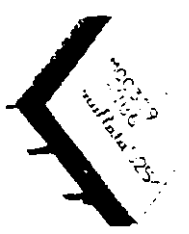
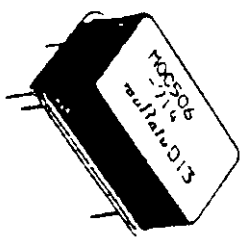


VCO



FEATURES

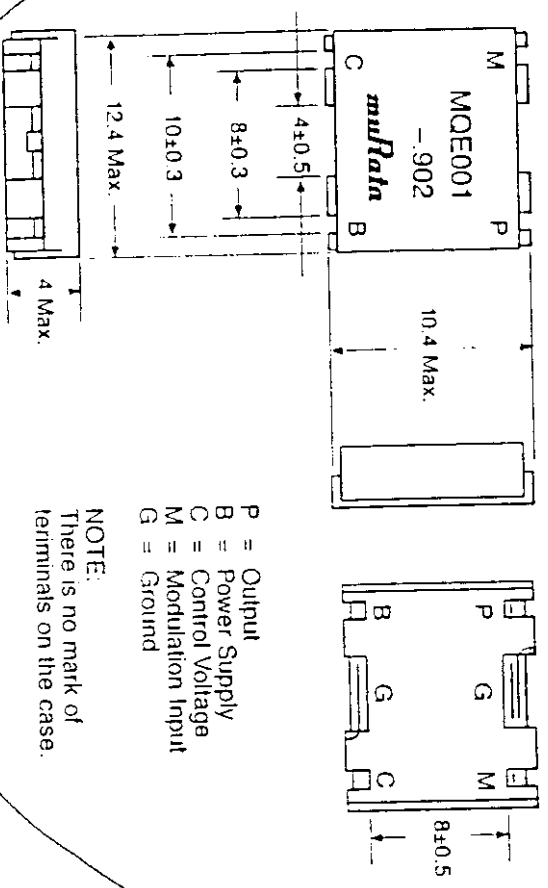
- Small and lightweight
- Low power consumption
- Excellent temperature stability

APPLICATIONS

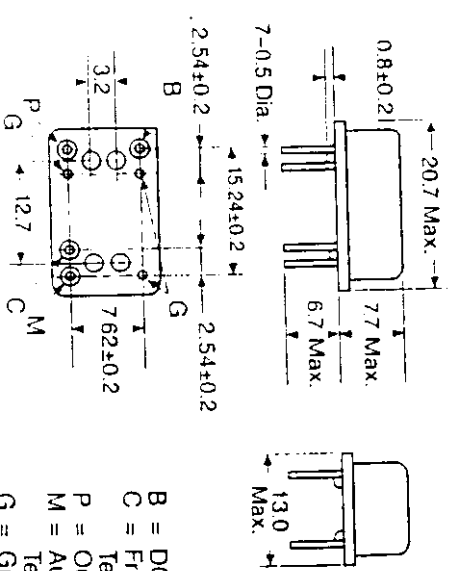
- Mobile and Hand Held Telephone
- Cordless Telephone (European)
- Personal Radio
- MCA Radio

DIMENSIONS: mm

MQE 000 Series



MQC 500 Series



MQC 300 Series

MQC 200 Series

SPECIFICATION	Rev./Date	'95 - '95							
	Prepared	Y. Kudo							
	checked	T. Kudo							
	approved	Y. Kudo							

MITSUBISHI ELECTRIC CORPORATION

THICK FILM HYBRID INTEGRATED CIRCUIT

1. TYPE NUMBER M68701

2. APPLICATION Amplification for 820-851MHz band mobil radio application

3. STRUCTURE Thick film hybrid integrated circuit

4. FUNCTION 5W output power amplification for f = 820-851MHz

at the standard operating conditions :

Vdd=12.5V, P_{in}=1mW,

Power controlling by V_{gs}

5. OUTLINE G477089

6. WARRANTY MITSUBISHI obligation shall be and limited to

replacing the products which may be proved to be defective by MITSUBISHI according to this specification.

7. WARRANTY PERIOD limited one year after the arrival of the products at the port of the destination.

8. MARKING

The following items are marked
 MITSUBISHI LOGO MARK
 TYPE NUMBER M68701
 LOT CODE
 COUNTRY CODE JAPAN

SPECIFICATION		TYPE:	THICK FILM INTEGRATED CIRCUIT	SPEC. No.	GNOK-M68701-E01	PAGE	1/5
---------------	--	-------	-------------------------------	-----------	-----------------	------	-----

MITSUBISHI ELECTRIC CORPORATION

SPECIFICATION

MAXIMUM RATINGS (Tc= 25 °C Zg=21=50Ω UNLESS OTHERWISE SPECIFIED)

RATING	SYMBOL	Tc(°C)	CONDITIONS	VALUE	UNIT
Drain DC Supply	Vdd	25		17	V
Gate DC Supply	Vgg	25		5.5	V
DC Current	Idd	25		2.5	A
Input Power	Pin	25	f=820-851MHz, Vgg≤5V	10	mW
Output Power	Po	25	f=820-851MHz, Vgg≤5V	10	W
Operation case temperature	Tc(op)	—		-30 — +100	°C
Storage temperature	Tstg	—		-40 — +110	°C

NOTE : EACH MAXIMUM RATINGS IS GUARANTEED INDEPENDENTLY.

MITSUBISHI ELECTRIC CORPORATION

SPECIFICATION

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ C$, $Z_g = 21 = 50 \Omega$ UNLESS OTHERWISE SPECIFIED)

