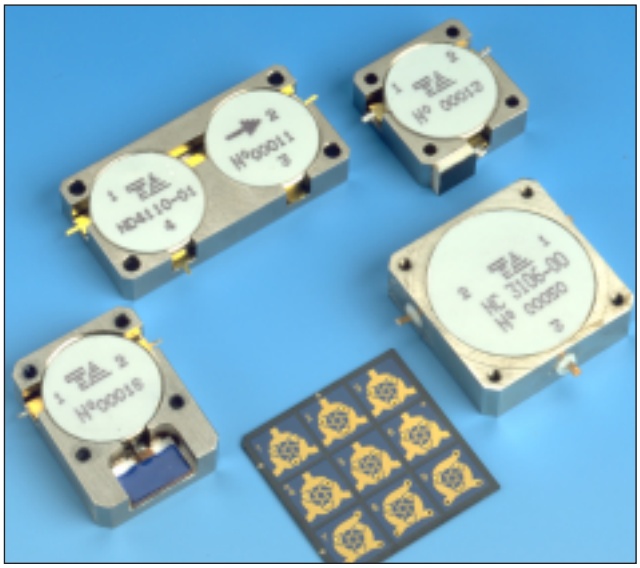
DROP-IN CIRCULATORS & ISOLATORS

Selection Guide



INTRODUCTION

For more than 10 years, TEMEX COMPONENTS designs miniaturized drop-in circulators and isolators.

Today, patented designs, space qualified drop-in assemblies and time proven circulators and isolators are available.

Current production of drop-in devices is covering frequency ranges from HF, VHF, UHF and up to 18 GHz.

New technologies of drop-in devices have been developed these last couple of years:

- Patented designs with magnetical and electrical shieldings,
- Wide band devices,
- Operating with various substrates,
- Integrated substrates,
- Double cell circulator designs,
- Integrated functions (diode limitors, ...),
- Low mass sub-systems for satellite pay-load integration,
- Technological process (SMD & micro-electronic applications MMIC compatible)...

Automated brazing benches, cycling and ageing benches, S-parameters networks analyzers with automated test benches are the basic tools used by TEMEX COMPONENTS for mass production capacity. In addition, test set-up for 3rd order intermodulation products for VHF/UHF frequency bands, power handling capability and clean room for space components and assemblies are available in our facility.

Custom components

TEMEX COMPONENTS capability has broadened to custom sub-systems which integrate circulators, terminations, limitors, detectors, etc.

Furthermore, the following presentation of some products is only a resume of our expertise and our engineering staff stands ready to design and produce custom components to state-of-art specification.

LOW COST SMD CIRCULATORS & ISOLATORS

Under reduced dimensions, circulators have a rectangular shape looking like a capacitor, assuming good electrical features needed under severe environmental conditions.

Connections are made for SMD or micro-electronic circuitry with 50 impedance, for thick film technology (MMIC compatible) or with boundings.

Typical electrical features

These new range of circulators and isolators are under development thanks to the strong involvement of TEMEX COMPONENTS in the R & D fields, including fundamental research in the ferrite materials, new assembly process, internally developed software and finite element calculation.

Following are preliminary specifications for circulators. Electrical and mechanical features rely upon the technology report process to be defined with the user.

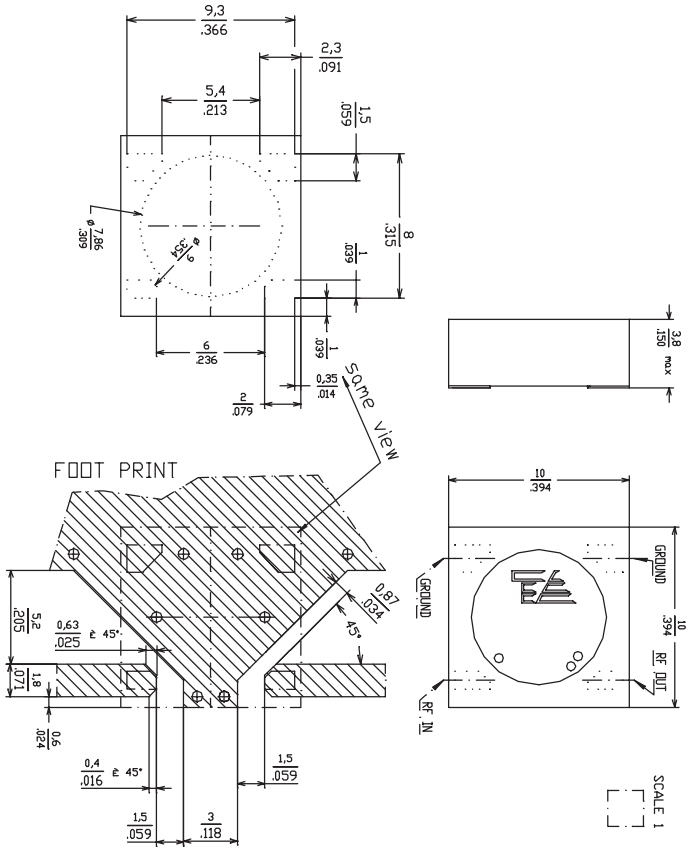
Please contact us for your specific application.

