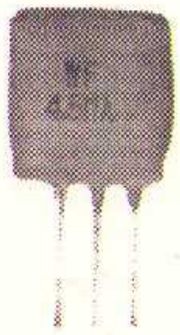
T E C H N I S C H E D O C U M E N T A T I E M A A R T 1 9 6 9

DEZE UITGAVE: Technische gegevens 2N3055 transistor.
Technische gegevens SN72709L operationele versterker.
Technische gegevens SN72709BN operationele versterker.
Technische gegevens LM703L middenfrequent versterker.
Toepassingen LM703L middenfrequent versterker.
Keramische filters voor 455kHz, 4,5MHz en 10,7MHz;
technische gegevens en enkele toepassingen.
Technische gegevens 10T4 - 17T4 thyristoren.

SF4,5MA

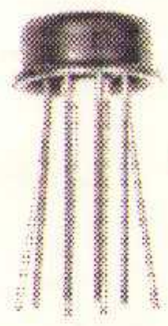
SF10,7MA



WF4,5MA

LM703

12T4



SN72709L

keramische filters

SF455D

SF455B

BF455A

NIEUW
SN72709BN

halfgeleiders

2N3055 T.I.

V A N D A M E L E K T R O N I C A

Rotterdam-noord
Snellemanstraat 10-11
bij Zwaanshals
Telefoon: 010-243497-240812
Administratie: 010-245516
Postgiro: 295550
Bankrelatie: AMRO-bank

Amsterdam
Reguliersgracht 105
bij Frederiksplein
Telefoon: 020-248967
Postorders en correspondentie
uitsluitend aan Postbus 3149
te Rotterdam-noord

PRIJS *f* 1,50

Technische documentatie 1969, tweede jaargang, maart 1969.

Abonnementsprijs per jaar Hfl. 10,40 incl. 4% B.T.W.

LEVERINGSVOORWAARDEN:

Voor onze leveringsvoorwaarden zie technische documentatie januari 1969, bladzijde 2.

VERHUIZINGEN:

Bij verhuizing dient vóór de 1ste van de maand hiervan melding te worden gemaakt aan onze administratie. Hierbij kunnen alleen adreswijzigingen in behandeling worden genomen, indien het op de enveloppe vermelde nummer wordt opgegeven; zonder dit nummer kunnen adresveranderingen of-correcties niet in behandeling worden genomen. Correspondentie te richten aan: Van Dam Elektronica, Postbus 3149 te Rotterdam-noord, t.a.v. TD-1969.

PRIJSNOTERINGEN:

Alle door ons uitgegeven prijzen kunnen onderhevig zijn aan prijsschommelingen; veranderingen zijn derhalve strikt voorbehouden. Al onze prijsnoteringen zijn incl. 12% B.T.W.: voor herleiding van de netto- of BTW-schone prijs dienen de aangegeven prijzen te worden vermenigvuldigd met de factor 0,8929.

INLEIDING:

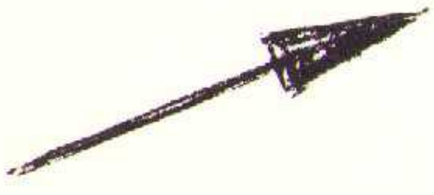
In verband met een op handen zijnde uitbreiding van ons Görler programma is de uitvoerige beschrijving van deze bekende FM-bouwstenen met één maand uitgesteld, teneinde de allernieuwste bouwstenen in de beschrijving te kunnen verwerken. Hetzelfde geldt voor de transistorgegevens en -aansluitingen.

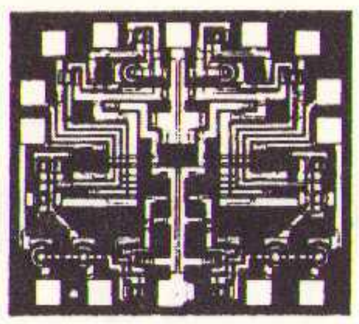
Deze uitgave wordt in beslag genomen door verscheidene nieuwe geïntegreerde schakelingen en keramische midden-frequent filters; tevens vestigen wij Uw aandacht op de nieuwste "JEDEC"-specificaties van de 2N3055.

De prijzen van de in deze documentatie opgenomen componenten treft U aan op bladzijde 24.

Van Dam Elektronica Rotterdam: Snellemanstraat 10-11, tel. 010-240812-243497
Amsterdam: Reguliersgracht 105 , tel. 020-248967.

MET INGANG VAN 1 JUNI 1969 ZIJN ZOWEL ONZE ZAAK IN ROTTERDAM ALS IN AMSTERDAM OP MAANDAG DE GEHELE DAG GESLOTEN.





Van Dam Elektronica, Snellemanstraat 10-11, Rotterdam-noord
Telefoon: 010-240812-243497, administratie: 010 - 245516
Postgiro: 295550. Bank:AMRO-bank, Middellandstraat, Rotterdam.
Postorders en correspondentie aan: Postbus 3149 te Rotterdam.

Van Dam Elektronica, Reguliersgracht 105, Amsterdam, Telefoon: 020-248967.

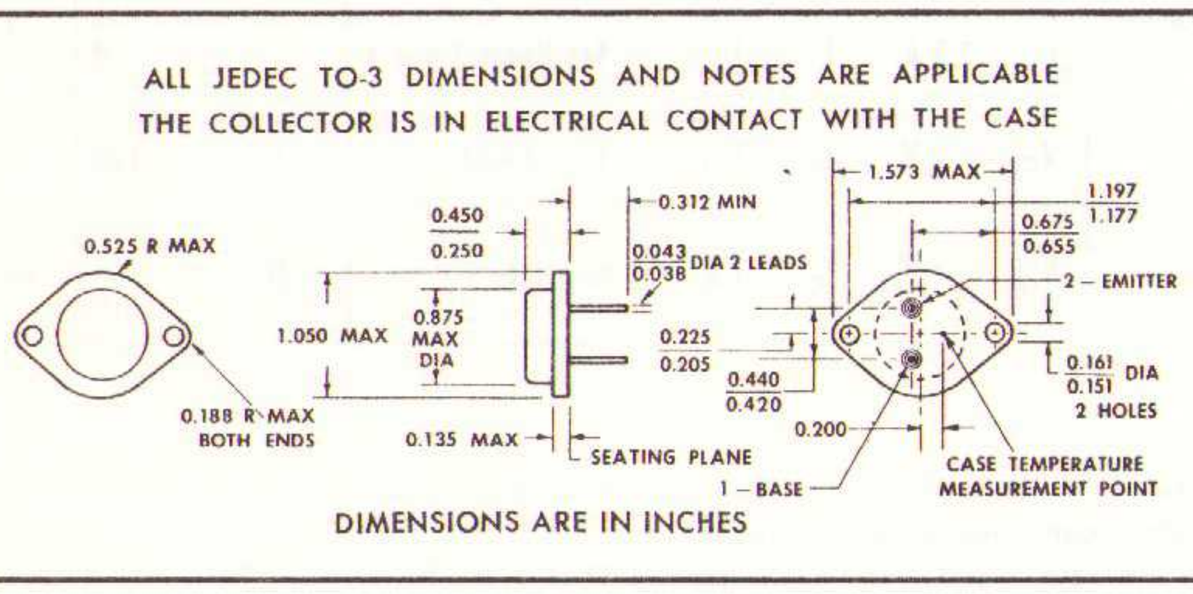
TYPE 2N3055
N-P-N SINGLE-DIFFUSED MESA SILICON POWER TRANSISTOR

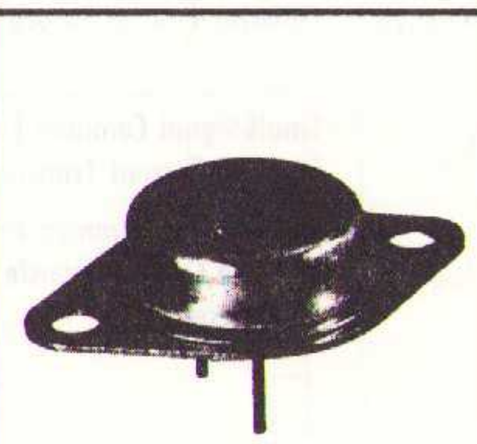
TYPE 2N3055
BULLETIN NO. DL-S 689659, AUGUST 1967
REVISED JULY 1968

FOR POWER-AMPLIFIER APPLICATIONS

- 115 W at 25°C Case Temperature
- Max I_C of 15 A
- Min f_{hfe} of 20 kHz

*mechanical data





Absolute maximum ratings at 25°C case temperature (unless otherwise noted)

Collector-Base Voltage	100 V
Collector-Emitter Voltage (See Note 1)	70 V
Emitter-Base Voltage	7 V
Continuous Collector Current	15 A
Continuous Base Current	7 A
Continuous Device Dissipation at (or below) 25°C Case Temperature (See Note 2)	115 W
Operating Case Temperature Range	–65°C to 200°C
Storage Temperature Range	–65°C to 200°C
Lead Temperature 1/32 Inch from Case for 10 Seconds	235°C

NOTES: 1. This value applies when the base-emitter resistance $R_{BE} = 100\ \Omega$.

2. Derate linearly to 200°C case temperature at the rate of 0.66 W/deg.

*Indicates JEDEC registered data

TYPE 2N3055
N-P-N SINGLE-DIFFUSED MESA SILICON POWER TRANSISTOR

*electrical characteristics at 25°C case temperature (unless otherwise noted)

PARAMETER		TEST CONDITIONS		MIN	MAX	UNIT
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C = 200 mA, I_B = 0,	See Note 4	60		V
$V_{(BR)CER}$	Collector-Emitter Breakdown Voltage	I_C = 200 mA, R_{BE} = 100 Ω		70		V
I_{CEO}	Collector Cutoff Current	V_{CE} = 30 V, I_B = 0			0.7	mA
I_{CEV}	Collector Cutoff Current	V_{CE} = 100 V, V_{BE} = –1.5 V			5	mA
		V_{CE} = 100 V, V_{BE} = –1.5 V, T_C = 150°C			30	
I_{EBO}	Emitter Cutoff Current	V_{EB} = 7 V, I_C = 0			5	mA
h_{FE}	Static Forward Current Transfer Ratio	V_{CE} = 4 V, I_C = 4 A,	See Notes 3 and 4	20	70	
		V_{CE} = 4 V, I_C = 10 A,	See Notes 3 and 4	5		
V_{BE}	Base-Emitter Voltage	V_{CE} = 4 V, I_C = 4 A,	See Notes 3 and 4		1.8	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_B = 400 mA, I_C = 4 A,	See Notes 3 and 4		1.1	V
		I_B = 3.3 A, I_C = 10 A,	See Notes 3 and 4		8	
h_{fe}	Small-Signal Common-Emitter Forward Current Transfer Ratio	V_{CE} = 4 V, I_C = 1 A,	f = 1 kHz	15	120	
f_{hfe}	Small-Signal Common-Emitter Forward Current Transfer Ratio Cutoff Frequency	V_{CE} = 4 V, I_C = 1 A,	See Note 5	20		kHz

NOTES: 3. These parameters must be measured using pulse techniques. t_p = 300 μs, duty cycle ≤ 2%.

4. These parameters are measured with voltage-sensing contacts separate from the current-carrying contacts.

5. f_{hfe} is the frequency at which the magnitude of the small-signal forward current transfer ratio is 0.707 of its low-frequency value. For this device, the reference measurement is made at 1 kHz.

*Indicates JEDEC registered data

thermal characteristics

PARAMETER		MAX	UNIT
θ_{J-C}	Junction-to-Case Thermal Resistance	1.52	deg/W

TEXAS INSTRUMENTS
INCORPORATED
POST OFFICE BOX 5012 • DALLAS, TEXAS 75222

INTEGRATED CIRCUITS

NEW-PRODUCT BULLETIN

This announcement provides preliminary engineering information on new Texas Instruments products. Definitive specifications are now being prepared for publication.

SOLID CIRCUIT®
SEMICONDUCTOR NETWORKS†

TYPES SN52 709, SN52 709L, SN72 709, SN72 709L
HIGH-PERFORMANCE OPERATIONAL AMPLIFIERS

SERIES 52/72 OPERATIONAL AMPLIFIERS

featuring

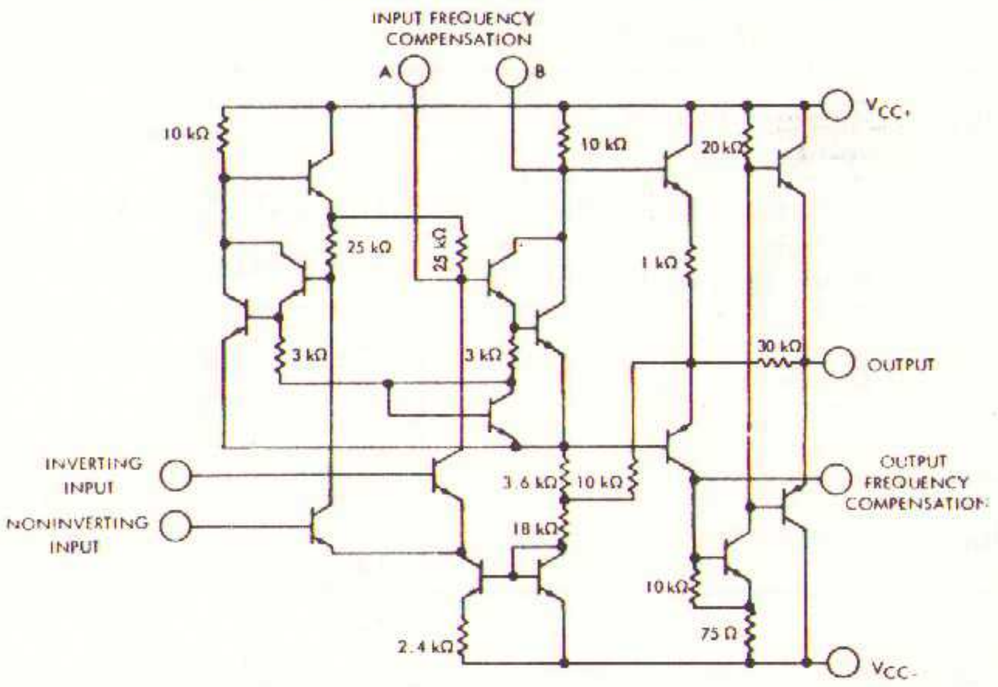
Common-Mode Input Range — ±10 V

Peak-to-Peak Output Voltage Swing — ±14 V

description

The SN52 709 circuit is a high-performance operational amplifier with high-impedance differential inputs and a low-impedance output. Component matching, inherent with silicon monolithic circuit fabrication techniques, produces an amplifier with low drift and offset characteristics. Provisions are incorporated within the circuit whereby external components may be used to compensate the amplifier for stable operation under various feedback or load conditions. These amplifiers are particularly attractive for applications requiring transfer or generation of linear or non-linear functions. The SN52 709 and SN52 709L are characterized for operation over the temperature range of -55°C to 125°C. The SN72 709 and SN72 709L are characterized for operation from 0°C to 70°C.

Texas Instruments Series 52/72 catalog lines of linear integrated circuits offer higher reliability, lower cost, smaller size, and less weight than equivalent discrete component circuits.

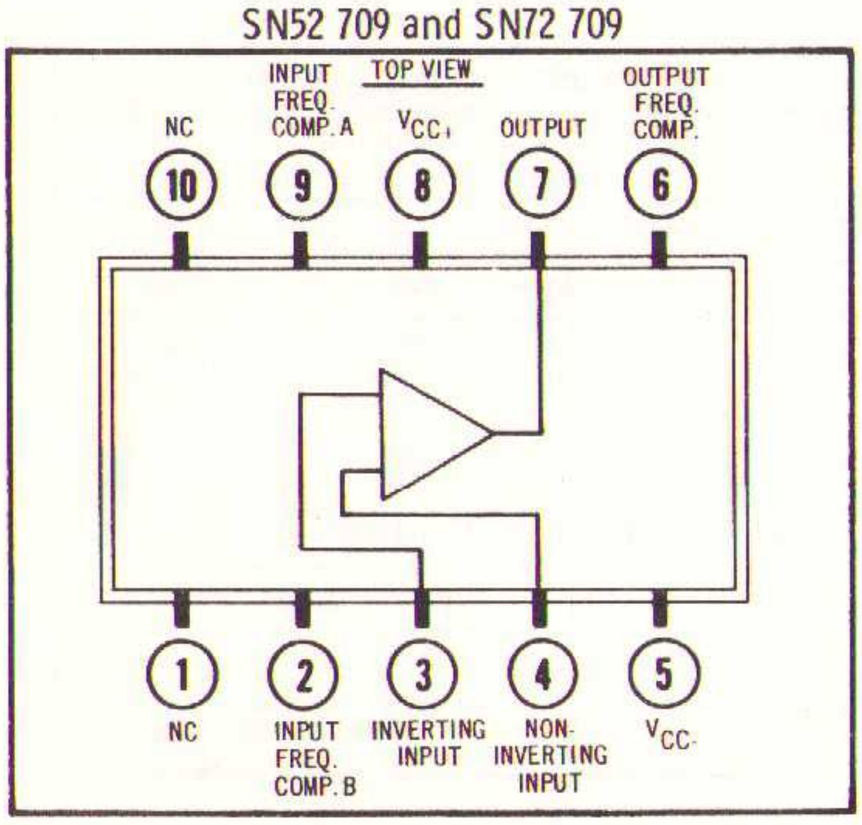


Component values shown are nominal.

SCHEMATIC DIAGRAM

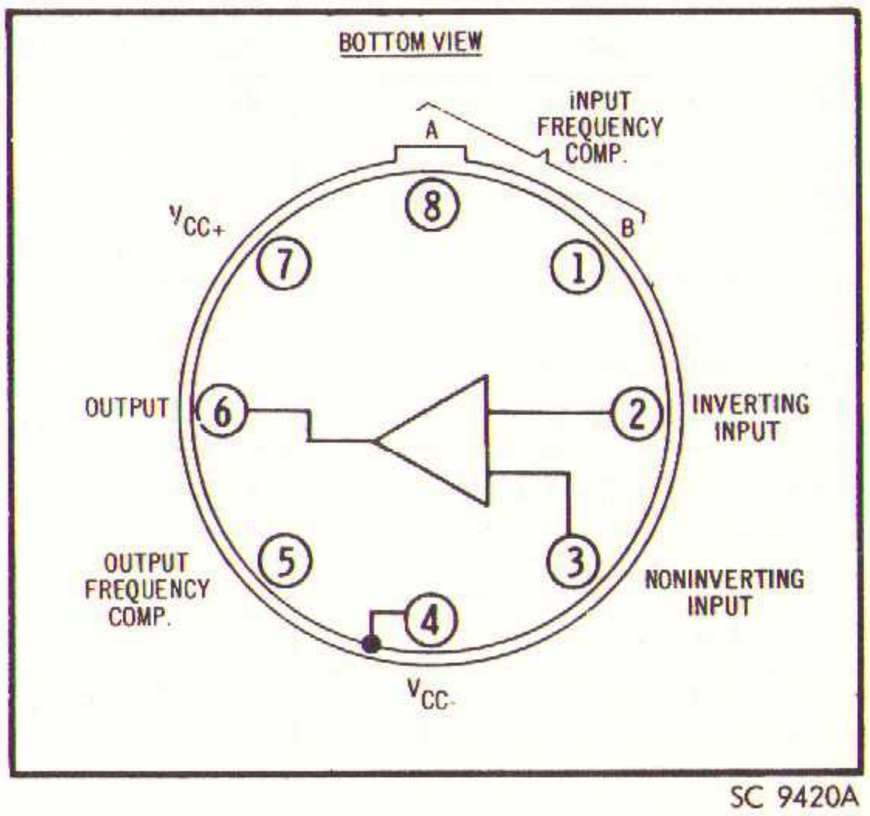
TERMINAL ASSIGNMENTS

SN52 709 and SN72 709



NC — No internal connection

SN52 709L and SN72 709L



†Patented by Texas Instruments.

