RF SWITCHING DIODES

DESCRIPTION

Low insertion loss and high isolation are characteristics of these diodes which are tailored for RF control applications such as band switching, power switching, phase shifting, duplexing, and TR or ATR switching between 1 and 500 MHz. Power handling capabilities are as high as 25 watts in this rugged, hi-rel family of silicon, planar, epitaxial PIN diodes.

MAXIMUM RATINGS

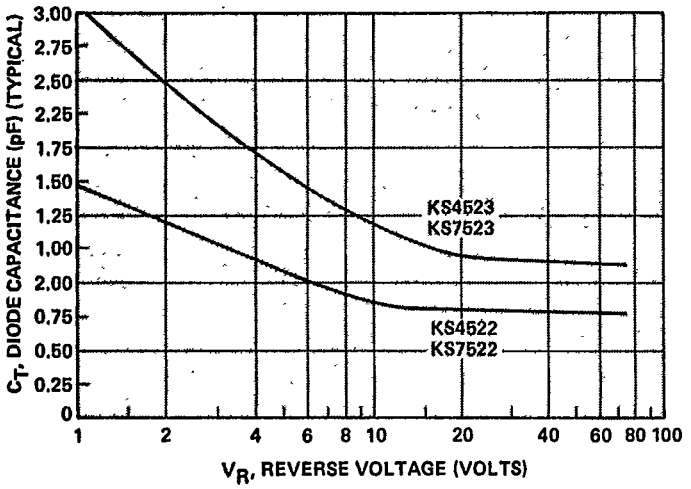
SYMBOL	PARAMETER	VALUE	UNIT
P_d	DC POWER DISSIPATION @ T_A = 50°C DERATE ABOVE 50°C	300 3.0	mW mW/°C
T_j	OPERATING TEMPERATURE RANGE	-65 TO +150	°C
T_{stg}	STORAGE TEMPERATURE RANGE	-65 TO +175	°C
V_F	FORWARD VOLTAGE DROP @ I_F = 100mA	1.5	Vdc

