HEWLETT PACKARD

Surface Mount Microwave SOT-23 Schottky Diodes

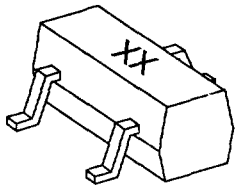
Technical Data

HSMS-8101 Single
HSMS-8202 Pair

Features

- **Optimized for use at 10-14 GHz**
- **Low Capacitance**
- **Low Conversion Loss**
- **Low R_D**
- **Low Cost Surface Mount Plastic Package**

Plastic SOT-23 Package



Description/ Applications

These low cost microwave Schottky diodes are specifically designed for use at X/Ku-bands and are ideal for DBS and VSAT downconverter applications. They are available as a single or a series pair in SOT-23 standard package configurations.

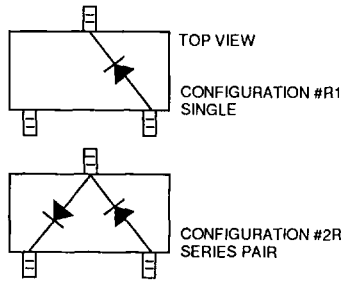
Absolute Maximum Ratings*

(T_A = 25°C)

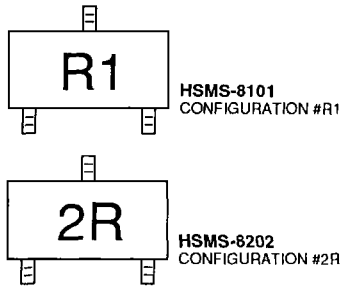
Symbol	Parameters	Min.	Max.	Units
P_T	Total Device Dissipation(1)		75	mW
P_{IV}	Peak Inverse Voltage		4	V
T_j	Junction Temperature		+150	°C
T_{stg} & T_{op}	Storage & Operating Temperature	-65	+150	°C

* Operation in excess of any one of these parameters may result in permanent damage.

Note 1. Measured in an infinite heat sink at T_{case} = 25°C. Derate linearly to zero at 150°C per diode.



Package Lead Code Identification



Package Marking

Package Characteristics

Lead Material ..... Alloy 42
Lead Finish ..... Tin-Lead
Max. Soldering Temp. ..... 260°C for 5 sec.
Min. Lead Strength ..... 2 pounds pull
Typical Package Inductance ..... 2 nH
Typical Package Capacitance ..... 0.08 pF (opposite leads)

Ordering Information

See page 14-14.

DC Electrical Specifications (T_A = 25°C)

Symbol	Parameters	Test Conditions	Units	HSMS-8101		HSMS-8202	
				Min.	Max.	Min.	Max.
V_{BR}	Breakdown Voltage	I_R = 10 μA	V	4		4	
C_T	Total Capacitance	V_R = 0 V, f = 1 MHz	pF		0.35		0.26
ΔC_T	Capacitance Difference	V_R = 0 V, f = 1 MHz	pF				0.04
R_D	Dynamic Resistance	I_F = 5 mA	Ω		12		14
ΔR_D	Dynamic Resistance Difference	I_F = 5 mA	Ω				2
V_F	Forward Voltage	I_F = 1 mA	mV	250	350	250	350
ΔV_F	Forward Voltage Difference	I_F = 1 mA	mV				20

RF Electrical Parameters, (T_A = 25°C)

Symbol	Parameters	Units	HSMS-8101	HSMS-8202
			Typ.	Typ.
L_c	Conversion Loss at 12 GHz	dB	6.3	6.1
Z_{IF}	IF Impedance	Ω	150	150
SWR	SWR at 12 GHz		1.2	1.2

Note:

DC Load resistance = 0 Ω; LO power = 1 mW.

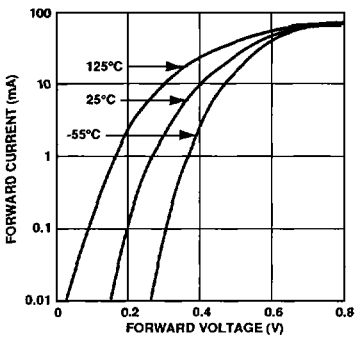


Figure 1. Typical Forward Current vs. Forward Voltage at Three Temperatures

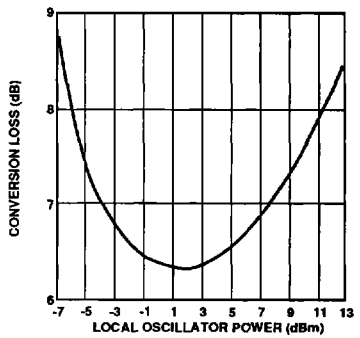
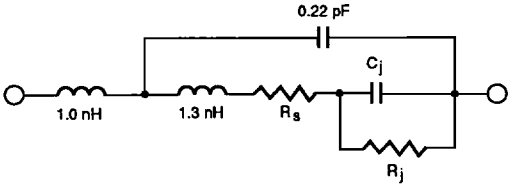


Figure 2. Typical Conversion Loss vs. Local Oscillator Power

Equivalent Circuit Models

HSMS-8101



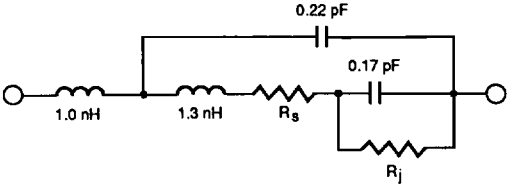
Self Bias

	1 mA	2.5 mA
R_s	15	12.3
R_j	286	139
C_j	0.23	0.26

Spice Parameters:

IS = 9 E-8	EG = 0.69	TT = 0
RS = 4	CJO = 0.23 E-12	
N = 1.08	VJ = 0.5	
BV = 5.5	M = 0.5	
IBV = 1 E-5	FC = 0.5	

HSMS-8202



Self Bias

	1 mA	2.5 mA
R_s	6.8	1.4
R_j	263	142

Spice Parameters:

IS = 4.6 E-8	EG = 0.69	TT = 0
RS = 6	CJO = 0.18 E-12	
N = 1.09	VJ = 0.5	
BV = 7.3	M = 0.5	
IBV = 1 E-5	FC = 0.5	