SC 9420A
DECEMBER 1966
REPLACES SC 9420 NOVEMBER 1966

TYPES SN52 709, SN52 709L
HIGH-PERFORMANCE OPERATIONAL AMPLIFIERS

absolute maximum ratings

Supply Voltages (See Note 1):	V_{CC+}	+18 V
	V_{CC-}	-18 V
Differential Input Voltage		±5 V
Input Voltage (Either Input, See Note 1)		±10 V
Duration of Short-Circuit Output Current (T_A = 25°C)		5 s
Continuous Total Power Dissipation:	SN52 709L (See Note 2)	300 mW
	SN52 709 (See Note 3)	250 mW
Operating Temperature Range (See Notes 2 and 3)		-55°C to 125°C
Storage Temperature Range		-65°C to 150°C

NOTES: 1. These voltage values are with respect to the zero reference level of the supply voltage.
2. At free-air temperature (T_A) above 95°C derate power dissipation linearly at 5.6 mW/deg.
3. At case temperature (T_C) above 100°C derate power dissipation linearly at 5 mW/deg.

electrical characteristics (unless otherwise noted, V_{CC+} = 15 V and V_{CC-} = -15 V, to V_{CC+} = 9 V and V_{CC-} = -9 V, T_A = 25°C)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_{DI}	Differential-input offset voltage	$R_S \leq 10$ kΩ, T_A = -55°C to 125°C			6	mV
		$R_S \leq 10$ kΩ		1	5	mV
α_{VDI}	Differential-input offset voltage temperature coefficient	R_S = 50 Ω, T_A = -55°C to 125°C		3		μV/deg
		$R_S \leq 10$ kΩ, T_A = -55°C to 125°C		6		μV/deg
I_{DI}	Differential-input offset current	T_A = 125°C		20	200	nA
				50	200	nA
		T_A = -55°C		100	500	nA
I_{in}	Input Current			200	500	nA
		T_A = -55°C		500	1500	nA
V_{OM}	Maximum peak-to-peak output voltage	V_{CC+} = 15 V, V_{CC-} = -15V, $R_L \geq 10$ kΩ, T_A = -55°C to 125°C	±12	±14		V
		V_{CC+} = 15 V, V_{CC-} = -15 V, $R_L \geq 2$ kΩ, T_A = -55°C to 125°C	±10	±13		V
V_{CMI}	Common-mode input voltage range	V_{CC+} = 15 V, V_{CC-} = -15 V, T_A = -55°C to 125°C	±8	±10		V
A_V	Large-signal voltage gain	V_{CC+} = 15 V, V_{CC-} = -15 V, $R_L \geq 2$ kΩ, V_{out} = ±10 V, T_A = -55°C to 125°	25,000	45,000	70,000	
CMRR	Common-mode rejection ratio	$R_S \leq 10$ kΩ, T_A = -55°C to 125°C	70	90		dB
SVRR	Supply voltage rejection ratio	$R_S \leq 10$ kΩ, T_A = -55°C to 125°C		25	150	μV/V
r_{in}	Input resistance	T_A = -55°C to 125°C	40	100		kΩ
			150	400		kΩ
r_{out}	Output resistance			150		Ω
P_T	Total power dissipation	V_{CC+} = 15 V, V_{CC-} = -15 V		80	165	mW

transient response, V_{CC+} = 15 V and V_{CC-} = -15 V, to V_{CC+} = 9 V and V_{CC-} = -9 V, T_A = 25°C (See Figure 1)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_r	Rise time	V_{in} = 20 mV, C_L = open		0.3	1	μs
	Overshoot	V_{in} = 20 mV, $C_L \leq 100$ pF		10	30	%

absolute maximum ratings

Supply Voltages (See Note 1):	V_{CC+}	+18 V
	V_{CC-}	−18 V
Differential Input Voltage		±5 V
Input Voltage (Either Input, See Note 1)		±10 V
Duration of Short-Circuit Output Current (T_A = 25°C)		5 s
Continuous Total Power Dissipation:	SN72 709L (See Note 4)	250 mW
	SN72 709 (See Note 5)	250 mW
Operating Free-Air Temperature Range (See Notes 4 and 5)		0°C to 70°C
Storage Temperature Range		−65°C to 150°C

NOTES:
1. These voltage values are with respect to the zero reference level of the supply voltage.
4. At free-air temperature (T_A) above 55°C derate power dissipation linearly at 5.6 mW/deg.
5. At case temperature (T_C) above 100°C derate power dissipation linearly at 5 mW/deg.

electrical characteristics V_{CC+} = 15 V and V_{CC-} = −15 V, (unless otherwise noted, T_A = 25°C)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_{DI}	Differential-input offset voltage	$R_S \leq 10$ kΩ, T_A = 0°C to 70°C (See Note 6)			10	mV
		$R_S \leq 10$ kΩ (See Note 6)		2	7.5	mV
I_{DI}	Differential-input offset current	T_A = 0°C to 70°C			750	nA
				100	500	nA
I_{in}	Input current	T_A = 0°C			2	μA
				0.3	1.5	μA
V_{OM}	Maximum peak-to-peak output voltage	$R_L \geq 10$ kΩ	±12	±14		V
		$R_L \geq 2$ kΩ	±10	±13		V
V_{CMI}	Common-mode input voltage range		±8	±10		V
A_V	Large-signal voltage gain	$R_L \geq 2$ kΩ, V_{out} = ±10 V, T_A = 0°C to 70°C	12,000			
		$R_L \geq 2$ kΩ, V_{out} = ±10 V	15,000	45,000		
CMRR	Common-mode rejection ratio	$R_S \leq 10$ kΩ	65	90		dB
SVRR	Supply voltage rejection ratio	$R_S \leq 10$ kΩ		25	200	μV/V
r_{in}	Input resistance		50	250		kΩ
r_{out}	Output resistance			150		Ω
P_T	Total power dissipation			80	200	mW

NOTE 6: V_{CC+} = 15 V and V_{CC-} = −15 V to V_{CC+} = 9 V and V_{CC-} = −9 V.

TRANSIENT RESPONSE TEST CIRCUIT FOR SN52 709L AND SN52 709

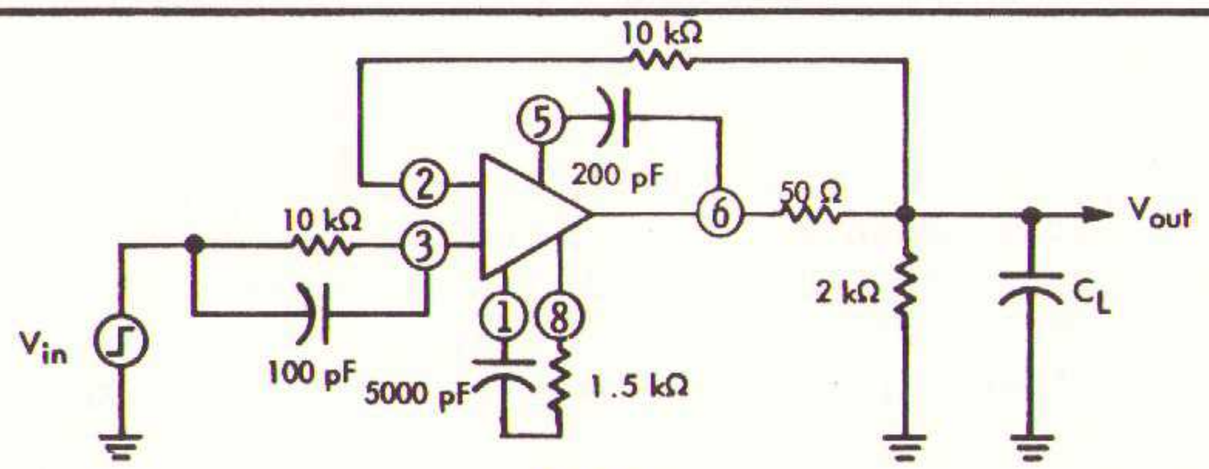


FIGURE 1

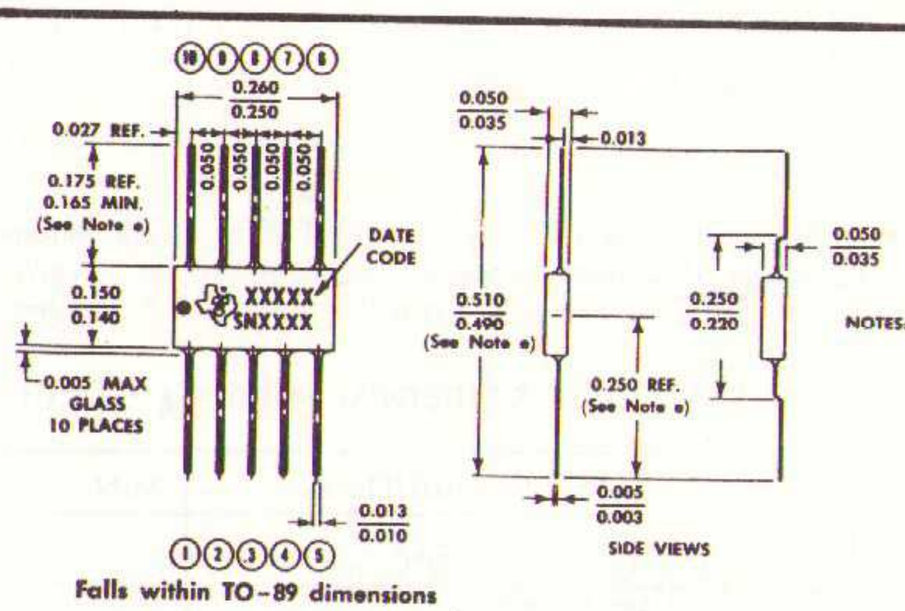
TYPES SN52 709, SN52 709L, SN72 709, SN72 709L
HIGH-PERFORMANCE OPERATIONAL AMPLIFIERS

mechanical data

The SN52 709 and SN72 709 amplifiers are mounted in glass-to-metal hermetically sealed welded packages meeting TO-89. Leads are gold-plated F-15† glass-sealing alloy. Approximate weight is 0.1 gram. All external surfaces are metallic and are insulated from leads and circuit. Both are available with formed leads, insulator attached, and/or mounted in a Mech-Pak carrier. See Ordering Instructions.

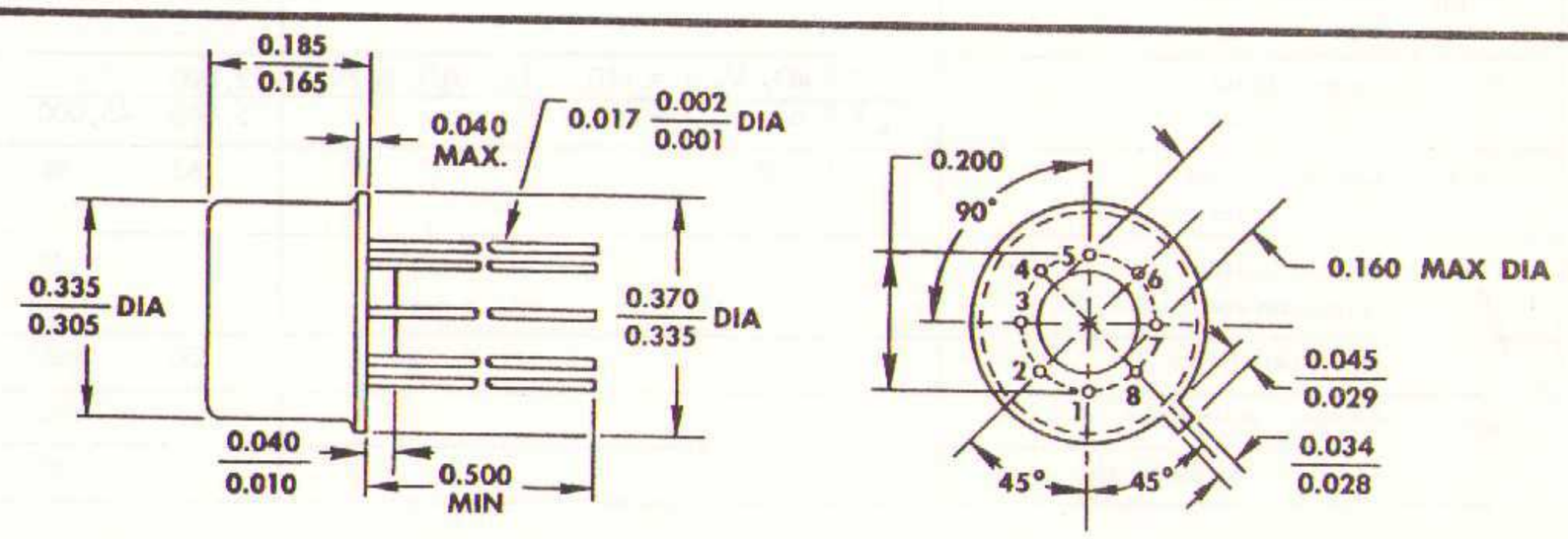
ORDERING INSTRUCTIONS

	NO MECH-PAK CARRIER				MECH-PAK CARRIER			
Lead Length	0.175 Inch				Not Applicable			
Formed Leads	No	No	Yes	Yes	No	No	Yes	Yes
Insulators	No	Yes	No	Yes	No	Yes	No	Yes
Ordering Suffix	None	-6	-7	-1	-2	-3	-4	-5



NOTES:
a. All dimensions in inches.
b. All decimals ±0.005 except as noted.
c. Lead spacing tolerance is ±0.015 at extremities and ±0.005 at package, nonaccumulative.
d. Lead centerlines are located within ±0.005 of their true positions relative to body centerlines.
e. Not applicable in Mech-Pak carrier.
f. Symbolization denotes orientation of package.

The SN52 709L and SN72 709L package outlines are same as JEDEC TO-99 except for diameter of standoff.

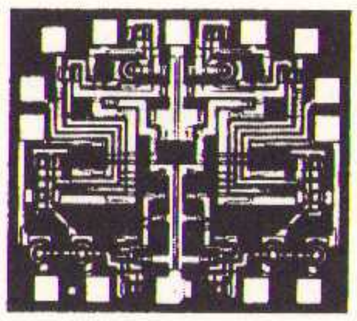


ALL DIMENSIONS IN INCHES

PIN ④ IS IN ELECTRICAL CONTACT WITH THE CASE

† F-15 is the ASTM designation for an iron-nickel-cobalt alloy containing nominally 53% iron, 29% nickel, and 17% cobalt.

Wij stellen U gaarne ruimte in deze technische documentaties ter beschikking voor het opnemen van door u ontwikkelde schakelingen met de hier beschreven componenten. Deze schakelingen mogen behoren tot een veelzijdig gebied. Correspondentie over dit onderwerp kunt U richten aan ons adres: Van Dam Elektronica, t.a.v. TD-1969, Postbus 3149 te Rotterdam-noord.



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telefoon: 010-240812-243497, administratie: 010-245516.
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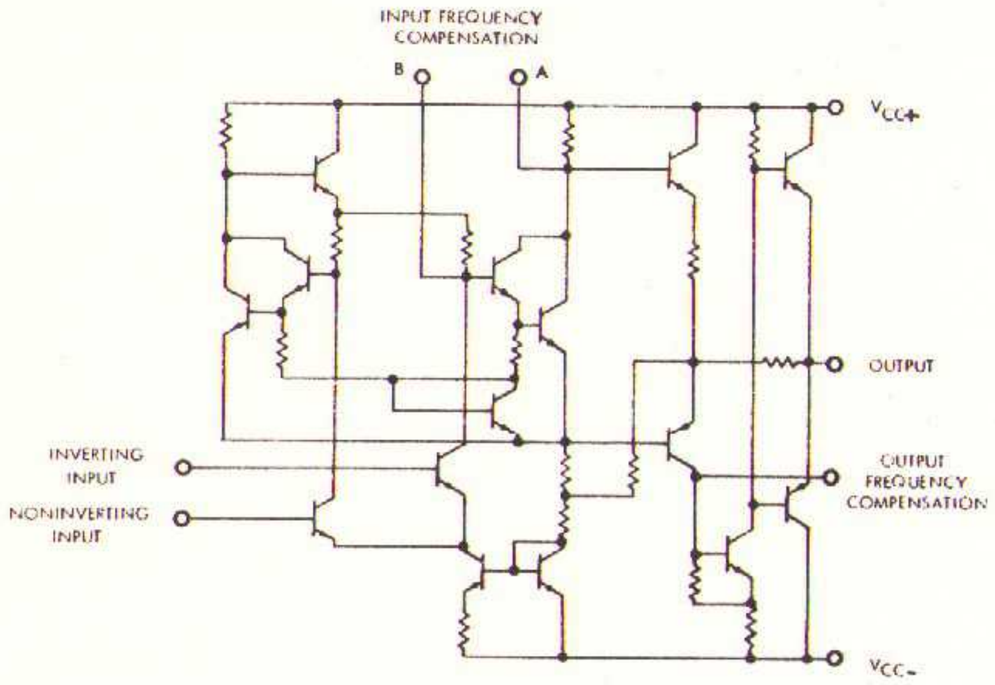
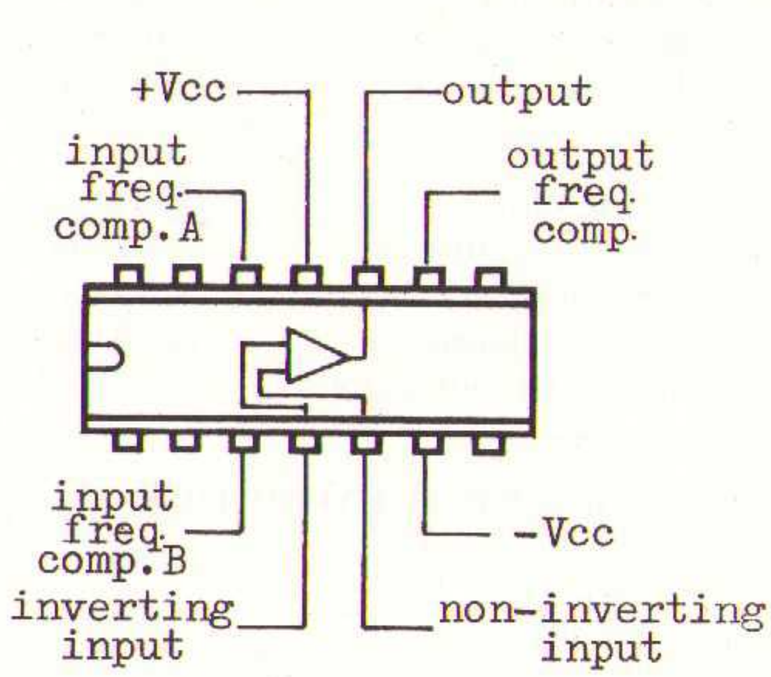
Van Dam Elektronica, Reguliersgracht 105, Amsterdam, telefoon: 020-248967.