CHARACTERISTIC	SYMBOL	Tc(°C)	CONDITIONS	LIMIT		MIN.	MAX.	UNIT	RMKS
Frequency Range	f	25		820	851	Hz			
Output Power	P _{o1}	25	V _{DD} =12.5V, V _{APC} =5V, P _{in} =1mW	6		W			
Total Efficiency	η_t	25	V _{DD} =12.5V, P _o =5W, P _{in} =1mW V _{APC} =Adj.	35		%			
2nd Harmonic	2f _o	25			-30	dB			
3rd Harmonic	3f _o	25			-35	dB			
Input VSWR	P _{in}	25			3	-			
Load VSWR		25	f=820-851MHz V _{DD} =15.2V, P _{in} =1mW, P _o =5W (V _{sg} :adj.vst), LOAD VSWR=20:1(A11Phase)	No degradation or destroy					
Stability		25	f=820-851MHz, P _o ≤9W, Z _g =50Ω, LOAD VSWR≤4:1(A11 Phase)	No Oscillation More than -60dBc					note 1

f (MHz)	820, 851			
V _{DD} (V)	10		12.5	
P _{in} (mW)	1	2	4	4

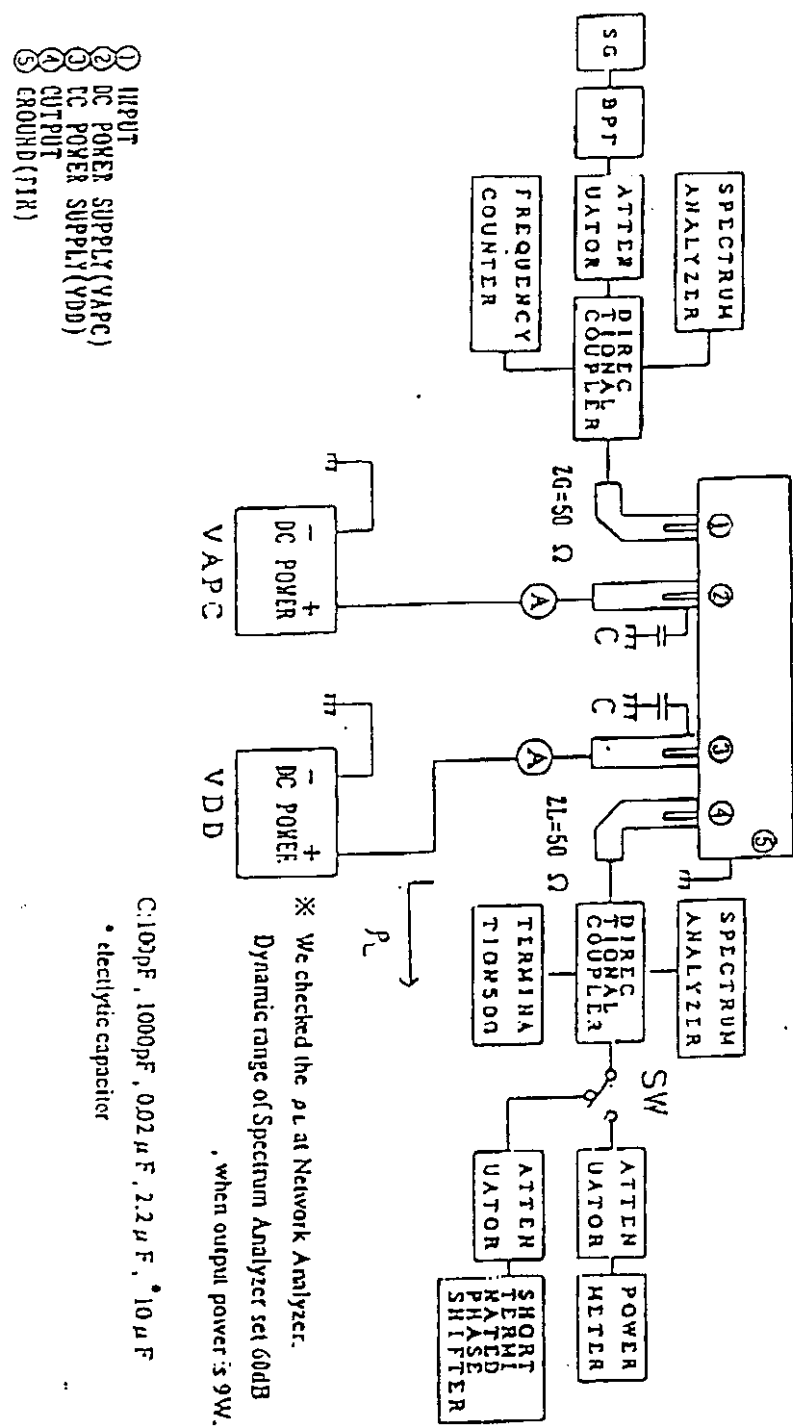
note 1 : This item is tested by sampling test (10pcs / lot)

SPECIFICATION	TYPE:	THICK FILM INTEGRATED CIRCUIT	SPEC. No.	GNOK-M68701-E01	PAGE	3/5
---------------	-------	-------------------------------	-----------	-----------------	------	-----

