig. 2 typ. junction capacity versus blocking voltage

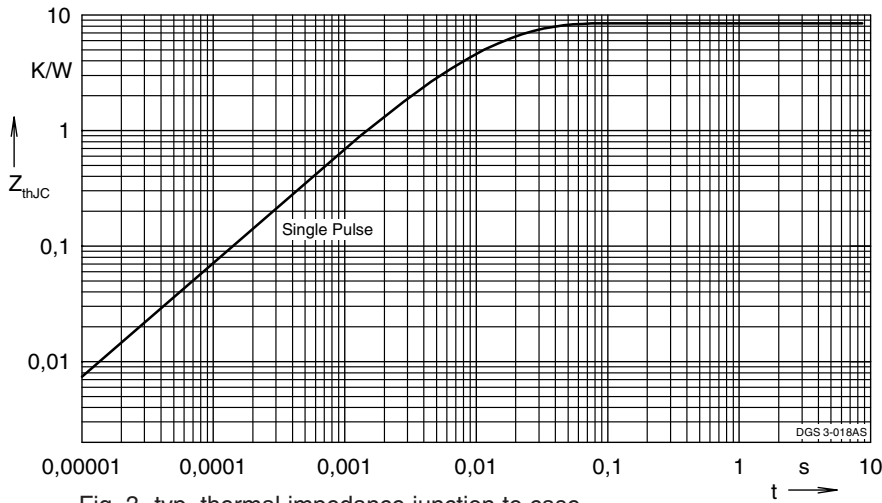
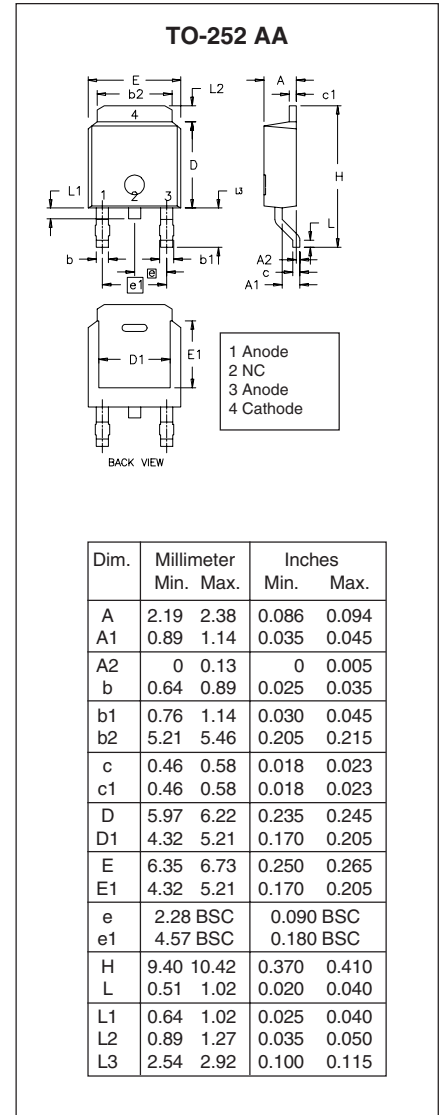


Fig. 3 typ. thermal impedance junction to case



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.