

Gallium Arsenide Schottky Rectifier

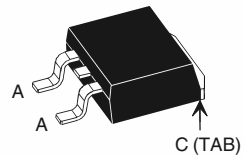
I_{FAV} = 23 A
 V_{RRM} = 180 V
 $C_{Junction}$ = 33 pF

Preliminary Data

V_{RSM} V	V_{RRM} V	Type
180	180	DGS 20-018AS



TO-263 AB



A = Anode, C = Cathode, TAB = Cathode

Symbol	Conditions	Maximum Ratings
I_{FAV}	$T_C = 25^\circ\text{C}$; DC	23 A
I_{FAV}	$T_C = 90^\circ\text{C}$; DC	17 A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t_p = 10$ ms (50 Hz), sine	30 A
T_{VJ}		-55...+175 °C
T_{stg}		-55...+150 °C
P_{tot}	$T_C = 25^\circ\text{C}$	48 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	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ $T_{VJ} = 125^\circ\text{C}$ $V_R = V_{RRM}$	2.0	2.0 mA mA
V_F	$I_F = 7.5$ A; $T_{VJ} = 125^\circ\text{C}$ $I_F = 7.5$ A; $T_{VJ} = 25^\circ\text{C}$	0.8	0.8 V 1.0 V
C_J	$V_R = 100$ V; $T_{VJ} = 125^\circ\text{C}$	33	pF
R_{thJC}		3.1	K/W
Weight		2	g

Pulse test: ① Pulse Width = 5 ms, Duty Cycle < 2.0 %
 Data according to IEC 60747 and per diode unless otherwise specified

IXYS reserves the right to change limits, Conditions and dimensions.

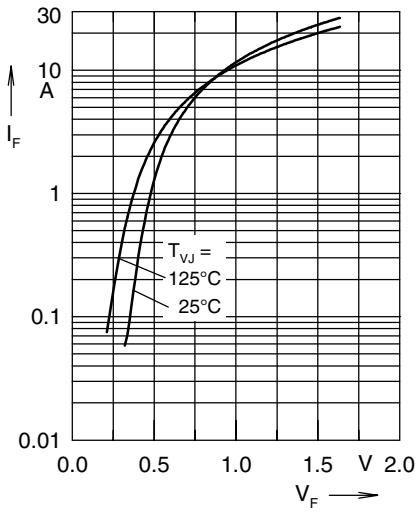


Fig. 1 typ. forward characteristics

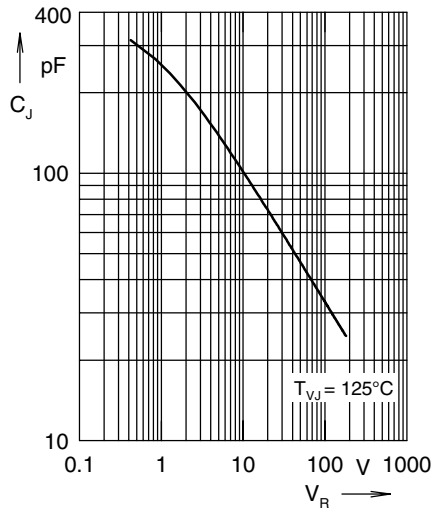


Fig. 2 typ. junction capacity versus blocking voltage

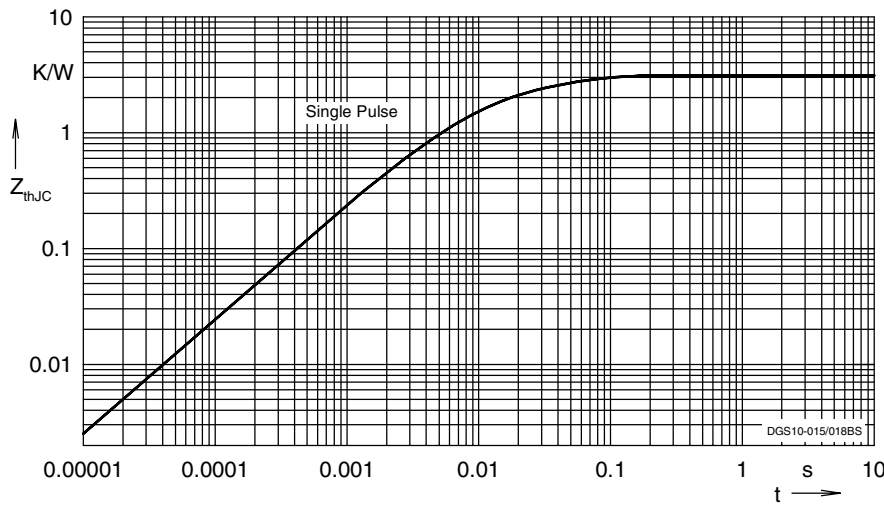
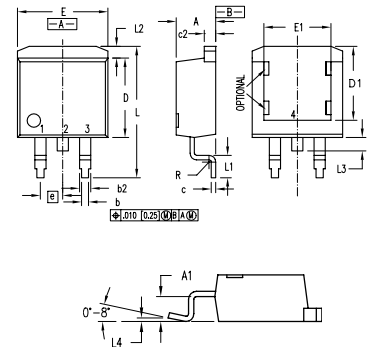


Fig. 3 typ. thermal impedance junction to case

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;
turn on characteristics	delayed saturation leads to V_{FR}	not temperature dependant no turn on overvoltage peak

Outline TO-263 AB



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	.160	.190
A1	2.03	2.79	.080	.110
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.46	0.74	.018	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	8.00	8.89	.315	.350
E	9.65	10.29	.380	.405
E1	6.22	8.13	.245	.320
e	2.54 BSC		.100 BSC	
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.20	0	.008
R	0.46	0.74	.018	.029