MITSUBISHI ELECTRIC CORPORATION

SPECIFICATION

Fig. 1 TEST BLOCK DIAGRAM



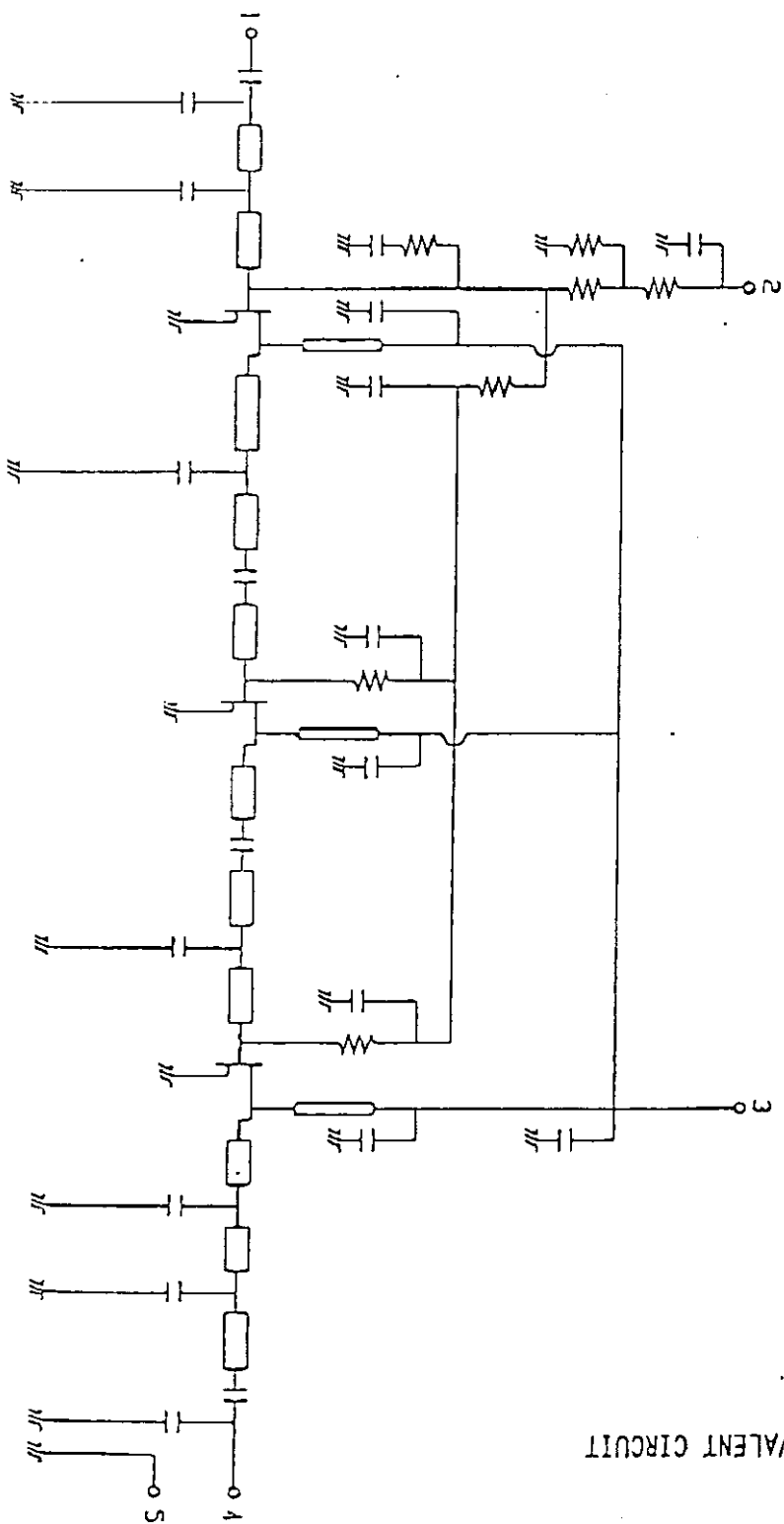


Fig. 2 EQUIVALENT CIRCUIT

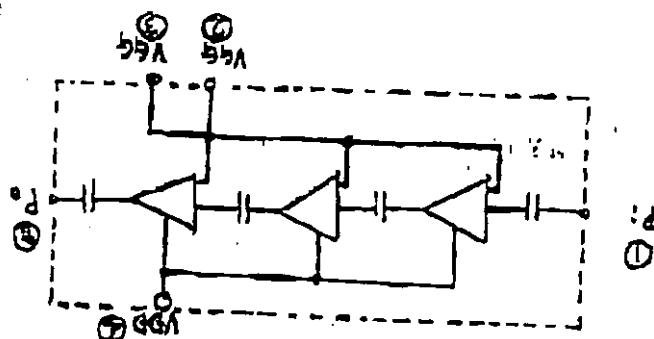
MITSUBISHI ELECTRIC CORPORATION

I.Pin : RF INPUT
 1.V_{gs} : GATE BIAS SUPPLY
 2.V_{dd} : DRAIN BIAS SUPPLY
 4.P_o : RF OUT

FAX to : MELA
 attn : Mr G Kaufman
 date : Aug 1 1996
 No. : G2K-R-980801-1
 from : Mitsubishi Electric Kite-itani Works
 dept. High freq. / Opt. semicon.

Re: M68701

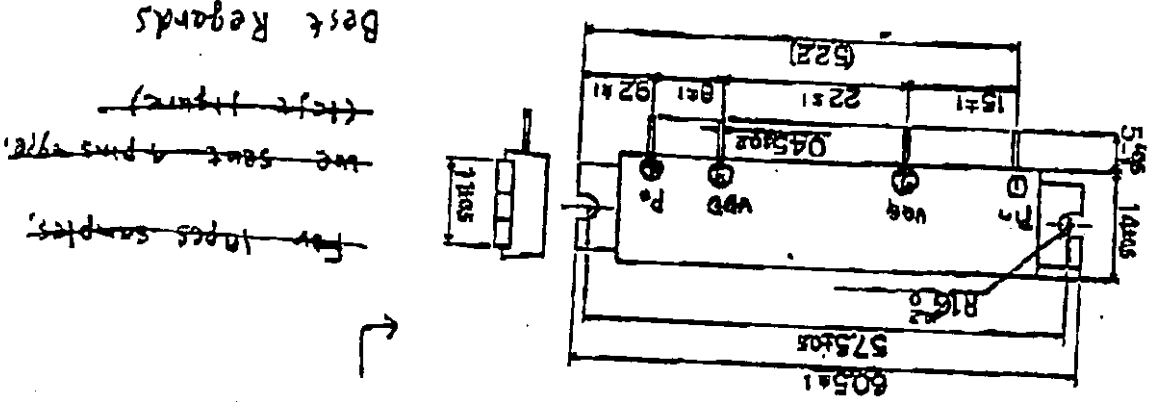
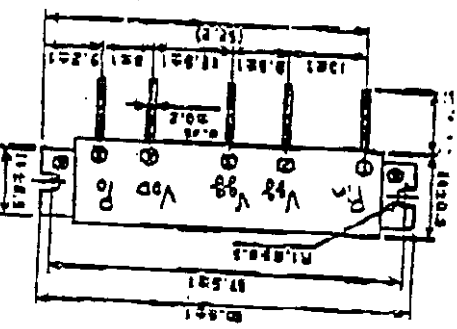
• We show the block diagram of M68701.



←
 Samples
 sent
 with
 pins

VDD and VSS connected

the same VDD line in module.
 (Customer can select the VDD or VSS for gate bias.)
 • And then, we standardize VDD only.

