

LIMITER/AMPLIFIER

The TBA750C is a limiter/amplifier with f.m. detector, d.c. volume control and a.f. preamplifier. It is intended for 4,5 MHz, 5,5 MHz or 10,7 MHz. The limiter/amplifier is a four-stage differential amplifier that gives very good noise and interference suppression. The detector is of the balanced type. The d.c. volume control stage has excellent control characteristics with a control range of more than 80 dB. The a.f. preamplifier can drive a triode-pentode output stage or a class-A push-pull transistor output stage.

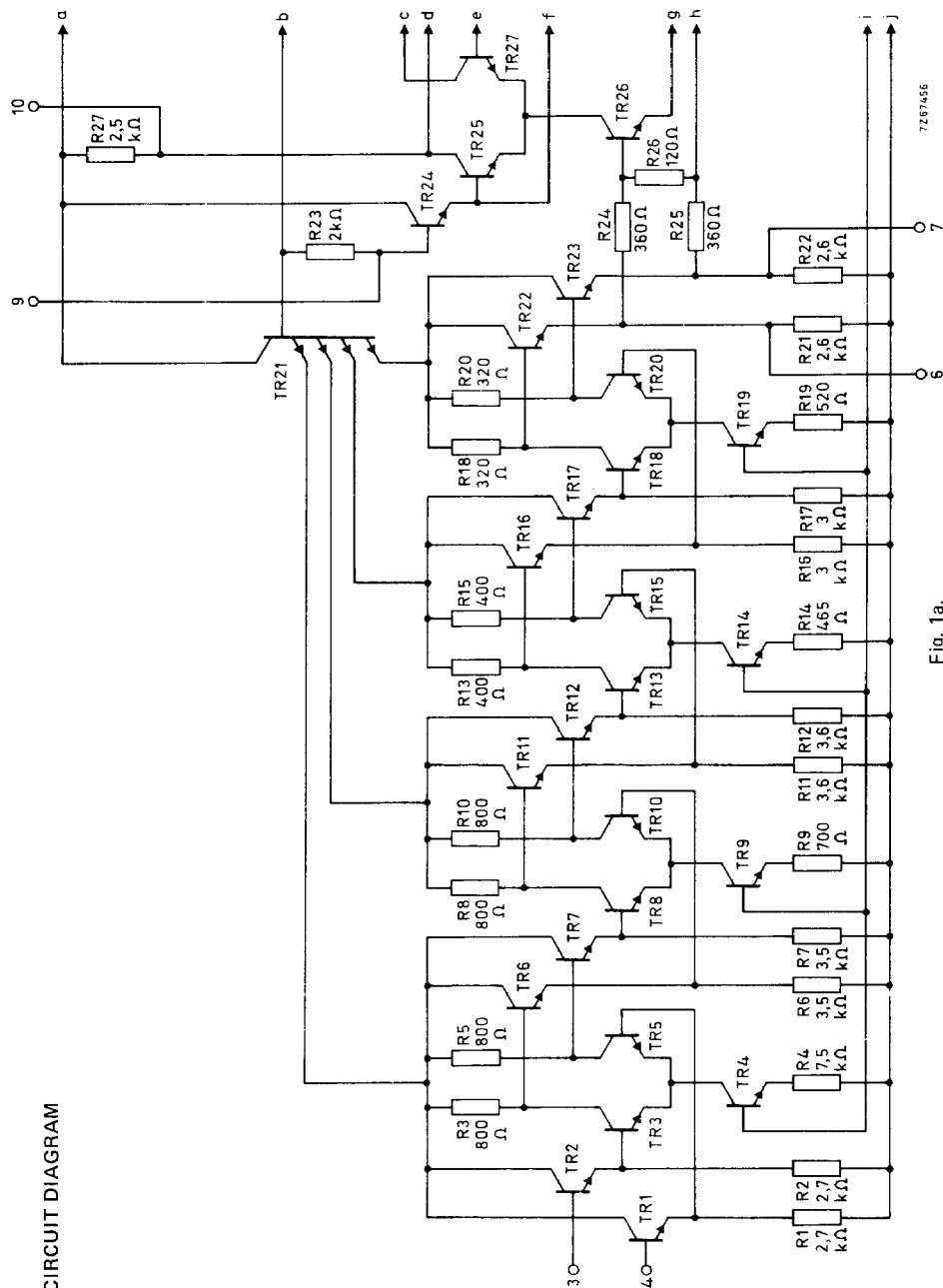