O P E R A T I O N A L A M P L I F I E R T Y P E S N 7 2 7 0 9 B N

SCHEMATIC DIAGRAM



CONNECTIONS; TOP VIEW
case: 14-lead dual-in-line plastic



The other pins are not connected.

<u>absolute maximum ratings:</u>

Supply Voltages (See Note 1):	+Vcc	+ 15 volt
	-Vcc	- 15 volt
Differential Input Voltage		± 4 volt
Input voltage (Either Input, See Note 1)		± 7 volt
Duration of short-circuit output current (T_A=25°C)		5 sec.
Continuous Total Power Dissipation		ca 300mW
Operating Free-Air Temperature Range (See Note 2 and 3)		0 - 70 °C
Storage Temperature Range		-55 to 150°C

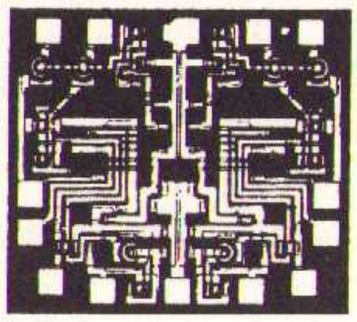
SN72709BN
PRIJS f 9,—

NOTES: 1. These voltage values are with respect to the zero reference level of the supply voltage.
2. At free-air temperature (T_A) above 55°C derate power dissipation at 5.6mW/deg.
3. At case temperature (T_C) above 100°C derate power dissipation linearly at 5mW/deg.

<u>electrical characteristics</u> at Vcc = ±15 volt and at T_A = 25°C

	PARAMETER	TEST CONDITIONS	TYP.	MAX.	UNIT
V_{DI}	Differential-input offset voltage	Rs = 50Ω		30	mV
I_{DI}	Differential-input offset current	T_A = 0°C to 70°C	2		µA
I_{in}	Input current	T_A = 0°C		5	µA
V_{OM}	Max. peak-to-peak output voltage	$R_L \geq$ 2kΩ	±8		V
V_{CMI}	Common-mode input voltage range		±6		V
A_V	Large-signal voltage gain		6000		
r_{in}	Input resistance		10		kΩ
r_{out}	Output resistance		150		Ω
P_T	Total power diss.		80	200	mW

Deze operationele versterker is niet bedoeld voor het verrichten van topprestaties, doch is speciaal voor Van Dam Elektronica geselecteerd voor gebruik op plaatsen, waar dit mogelijk is, als audio, voedingen, enz.



LM703L low power drain rf/if amplifier

general description

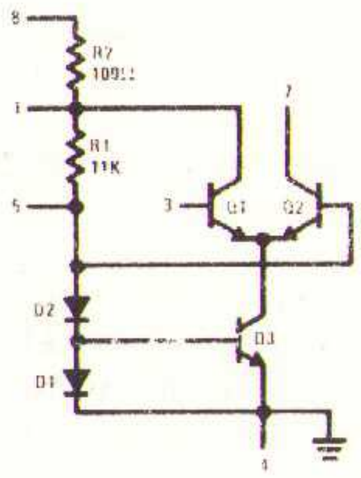
The LM703L is a monolithic RF-IF amplifier, having an efficient DC biasing system, reducing demands upon power supply and decoupling elements. Its low internal feedback guarantees a high stability-limited gain. In addition, the device features:

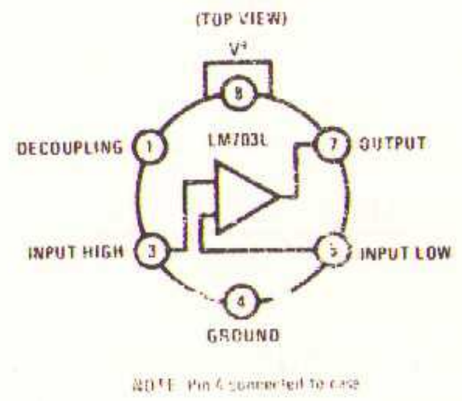
Power Consumption	84 mw (max.)
Forward Transadmittance	33 mmhos
Input Conductance	0.35 mmhos
Output Conductance	0.03 mmhos
Peak-to-Peak Output Current	5.0 mA

Applications include limiting and nonlimiting amplifiers, mixers, and RF oscillators. The LM703L is specifically characterized for operation in consumer applications such as TV sound IF, FM-IF limiter amplifier, and Chroma reference oscillator for color TV.

PRIJS PER STUK ƒ 4,75 incl. BTW

schematic and connection diagrams

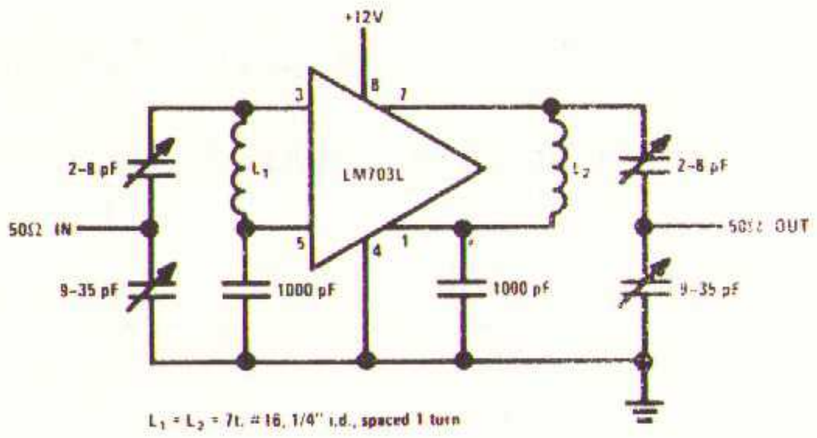




NOTE: Pin 4 connected to case

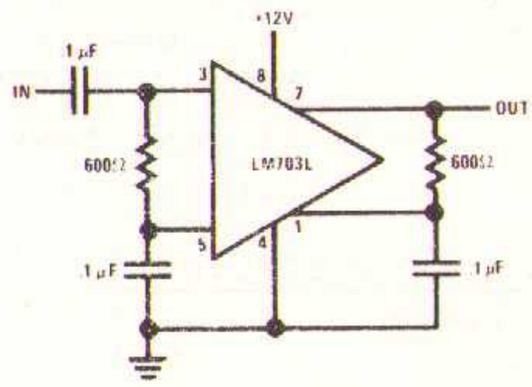
typical applications

100 MHz Narrow Band Amplifier

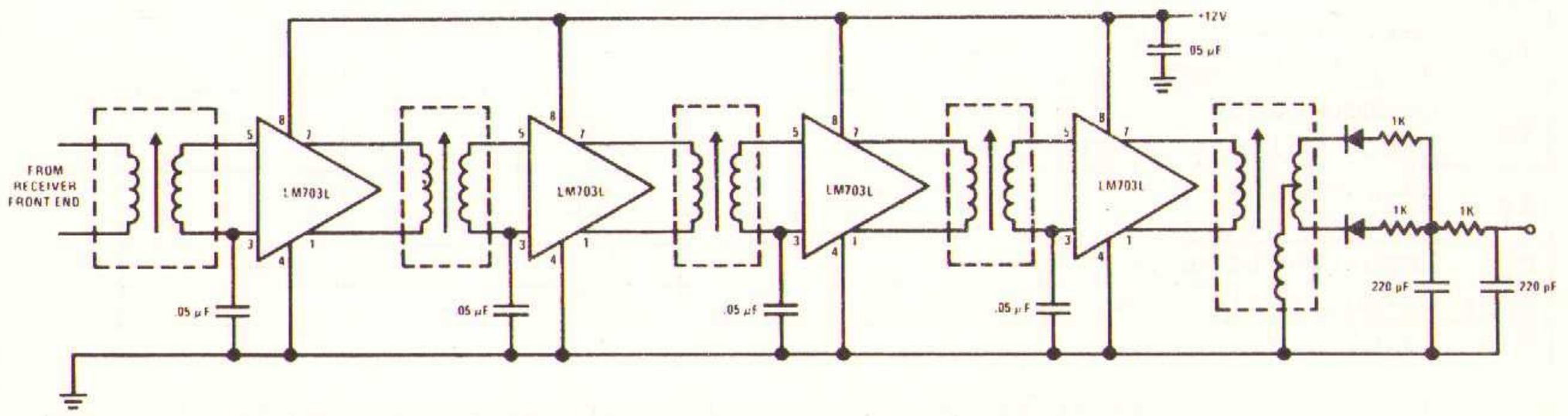


$L_1 = L_2 = 7t, \#16, 1/4''$ i.d., spaced 1 turn

RC Coupled Video Amplifier



Four Stage 10.7 MHz FM-IF Amplifier



absolute maximum ratings

Supply Voltage	20V	Operating Temperature Range	0°C to 70°C
Output Collector Voltage	24V	Storage Temperature Range	−65°C to 150°C
Voltage Between Input Terminals	±5.0V	Lead Temperature (soldering — 60 seconds)	300°C
Internal Power Dissipation	200 mW		

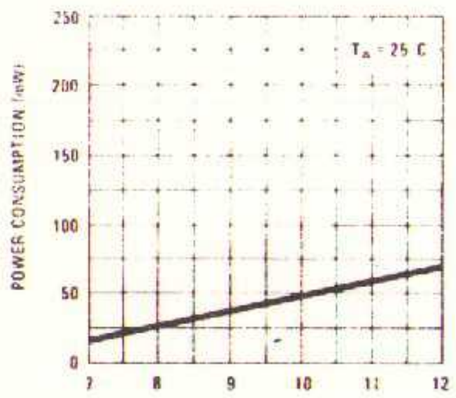
electrical characteristics (Note 1)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Power Consumption	e_{in} = 0		71	84	mW
Quiescent Output Current	e_{in} = 0	1.5	2.5	3.3	mA
Peak-to-Peak Output Current	e_{in} = 400 mV rms, f = 10.7 MHz	3.0	5.0		mA
Output Saturation Voltage				1.7	V
Forward Transadmittance	e_{in} = 10 mV rms, f ≤ 10.7 MHz	24.0	33.0		mmho
Reverse Transadmittance	e_{in} = 10 mV rms, f ≤ 10.7 MHz		0.002		mmho
Input Conductance	e_{in} = < 10 mV rms, f ≤ 10.7 MHz		0.35	1.0	mmho
Input Capacitance	e_{in} < 10 mV rms, f ≤ 10.7 MHz		9.0	12.5	pF
Output Capacitance	f ≤ 10.7 MHz		2.6	4.0	pF
Output Conductance	f ≤ 10.7 MHz		0.03	0.05	mmho
Noise Figure	R_S = 500Ω, f = 10.7 MHz R_S = 500Ω, f = 100 MHz		6.0 8.0		dB dB
Maximum Stable Gain	f = 100 MHz		28.0		dB

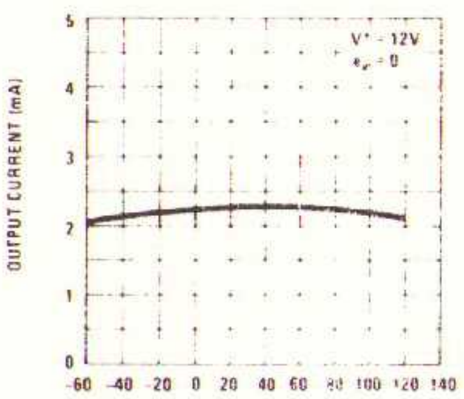
Note 1: These specifications apply for T_A = 25°C, V^+ = 12V unless otherwise specified.

typical performance characteristics

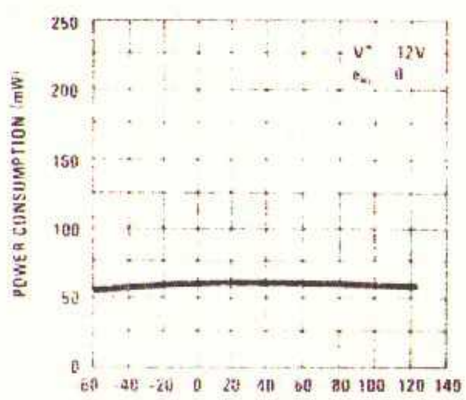
Power Consumption as a Function of Supply Voltage



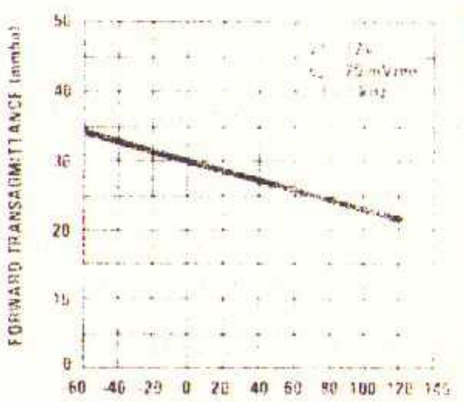
Output Current as a Function of Ambient Temperature



Power Consumption as a Function of Ambient Temperature



Forward Transadmittance as a Function of Ambient Temperature

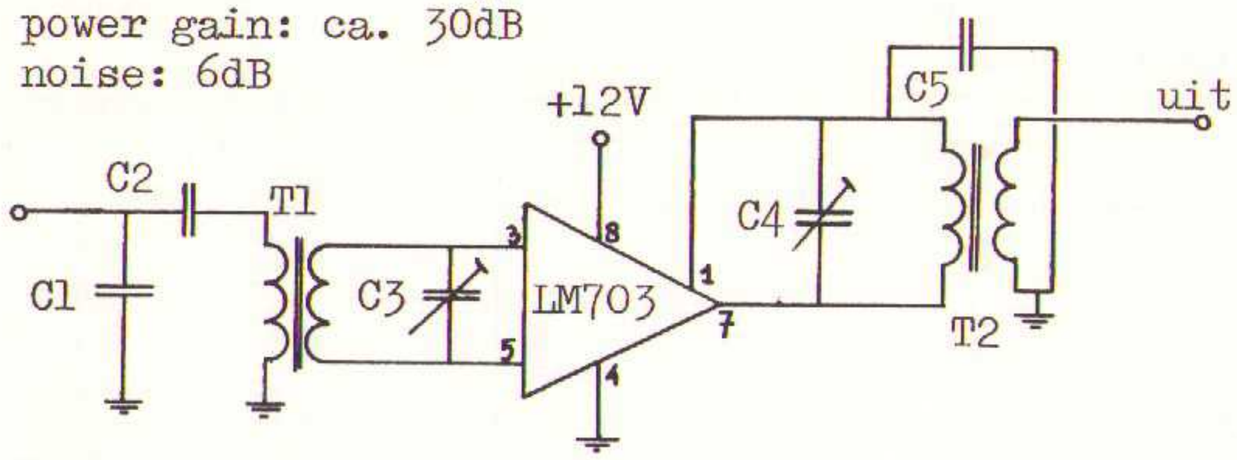


Note: For additional performance curves, and packaging, see LM703/C/E data sheet.

fabrikant:

National Semiconductor Corporation

bandbreedte: ca. 1,5MHz
power gain: ca. 30dB
noise: 6dB

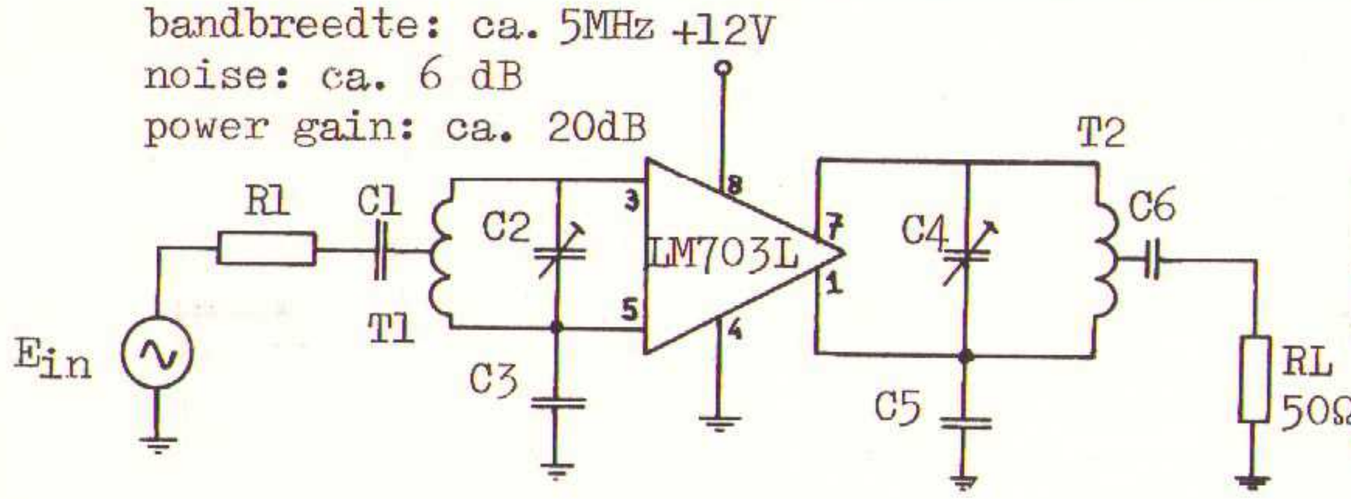


30 MHz middenfrequent versterker met LM703L

C1 = 200 pF
C2 = 40 pF
C3 = 7-45 pF
C4 = 7-45 pF
C5 = 0,001µF
T1 = primair 10 wdg.
secund. 10 wdg.
T2 = primair 12 wdg.
secund. 1 wdg.

