TDA 1087

Monolithisch Integrierte NPN-Doppeltransistoren
Monolithic integrated NPN double transistors

Anwendung: Hochstrom Kaskadenverstärkerstufe bis 300 MHz
Application: *High current cascade amplifier stage up to 300 MHz*

Besondere Merkmale:

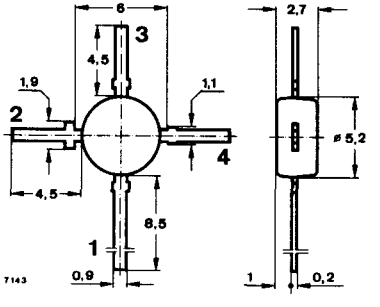
- Kleine Rückwirkung
- Hohe Aussteuerfähigkeit
- Hoher Innenwiderstand
- Hohe dynamische Stabilität

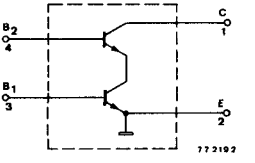
Features:

- *Low feedback*
- *High input signal opportunity*
- *High internal resistance*
- *High dynamic stability*

Vorläufige technische Daten · *Preliminary specifications*

Abmessungen in mm
Dimensions in mm





Normgehäuse
Case
50 B 4 DIN 41 867
JEDEC TO 50
Gewicht · *Weight*
max. 0,1 g

Absolute Grenzdaten
Absolute maximum ratings

Kollektor-Basis 2-Sperrspannung *Collector-base 2 voltage*	U_{CB20}	20	V
Kollektor-Basis 1-Sperrspannung *Collector-base 1 voltage*	U_{CB10}	20	V
Kollektor-Emitter-Sperrspannung *Collector-emitter voltage*	U_{CEO}	20	V
Emitter-Basis 1-Sperrspannung *Emitter-base 1 voltage*	U_{EB10}	4	V
Emitter-Basis 2-Sperrspannung *Emitter-base 2 voltage*	U_{EB20}	5	V
Kollektorstrom *Collector current*	I_C	50	mA
Basisstrom *Base current*	I_{B1}, I_{B2}	5	mA
Gesamtverlustleistung *Total power dissipation* $t_{amb} \leq 55\,°C$	P_{tot}	280	mW
Sperrschichttemperatur *Junction temperature*	t_j	125	°C
Lagerungstemperaturbereich *Storage temperature range*	t_{stg}	−25 ... +125	°C

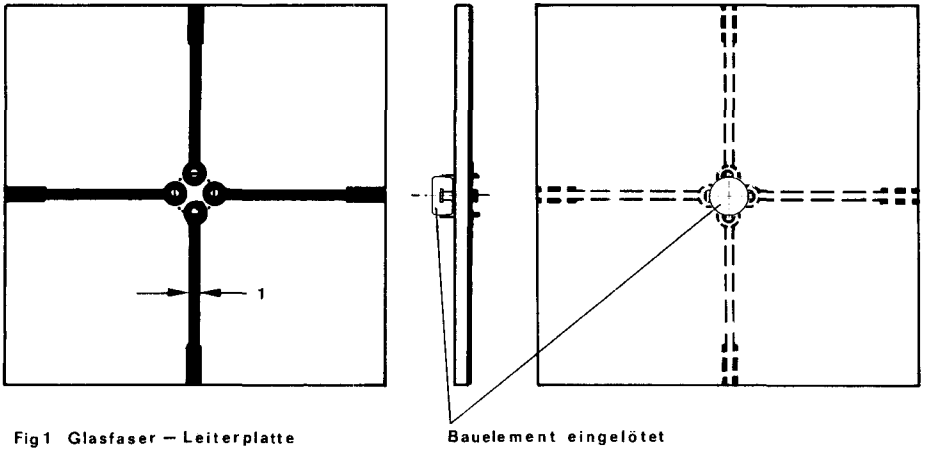


Fig 1 Glasfaser – Leiterplatte
Glass fiber board
50 × 50 × 1,5 mm

Bauelement eingelötet
Device soldered

78 2190

Wärmewiderstände ***Thermal resistances***		Min.	Typ.	Max.	
Sperrschicht-Umgebung *Junction ambient* t_L = konstant *constant* befestigt auf Glasfaser-Leiterplatte einseitig kaschiert Cu 35 µm *mounted on a glass fiber board* *one side Cu 35 µm thickness* 50 x 50 x 1,5 mm, **Fig. 1**	R_{thJA}			200	°C/W

