Gallium Arsenide Schottky Rectifier

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

Type	Marking on product	Circuit	Package
			A = Anode, C = Cathode , TAB = Cathode
DGS 3-018AS	3A180AS	A ▷| C	TO-252 AA
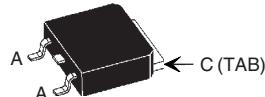
Symbol	Conditions	Maximum Ratings	
$V_{RRM/RSM}$		180	V
I_{FAV}	T_C = 25°C; DC	7	A
I_{FAV}	T_C = 90°C; DC	5	A
I_{FSM}	T_{VJ} = 45°C; t_p = 10 ms (50 Hz); sine	10	A
T_{VJ}		-55...+175	°C
T_{stg}		-55...+150	°C
P_{tot}	T_C = 25°C	18	W

Symbol	Conditions		Characteristic Values	
			typ.	max.
I_R ①	$V_R = V_{RRM}$; T_{VJ} = 25°C			0.7	mA
	$V_R = V_{RRM}$; T_{VJ} = 125°C		0.7		mA
V_F	I_F = 2 A; T_{VJ} = 125°C		0.85		V
	I_F = 2 A; T_{VJ} = 25°C		0.85	1.1	V
C_J	V_R = 100 V; T_{VJ} = 125°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

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

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

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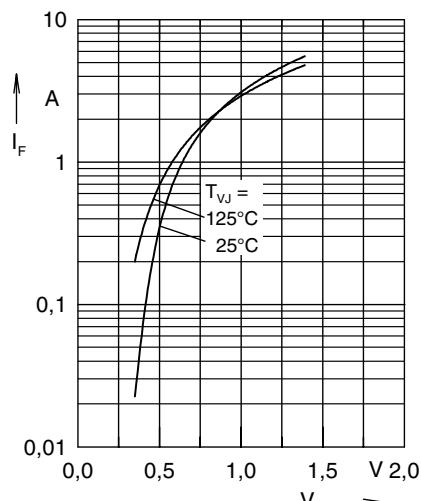
Fig. 1 typ. forward characteristics
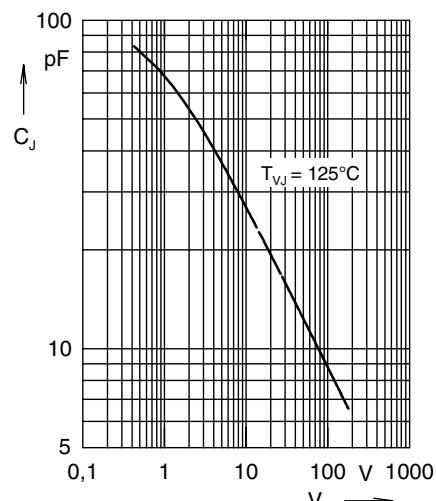
Fig. 2 typ. junction capacity versus blocking voltage
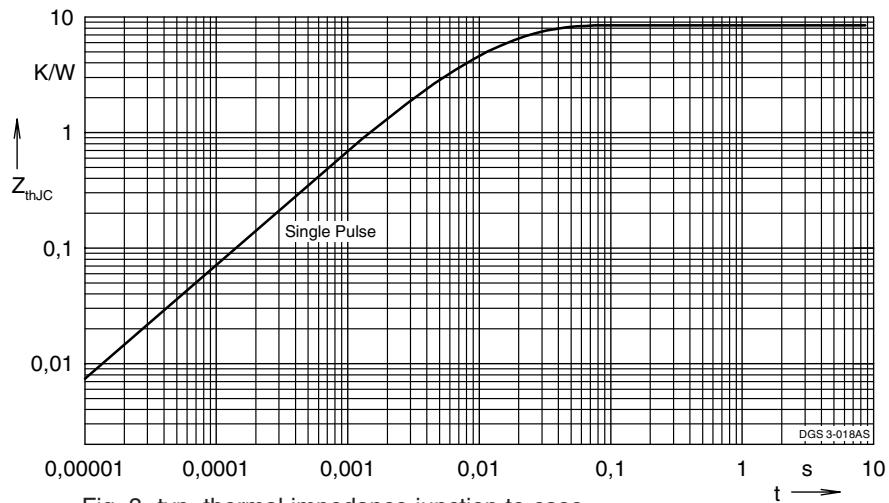
Fig. 3 typ. thermal impedance junction to case

TO-252 AA

BACK VIEW

1 Anode
2 NC
3 Anode
4 Cathode

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

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