

# Gallium Arsenide Schottky Rectifier

Isolated Surface Mount Package

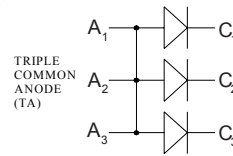
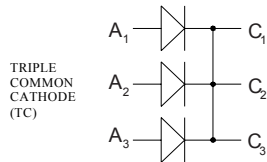
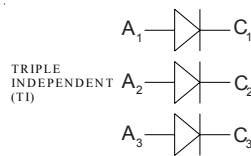
Preliminary Data

$$I_{DC} = 4 \text{ A}$$

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

$$C_{Junction} = 9 \text{ pF}$$

$V_{RSM}$ V	$V_{RRM}$ V	Type	Part Number	Configuration
250	250	GS150	TI25104	Triple Independent
250	250	GS150	TC25104	Triple Common cathode
250	250	GS150	TA25104	Triple Common anode



A = Anode, C = Cathode

Symbol	Conditions	Maximum Ratings	
$I_{FAV}$	$T_C = 25^\circ\text{C}$ ; DC	04	A
$I_{FAV}$	$T_C = 90^\circ\text{C}$ ; DC	3.5	A
$I_{FSM}$	$T_{VJ} = 45^\circ\text{C}$ ; $t_p = 10 \text{ ms}$ (50 Hz), sine	10	A
$T_{VJ}$		-55...+175	$^\circ\text{C}$
$T_{stg}$		-55...+150	$^\circ\text{C}$
$P_{tot}$	$T_C = 25^\circ\text{C}$ (20W/device)	30	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

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	1.3 mA mA
$V_F$	$I_F = 2 \text{ A}$ ; $T_{VJ} = 125^\circ\text{C}$	1.3	V
	$I_F = 2 \text{ A}$ ; $T_{VJ} = 25^\circ\text{C}$	1.2	1.5 V
$C_J$	$V_R = 100 \text{ V}$ ; $T_{VJ} = 125^\circ\text{C}$	9	pF
$R_{thJC}$		5	KW
Weight		2	g

### Applications

- MHz switched mode power supplies (SMPS)
- High frequency converters
- Resonant converters

Pulse test: ① Pulse Width = 5 ms, Duty Cycle &lt; 2.0 %

Data per diode unless otherwise specified

IXYSRF reserves the right to change limits, conditions and dimensions.

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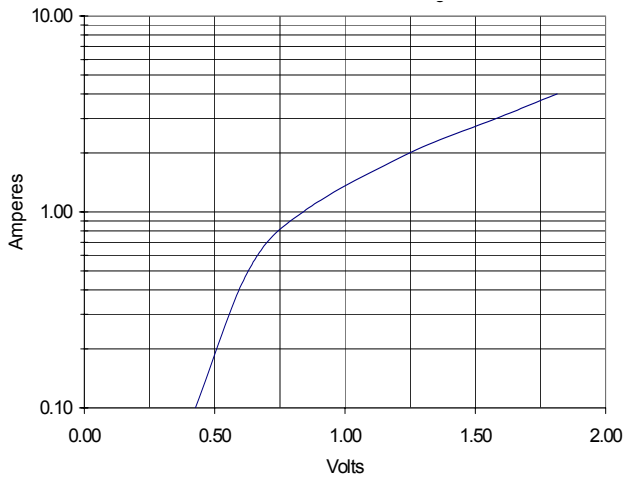


Fig. 1 Typical forward characteristics

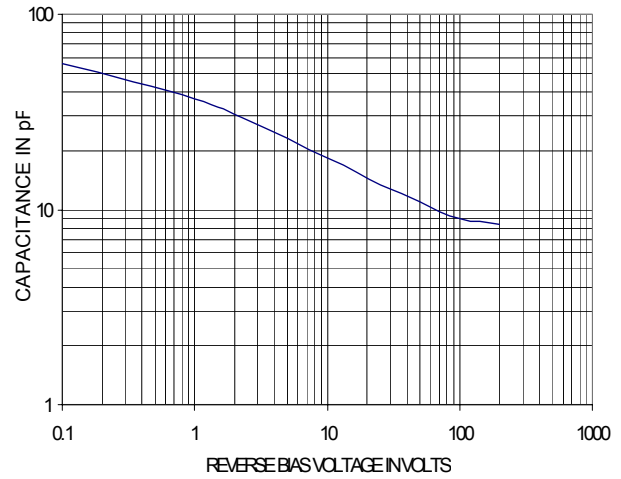


Fig. 2 Typical junction capacity versus blocking voltage

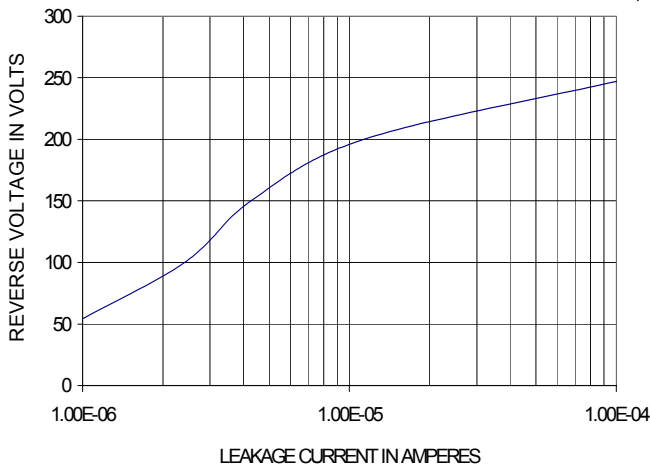


Fig. 3 Typical leakage current vs. voltage at 25C

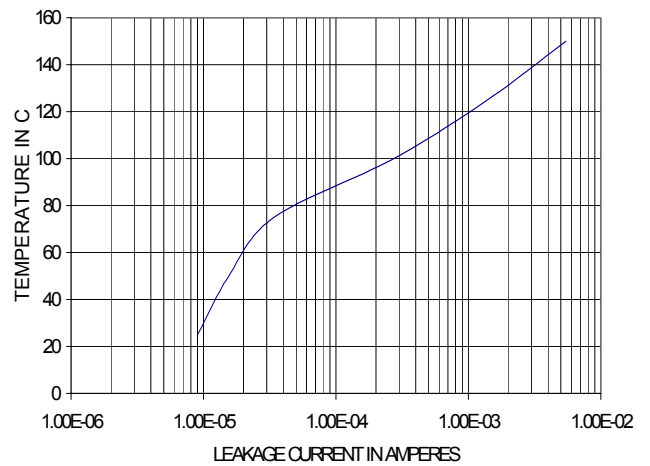
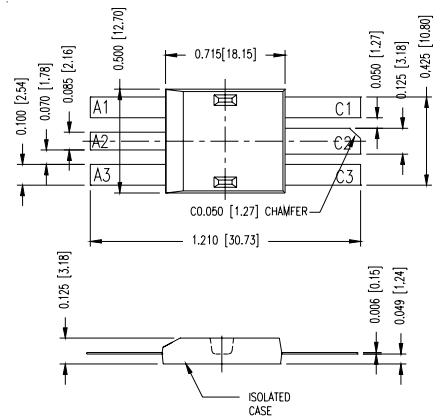


Fig. 4 Typical leakage current vs. temperature at 100V Reverse

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



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