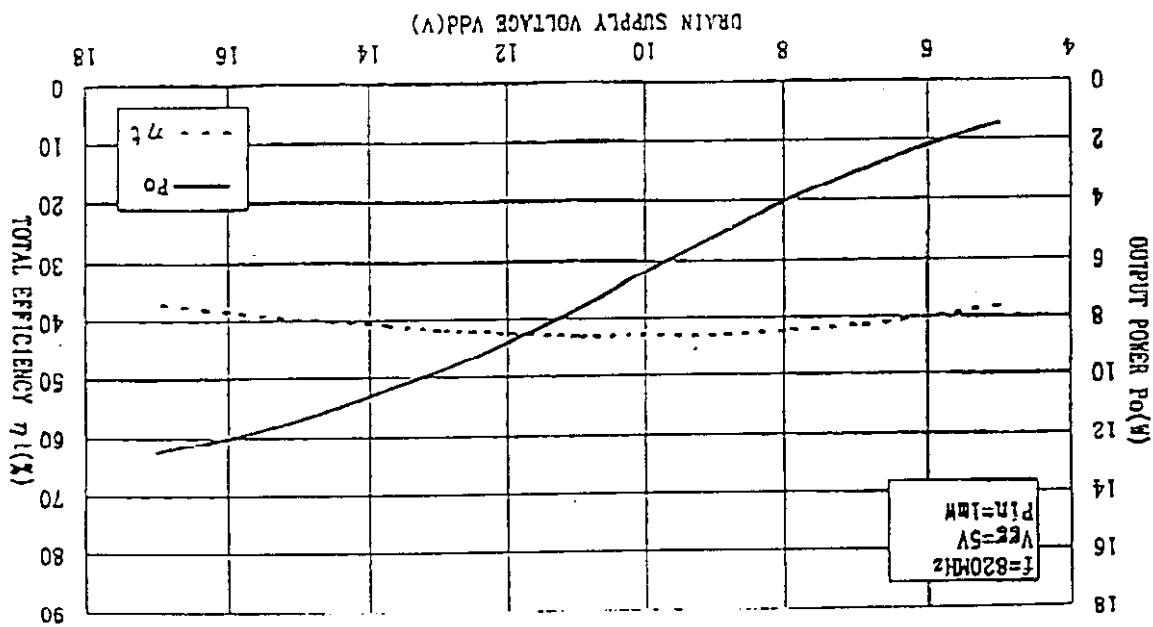


←
 induction

For 1000 samples,
 we sent 4 pins only.
 (test figure)
 Best Regards
 T. Kobayashi

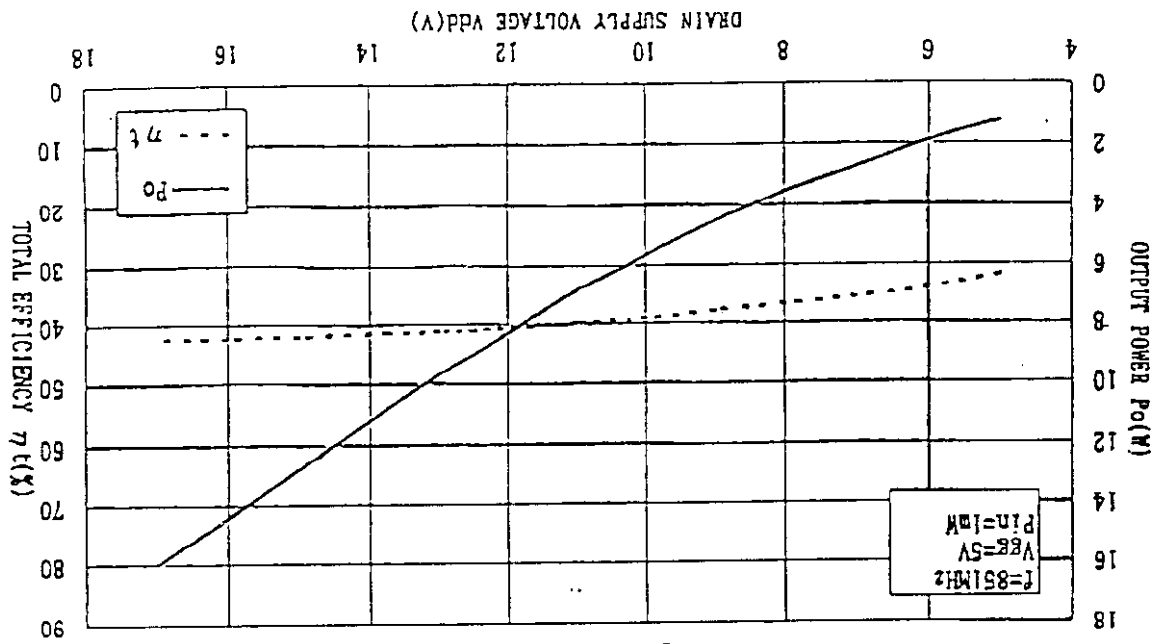
M68701 Po-Vdd Characteristics (Typical)

$f=820\text{MHz}$

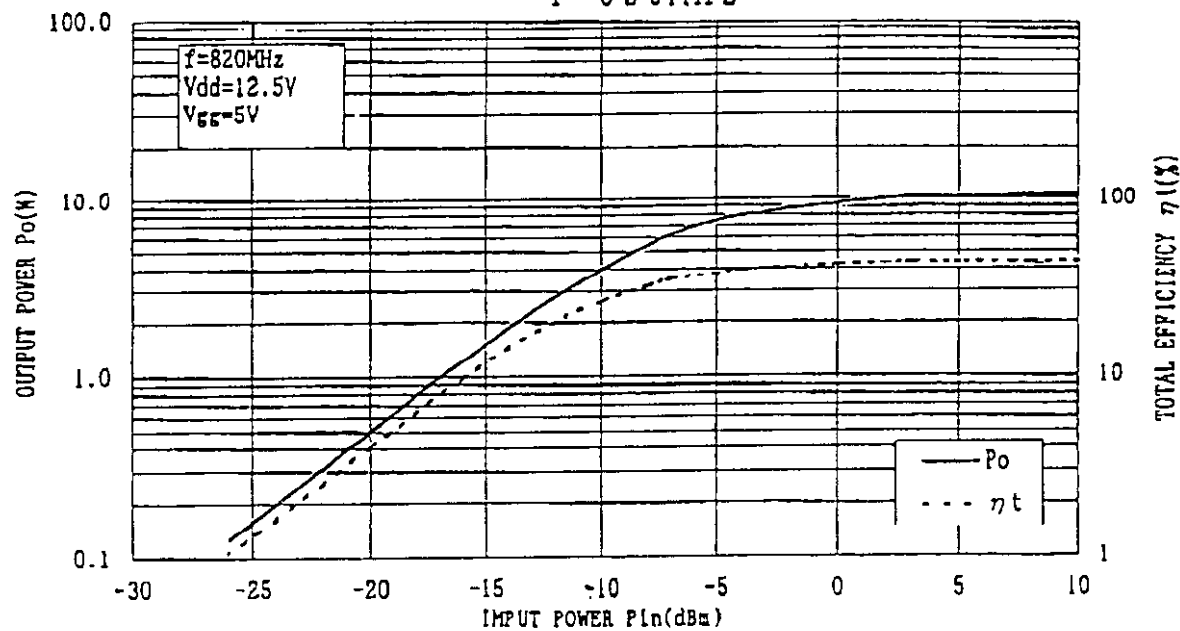


M68701 Po-Vdd Characteristics (Typical)

