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

Gallium Arsenide Schottky Rectifier

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

Type	Marking on product		Circuit	Package
A = Anode, C = Cathode, TAB = Cathode				
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}	$T_C = 25^\circ\text{C}$; DC	15 A
I_{FAV}	$T_C = 90^\circ\text{C}$; DC	11 A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t_p = 10\text{ ms}$ (50 Hz), sine	20 A
T_{VJ}		-55...+175 $^\circ\text{C}$
T_{stg}		-55...+150 $^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	34 W
M_d	mounting torque (Versions A only)	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	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ $T_{VJ} = 125^\circ\text{C}$ $V_R = V_{RRM}$	1.3 mA
V_F	$I_F = 5\text{ A}$; $T_{VJ} = 125^\circ\text{C}$ $I_F = 5\text{ A}$; $T_{VJ} = 25^\circ\text{C}$	0.8 V 1.1 V
C_J	$V_R = 100\text{ V}$; $T_{VJ} = 125^\circ\text{C}$	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.

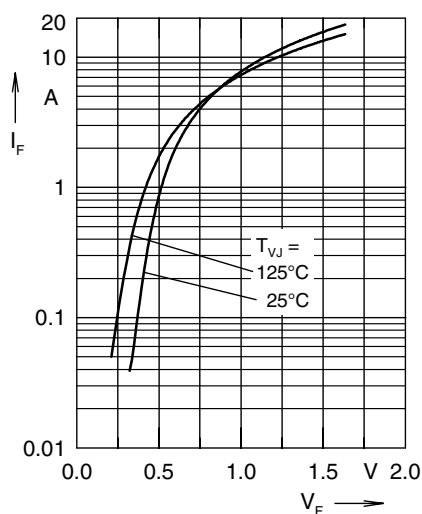


Fig. 1 typ. forward characteristics

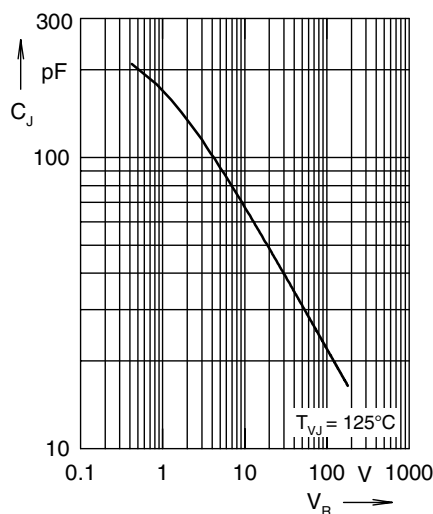


Fig. 2 typ. junction capacity versus blocking voltage

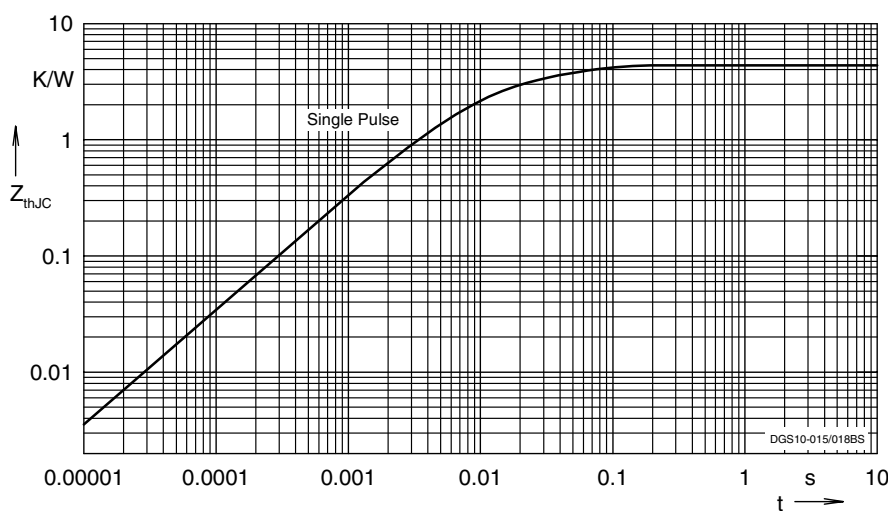


Fig. 3 typ. thermal impedance junction to case

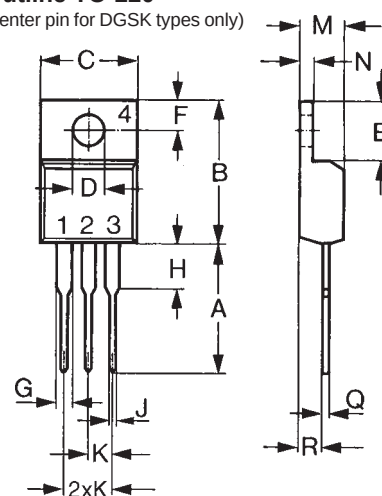
Note:

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

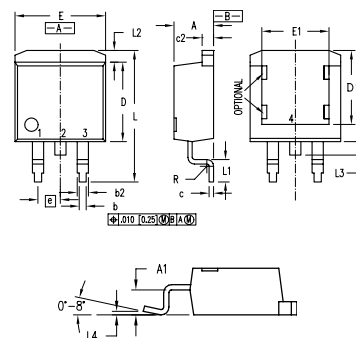
Outline TO-220

(center pin for DGSK types only)



Dim.	Millimeter Min. Max.	Inches 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

Outline TO-263 AB



Dim.	Millimeter Min. Max.	Inches 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