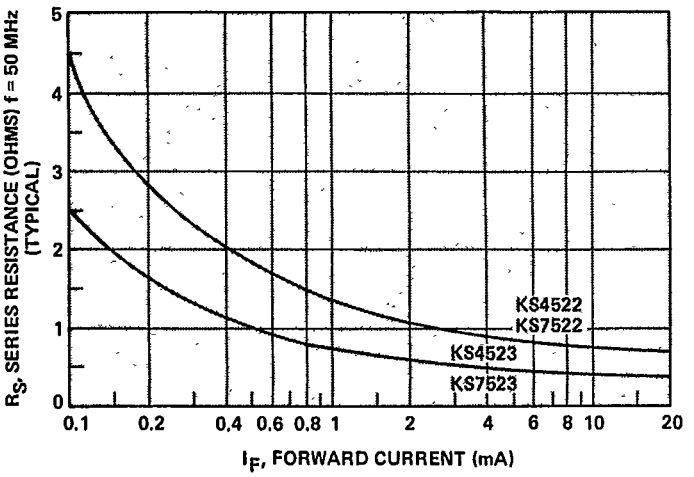
ELECTRICAL SPECIFICATIONS

T_A = 25°C

MODEL NUMBER	C_T DIODE CAPACITANCE (pF) f = 1 MHz V_R = 20 Vdc TYP/MAX	R_S SERIES RESISTANCE (OHMS) f = 50 MHz I_F = 10 mAdc TYP/MAX	EFFECTIVE MINORITY CARRIER LIFETIME (μSEC) I_F = 10 mAdc I_R = 2 mAdc TYP	P_{SW} RF POWER SWITCHING CAPABILITY (WATTS) f = 100 MHz, T_A = 50°C				ISOLATION, SERIES CONNECTED (dB) f = 100 MHz		INSERTION, LOSS, SERIES CONNECTED (dB) f = 100 MHz		V_{BR} REVERSE BREAKDOWN VOLTAGE I_R = 10μAdc MIN	I_R REVERSE LEAKAGE CURRENT (nAdc)	
				I_F = 10 mAdc V_R = 22 Vdc TYP		I_F = 20 mAdc V_R = 40 Vdc TYP		V_R = 22 Vdc TYP	V_R = 40 Vdc TYP	I_F = 10 mAdc TYP	I_F = 20 mAdc TYP		V_R = 30 Vdc MAX	V_R = 60 Vdc MAX
				SERIES	SHUNT	SERIES	SHUNT							
KS4522	0.8/1.0	0.7/1.0	1.3	10	5			26		0.09		45	100	
KS4523	1.2/2.0	0.4/0.5	1.3	20	5			22		0.06		45	100	
KS4524	-/2.0	-/1.0	1.3	10	5			22		0.09		45	100	
KS7522	0.8/1.0	0.7/1.0	1.3			15	15		26		0.08	75		100
KS7523	1.2/2.0	0.4/0.5	1.3			25	15		22		0.05	75		100
KS7524	-/2.0	-/1.0	1.3			15	15		22		0.08	75		100

ALL DEVICES IN DO-7 PACKAGE.