Statische Kenngrößen ***DC characteristics***					
t_{amb} = 25 °C, falls nicht anders angegeben *unless otherwise specified*					
Kollektorreststrom *Collector cut-off current* $-U_{CE}$ = 15 V, $-U_{B2E}$ = 6 V	I_{CB1S}			100	nA
Kollektor-Basis-Durchbruchspannung *Collector-base breakdown voltage* $-I_C$ = 10 µA	$-U_{(BR)CB2O}$ $-U_{(BR)CB1O}$	20 20			V V
Kollektor-Emitter-Durchbruchspannung *Collector-emitter breakdown voltage* $-I_C$ = 100 µA	$-U_{(BR)CEO}$	20			V
Emitter-Basis-Durchbruchspannung *Emitter-base breakdown voltage* $-I_E$ = 10 µA	$U_{(BR)EB1O}$ $U_{(BR)EB2O}$	4 5			V V
Kollektor-Basis-Gleichstromverhältnis *DC forward current transfer ratio* $-U_{CE}$ = 10 V, $-U_{B2E}$ = 6 V, $-I_C$ = 3 mA I_C = 20 mA	h_{FE} h_{FE}	30 40			

Dynamische Kenngrößen ***AC characteristics***					
t_{amb} = 25 °C					
Transitfrequenz *Gain bandwidth product* $-U_{CE}$ = 10 V, $-U_{B2E}$ = 6 V, f = 100 MHz, I_C = 3 mA I_C = 10 mA	f_T f_T		500 680		MHz MHz

		Min.	Typ.	Max.	
Rückwirkungskapazität *Feedback capacitance* U_{CE} = 10 V, U_{B2E} = 6 V, f = 200 MHz	C_{CB2} C_{CB1}		0,7 10		pF fF
Kollektor-Emitter-Kapazität *Collector-emitter capacitance* U_{CE} = 10 V, U_{B2E} = 6 V, I_C = 10 mA, f = 200 MHz	C_{CE10}		2,5		pF
Rauschmaß *Noise figure* U_{CE} = 10 V, U_{B2E} = 6 V, R_G = 50 Ω, f = 200 MHz, I_C = 3 mA	F		3,8	5	dB
I_C = 10 mA	F		5,8	7	dB
Unilateralverstärkung *Unilateral gain* U_{CE} = 10 V, U_{B2E} = 6 V, R_E = 100 Ω, I_C = 10 mA, f = 40 MHz	G_u [1]		48		dB
f = 200 MHz	G_u [1]		31		dB
I_C = 20 mA, f = 40 MHz	G_u [1]		49		dB