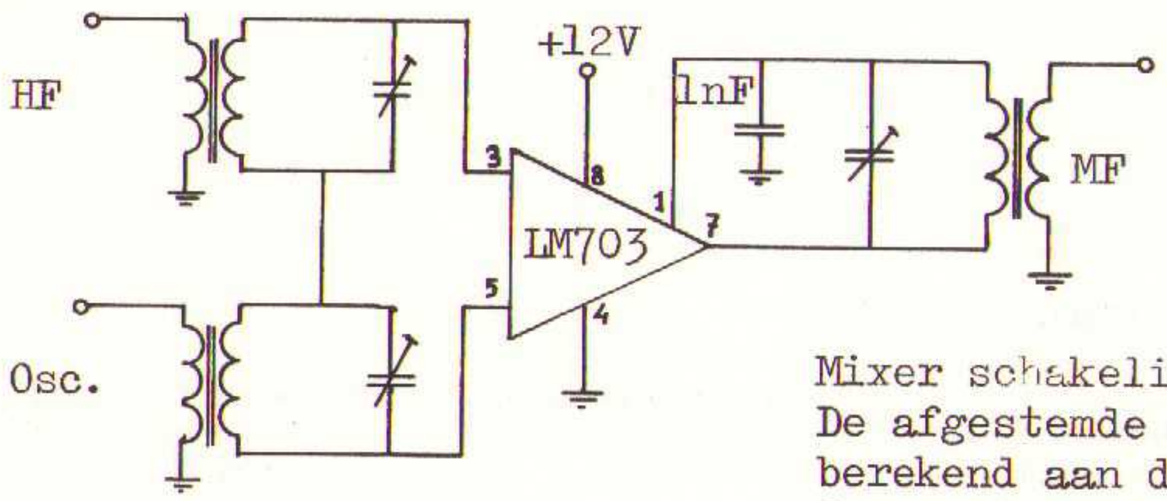
---

bandbreedte: ca. 5MHz
noise: ca. 6 dB
power gain: ca. 20dB



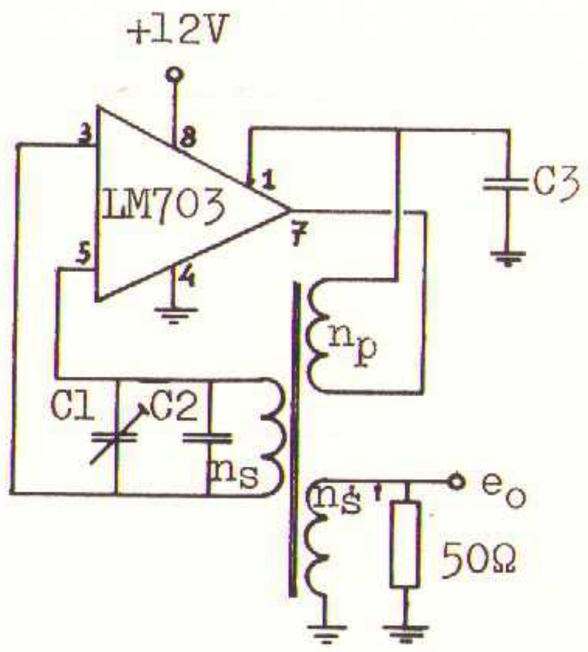
100/200 MHz versterker met LM 703L

C1, C3, C5, C6 = 1nF ker.
C2, C4 = 3-10pF trimmer
Voor 100 MHz:
T1 8 wdg 0,8mmØ met aftakking op 3,5 wdg.
T2 8 wdg 0,8mmØ met aftakking op 0,75 wdg.
Voor 200 MHz:
T1 3 wdg 0,8mmØ met aftakking op ca. 1 wdg.
T2 5 wdg 1,3mmØ met aftakking op 1 wdg.



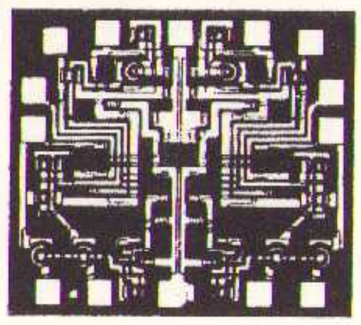
Mixer schakeling met de LM703L
De afgestemde kringen dienen te worden berekend aan de hand van de betrokken frequenties.

Hoogfrequent oscillator met de LM703L



Door de onderdelenwaarden aan te passen wordt gebruik met bovenstaande mixer schakeling mogelijk.

C1 = 7-45 pF
C2 = 360 pF
C3 = 0,001µF
e_o = 500 mVtt
f_{osc} = 10 MHz
$n_s = n_p$ = 10 wdg. bif.
n_s' = 5 wdg. gewikkeld over n_s en n_p.



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455KHz CERAMIC FILTER for AM TRANSISTOR RADIOS

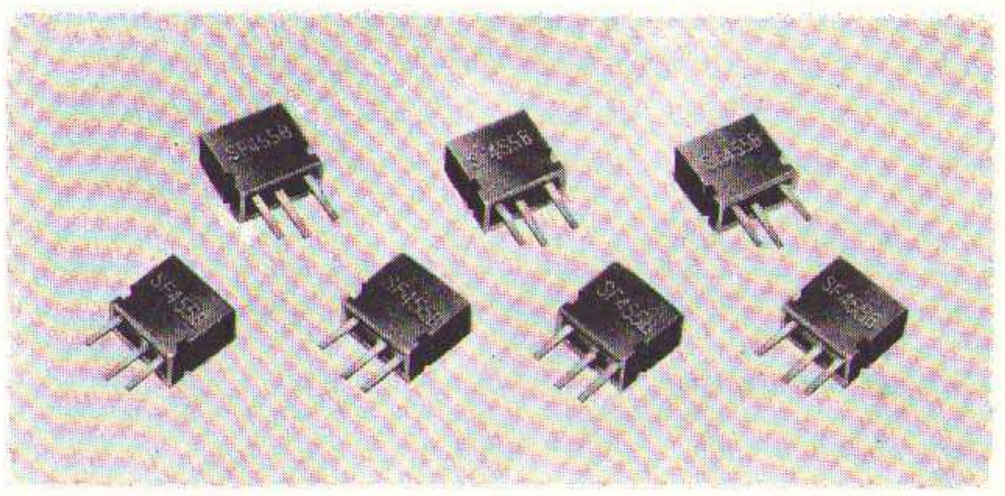
Ceramic Filter MODEL SF-455B for IFT Use

MODEL SF-455B is a resonance type filter of 455 KHz that replaces the transistor radio's IFT.

This ceramic filter has many merits such as small size, no alignment, high gain, low spurious level and low cost.

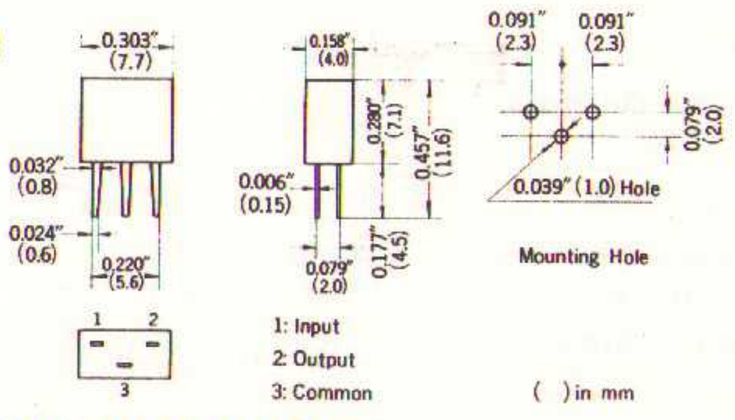
SPECIFICATIONS

Items	SF-455B
Center Frequency	455KHz±2KHz
3dB Band Width	10KHz±3KHz
Input and Output Impedance	3KΩ
Insertion Loss	5dB Max.
Frequency Stability Temperature	Within ±0.4% from −10°C to +80°C
Frequency Stability Time	Within 0.5% for 10 years
Working Voltage	50VDC



DIMENSIONS

Fig. 3



FREQUENCY CHARACTERISTIC

The frequency response curve of SF-455B is shown in Fig.2, when measured by the circuit of Fig. 1.

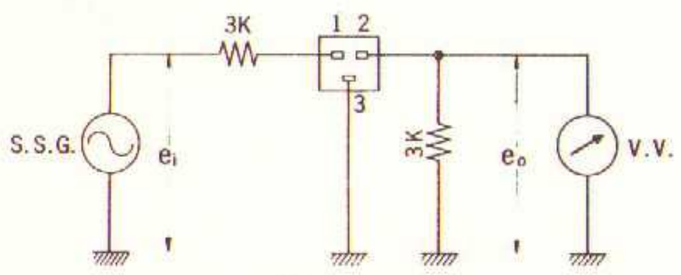


Fig. 1

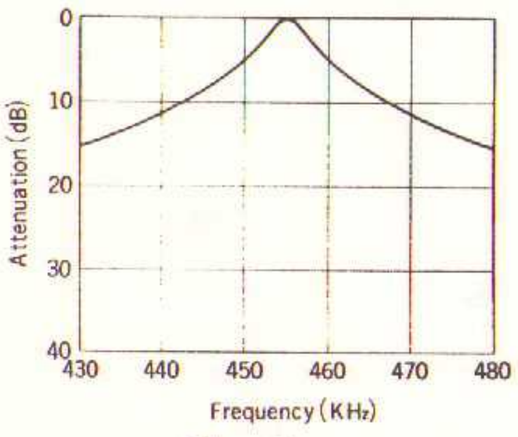


Fig. 2

SPURIOUS RESPONSE

The spurious response of SF-455B is shown in Fig.4.

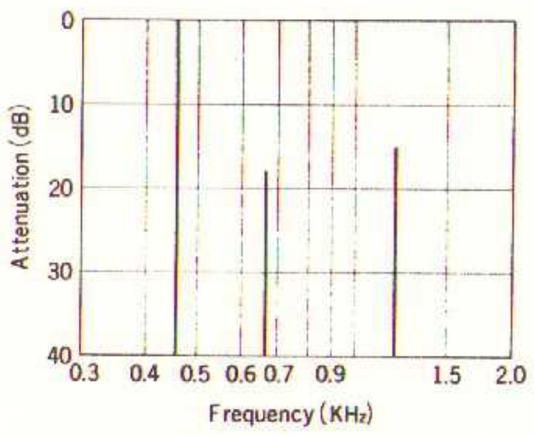


Fig. 4

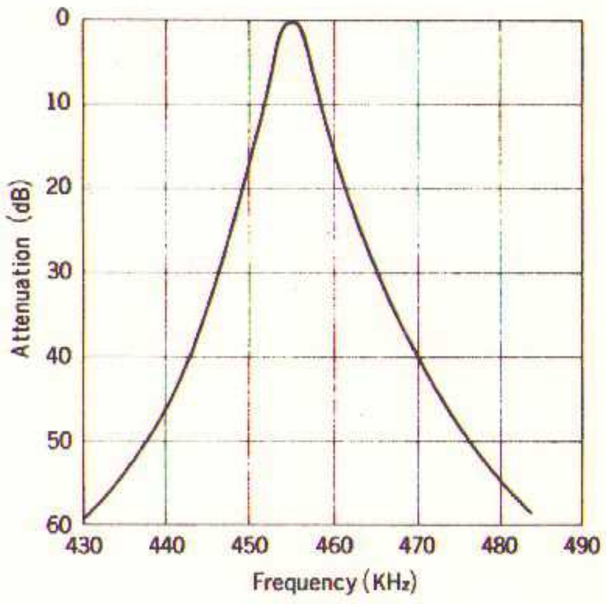


Fig .5

APPLICATION

I-F circuit with two SF-455B is shown in Fig. 6, and the characteristic obtained by the circuit is shown in Fig.5.

Moreover, with combined one BF-455A (a ceramic filter for emitter by-pass use), the better selectivity is obtained.

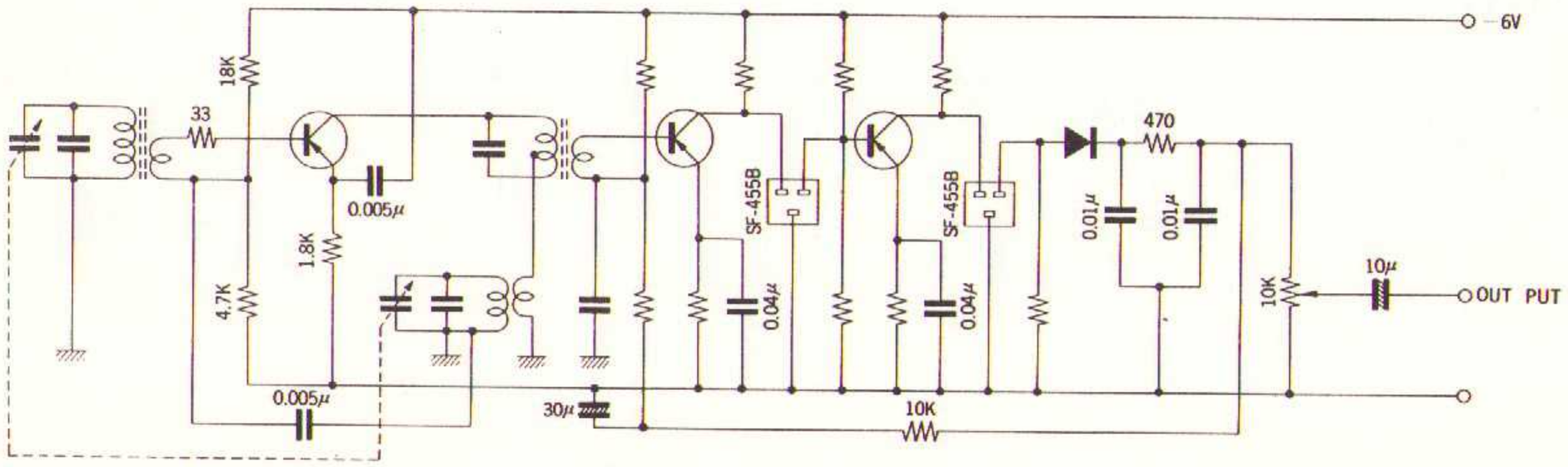
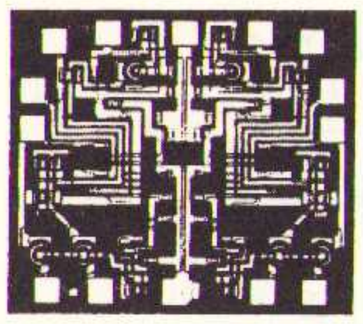


Fig. 6



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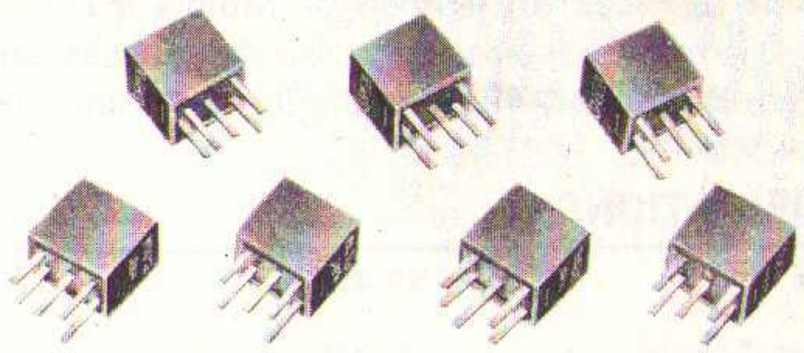
455KHz CERAMIC FILTER for AM TRANSISTOR RADIOS

Ceramic Filter MODEL SF-455D for IFT Use

MODEL SF-455D shows double peak resonance curve. Two resonators of SF-455B are combined by C coupling to obtain simultaneously top flat response and high selectivity.



SPECIFICATIONS

Items	SF-455D
Center Frequency	455KHz±2KHz
3dB Band Width	4.5KHz±1KHz
Selectivity	26dB Min. at −10KHz 20dB Min. at +10KHz
Ripple	1.5dB Max.
Input and Output Impedance	3KΩ
Insertion Loss	9dB Max.
Frequency Stability Temperature	Witnin ±0.4% from −10°C to +80°C
Frequency Stability Time	Within 0.5% for 10 years
Working Voltage	50VDC

FREQUENCY CHARACTERISTIC

The frequency response curve of SF-455D is shown in Fig. 8, when measured by the circuit of Fig. 7.

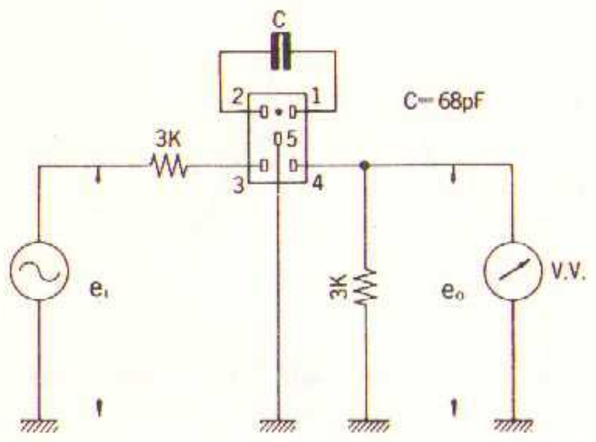


Fig. 7

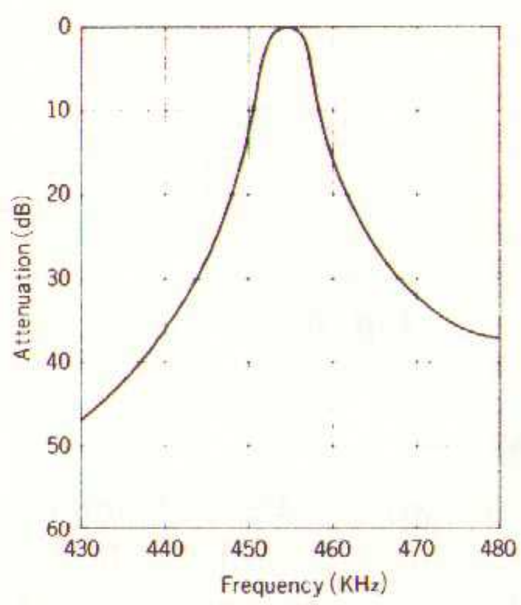


Fig. 8

DIMENSIONS

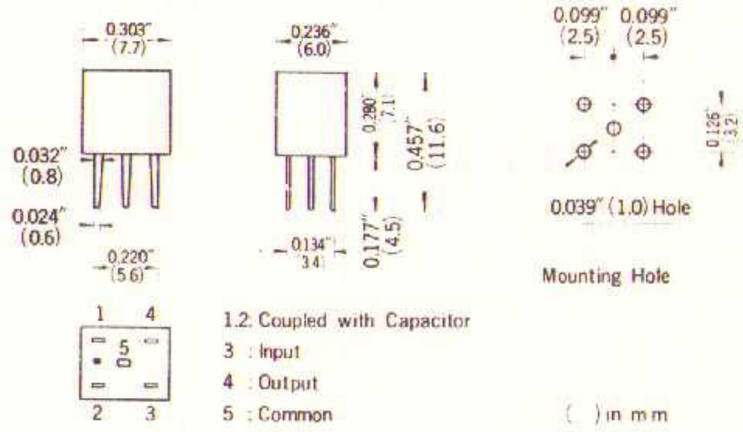


Fig. 9

APPLICATION

I-F circuit with SF-455D and BF-455A is shown in Fig. 10. BF-455A is used for the improvement of spurious level and selectivity in the first I-F stage emitter.