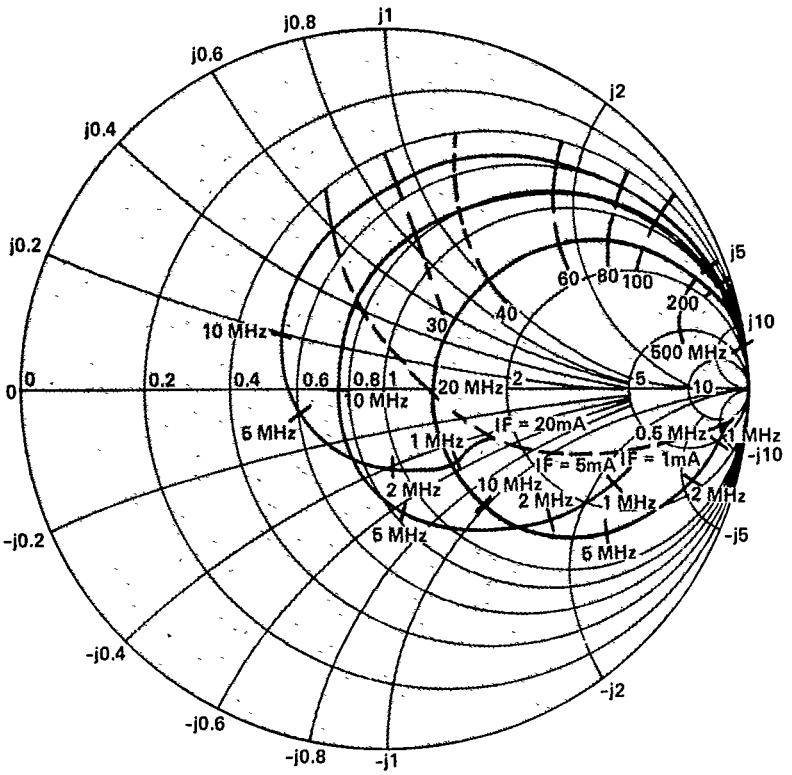




RF SWITCHING DIODES

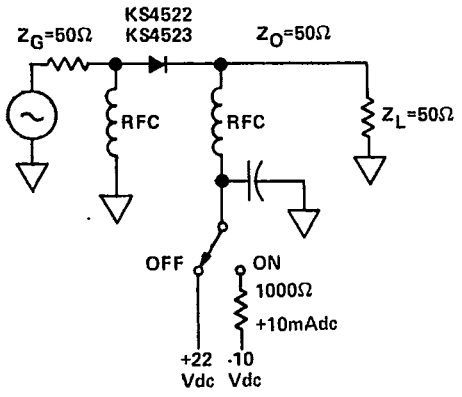
TYPICAL PERFORMANCE

FORWARD IMPEDANCE, KS4522, KS7522

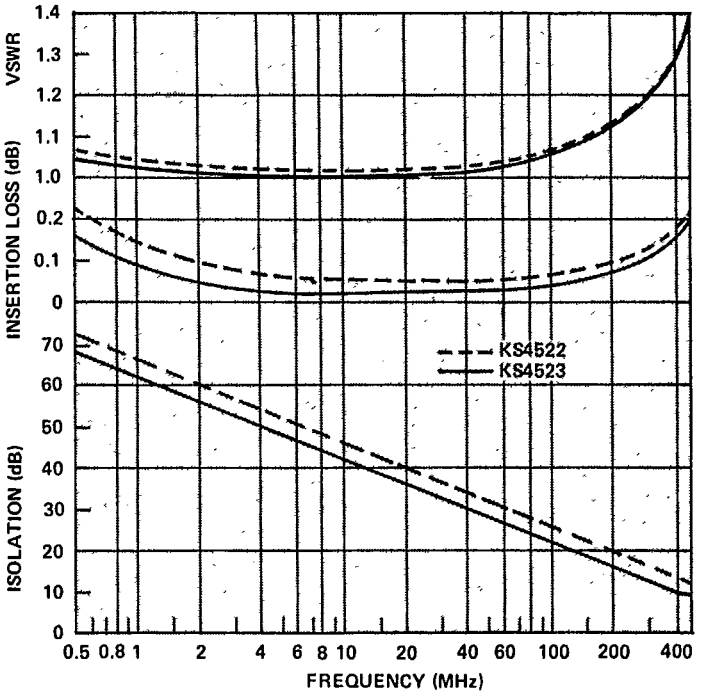


COORDINATES IN OHMS

SERIES SWITCH PERFORMANCE



$$\frac{P_{AVAILABLE}}{P_{OUT}} = \left| 1 + \frac{Z_{DIODE}}{2Z_O} \right|^2$$