QUICK REFERENCE DATA

Supply voltage	V_{2-5}	typ	12 V
Total current drain	I_{tot}	typ	34 mA
Frequency	f_o		5,5 MHz
Input voltage at start of limiting	$V_{i \text{ lim}}$	typ	130 μ V
A.M. rejection at $V_i = 1 \text{ mV}$	α	typ	45 dB
A.F. output voltage at $\Delta f = \pm 15 \text{ kHz}$ at pin 16	$V_{o(rms)}$	typ	2,7 V
D.C. volume control range		>	80 dB

PACKAGES OUTLINES

TBA750C: 16-lead DIL; plastic (SOT-38).

TBA750CQ: 16-lead QIL; plastic (SOT-58).



7267456

Fig. 1a.

CIRCUIT DIAGRAM

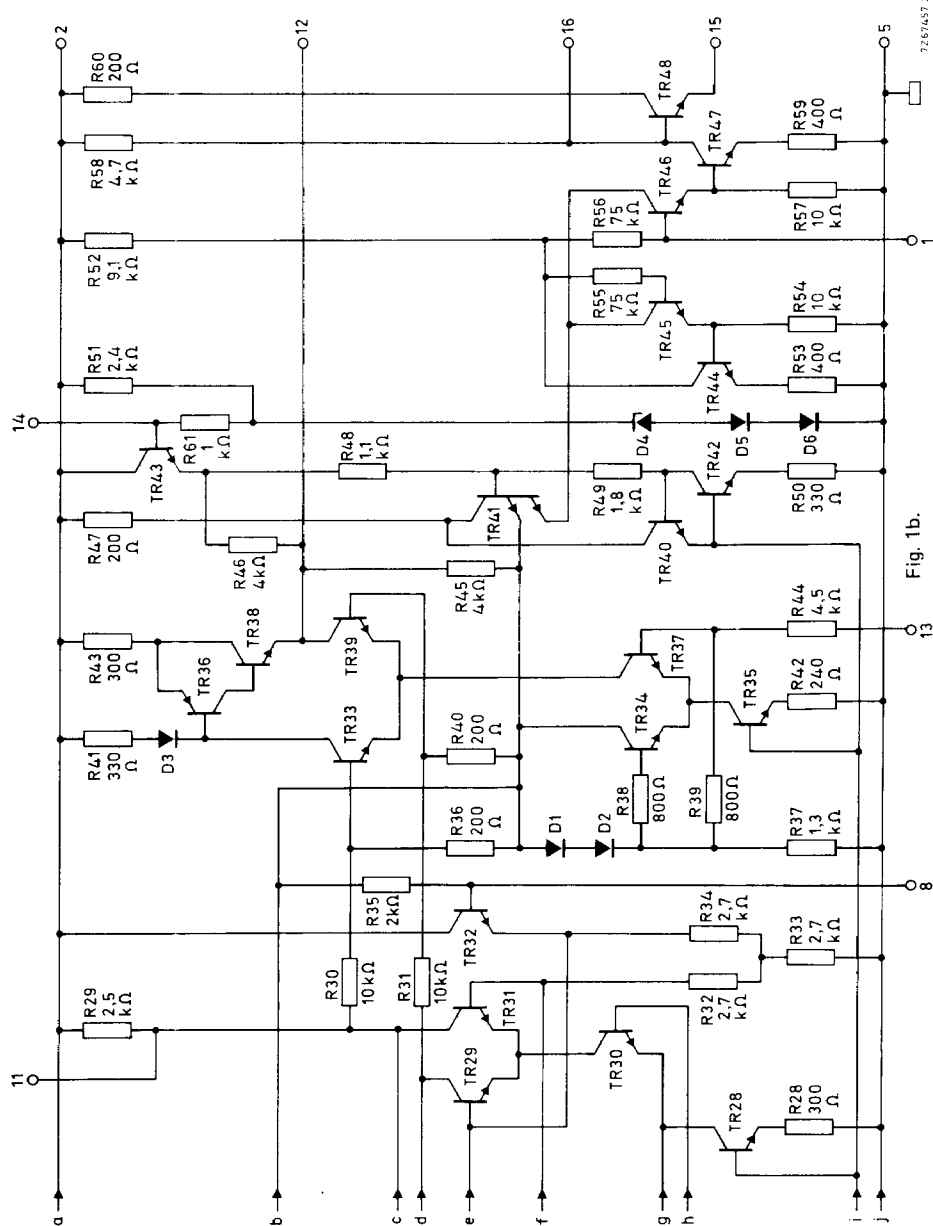


Fig. 1b.