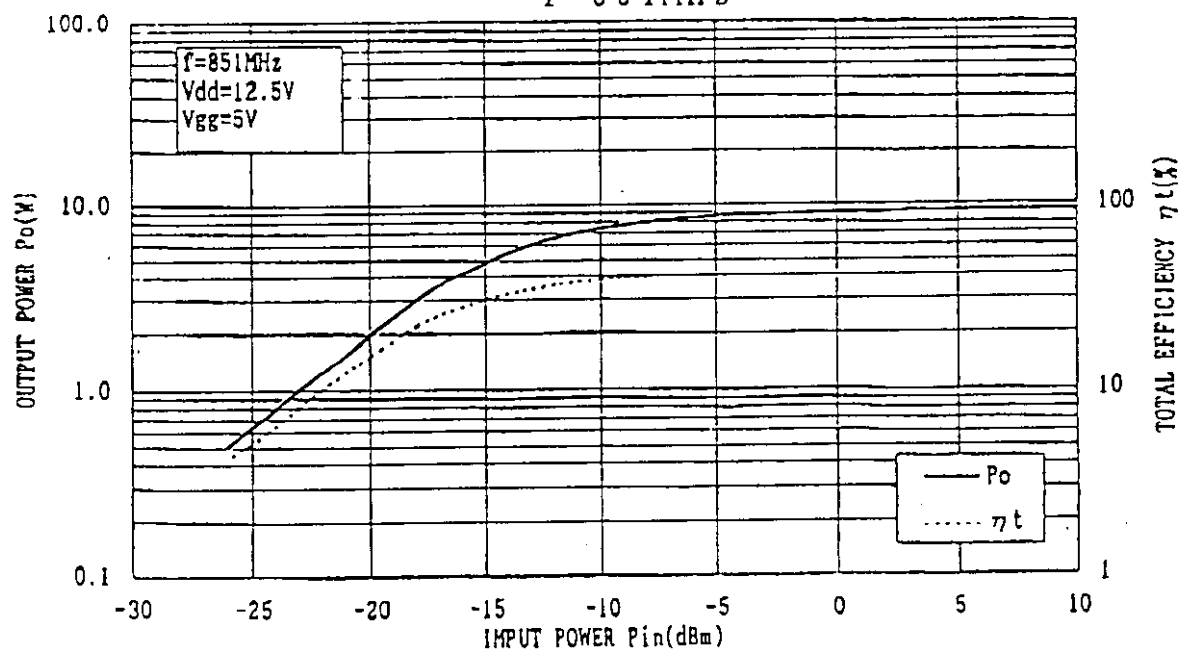
$f=851\text{MHz}$



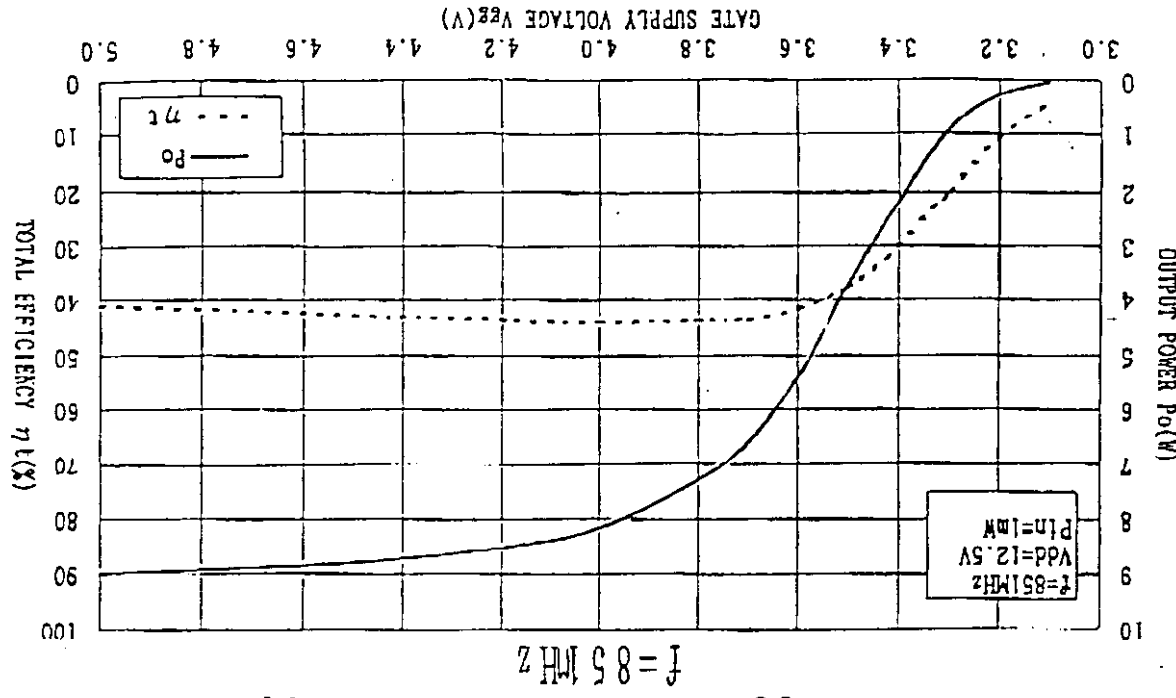
M68701 Pin-Pout Characteristics (Typical) $f=820\text{MHz}$



