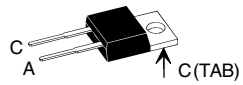
Gallium Arsenide Schottky Rectifier

I_{FAV} = 23 A
V_{RRM} = 150/180 V
$C_{Junction}$ = 33 pF

Preliminary Data

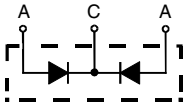
V_{RSM} V	V_{RRM} V	Type	
150	150	DGS 20-015A	Single
180	180	DGS 20-018A	

TO-220 AC

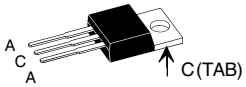


A = Anode, C = Cathode , TAB = Cathode

V_{RSM} V	V_{RRM} V	Type	
150	150	DGSK 40-015A	Common cathode
180	180	DGSK 40-018A	



TO-220 AB



Symbol	Conditions	Maximum Ratings	
I_{FAV}	T_C = 25°C; DC	23	A
I_{FAV}	T_C = 90°C; DC	17	A
I_{FSM}	T_{VJ} = 45°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°C	48	W
M_d	mounting torque	0.4...0.6	Nm

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°C	$V_R = V_{RRM}$		2.0	mA
	T_{VJ} = 125°C	$V_R = V_{RRM}$	2.0		mA
V_F	I_F = 7.5 A;	T_{VJ} = 125°C	0.8		V
	I_F = 7.5 A;	T_{VJ} = 25°C	0.8	1.0	V
C_J	V_R = 100 V;	T_{VJ} = 125°C	33		pF
R_{thJC}				3.1	K/W
R_{thCH}			0.5		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.

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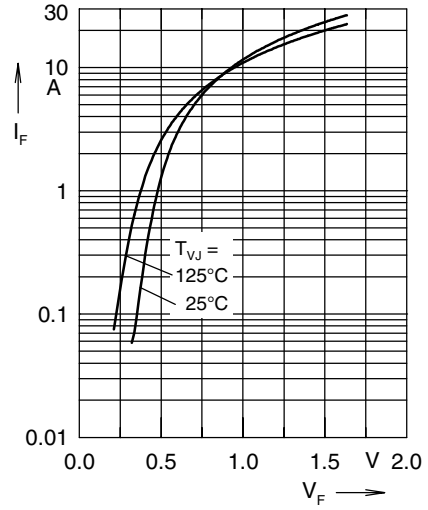


Fig. 1 typ. forward characteristics

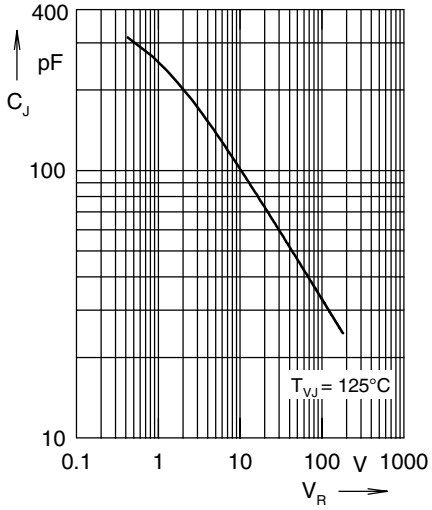


Fig. 2 typ. junction capacity versus blocking voltage

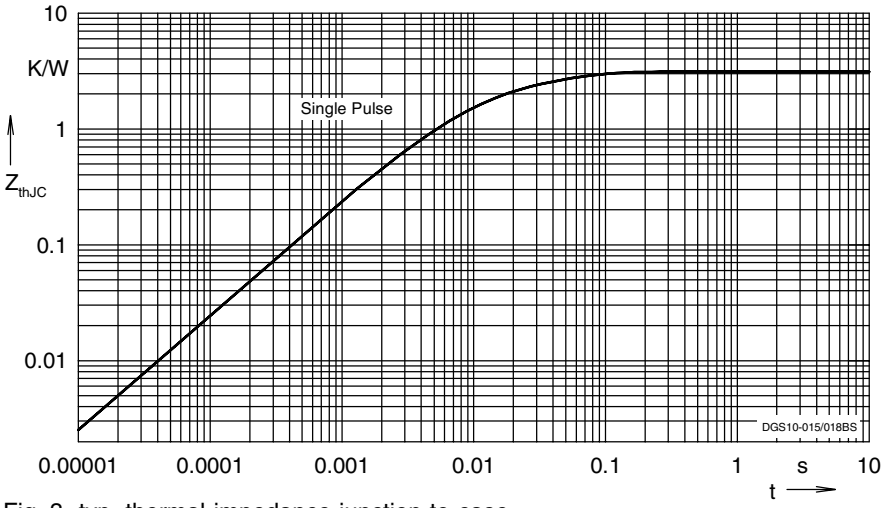
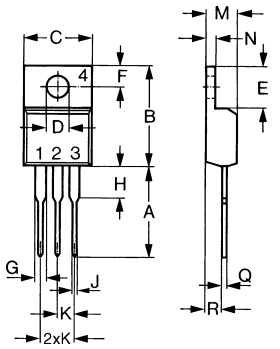


Fig. 3 typ. thermal impedance junction to case

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

Outline (center pin only for DGSK types)



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.70	13.97	0.500	0.550
B	14.73	16.00	0.580	0.630
C	9.91	10.66	0.390	0.420
D	3.54	4.08	0.139	0.161
E	5.85	6.85	0.230	0.270
F	2.54	3.18	0.100	0.125
G	1.15	1.65	0.045	0.065
H	2.79	5.84	0.110	0.230
J	0.64	1.01	0.025	0.040
K	2.54	BSC	0.100	BSC
M	4.32	4.82	0.170	0.190
N	1.14	1.39	0.045	0.055
Q	0.38	0.56	0.015	0.022
R	2.29	2.79	0.090	0.110