7257457.2

100-302-200-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098-1099-1100-1101-1102-1103-1104-1105-1106-1107-1108-1109-1110-1111-1112-1113-1114-1115-1116-1117-1118-1119-1120-1121-1122-1123-1124-1125-1126-1127-1128-1129-1130-1131-1132-1133-1134-1135-1136-1137-1138-1139-1140-1141-1142-1143-1144-1145-1146-1147-1148-1149-1150-1151-1152-1153-1154-1155-1156-1157-1158-1159-1160-1161-1162-1163-1164-1165-1166-1167-1168-1169-1170-1171-1172-1173-1174-1175-1176-1177-1178-1179-1180-1181-1182-1183-1184-1185-1186-1187-1188-1189-1190-1191-1192-1193-1194-1195-1196-1197-1198-1199-1200-1201-1202-1203-1204-1205-1206-1207-1208-1209-1210-1211-1212-1213-1214-1215-1216-1217-1218-1219-1220-1221-1222-1223-1224-1225-1226-1227-1228-1229-1230-1231-1232-1233-1234-1235-1236-1237-1238-1239-1240-1241-1242-1243-1244-1245-1246-1247-1248-1249-1250-1251-1252-1253-1254-1255-1256-1257-1258-1259-1260-1261-1262-1263-1264-1265-1266-1267-1268-1269-1270-1271-1272-1273-1274-1275-1276-1277-1278-1279-1280-1281-1282-1283-1284-1285-1286-1287-1288-1289-1290-1291-1292-1293-1294-1295-1296-1297-1298-1299-1300-1301-1302-1303-1304-1305-1306-1307-1308-1309-1310-1311-1312-1313-1314-1315-1316-1317-1318-1319-1320-1321-1322-1323-1324-1325-1326-1327-1328-1329-1330-1331-1332-1333-1334-1335-1336-1337-1338-1339-1340-1341-1342-1343-1344-1345-1346-1347-1348-1349-1350-1351-1352-1353-1354-1355-1356-1357-1358-1359-1360-1361-1362-1363-1364-1365-1366-1367-1368-1369-1370-1371-1372-1373-1374-1375-1376-1377-1378-1379-1380-1381-1382-1383-1384-1385-1386-1387-1388-1389-1390-1391-1392-1393-1394-1395-1396-1397-1398-1399-1400-1401-1402-1403-1404-1405-1406-1407-1408-1409-1410-1411-1412-1413-1414-1415-1416-1417-1418-1419-1420-1421-1422-1423-1424-1425-1426-1427-1428-1429-1430-1431-1432-1433-1434-1435-1436-143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RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Supply voltage	V_{2-5}	max	16 V *
Storage temperature	T_{stg}		-55 to + 125 °C
Operating ambient temperature	T_{amb}		-25 to + 55 °C
Power dissipation			

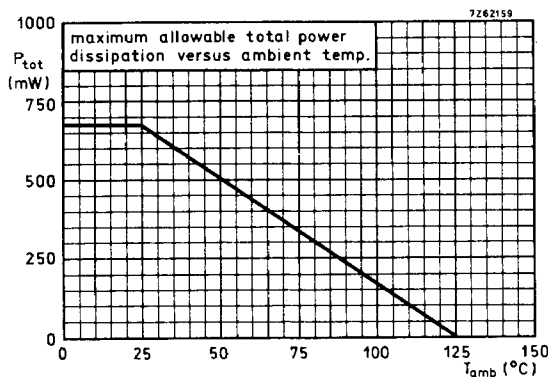


Fig. 2.

CHARACTERISTICS

Measured in test circuit Fig. 3.