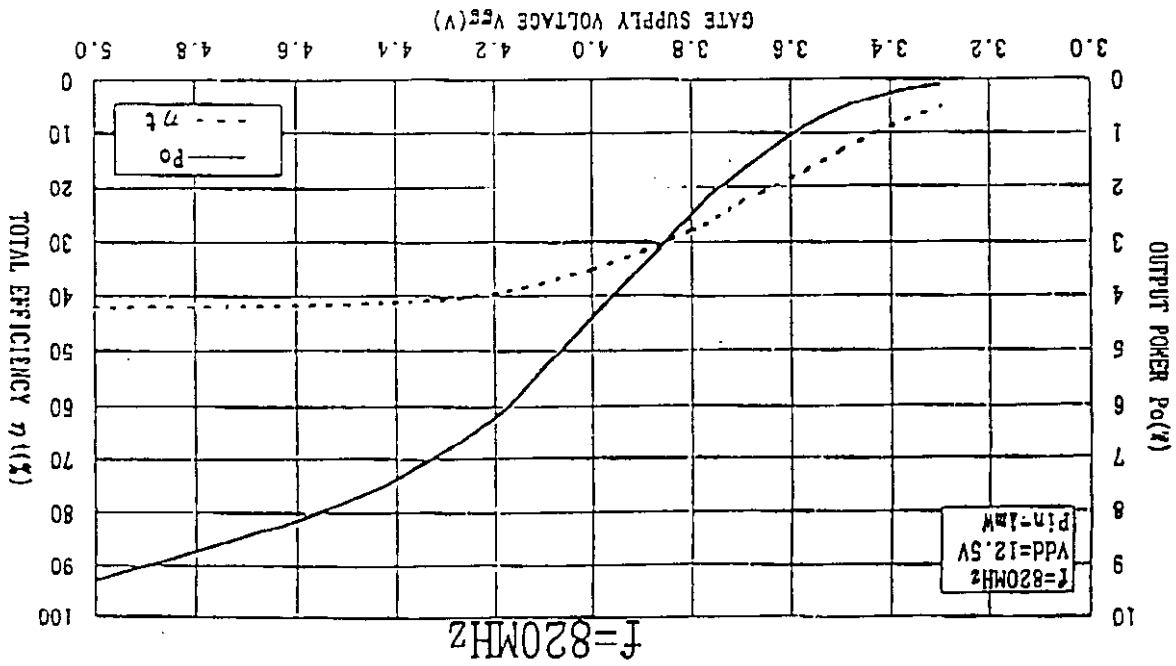
M68701 Pin-Pout Characteristics (Typical) $f=851\text{MHz}$



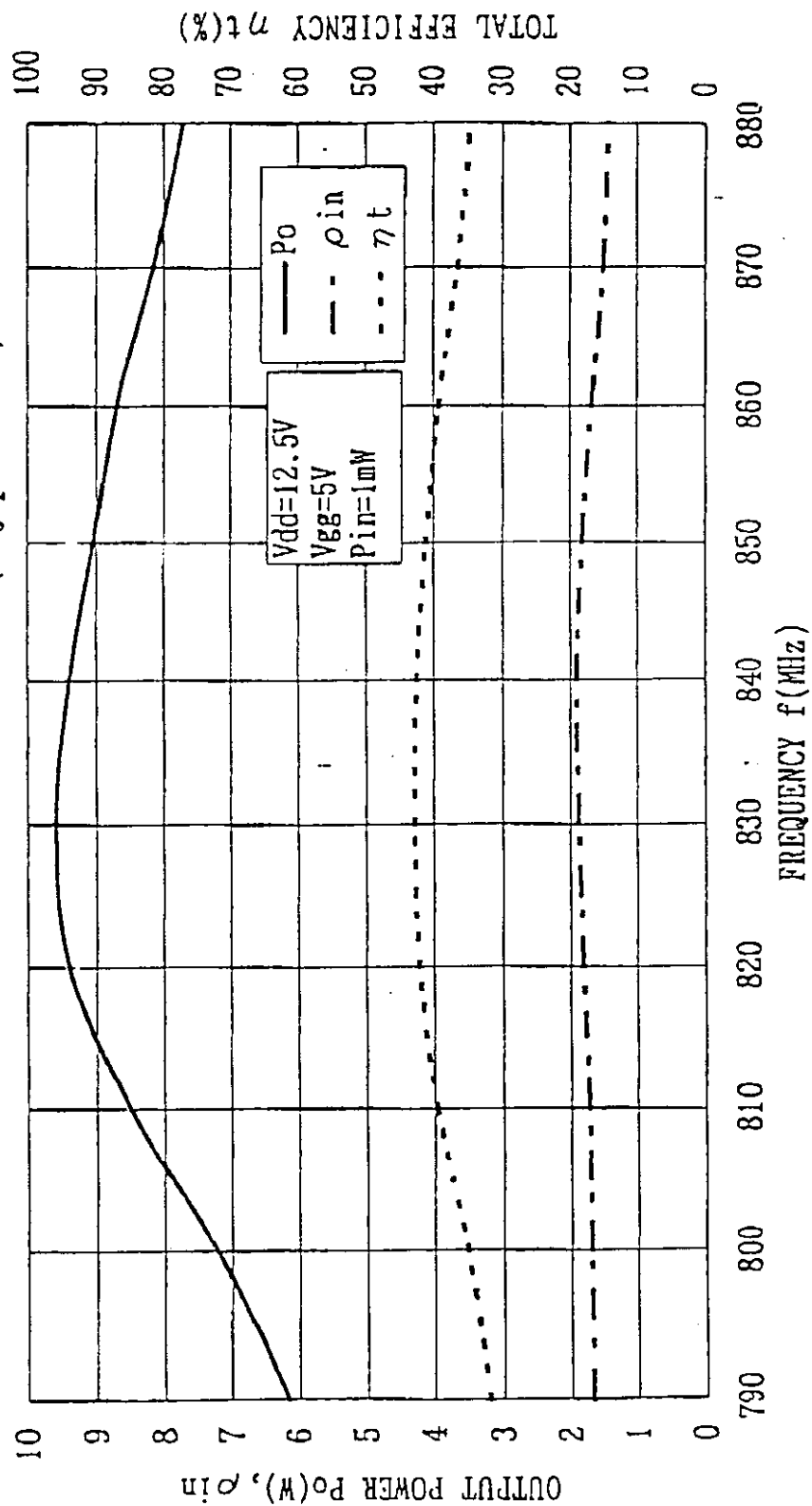
M68701 Po-V_{GS} Characteristics (Typical)



M68701 Po-V_{GS} Characteristics (Typical)



M68701 Po-Frequency Characteristics(Typical)