[1] $G_u = \frac{|S_{21}|^2}{(1-|S_{11}|^2) \cdot (1-|S_{22}|^2)}$

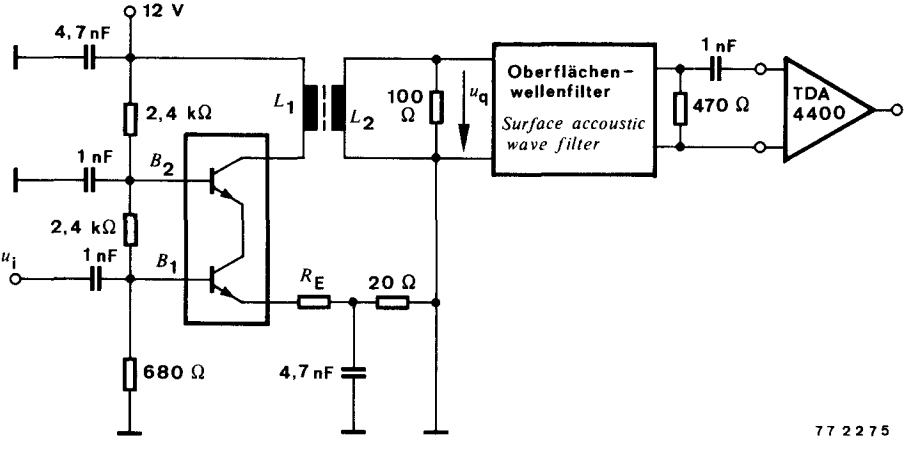
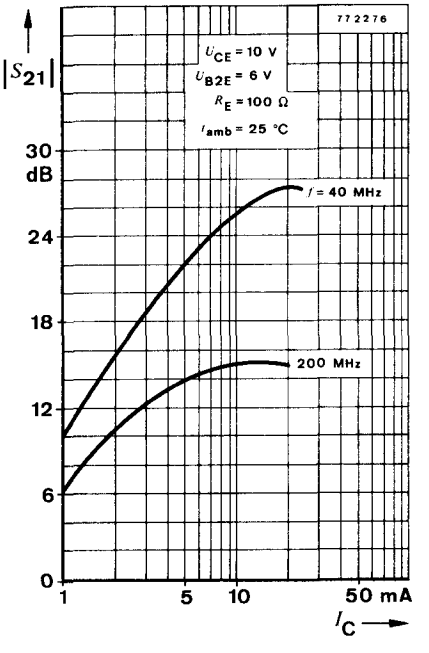
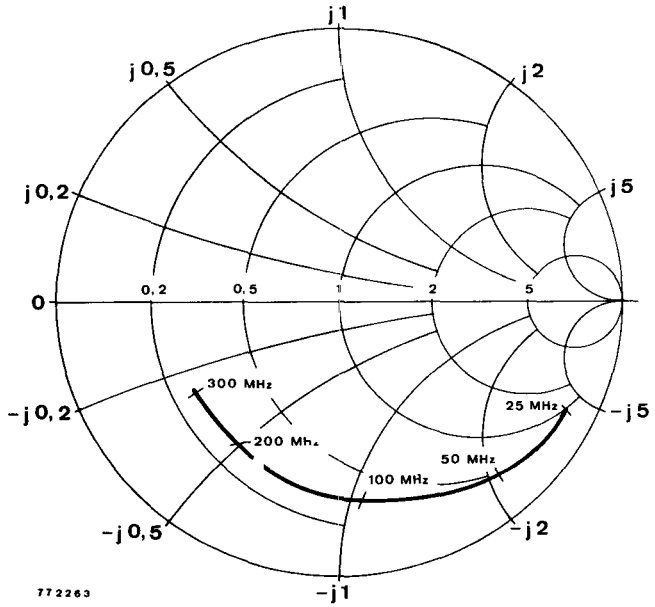


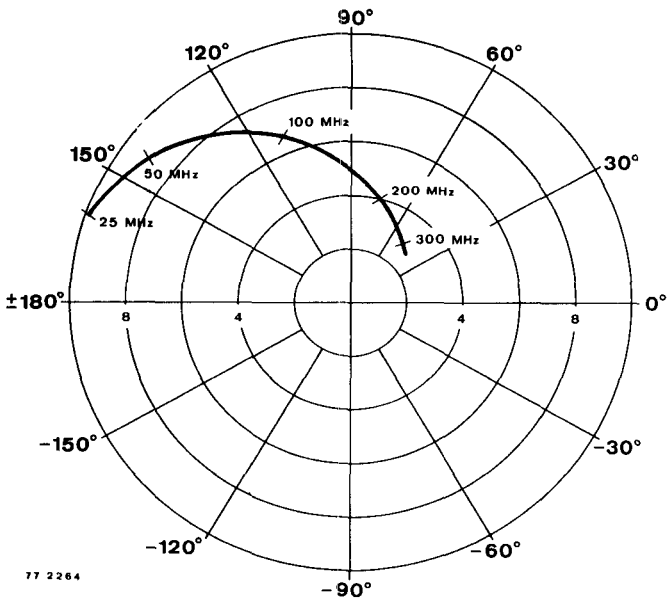
Fig. 2 Anwendungsbeispiel: Vorverstärkerstufe für Oberflächenwellenfilter
Application: *Pre-amplifier stage for surface accoustic wave filter*