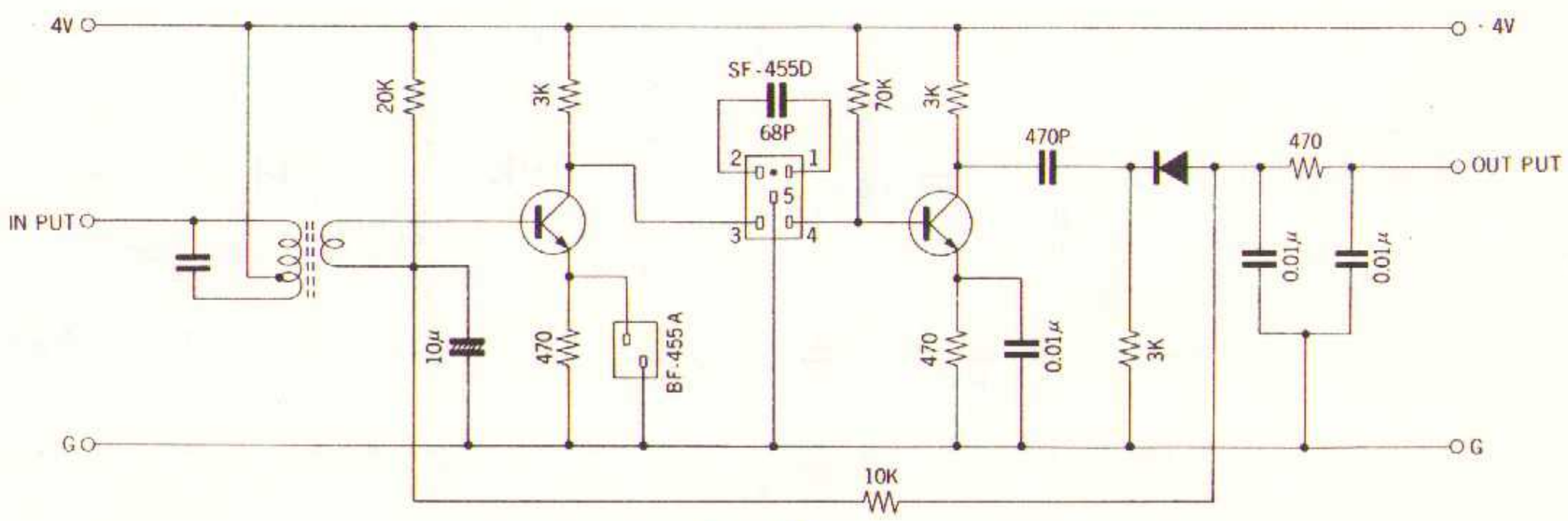
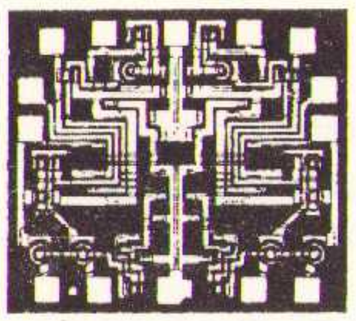


Fig. 10



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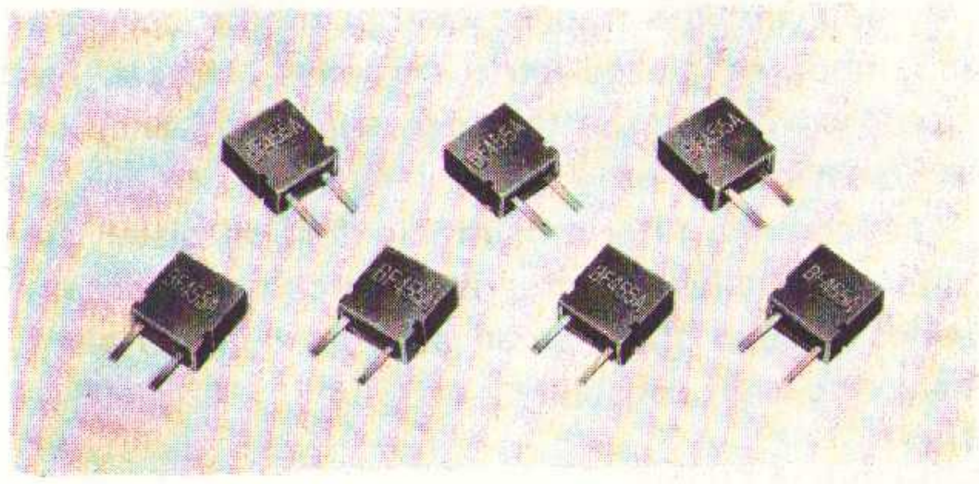
455KHz CERAMIC FILTER for AM RADIOS & TRANCEIVERS

Ceramic Filter MODEL BF-455A for Emitter By-pass Use

MODEL BF-455A improves selectivity by replacing emitter by-pass capacitors in transistor I-F stage.

This ceramic filter has long range reliability and simplifies circuit alignment procedure.



SPECIFICATIONS

Items	BF-455A
Center Frequency	455KHz±2KHz
3dB Band Width	8KHz±2KHz
Capacity	550pF±20%
Impedance at resonance	30Ω Max.
Frequency Stability Temperature	Within ±0.4% from −10°C to +80°C
Frequency Stability Time	Within 0.5% for 10 years
Working Voltage	50VDC

DIMENSIONS

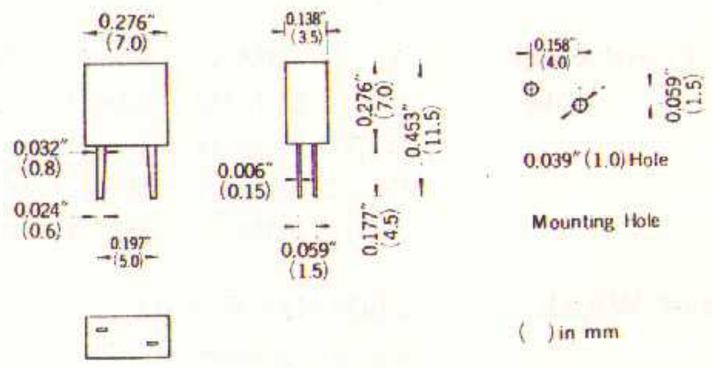


Fig. 15

FREQUENCY CHARACTERISTIC

The frequency response curve of BF-455A is shown in Fig. 17, when measured by the circuit of Fig. 16. In this case, the emitter current is 500 μA.

Fig. 16

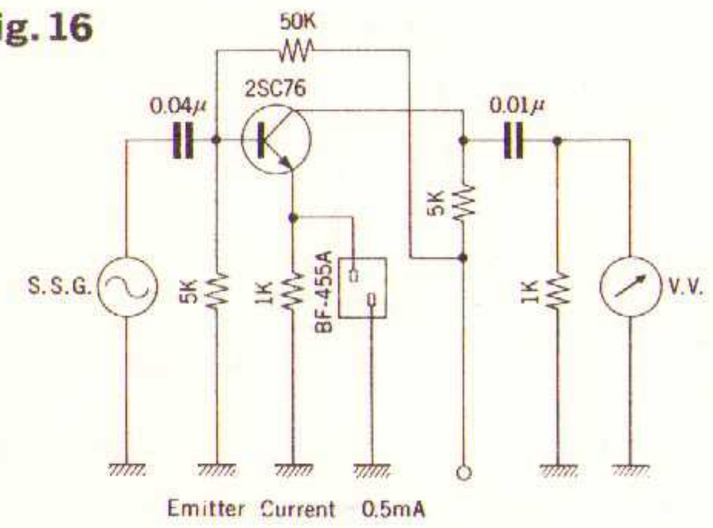
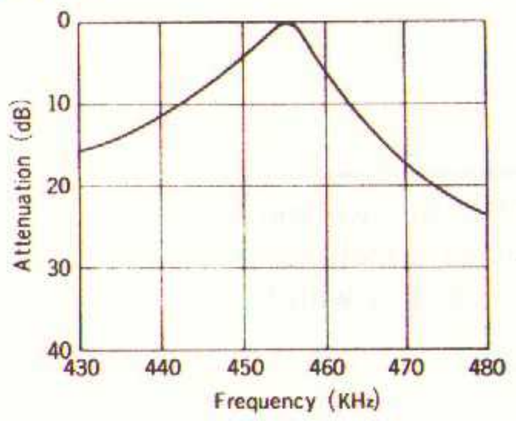


Fig. 17



APPLICATION

The selectivity of ordinary I-F transistor circuit can be considerably improved by the addition of one BF-455A as shown in Fig. 19.

The frequency response curve in this case is shown in Fig.18 in comparison with ordinary IFT. Moreover, by replacing a by-pass capacitor (0.04μF) in the second I-F stage with BF-455A, the higher selectivity can be obtained as shown in Fig. 18.

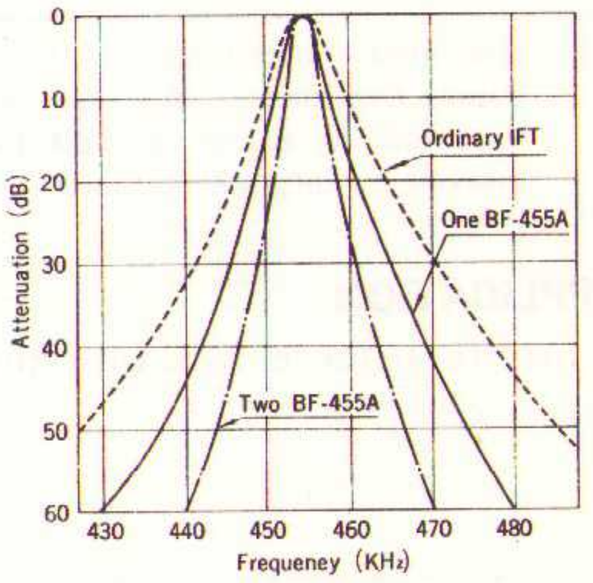
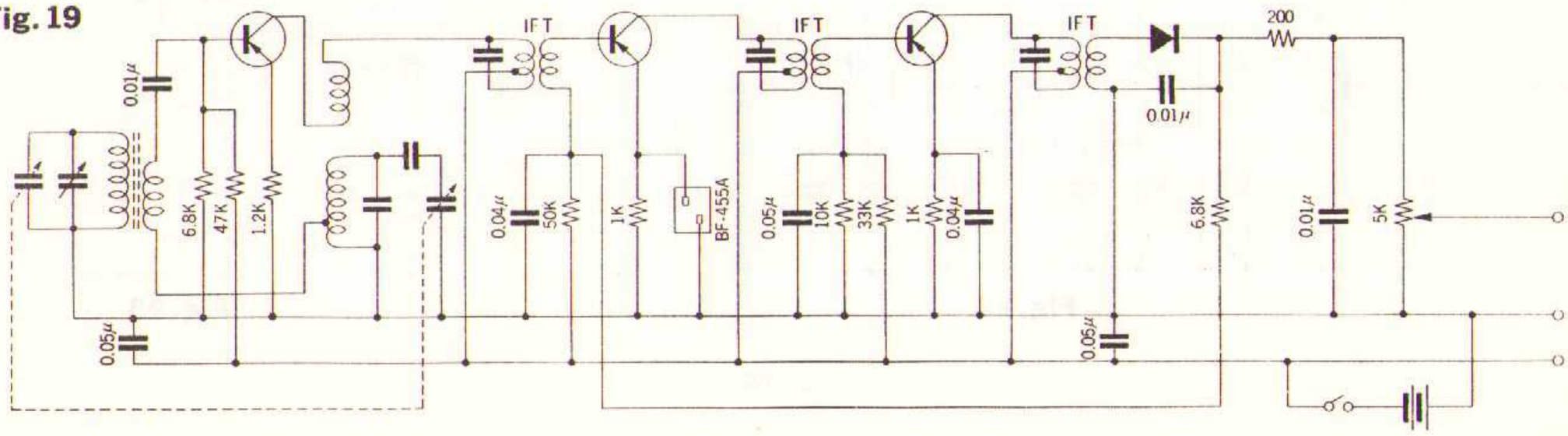


Fig. 18

Fig. 19



De ontbrekende figuren nummer 11, 12, 13 en 14 hebben betrekking op enkele niet in deze beschrijving opgenomen schakelingen en zijn weggelaten, daar ze voor de opgenomen filters niet van belang zijn.

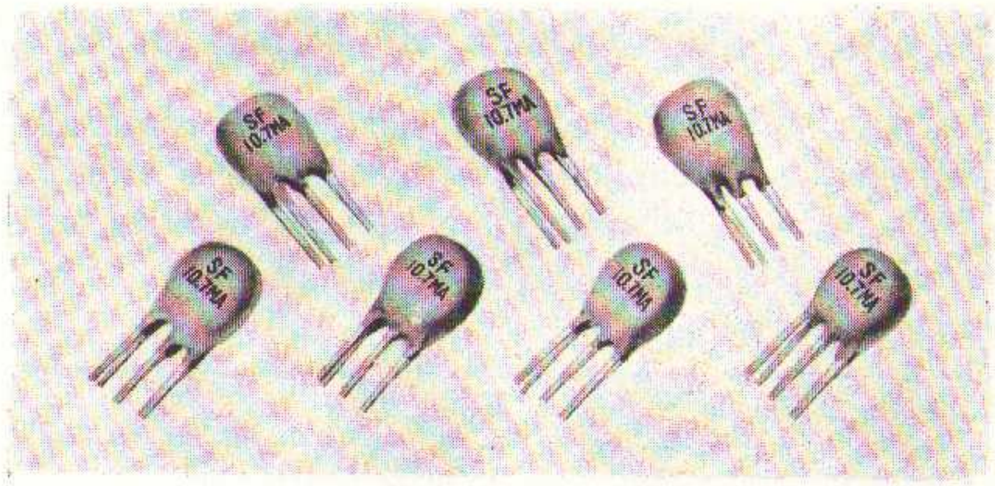
10.7MHz CERAMIC FILTER for FM TRANSISTOR RADIOS

Ceramic Filter MODEL SF-10.7MA

MODEL SF-10.7MA is the world's first trapped energy ceramic filter for FM transistor radios.

By applying the trapped energy theory on vibration mode to piezoelectric ceramics, Murata has succeeded in making this new high frequency ceramic filter.

This ceramic filter is suitable for transistor circuits, especially for integrated circuit, with many merits of solid state, small size, no coil, no alignment and high reliability.



SPECIFICATIONS

Items	SF-10.7MA
Center Frequency (Note)	A : 10.70MHz±35KHz (Red) B : 10.65MHz±35KHz (Black) C : 10.75MHz±35KHz (White) D : 10.60MHz±35KHz (Green) E : 10.80MHz±35KHz (Yellow)
3dB Band Width	250KHz±50KHz
20dB Band Width	650KHz Max.
Insertion Loss	12dB Max.
Input and Output Impedance	330Ω
Temperature Range	−20°C to +80°C
Working Voltage	50VDC

Note : The rated center frequency is 10.7 MHz. But we will supply five classes of center frequencies which determined as center of 3dB band width and which marked by different colours.

APPLICATION

The transistor circuit with three SF-10.7 MA is shown in Fig. 22.

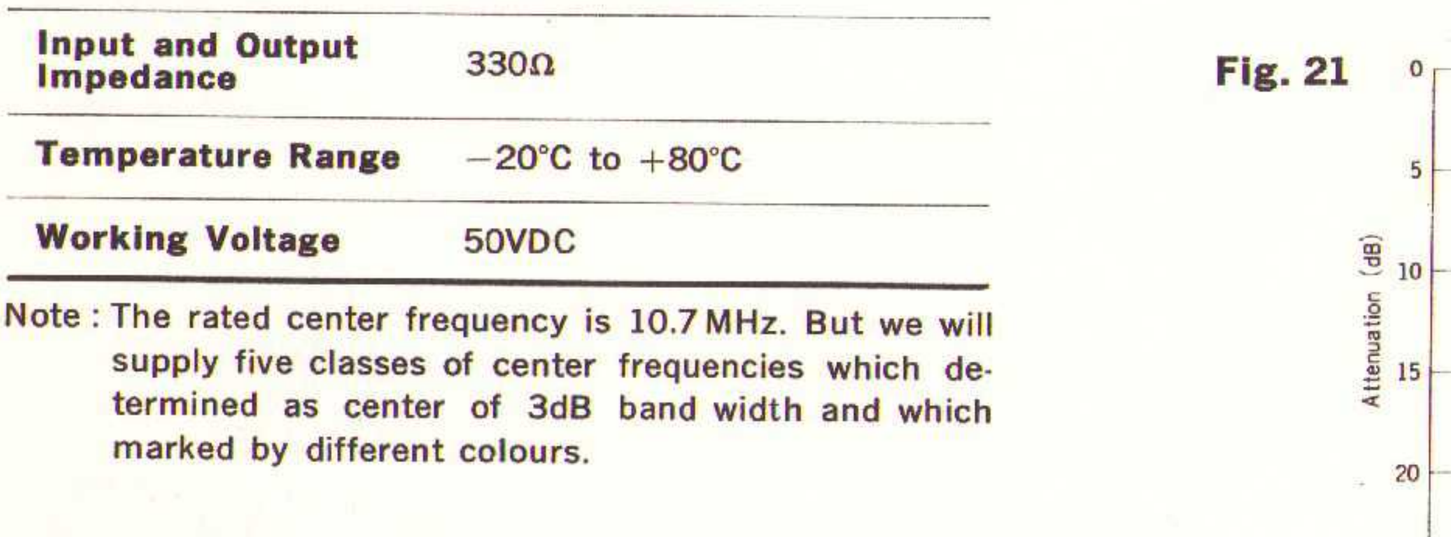
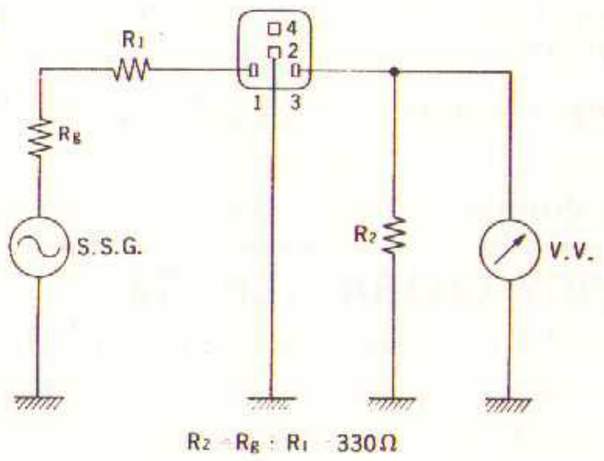


Fig. 22

FREQUENCY CHARACTERISTIC

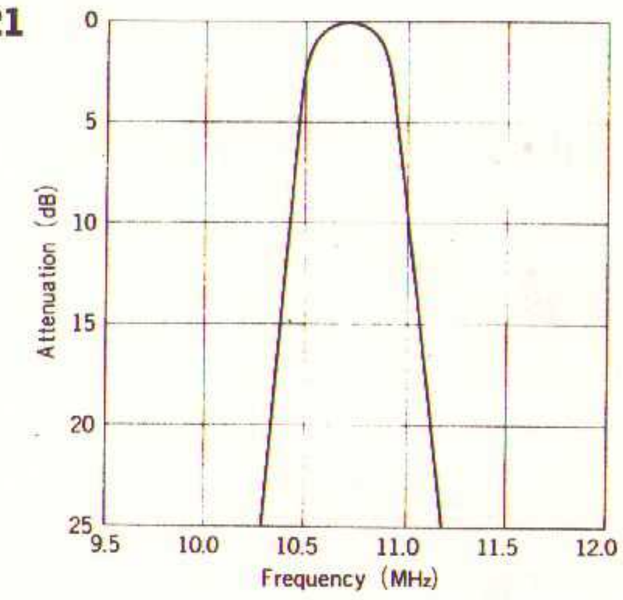
The frequency response curve of SF-10.7 MA is shown in Fig. 21, when measured by the circuit of Fig. 20.