AMPS Duplexer Surface Mount Ceramic Filter

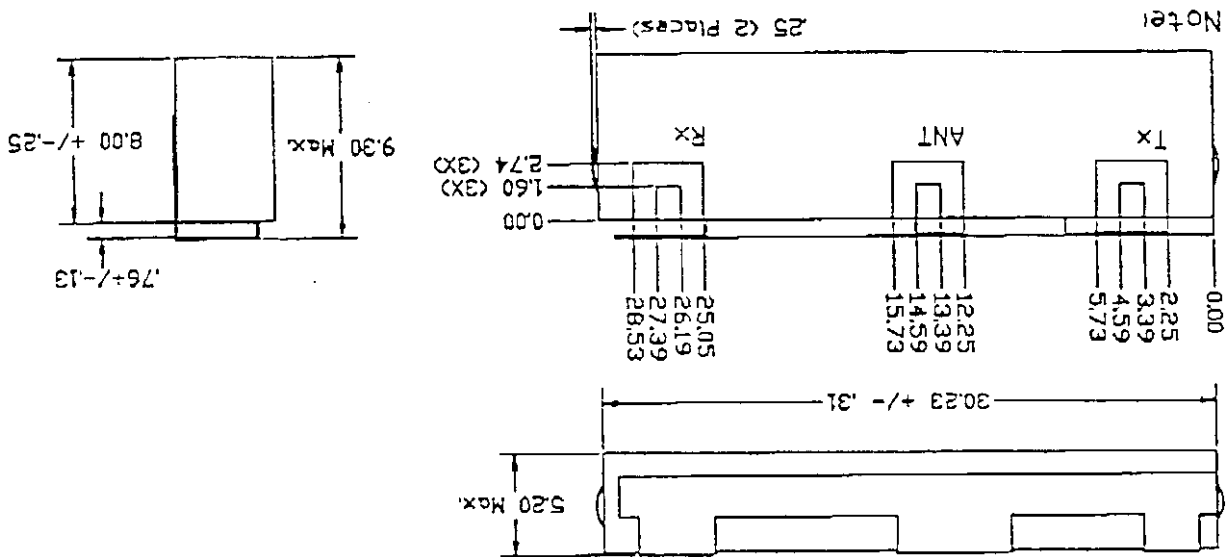
KFF6567A

1.0 Electrical Specifications

Parameter	Specification @ 25 deg C	Typical Variation -30 to +85 deg C
Tx		
Pass Band	824 - 849 MHz	
Pass Band Insertion Loss	2.5 dB max	0.2 dB
Pass Band Return Loss (@ Tx)	10.0 dB min	1.0 dB
Attenuation @ 779 - 804 MHz	10.0 dB min	1.0 dB
	@ 869 - 894 MHz	2.0 dB
RX		
Pass Band	869 - 894 MHz	
Pass Band Insertion Loss	3.3 dB max	0.25 dB
Pass Band Return Loss (@ Rx)	8.0 min	1.0 dB
Attenuation @ 824 - 849 MHz	52.0 dB min	2.0 dB
	@ 914 - 939 MHz	1.0 dB
	@ 959 - 984 MHz	1.0 dB
Max. Transmit Power	3 W	

2.0 Mechanical Specifications

2.1 Mechanical Outline



2.2 Filter Weight

6.2 Grams (Typical)

2.3 SMD Information

2.3.1 Coplanarity

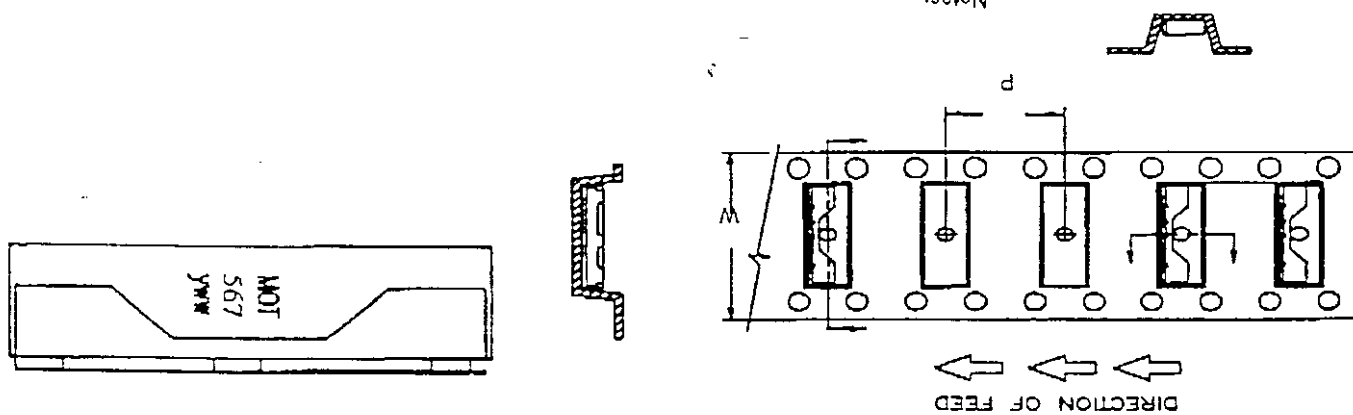
0.1 mm Max.

SMDA PLEXR



AMPS Duplexer Surface Mount Ceramic Filter

KFF6567A
Part Marking



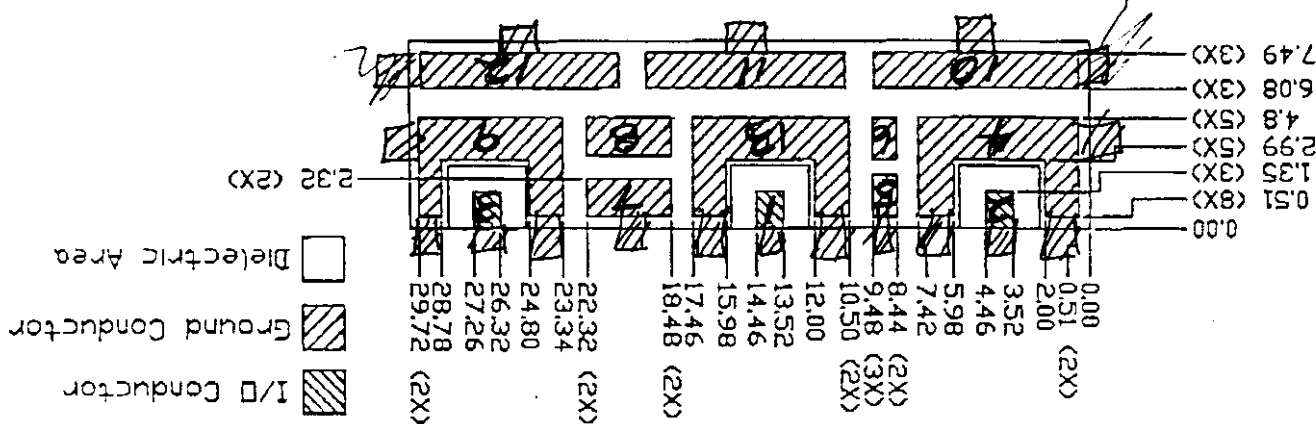
1. Dimension "W" is equal to 44 mm (width of tape).
2 Dimension "P" is equal to 20 mm (pitch of tape).