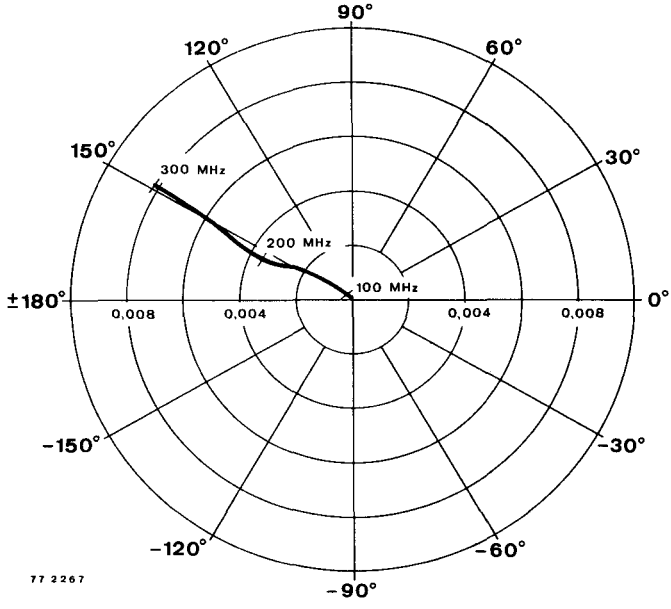
S_{11}

U_{CE} = 10 V
U_{B2E} = 6 V
I_C = 3 mA
Z_o = 50 Ω
f = 25...300 MHz



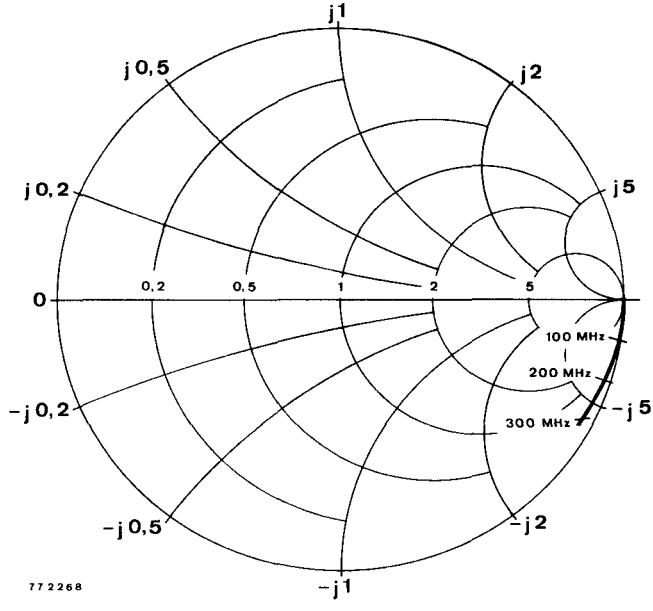
S_{21}

U_{CE} = 10 V
U_{B2E} = 6 V
I_C = 3 mA
f = 25...300 MHz



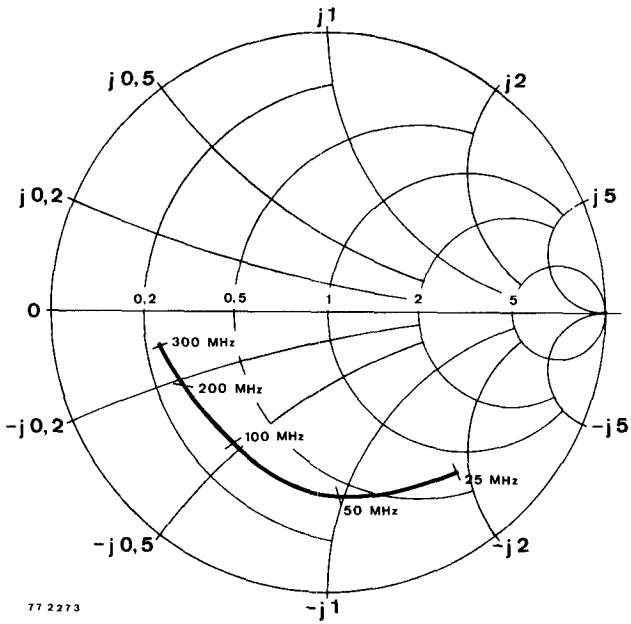
S_{12}

U_{CE} = 10 V
U_{B2E} = 6 V
I_C = 3 mA
f = 25 ... 300 MHz



S_{22}

U_{CE} = 10 V
U_{B2E} = 6 V
I_C = 3 mA
Z_o = 50 Ω
f = 25 ... 300 MHz



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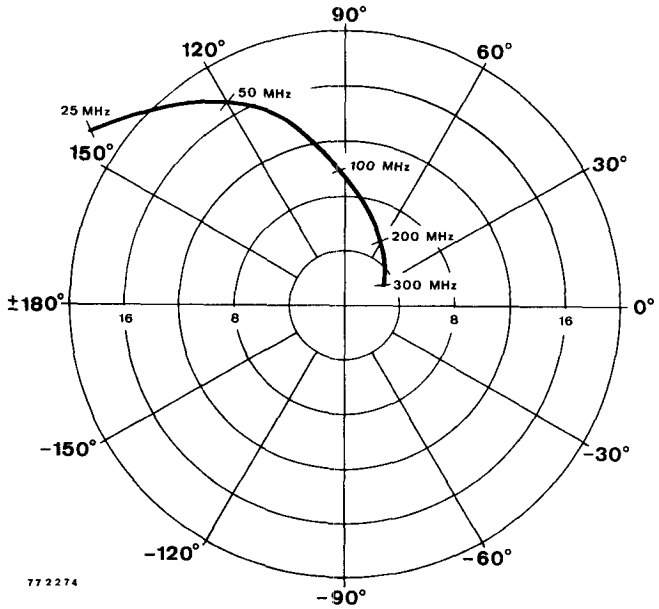