Fig. 20



R2 = Rg = R1 = 330Ω

Fig. 21



DIMENSIONS

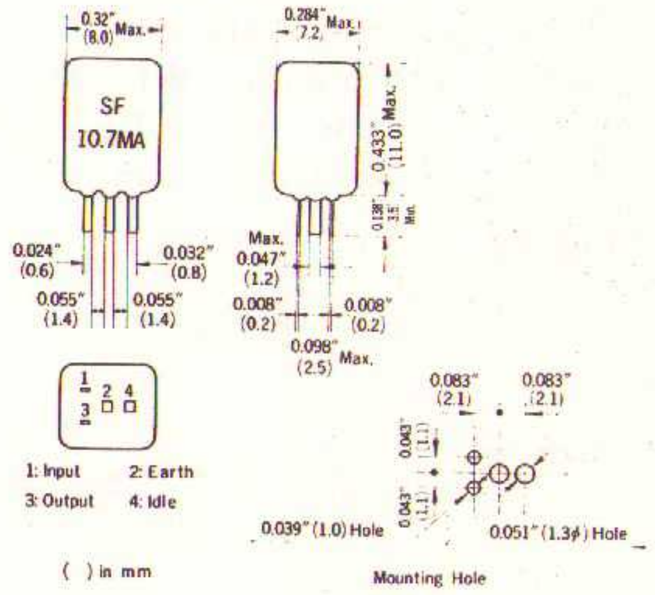


Fig. 23

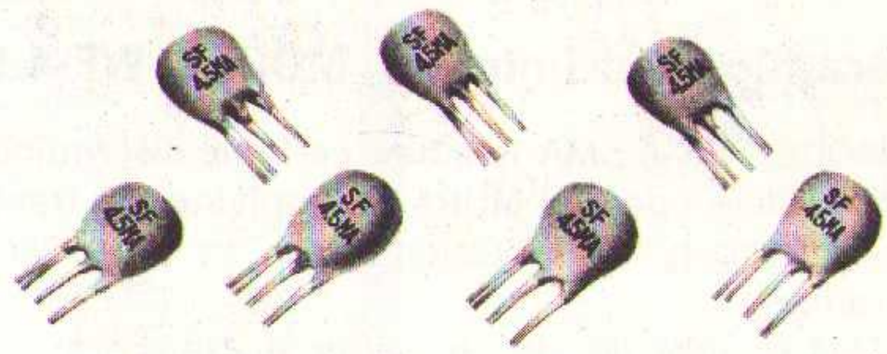
4.5MHz CERAMIC FILTER for TRANSISTOR TVs

Ceramic Filter MODEL SF-4.5MA for SOUND I-F in TV.

MODEL SF-4.5 MA is the world's first trapped energy ceramic filter for sound I-F in transistor TVs.

This filter is fixed tuned and needs no alignment.

This is ideal for transistor circuits, especially for integrated circuits.



SPECIFICATIONS

Items	SF-4.5MA
Center Frequency	4.5MHz±30KHz
3dB Band Width	120KHz Min.
20dB Band Width	450KHz Max.
Insertion Loss	10dB Max.
Input and Output Impedance	1KΩ
Temperature Range	−20°C to +80°C
Working Voltage	50VDC

FREQUENCY CHARACTERISTIC

The frequency response curve of SF-4.5 MA is shown in Fig.25, when measured by the circuit of Fig.24.

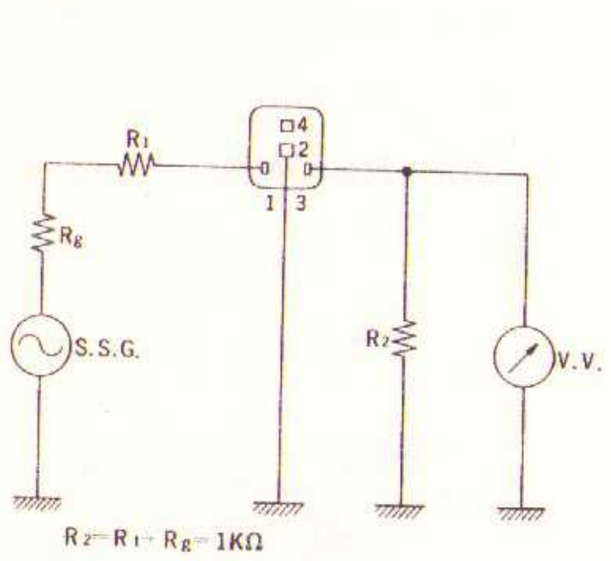


Fig. 24

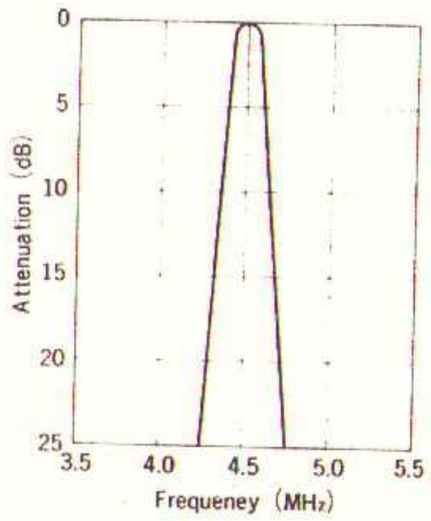


Fig. 25

DIMENSIONS

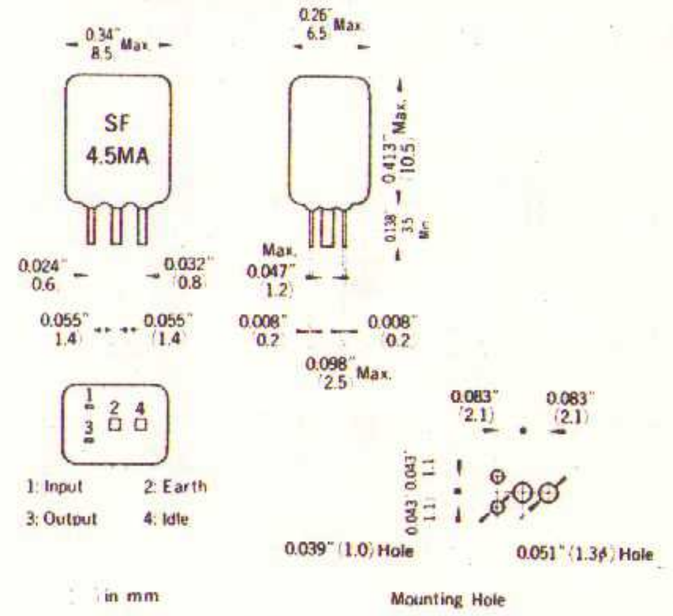
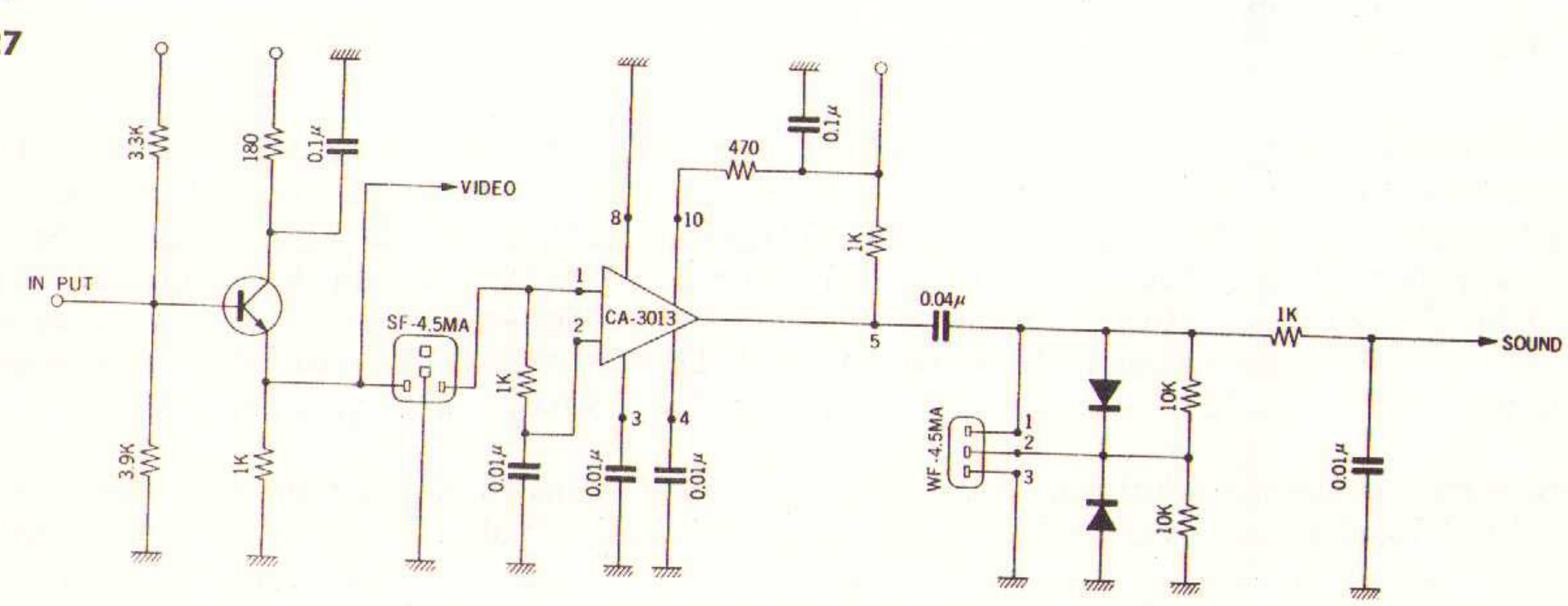


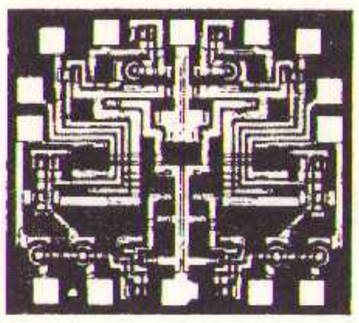
Fig. 26

APPLICATION

Sound I-F circuit with SF-4.5MA and WF-4.5MA (4.5MHz ceramic discriminator in TV) is shown in Fig.27.

Fig. 27





Van Dam Elektronica, Snellemanstraat 10-11, Rotterdam-noord
telefoon: 010-240812-243497, administratie: 010-245516.
Postgiro: 295550 Bank: AMRO-bank, Middellandstraat, R'dam.
Postorders en correspondentie aan: Postbus 3149 te Rotterdam

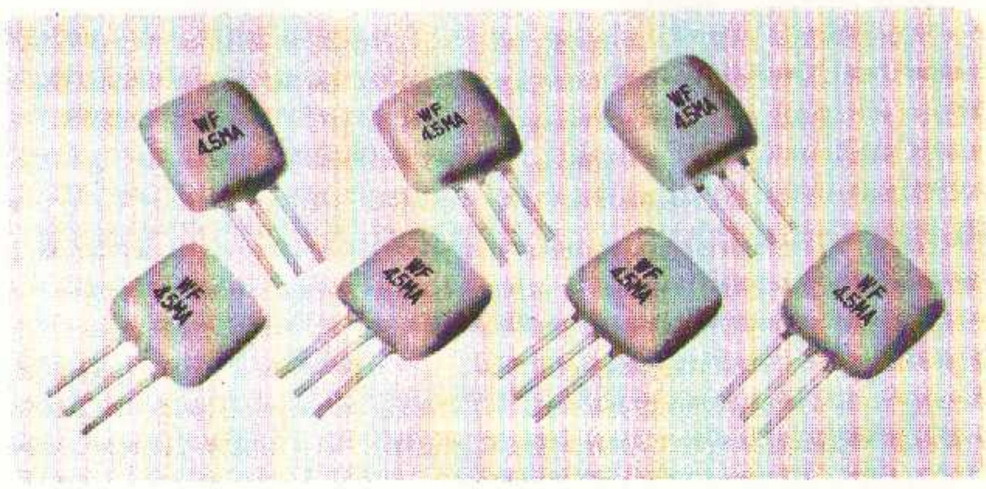
Van Dam Elektronica, Reguliersgracht 105, Amsterdam, telefoon: 020-248967.

4.5MHz CERAMIC DISCRIMINATOR for TRANSISTOR TVs

Ceramic Discriminator MODEL WF-4.5MA

MODEL WF-4.5MA is a new ceramic discriminator in TVs developed by MURATA, applying the trapped energy theory on vibration mode to piezoelectric ceramics.

This is ideal for discriminator in transistor TVs.



SPECIFICATION

Items	WF-4.5MA
Center Frequency	4.5MHz±15KHz
Peak Separation	±50KHz Min.
Sensitivity	12mv/KHz Min.
Temperature Range	−20°C to +80°C
Working Voltage	50VDC

FREQUENCY CHARACTERISTIC

The frequency response curve of discriminator WF-4.5MA is shown in Fig. 29, when measured by the circuit of Fig. 28.

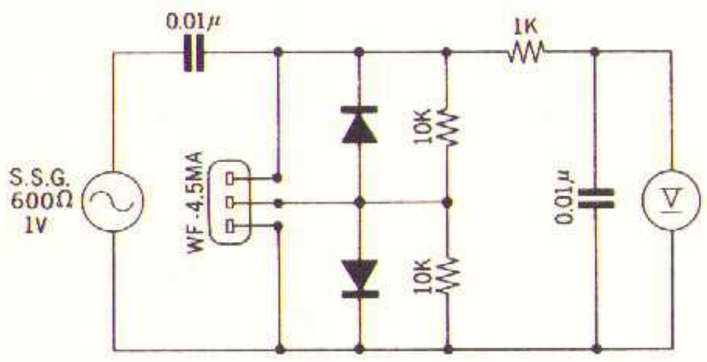


Fig. 28

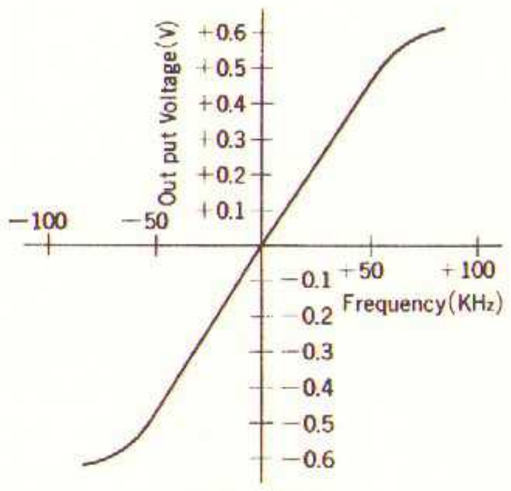
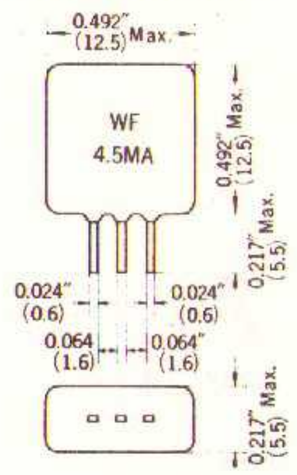


Fig. 29

DIMENSIONS



( ) in mm

Fig. 30

APPLICATIONS

Please refer to I-F sound circuit as shown in Fig.27. on Page 17.

Met deze keramische filters van het bekende fabrikaat MURATA zijn diverse technisch interessante mogelijkheden aanwezig. Zo kan o.a. als versterkend element gebruik worden gemaakt van de geïntegreerde schakelingen LM703L en de CA3012 (voor deze laatste zie onze technische documentatie 1969, februarinummer blz. 14 t/m 19). Bij de FM kan als HF-deel worden gebruik gemaakt van de Görler fet-tuner met condensatorafstemming of de nieuwe uitvoering met varicaps. Het is ook mogelijk voor dit deel gebruik te maken van geïntegreerde schakelingen, zoals de CA3018, CA3028, e.d.

Voor een serie toepassingen van geïntegreerde schakelingen verwijzen wij naar het boek "Praktische toepassingen van geïntegreerde schakelingen" door dHr. J. Bron (uitgeverij de MuiderkringN.V.). Dit boekje bevat circa 24 interessante schakelingen. Voor de prijs van dit boek zie ook blz. 24 van deze beschrijving.

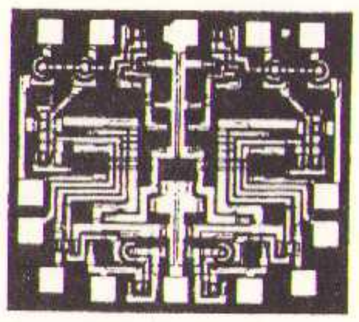
SILICIUM

SILICON

THYRISTORS 1,6 A

1.6A CONTROLLED RECTIFIERS

10 T 4 14 T 4
11 T 4 15 T 4
12 T 4 16 T 4
13 T 4 17 T 4



V A N D A M E L E K T R O N I C A

Rotterdam-noord
Snellemanstraat 11
bij Zwaanshals
Tel. 010-240812
010-243497
Giro: 295550
Adm. 010-245516

Amsterdam
Reguliersgracht 105
bij Frederiksplein
Tel. 020-248967
Postorders e.d.
alléén via post-
bus 3149 te R'dam.