Notes:

2.3.3 Parts per Reel

160 per cent

2.3.4 Recommended Board Layout



NOTES:

1. All dimensions in mm
2. Tolerances are +/- .13
3. Ground plane under Tx, Rx and Antenna pads and the dielectric area that surrounds them should be at least .63 mm below top surface. There should also be no active traces under these areas.
4. Via ground holes (not shown in drawing) should be .254 mm in diameter with a pitch of 1.27 mm. There should be a minimum of 2 via holes per ground pad.

1. The Applicant hereby certifies that the information provided in this application is true and correct to the best of their knowledge and belief. The Applicant understands that any false or misleading information provided in this application may result in the denial of the application and may be subject to legal action.

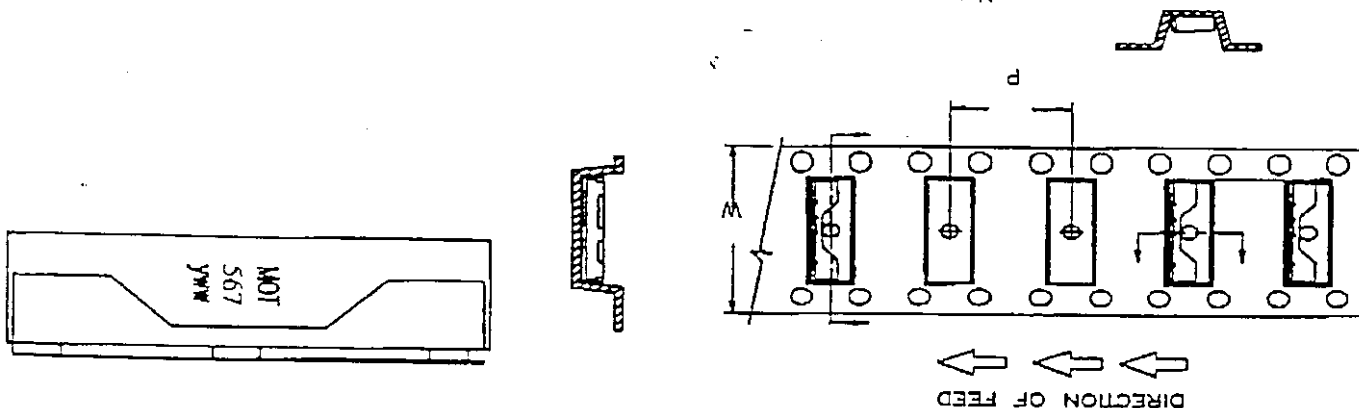
MOTOROLA



AMPS Duplexer Surface Mount Ceramic Filter

KFF6567A

Part Marking



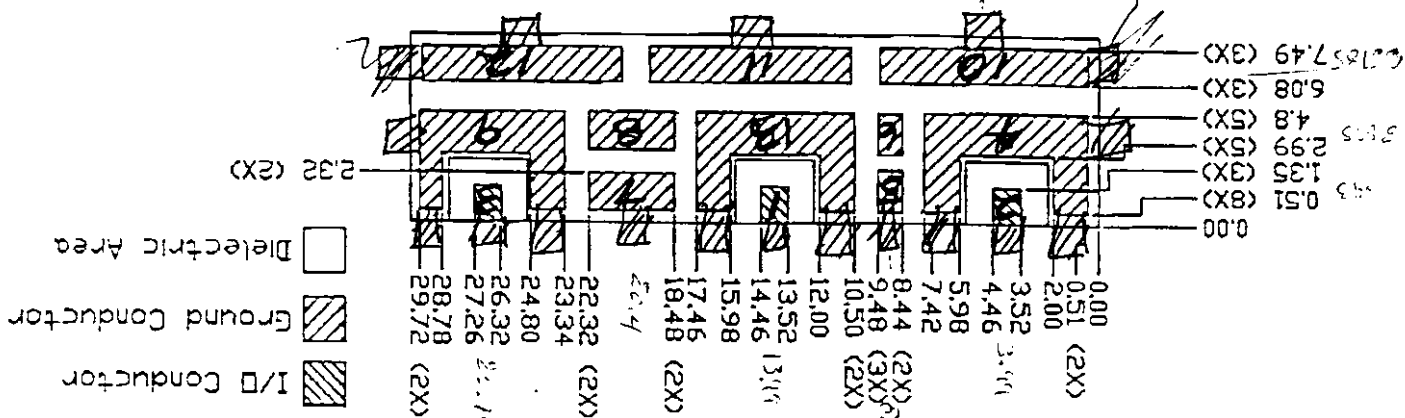
2.3.2 Tape and Reel Specifications

- Notes:
1. Dimension "W" is equal to 44 mm (width of tape).
 2. Dimension "P" is equal to 20 mm (pitch of tape).

2.3.3 Parts per Reel

160 per reel

2.3.4 Recommended Board Layout



- Notes:
1. All dimensions in mm
 2. Tolerances are ± 0.13
 3. Ground plane under Tx, Rx and Antenna pads and the dielectric area that surrounds them should be at least 0.63 mm below top surface. There should also be no active traces under these areas.
 4. Via ground holes (not shown in drawing) should be a minimum diameter with a pitch of 1.27 mm. There should be a minimum of 2 via holes per ground pad.

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters can and do vary in different applications. All operating parameters, including "Typical" must be validated for each customer application by customer's technical experts. This product may be covered by one or more patents in the patent portfolio of Motorola. Motorola does not carry any claims under the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should buyer purchase or use Motorola products for any such unintended or unauthorized application, buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and its agents are registered trademarks of Motorola Inc. Motorola Inc. is an Equal Opportunity/Affirmative Action Employer.