

Gallium Arsenide Schottky Rectifier

Isolated Surface Mount Package

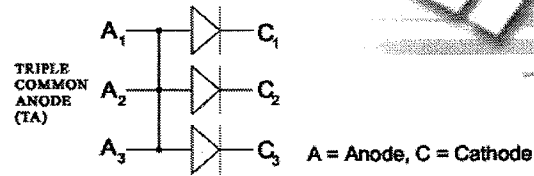
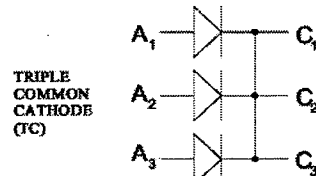
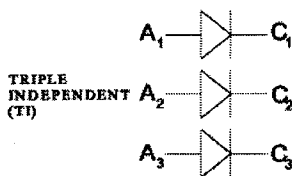
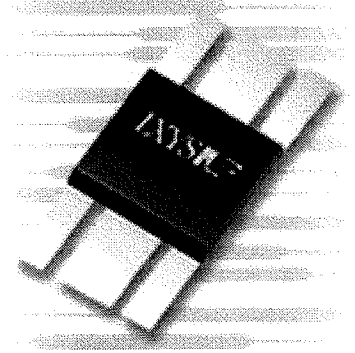
Preliminary Data

$$I_{DC} = 20 \text{ A}$$

$$V_{RRM} = 250 \text{ V}$$

$$C_{Junction} = 18 \text{ pF}$$

V_{RSM} V	V_{RRM} V	Type	Part Number	Configuration
250	250	GS150	TI25120	Triple Independent
250	250	GS150	TC25120	Triple Common cathode
250	250	GS150	TA25120	Triple Common anode



Symbol	Conditions	Maximum Ratings	
I_{FAV}	$T_c = 25C$	20	A
I_{FAV}	$T_c = 90C$	18	A
I_{FSM}	$T_{VJ} = 45C; t_p = 10 \text{ ms (50 Hz) sine}$	30	A
T_{VJ}		-55...+175	C
T_{stg}		-55...+175	C
P_{tot}	$T_c = 25C (20W/device)$	60	W
Isolation	(Substrate to Case)	>2500	V
Isolation	(Diode to Diode)	>600	V

Features

- Low forward voltage
- Very high switching speed $T_{rr} < 15\text{ns}$
- 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)
- High frequency converters
- Resonant converters

Symbol	Conditions	Characteristic Values	
		Typ.	Max.
IR	1. $TVJ = 25C \text{ VR} = V_{RRM}$		2 mA
	$TVJ = 125C \text{ VR} = V_{RRM}$	2	mA
VF	$I_F = 10A; TVJ = 125C$	1.3	V
	$I_F = 10A; TVJ = 25C$	1.2	1.5 V
CJ	$VR = 100V; TVJ = 125C$	26	pF
RthJC		3	K/W
Weight		2	g

Pulse test: 1. Pulse Width = 5 ms, Duty Cycle < 2.0 %
Data per diode unless otherwise specified

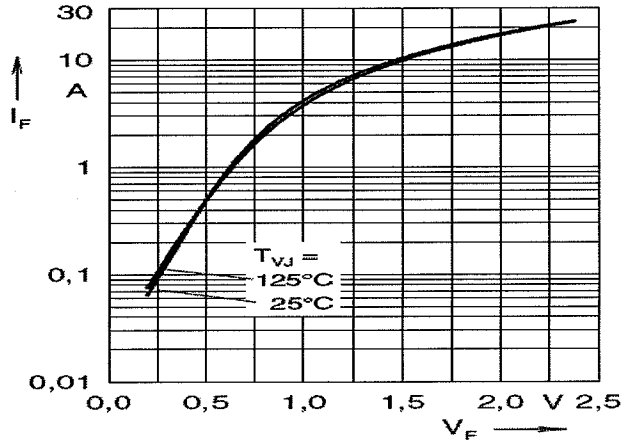


Fig. 1 typ. forward characteristics

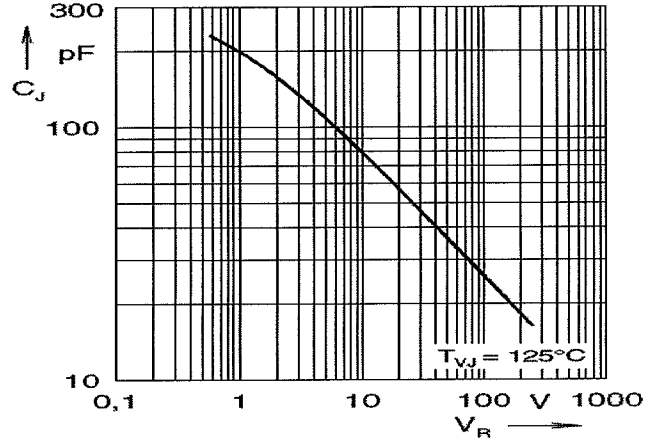


Fig. 2 typ. junction capacity versus blocking voltage

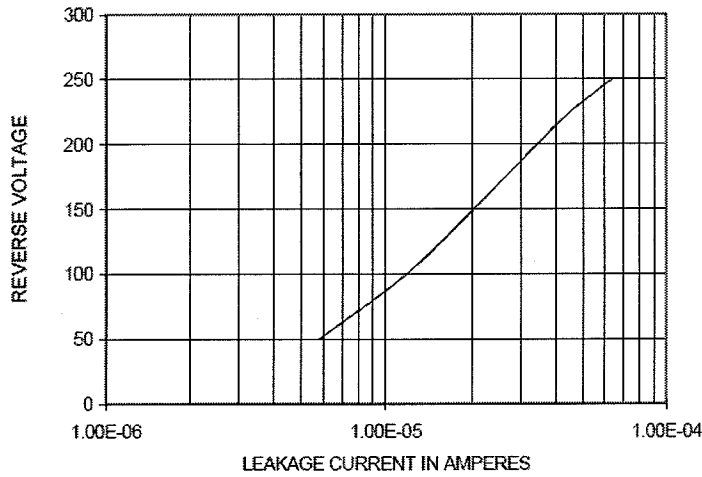


Fig. 3 Typical leakage current vs. voltage at 25°C

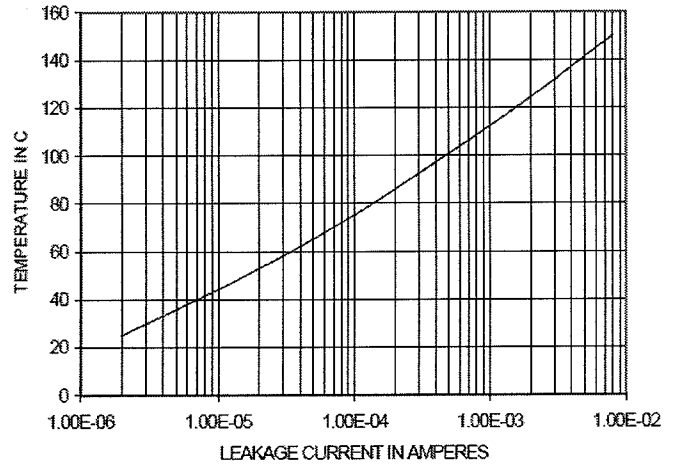


Fig. 4 Typical leakage current vs. temperature at 100V

Explanatory comparison of the basic operational behavior 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 dependent
Turn on characteristics	Delayed saturation leads to V_{FR}	No turn on overvoltage peak