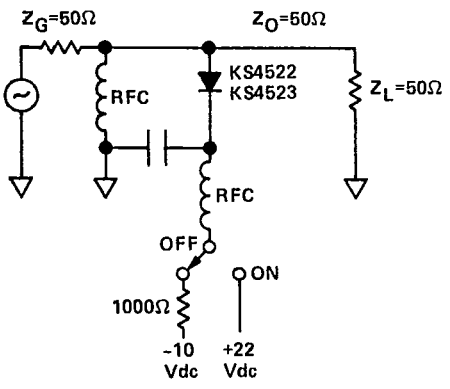


CONTROL DEVICES

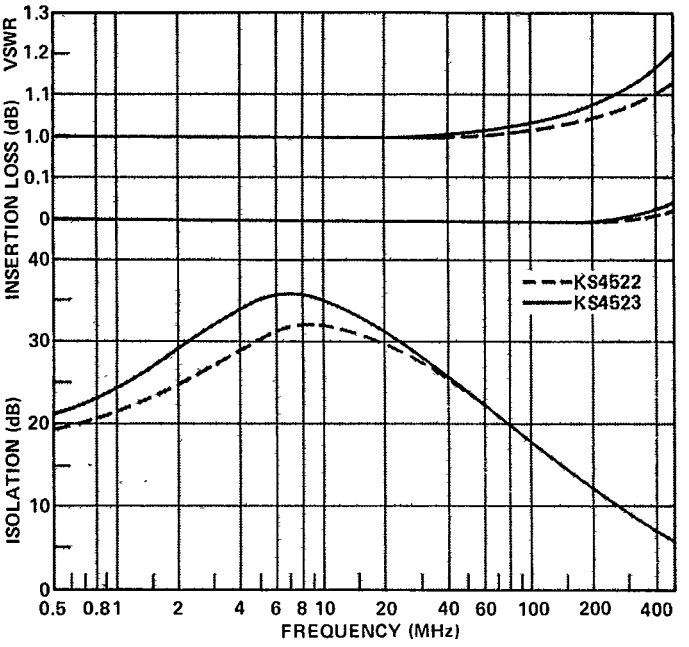
FREQUENCY SOURCES
SEMICONDUCTOR DIVISION

RF SWITCHING DIODES

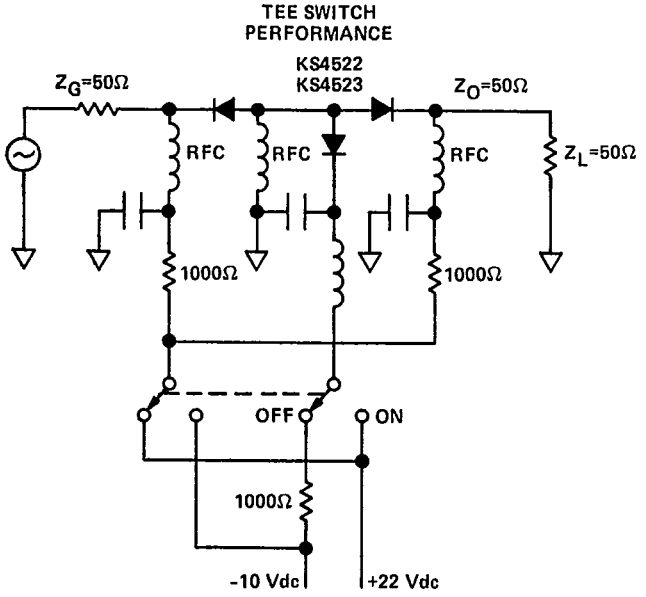
SHUNT SWITCH PERFORMANCE



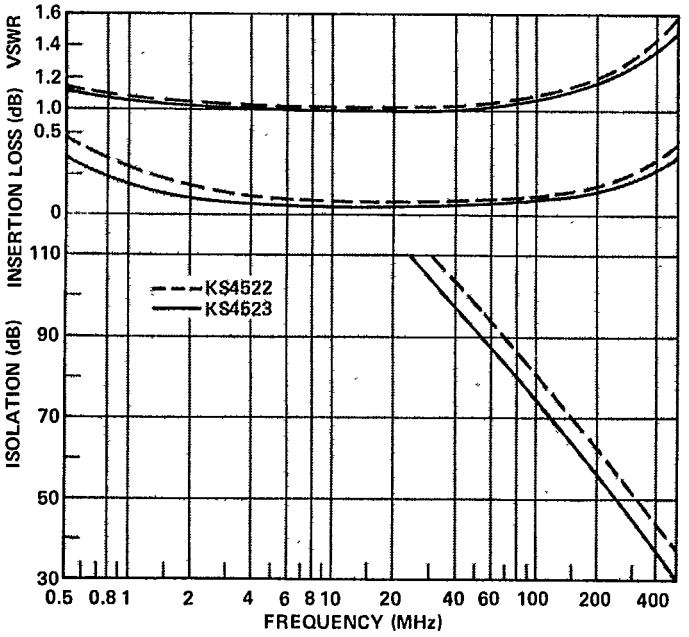
$$\frac{P_{AVAILABLE}}{P_{OUT}} = \left| 1 + \frac{Z_O}{2Z_{DIODE}} \right|^2$$