Supply voltage range
see also Fig. 4

V_{2-5} 10 to 25 V

Total current drain; pin 15 not connected

I_2 25 to 45 mA

Input limiting voltage at $V_O = -3$ dB (r.m.s. value)

$V_i \text{ lim(rms)}$ typ 130 μ V

I.F. output voltage at pins 6 and 7
(peak-to-peak value)

$V_{6-5(p-p)}$ } typ 380 mV
 $V_{7-5(p-p)}$ }

A.M. rejection

$V_i = 1$ mV

$V_i = 10$ mV

$V_i = 100$ mV

α typ 45 dB

α typ 50 dB

α typ 55 dB

D.C. volume control range; see also Fig. 5

> 80 dB

A.F. preamplifier voltage gain
pin 1 to pin 16

G_v typ 10

Input resistance at pin 1

$R_i \geq 35$ k Ω

* Allowable only if the dissipation in the IC is limited by means of a series resistor in the supply (see also Fig. 4).

CHARACTERISTICS (continued)

A.F. output voltages (r.m.s. values)

 $\Delta f = \pm 15 \text{ kHz}; f_m = 1 \text{ kHz}$

$V_{10-5(rms)}$	typ	65 mV
$V_{11-5(rms)}$	typ	250 mV
$V_{12-5(rms)}$	typ	2,7 V
$V_{16-5(rms)}$	typ	2,7 V

Total harmonic distortion

at pin 12; $\Delta f = 15 \text{ kHz}$
 d_{tot} typ 3 %

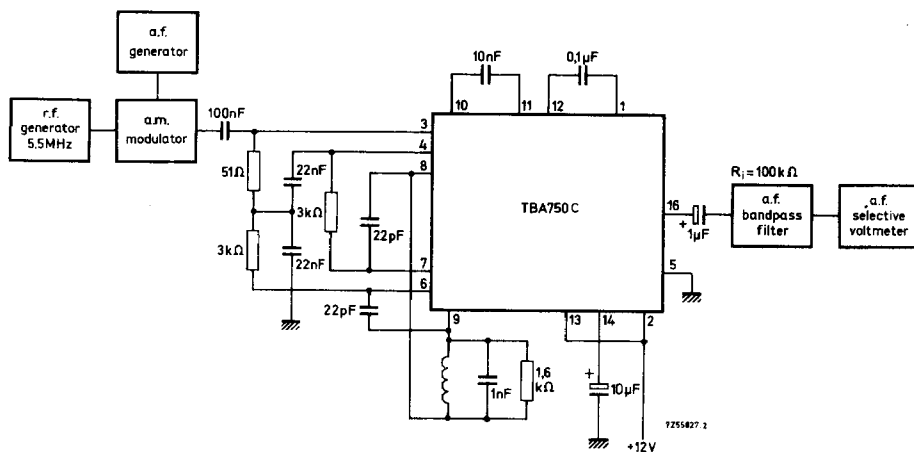
at pin 1 with respect to pin 16; $V_O(rms) = 3 \text{ V}$
 d_{tot} typ 2,6 %


Fig.3 Test circuit; for f.m.: $f_o = 5,5 \text{ MHz}$; $\Delta f = \pm 15 \text{ kHz}$; $f_m = 70 \text{ Hz}$.
For a.m.: $m = 0,3$; $f_m = 1 \text{ kHz}$.

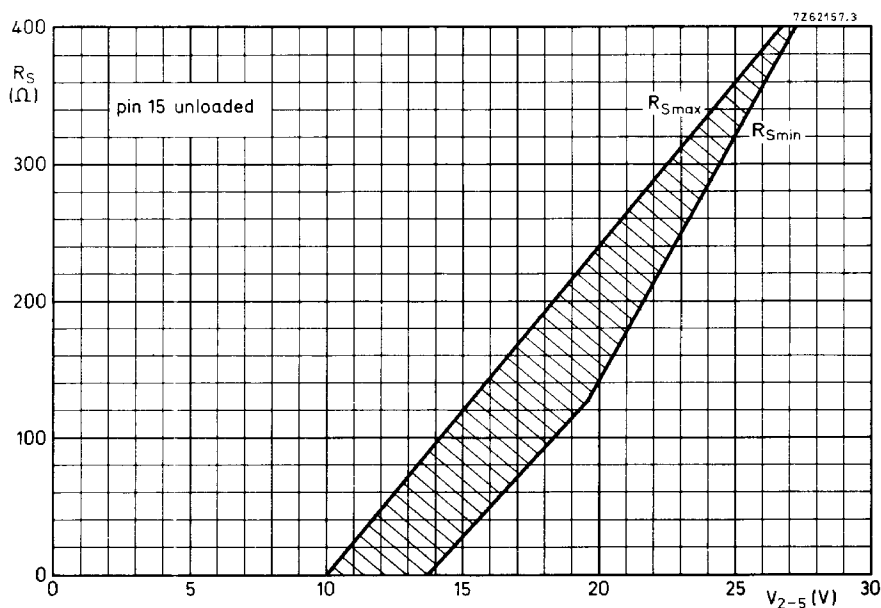


Fig. 4 Maximum and minimum values for the power supply series resistance (R_S).