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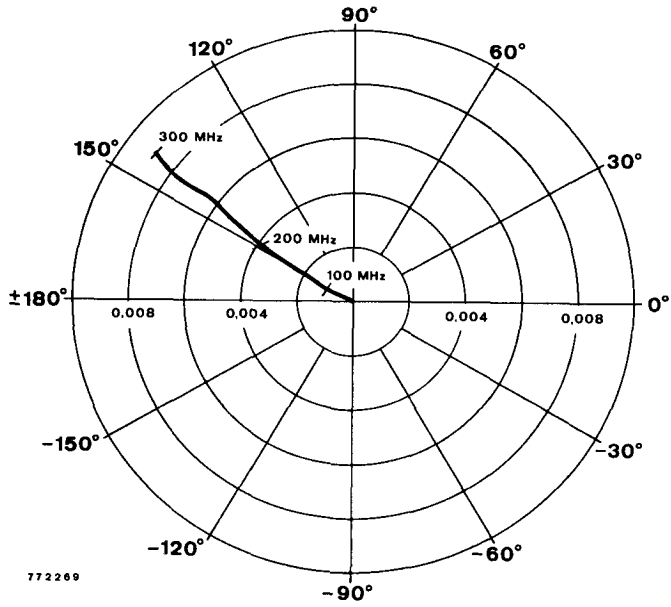

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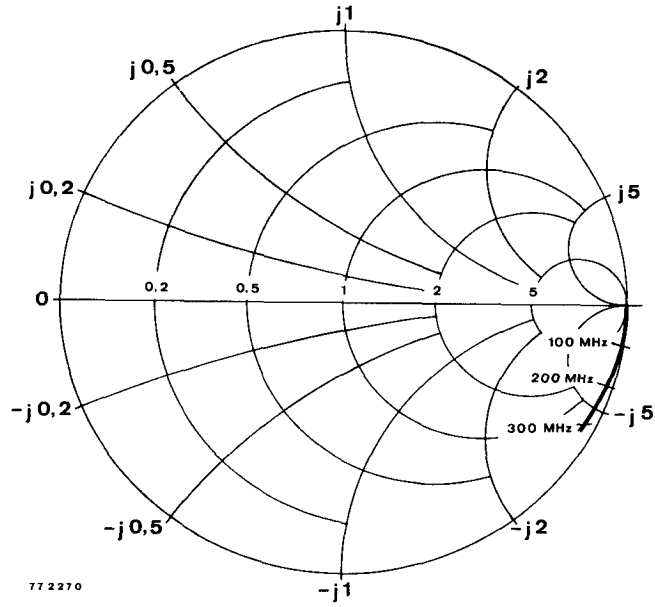