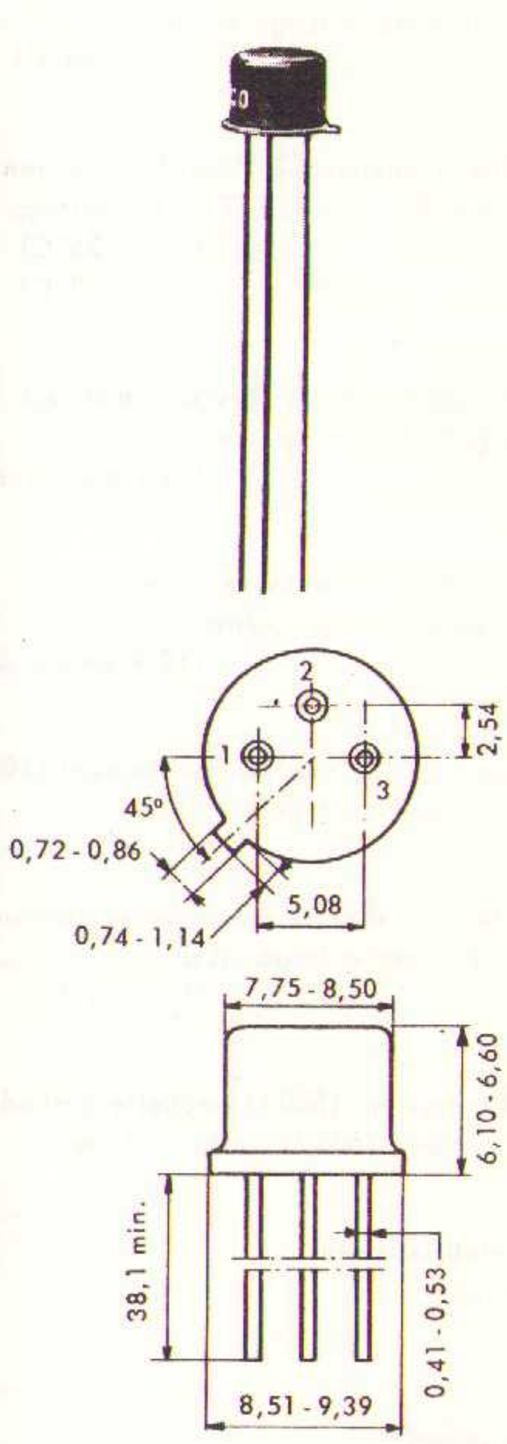
Les thyristors au silicium de la série 10 T 4 à 17 T 4 sont destinés aux applications industrielles.

- **Courant direct efficace : 1,6 A (25° C boîtier)**
- **Tension de 25 V à 400 V**
- **Puissance moyenne de commande : 10 mW**

These SCR'S (10 T 4 to 17 T 4) are designed for industrial applications.

- *RMS forward current 1.6 A (25° C case)*
- *Voltage from 25 V to 400 V*
- *Average gate power : 10 mW*

LIMITES ABSOLUES D'UTILISATION A 25° C (ambiante) (sauf spécifications contraires) ABSOLUTE MAXIMUM RATINGS AT 25° C (ambient) (unless otherwise specified)	SYMBOLES SYMBOLS	10 T 4	11 T 4	12 T 4	13 T 4	14 T 4	15 T 4	16 T 4	17 T 4	UNITES UNITS
Tension directe au-delà de laquelle l'amorçage peut se produite *Minimum forward breakover voltage* (R ⩽ 500 Ω entre gâchette et cathode) (R ⩽ 500 Ω gate-cathode) (t_J = - 20° C + 100° C)	V_{BR}	25	50	100	150	200	250	300	400	V
Tension inverse de crête instantanée *Repetitive peak reverse voltage* (t_J = - 20° C + 100° C)	V_{ROM}	25	50	100	150	200	250	300	400	V
Courant direct efficace (25° C boîtier) *RMS forward current (25° C case)*	I_{eff}	← 1,6 →								A
Surintensité non récurrente sur charge résistive 10 ms (½ période d'un réseau 50 Hz) *Peak (½ Hz) surge current non repetitive 50 Hz*	I_{FS}	← 15 →								A
Surintensité crête récurrente *Repetitive peak surge current* (20 µs f = 200 Hz)	I_{FS}	← 20 →								A
Courant instantané applicable à la gâchette *Peak gate current*	I_{GM}	← 100 →								mA
Valeur de la tension directe et inverse entre gâchette et cathode (anode ouverte) *Peak gate voltage (forward and reverse) (open anode)*	V_{GM}	← 6 →								V
Température de la jonction en fonctionnement *Junction operating temperature*	t_j	← - 20 + 100 →								°C
Température de stockage *Storage temperature*	t_{stg}	← - 40 + 125 →								°C



Dimensions en mm

1 = Cathode
2 = Gâchette (gate)
3 = Anode

Anode réunie au boîtier
Anode connected to case

Boîtier : JEDEC TO 5
Package CEI C4B4A
F 17

Marquage : en clair
Marking : numerals indicate type numbers
Poids : ≅ 1 g
Weight :

Homologation Registration			Liste préférentielle Referenced by				
TYPES	MARINE	CCT	OTAN	GAMT	CNET*	CEA	ORTF

*** Socotel - Sotelec**

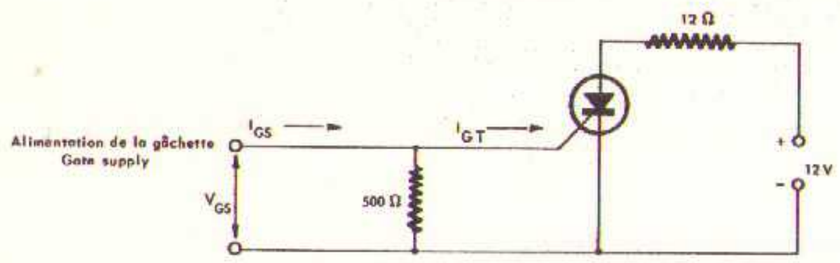
3. 6207.7

CARACTERISTIQUES ELECTRIQUES A $t_J = 25°C$ (sauf indications contraires) ELECTRICAL CHARACTERISTICS AT $t_J = 25°C$ (unless otherwise specified)	SYMBOLES SYMBOLS	10 T 4 à 17 T 4 Min	Moy Typ	Max	UNITES UNITS
Courant inverse maximum à la tension inverse crête maximum PRV (500 Ω entre gâchette-cathode) *Maximum reverse leakage current at PRV (500 Ω gate-cathode)*	I_R		5	25	µA
Courant inverse maximum à la tension inverse crête maximum PRV (500 Ω entre gâchette et cathode) *Maximum reverse leakage current at PRV (500 Ω gate-cathode)* **(t_J = 100° C)**	I_R		40	250	µA
Courant direct maximum à l'état bloqué (tension directe = V_{BR}; 500 Ω entre gâchette et cathode) *Forward blocking current (forward voltage = V_{BR}; 500 Ω gate-cathode)* **(t_J = 25° C)**	I_{FX}		5	25	µA
(t_J = 100° C)	I_{FX}		40	250	µA
Courant minimum nécessaire à l'amorçage * *Minimum gate current to fire* **(12 V anode-cathode; R_L = 12 Ω; R_{GK} = 500 Ω)**	I_{GS}		1	10	mA
Tension minimum nécessaire à l'amorçage *Minimum gate voltage to fire* **(12 V anode-cathode; R_L = 12 Ω; R_{GK} = 500 Ω)**	V_{GT}		0,6	3	V
Tension gâchette de non déclenchement (100° C) *Gate non trigger voltage 100° C*	V_{GNT}			0,1	V
Chute de tension directe maximum instantanée *Maximum forward voltage drop* **(I_F = 1 A)**	V_{FM}		1,7	2	V
Courant d'entretien (500 Ω gâchette-cathode) *Holding current (500 Ω gate-cathode)*	I_{HX}		1,5		mA
Temps d'établissement *Turn-on time* **(I_F max. 1 A)**	t_{on}		1,4		µs
Temps de retard *Delay time* **(I_F = 1 A)**	t_d		0,6		µs
Temps de montée *Rise time* **(I_F = 1 A)**	t_r		0,8		µs
Temps de désamorçage (500 Ω entre gâchette et cathode) *Turn-off time (500 Ω gate-cathode)* **(I_F = 1 A; I_R = 1 A)**	t_{off}		20		µs

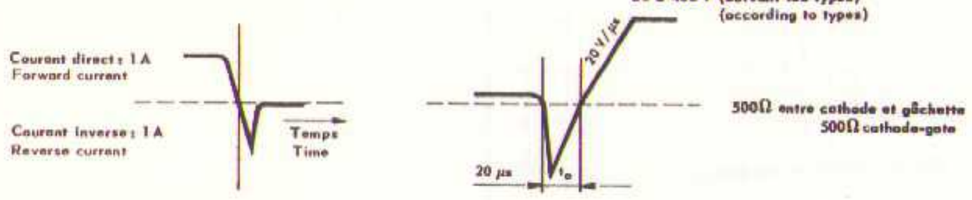
* **Voir circuit d'entrée ci-après.**
See input circuit (next page)

Dank zij de kleine afmetingen is deze thyristor uitermate geschikt voor o.a. beveiliging van voedingen en kleine besturingsinstallaties. Gezien het ruime toepassingsgebied van het type 12T4 hebben wij deze aan ons leveringsprogramma toegevoegd.

CIRCUIT D'ENTREE
INPUT CIRCUIT



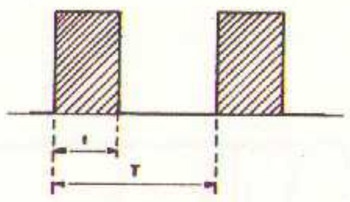
CONDITIONS DE MESURE DU TEMPS DE DESAMORÇAGE
TURN OFF TIME TEST CONDITIONS



Variation du courant dans le thyristor
Current waveform through SCR

Variation de la tension aux bornes du thyristor
Voltage waveform between anode-cathode

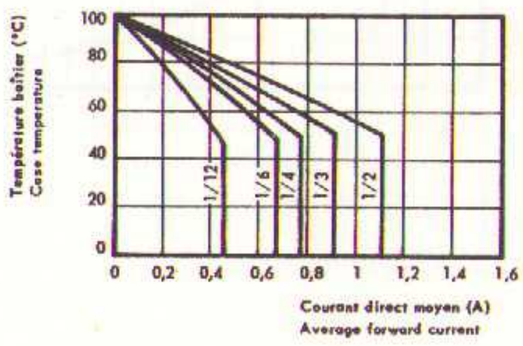
COURANT RECTANGULAIRE 50 A 400 Hz
(charge inductive)
SQUARE WAVE CURRENT 50 TO 400 Hz
(inductive load)



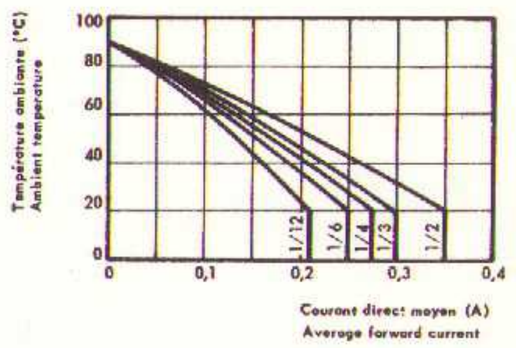
Facteur de forme = $\frac{t}{T}$
Duty cycle

Puissance de commande 100 mW
Power gate drive

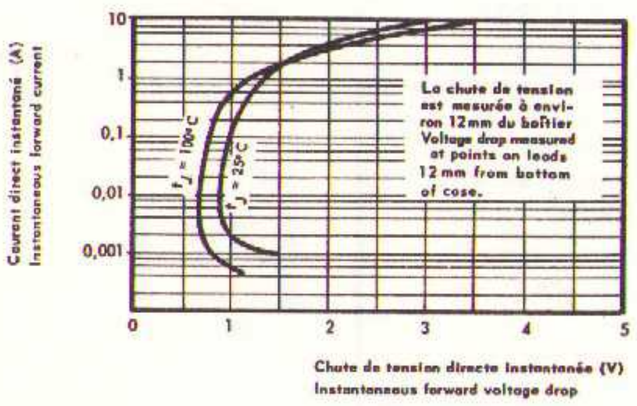
COURANT DIRECT MOYEN EN FONCTION
DE LA TEMPERATURE DU BOITIER
POUR DIFFERENTS FACTEURS DE FORME
AVERAGE FORWARD CURRENT
VERSUS CASE TEMPERATURE
FOR VARIOUS DUTY CYCLES



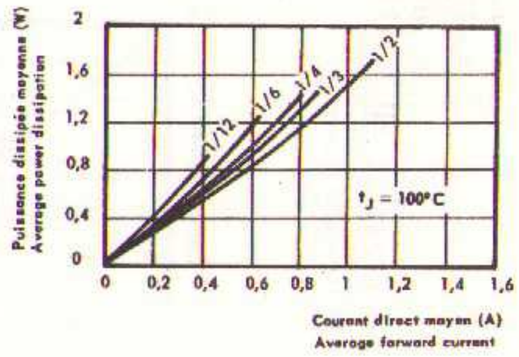
COURANT DIRECT MOYEN EN FONCTION
DE LA TEMPERATURE AMBIANTE
POUR DIFFERENTS FACTEURS DE FORME
AVERAGE FORWARD CURRENT
VERSUS AMBIENT TEMPERATURE
FOR VARIOUS DUTY CYCLES



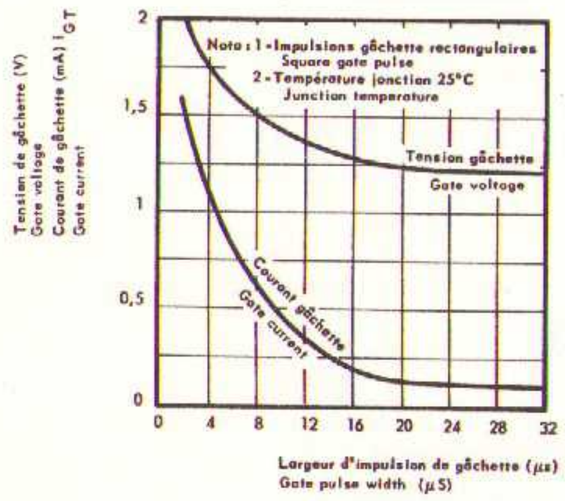
CARACTERISTIQUES DIRECTES INSTANTANEES
INSTANTANEOUS FORWARD CHARACTERISTICS



PUISSANCE DISSIPEE EN FONCTION DU COURANT
MOYEN POUR DIFFERENTS FACTEURS DE FORME
POWER DISSIPATION VERSUS AVERAGE CURRENT
FOR VARIOUS DUTY CYCLES



COURANT ET TENSION DE GACHETTE
EN FONCTION DE LA LARGEUR DE L'IMPULSION
GATE CURRENT AND VOLTAGE VERSUS PULSE WIDTH



COURANT SINUSOIDAL 50 A 400 Hz
(sur charge résistive ou inductive)
SINE WAVE CURRENT 50 TO 400 Hz
(resistive or inductive load)

Temps de montée ⩾ 5 µs

Si le temps de montée est inférieur à 5µs, diminuer la température de :

$\Delta t_C = 13\ F \times Im\ Vm \times 10^{-6}$ (température boîtier)

$\Delta t_A = 110\ F \times Im\ Vm \times 10^{-6}$ (température ambiante) avec Δt en °C

F = fréquence du réseau (Hz)

Vm = tension bloquée avant commutation (V)

Im = courant momentané après commutation (A)

Rise time ⩾ 5 µS

If rise time is <5µS, derate the temperature of:

$\Delta t_C = 13\ F \times ImVm \times 10^{-6}$ *(case temperature)*

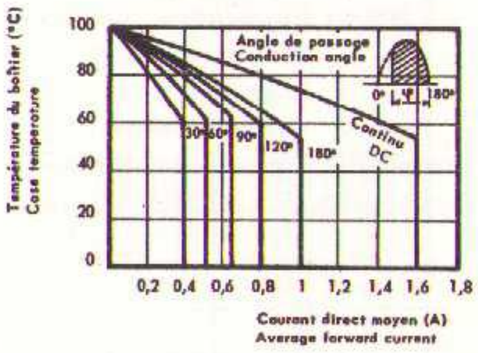
$\Delta t_A = 110F \times Im\ Vm \times 10^{-6}$ *(ambient temperature) with Δt in °C*

F = line frequency (Hz)

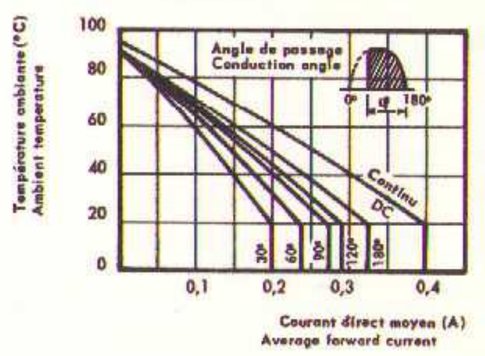
Vm = blocked voltage before turn on (V)

Im = instantaneous current after turn on (A)

COURANT DIRECT MOYEN EN FONCTION
DE LA TEMPERATURE DU BOITIER
POUR DIVERS ANGLES DE PASSAGE
AVERAGE FORWARD CURRENT VERSUS
CASE TEMPERATURE FOR
VARIOUS CONDUCTION ANGLES



COURANT DIRECT MOYEN EN FONCTION
DE LA TEMPERATURE AMBIANTE
POUR DIVERS ANGLES DE PASSAGE
AVERAGE FORWARD CURRENT VERSUS
AMBIENT TEMPERATURE FOR
VARIOUS CONDUCTION ANGLES