TEE SWITCH PERFORMANCE



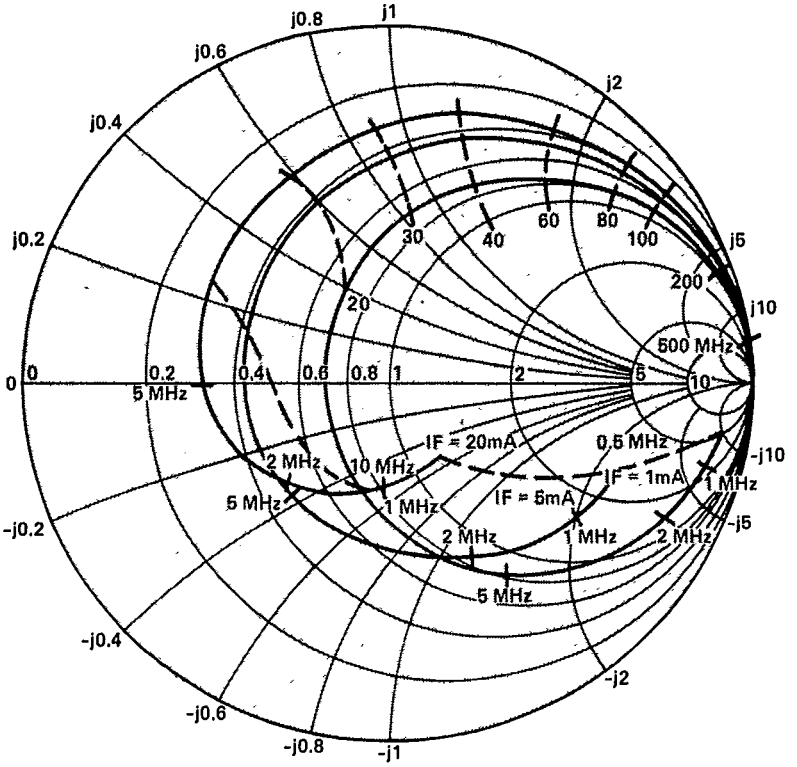
$$\frac{P_{AVAILABLE}}{P_{OUT}} = \left| 1 + \frac{Z^{SERIES}_{DIODE}}{Z_O} + \frac{Z^{SERIES}_{DIODE}}{Z^{SHUNT}_{DIODE}} + \frac{Z_O}{2Z^{SHUNT}_{DIODE}} + \frac{2Z^{SERIES}_{DIODE}}{2Z_O Z^{SHUNT}_{DIODE}} \right|^2$$



CONTROL DEVICES

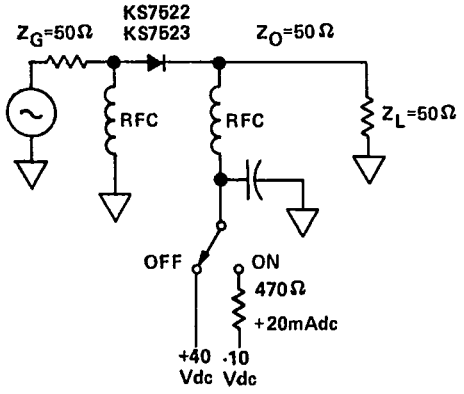
RF SWITCHING DIODES

FORWARD IMPEDANCE, KS4523, KS7523

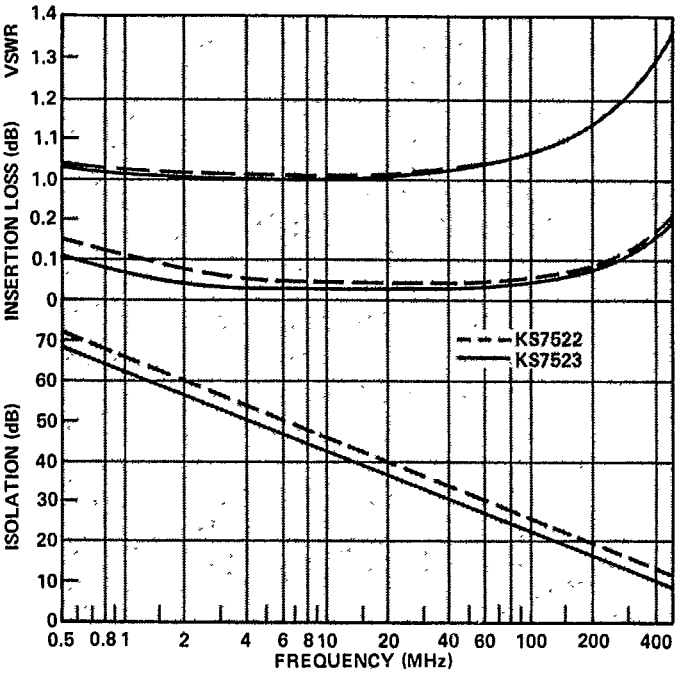


COORDINATES IN OHMS

SERIES SWITCH PERFORMANCE



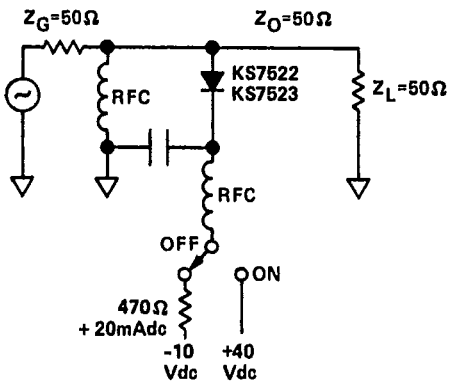
$$\frac{P_{AVAILABLE}}{P_{OUT}} = \left| 1 + \frac{Z_{DIODE}}{2Z_O} \right|^2$$