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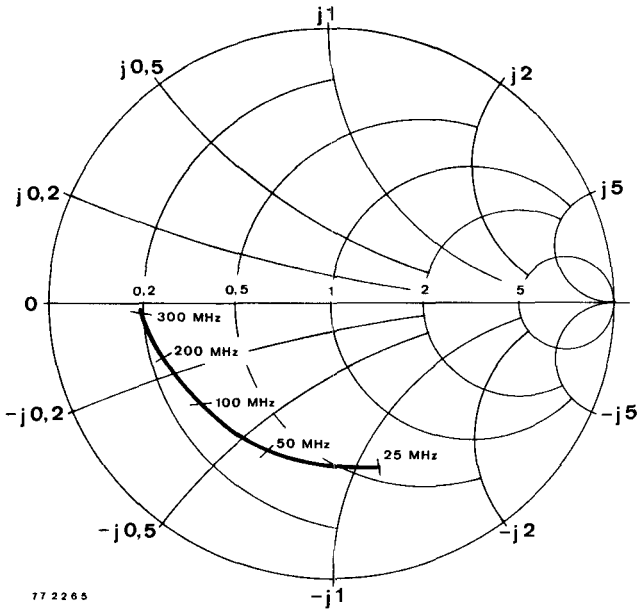
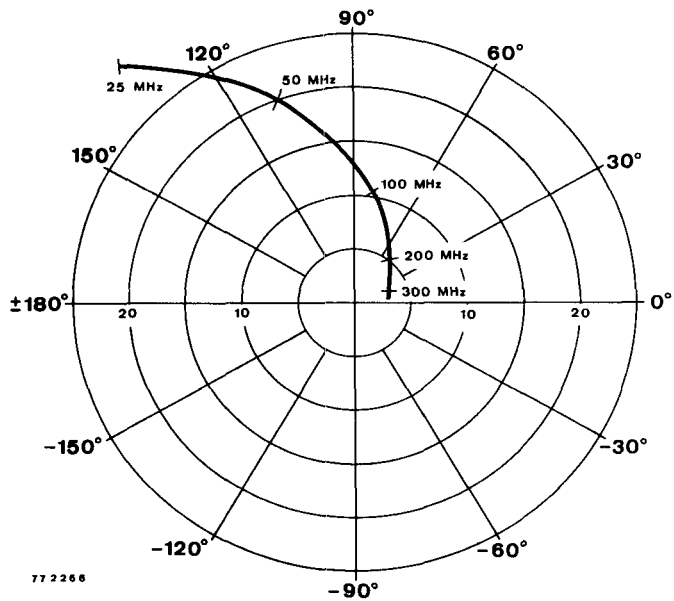


S_{11}

U_{CE} = 10 V
U_{B2E} = 6 V
I_C = 20 mA
Z_o = 50 Ω
f = 25...300 MHz



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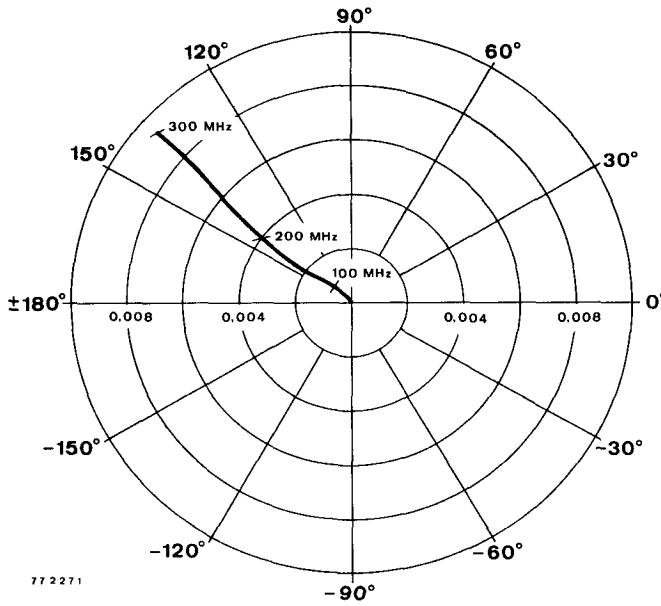
I_C = 20 mA
f = 25...300 MHz



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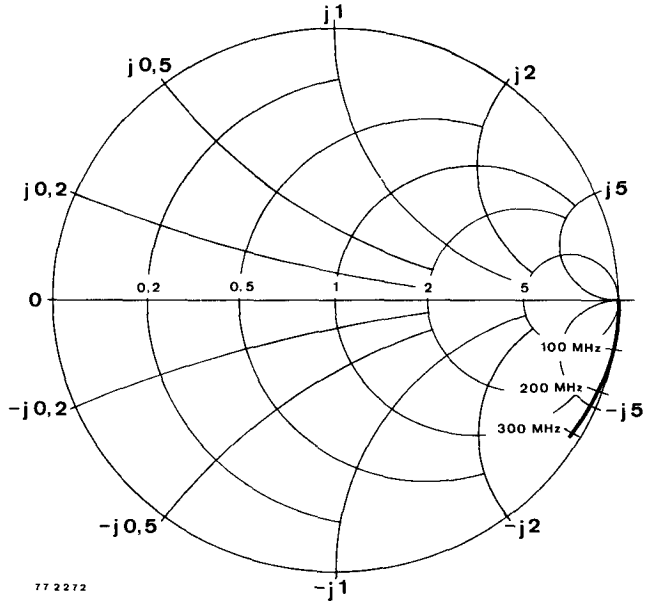

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