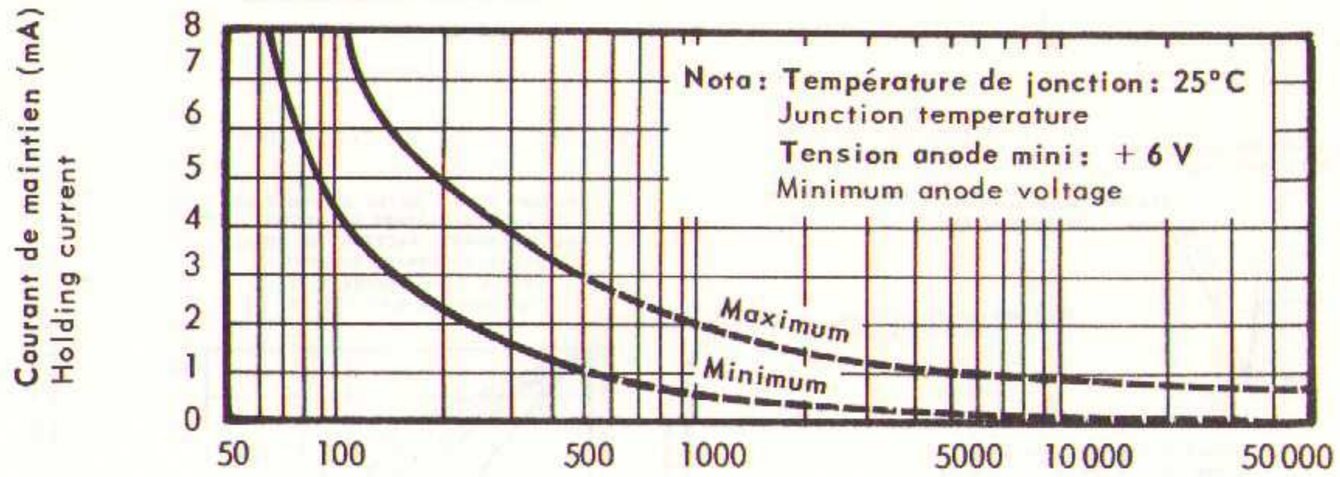


COURANT DE GACHETTE EN FONCTION
DE LA TEMPERATURE DE JONCTION
GATE CURRENT VERSUS
JUNCTION TEMPERATURE

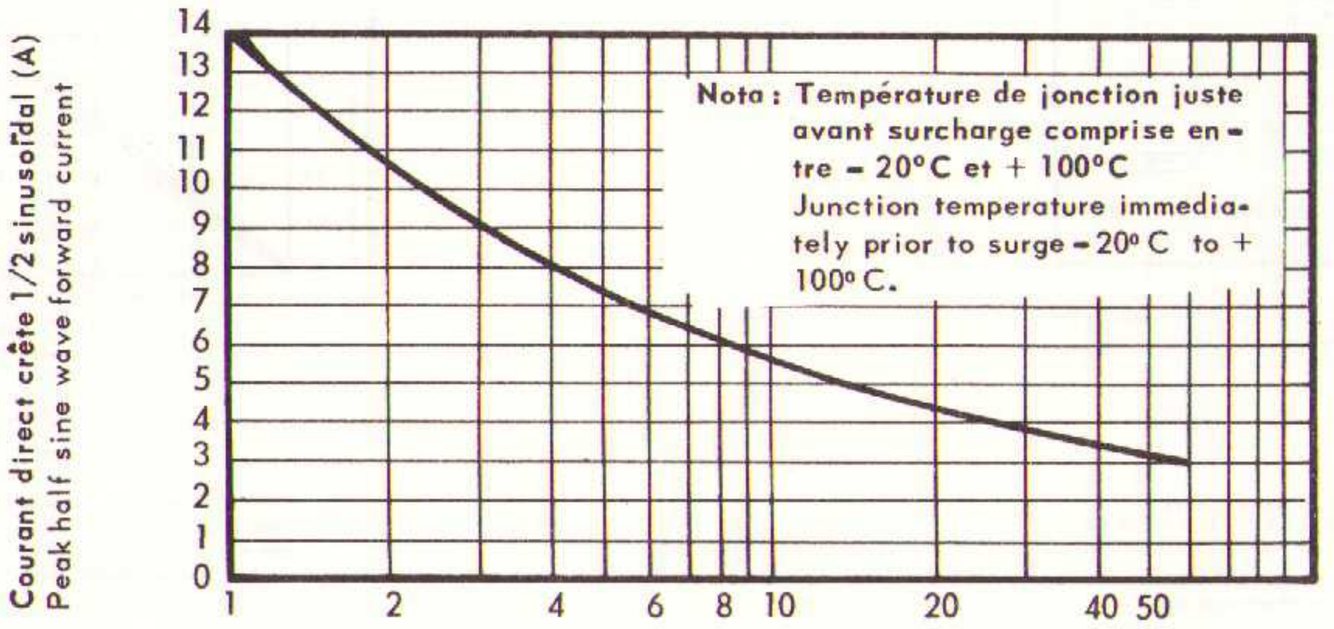
TENSION DE GACHETTE EN FONCTION
DE LA TEMPERATURE DE JONCTION
GATE VOLTAGE VERSUS
JUNCTION TEMPERATURE

PUISSANCE DISSIPEE EN DIRECT EN FONCTION
DU COURANT MOYEN POUR DIVERS ANGLES DE PASSAGE
FORWARD POWER DISSIPATION VERSUS
AVERAGE CURRENT FOR VARIOUS CONDUCTION ANGLES

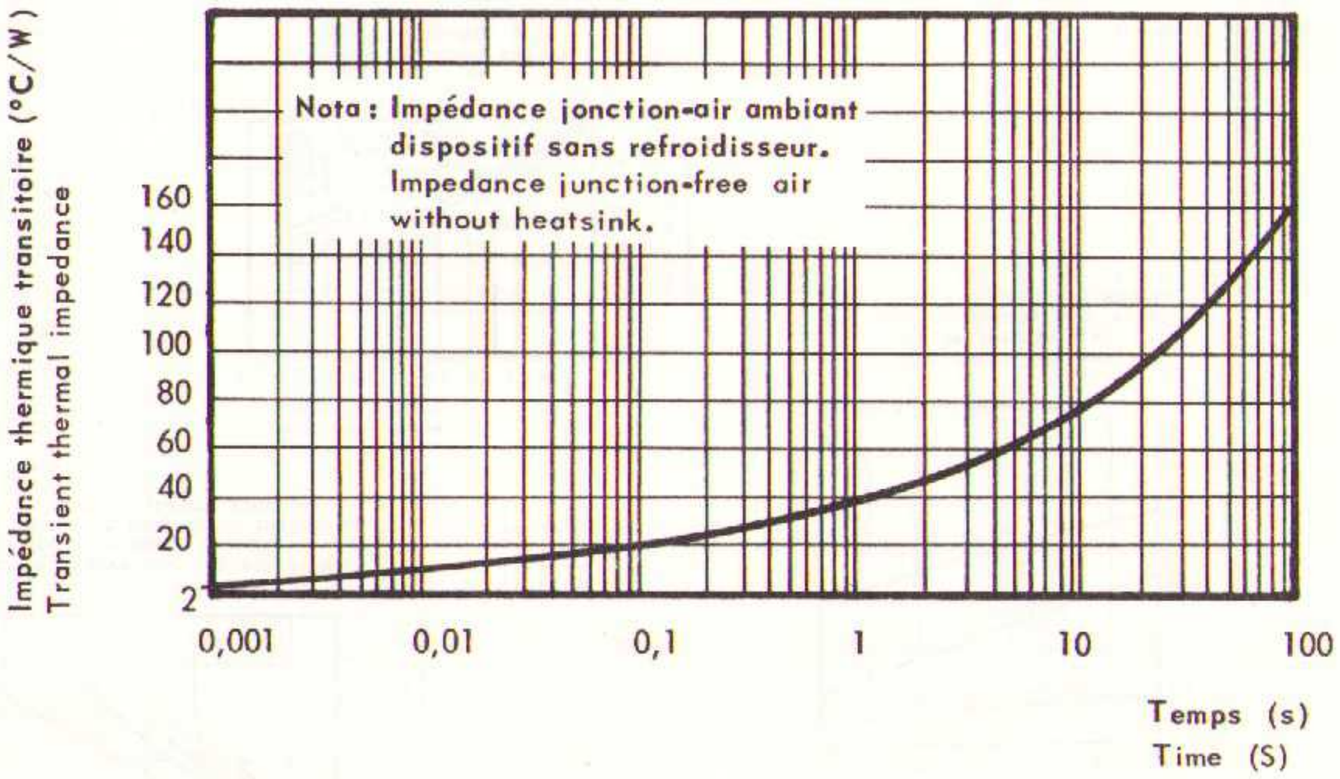
COURANT DE MAINTIEN EN FONCTION DE LA RESISTANCE DE GACHETTE
HOLDING CURRENT
VERSUS GATE RESISTOR



SURCHARGE MAX. ADMISSIBLE - NON RECURRENTE
MAXIMUM ALLOWABLE NON RECURRENT PEAK SURGE



IMPEDANCE THERMIQUE TRANSITOIRE MAX.
TRANSIENT THERMAL IMPEDANCE

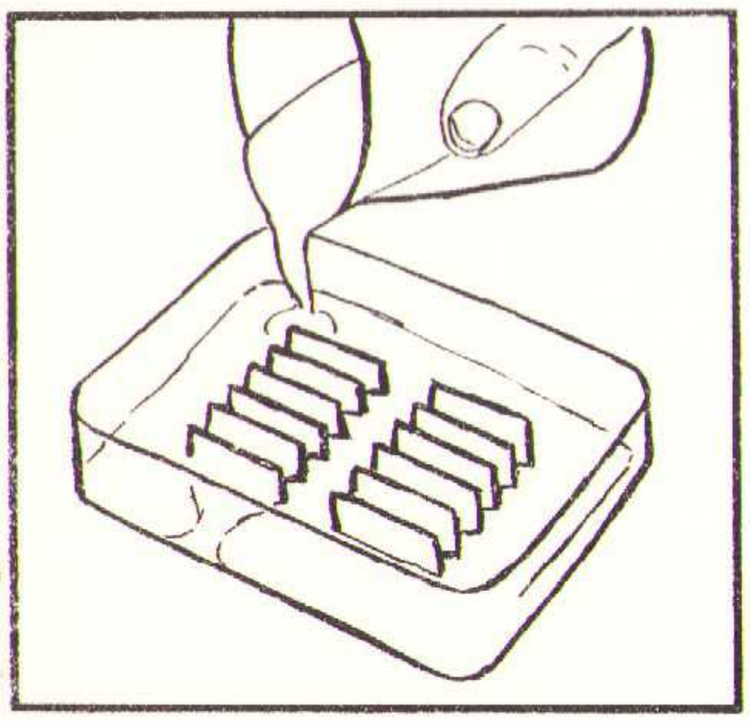


POLYTRONIC

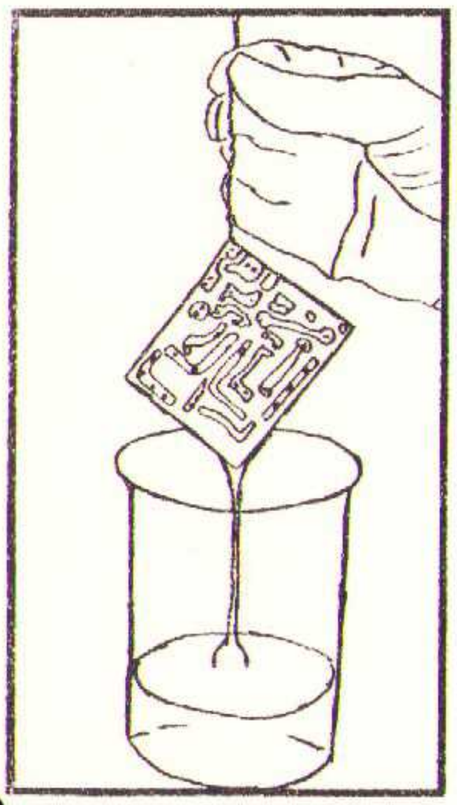
NIEUW

GIETHARS VOOR ELEKTRONISCHE TOEPASSINGEN

POLYTRONIC wordt aanbevolen voor de isolatie en bescherming van gedrukte schakelingen, antennefilters, hoogspanningsspoelen en kabelverbindingen.
Na toevoeging van de verharder is de hars gereed voor gebruik en dient, afhankelijk van de temperatuur, binnen 60-70 minuten te worden verwerkt. De viskositeit is zodanig gekozen dat luchtbellen, welke kunnen ontstaan tijdens het toevoegen van de verharder, uit de hars ontwijken voor de verharding aanvangt.

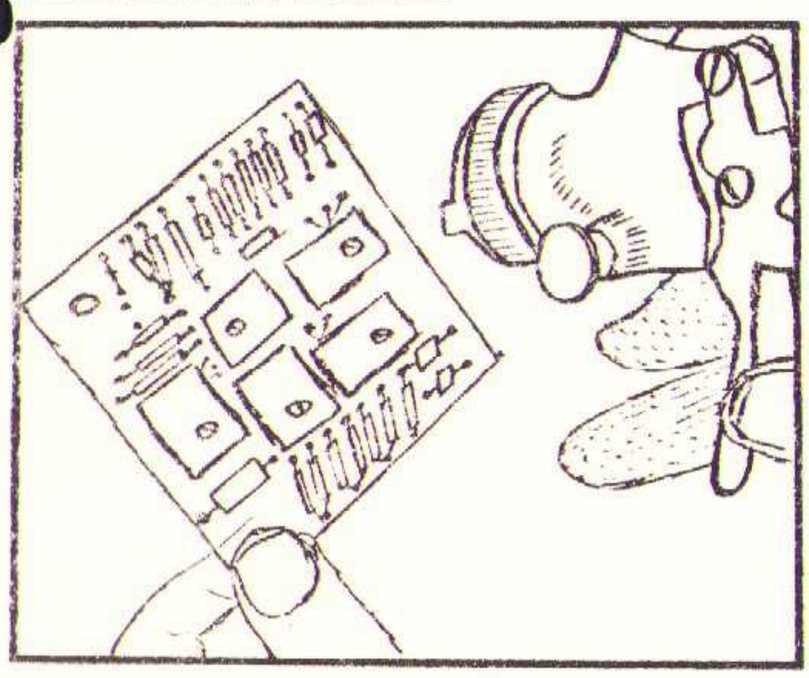


GIETEN : De aangemaakte hars kan in mallen van polyetheen en P.V.C. worden gegoten zonder dat deze een speciale voorbehandeling behoeven. Na verharding kan de mal zonder moeite worden verwijderd. In andere mallen dient POLYTRONIC PARTING AGENT te worden aangebracht welke voor het gieten goed droog moet zijn. Het gieten van blokken met een inhoud welke groter is dan 500 ccm dient in gedeelten te geschieden.



DOMPELEN : Het te isoleren voorwerp aan een dunne draad in de aangemaakte hars hangen, na enkele ogenblikken ophalen en af laten druipen. Gedompelde voorwerpen bij 60^{o} C gedurende 120 minuten naharden.

INJECTEREN: Voor het volspuiten van pluggen e.d. bij voorkeur een glazen of metalen injectiespuit gebruiken, welke na gebruik direct dient te worden gereinigd in POLYTRONIC THINNER.



SPUITEN : Verdun de aangemaakte hars met POLYTRONIC THINNER op spuitdikte. Spuiten op 50 cm afstand met 2,5 ato druk bij 1,8 mm spuitopening. De gespoten laag bij 60^{o} C gedurende 120 minuten naharden.

Indien een ondoorzichtige giethars is vereist, kan de hars worden gemengd met POLYTRONIC QUARTZPOWDER zonder dat dit afbreuk doet aan de kwaliteit. Indien er zware eisen worden gesteld aan de mechanische eigenschappen, verdient het aanbeveling 10 tot 25 % POLYTRONIC MILLED FIBERS aan de hars toe te voegen.

PRIJS SLECHTS *f* 7,-

ELEKTRISCHE EIGENSCHAPPEN

Diëlektrische constante bij 1000 Hz	3,2	(DIN 53483)
Diëlektrische verliesfactor bij 1000 Hz	0,006	(DIN 53483)
Doorslagspanning	38 Kv/mm	(DIN 53480)
Kruipstroomvastheid	T 5	(DIN 53480)
Oppervlakteweerstand	10^{14} ohm	(DIN 53482)
Soortgelijke doorgangsweerstand	10^{15} ohm /cm	(DIN 53482)

Van Dam Elektronica, Rotterdam: Snellemanstraat 10-11, Amsterdam: Reguliersgracht 105

PRIJZEN VAN DE IN DEZE DOCUMENTATIE GENOEMDE COMPONENTEN.

Halfgeleiders:

2N3055 T.I.	ƒ 7,45	SN72709BN	ƒ 9,00
LM 703 L	ƒ 4,75	SN 72709 L	ƒ 14,-

Keramische filters:

type SF455B	ƒ 3,00	type SF262,5	ƒ 3,00
type SF455D	ƒ 4,00	type TO-olD	ƒ 5,00
type SF455A	ƒ 2,00	type TO-02A	ƒ 5,00
type SF4,5MA	ƒ 4,00	type SF10,7MA	ƒ 4,00
type WF4,5MA	ƒ 4,00	type WF10,7MA	ƒ 4,00

Miniatuur trimmers, keramische printuitvoering, 8mmØ:
3-9pF 3,5-13pF 4,7-20pF 7-35pF ..... ƒ 0,75
Idem, echter 10mmØ:
3-10pF 3-12pF 10-40pF 10-60pF ..... ƒ 0,75

Doorvoercondensatoren, 1nF en 2nF ..... ƒ 0,30

Ferrietkralen ..... ƒ 0,05

Keramische condensatoren 0,56pF t/m 2,2 pF, axiale uitvoering .... ƒ 0,35
Keramische condensatoren 2,7pF t/m 15nF, print uitvoering ..... ƒ 0,35
Styroflex condensatoren, axiale uitvoering 100pF t/m 4700pF ..... ƒ 0,30
Voor andere condensatoren zie onze advertenties in de vakbladen.

In ons leveringsprogramma zijn ook wikkeldraad en spoelvormen opgenomen; raadpleeg hiervoor onze verkoopafdeling.

Enkele interessante halfgeleiders voor gebruik in combinatie met de in deze documentatie genoemde componenten zijn o.a.:

Hoogfrequent transistors:

BF 121 ..... ƒ 2,50	BF123 ..... ƒ 2,75	BF125 ..... ƒ 2,75
BF127 ..... ƒ 2,60	TIS 18 ..... ƒ 6,00	

FET's:

2N3819 ..... ƒ 3,60	2N3820 ..... ƒ 8,45	2N4360 ..... ƒ 4,65
3N128 ..... ƒ 7,00	3N140 ..... ƒ 7,75	BF245 ..... ƒ 5,60
BF247 ..... ƒ 14,50	MPF102 ..... ƒ 3,50	TIS34 ..... ƒ 4,80

Tunneldiode TD716 ..... ƒ 5,15

Hoogfrequent glasvezel printplaat afmetingen 10 x 20 cm ..... ƒ 4,00
afmetingen 10 x 10 cm ..... ƒ 2,50
Etsmiddel per set ..... ƒ 4,75

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VANAF 2 JUNI ZIJN WIJ OP

MAANDAG DE GEHELE DAG GESLOTEN

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prijsveranderingen voorbehouden.

Van Dam Elektronica Rotterdam: Snellemanstraat 10-11, Telefoon: 010-243497-240812, administratie: 010-245516, postgiro: 295550, Bankrelatie: AMRO-bank, Middellandstraat, Rotterdam.

Amsterdam: Reguliersgracht 105, Telefoon: 020-248967.

VANAF 1 JUNI 1969 ZIJN ONZE ZAKEN IN ROTTERDAM EN AMSTERDAM 'sMAANDAGS GESLOTEN.

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