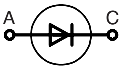
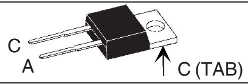
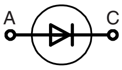
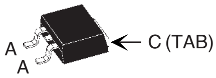
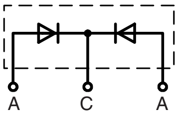
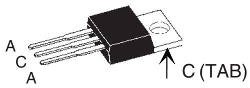
IXYS

DGS 10-018A(S)
DGSK 20-018A

Gallium Arsenide Schottky Rectifier

I_{FAV} = 15 A
V_{RRM} = 180 V
$C_{Junction}$ = 22 pF

A = Anode, C = Cathode , TAB = Cathode

Type	Marking on product		Circuit	Package	
DGS 10-018A	**DGS 10-018A**	Single		**TO-220 AC**	
DGS 10-018AS	**DGS 10-018AS**	Single		**TO-263 AB**	
DGSK 20-018A	**DGSK 20-018A**	Common cathode		**TO-220 AB**	

Symbol	Conditions	Maximum Ratings	
$V_{RRM/RSM}$		180	V
I_{FAV}	T_C = 25°C; DC	15	A
I_{FAV}	T_C = 90°C; DC	11	A
I_{FSM}	T_{VJ} = 45°C; t_p = 10 ms (50 Hz), sine	20	A
T_{VJ}		-55...+175	°C
T_{stg}		-55...+150	°C
P_{tot}	T_C = 25°C	34	W
M_d	mounting torque (Versions A only)	0.4...0.6	Nm

Symbol	Conditions	Characteristic Values typ.	max.	
I_R ①	T_{VJ} = 25°C $V_R = V_{RRM}$		1.3	mA
	T_{VJ} = 125°C $V_R = V_{RRM}$	1.3		mA
V_F	I_F = 5 A; T_{VJ} = 125°C	0.8		V
	I_F = 5 A; T_{VJ} = 25°C	0.8	1.1	V
C_J	V_R = 100 V; T_{VJ} = 125°C	22		pF
R_{thJC}			4.4	K/W
R_{thCH}	TO-220	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.

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

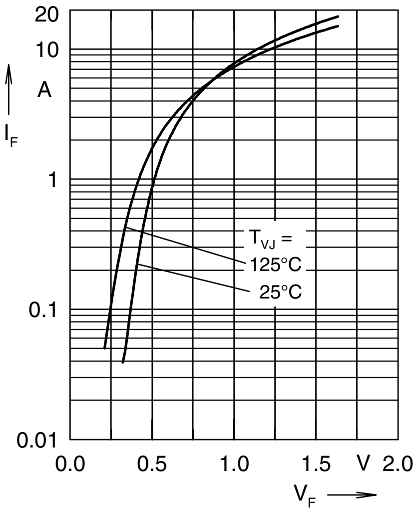


Fig. 1 typ. forward characteristics

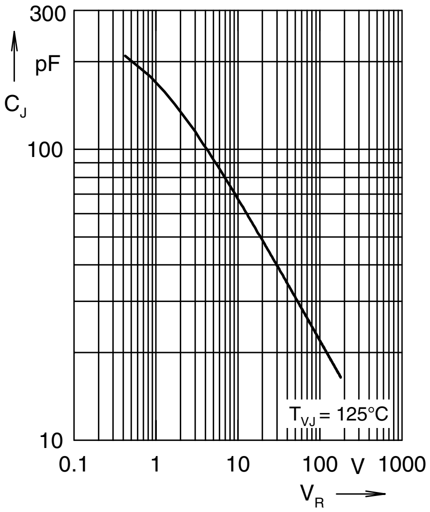
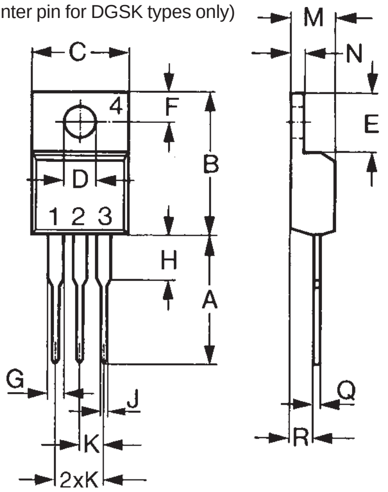


Fig. 2 typ. junction capacity versus blocking voltage

Outline TO-220

(center pin for DGSK types only)



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

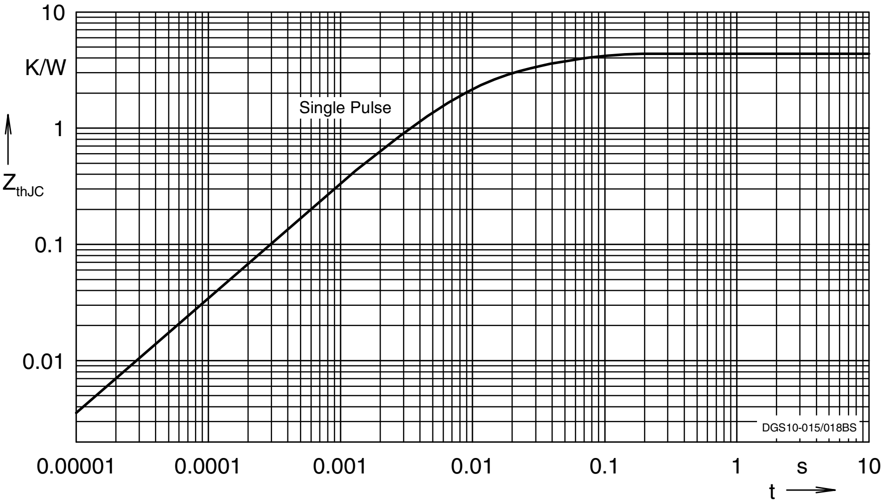
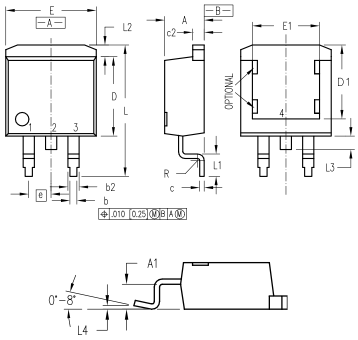


Fig. 3 typ. thermal impedance junction to case

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 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

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