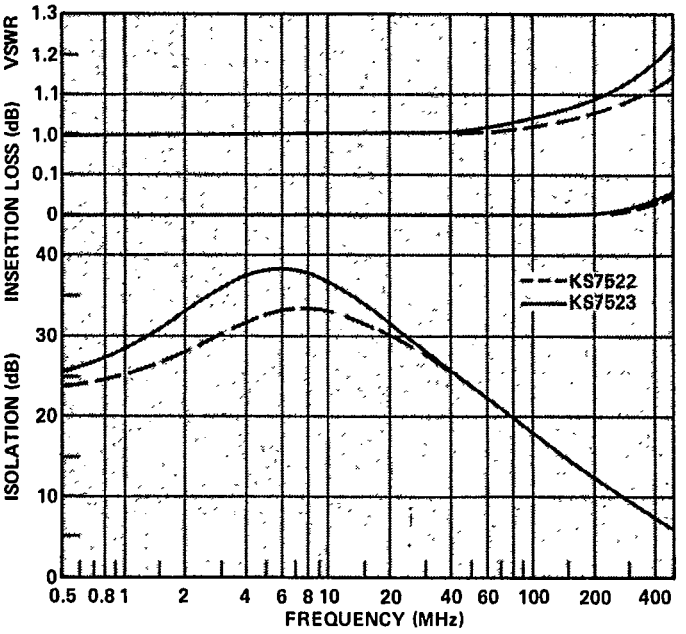
CONTROL DEVICES

RF SWITCHING DIODES

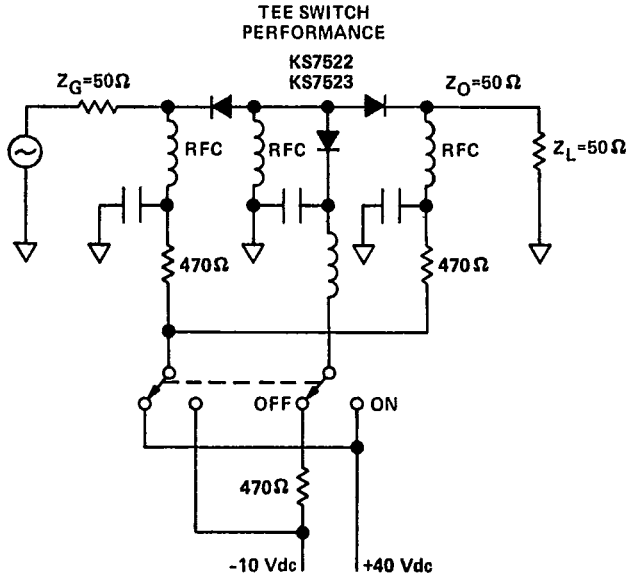
SHUNT SWITCH PERFORMANCE



$$\frac{P_{AVAILABLE}}{P_{OUT}} = \left| 1 + \frac{Z_O}{2Z_{DIODE}} \right|^2$$



TEE SWITCH PERFORMANCE



$$\frac{P_{AVAILABLE}}{P_{OUT}} = \left| 1 + \frac{Z^{SERIES}_{DIODE}}{Z_O} + \frac{Z^{SERIES}_{DIODE}}{Z^{SHUNT}_{DIODE}} + \frac{Z_O}{2Z_{\frac{SHUNT}{DIODE}}} + \frac{2^{SERIES}_{Z\ DIODE}}{2Z_O Z_{\frac{SHUNT}{DIODE}}} \right|^2$$