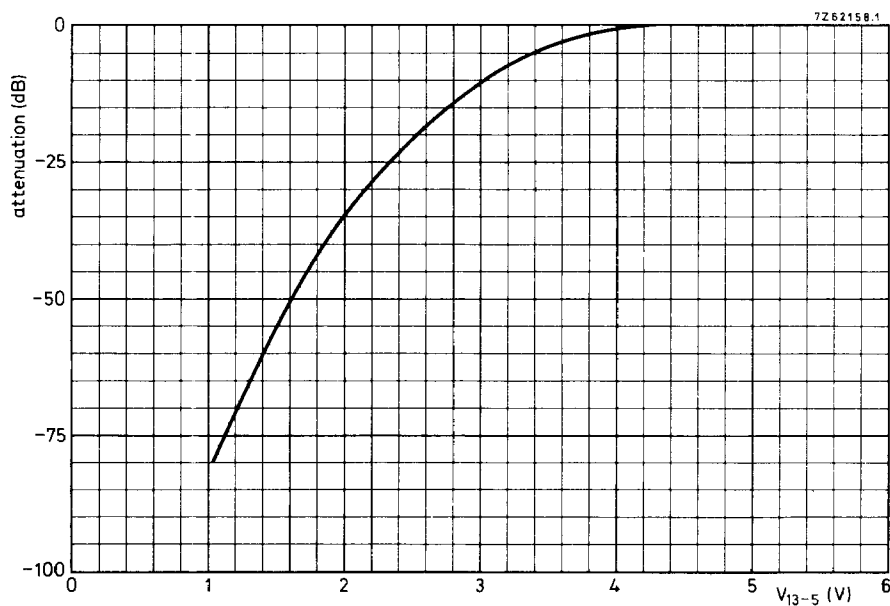


Fig. 5 Remote control characteristic.

APPLICATION INFORMATION at $f = 5,5 \text{ MHz}$

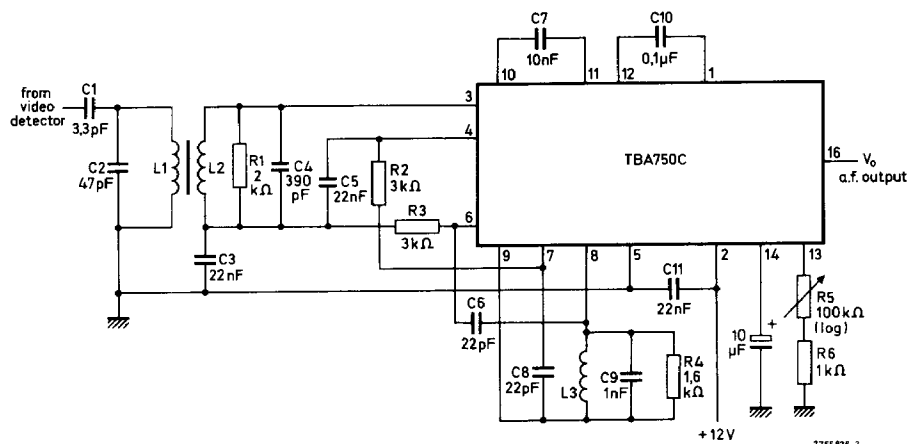


Fig. 6.

$$L1 = 18 \mu\text{H}; Q_{L1} = 36$$

$$L2 = 2,2 \mu\text{H}; Q_{L2} = 21$$

$$L3 = 0,84 \mu\text{H}; Q_{L3} = 22$$

The transfer ratio of the input bandpass filter: $\frac{V_2}{V_1} = 0,54$.

The peak-to-peak bandwidth of the detector S-curve is 300 kHz.

Note

Q_{L1} , Q_{L2} and Q_{L3} are the loaded Q-factors.

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