Type	Frequency range range	Case (max. mm) (max. mm)	Type	Frequency	Case
UB1003-03	350 - 370 MHz	10 x10 x 3.8 mm			
UB1203-01	380 - 400 MHz	10 x10 x 3.8 mm			
UB1003-01	403 - 433 MHz	10 x10 x 3.8 mm			
UB1003-04	435 - 465 MHz	10 x10 x 3.8 mm			
UB1003-05	470 - 500 MHz	10 x10 x 3.8 mm			
UB1003-06	500 - 530 MHz	10 x10 x 3.8 mm			
UC1234-08	819 - 854 MHz	10 x10 x 3.8 mm	UC1235-02	819 - 854 MHz	7 x 7 x 4 mm
UC1234-06	880 - 915 MHz	10 x10 x 3.8 mm	UC1235-01	880 - 915 MHz	7 x 7 x 4 mm
UC1234-05	925 - 960 MHz	10 x10 x 3.8 mm	UC1235-03	925 - 960 MHz	7 x 7 x 4 mm
			UD1233-06	1805 - 1880 MHz	7 x 7 x 4 mm
			UD1233-03	1850 - 1930 MHz	7 x 7 x 4 mm
			UD1233-04	1930 - 1990 MHz	7 x 7 x 4 mm
			UE1232-02	2100 - 2180 MHz	7 x 7 x 4 mm
			UE1232-01	2400 - 2500 MHz	7 x 7 x 4 mm

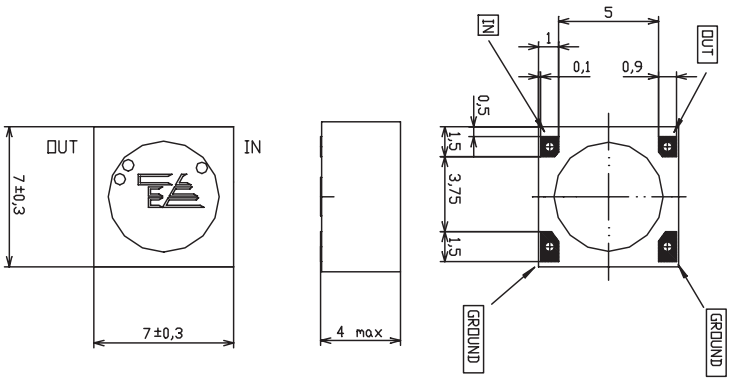
All the products are counterclockwise. We can provide these components in tape & reel for quantities above 500 pieces.

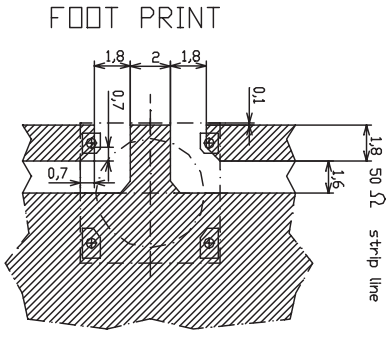
Outlines drawings: Standard packages

10 x 10 x 3.8



7 x 7 x 4





MINIATURIZED DROP-IN CIRCULATORS & ISOLATORS

TEMEX COMPONENTS has designed a line of miniaturized drop-in circulators and isolators covering the frequency ranges from **75 MHz** to **18 GHz**.

These circulators and isolators are designed to be used for applications where **space saving** and **magnetic shielding** are required, to avoid any detuning when operating close to magnetic field or ferrous materials:

- Cellular applications such as **NMT**, **AMPS**, **CT-1**, **CT-2**, **TACS**, **E-TACS**, **GSM**, **JDC**, **DECT**, **DCS**, **PCS, WLAN** and any communication base stations: **TFTS**, **INMARSAT**...
- Broadcasting applications: **DAB**, ...
- Microstrip sub-systems
- Airborne equipment
- Missiles
- Radars / phase array antennas
- Satellite pay loads
- Earth stations

Circulators and isolators are available under standard packages with “standard inch” dimensions.

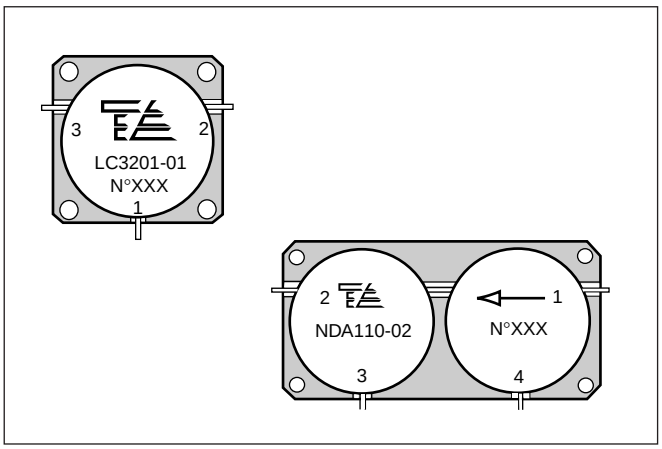
Isolators integrate the load which is:

- Up to 60 W-CW power handling capability for VHF/UHF bands,
- 1 W-CW power handling capability for microwave frequency bands.

For microwave applications, circulators are available in round package. Isolators are available in flange type package with or without through mounting holes.

Depending on the requested isolation, one or two cell designs are available in the VHF/UHF band as standard packages.

The drop-in design allows easy and fast installation into stripline and microstrip assemblies with mounting screws or soldering with conductive epoxy glue.



Test jigs for different packages are available for customer’s incoming inspection.

DROP-IN CIRCULATORS & ISOLATORS

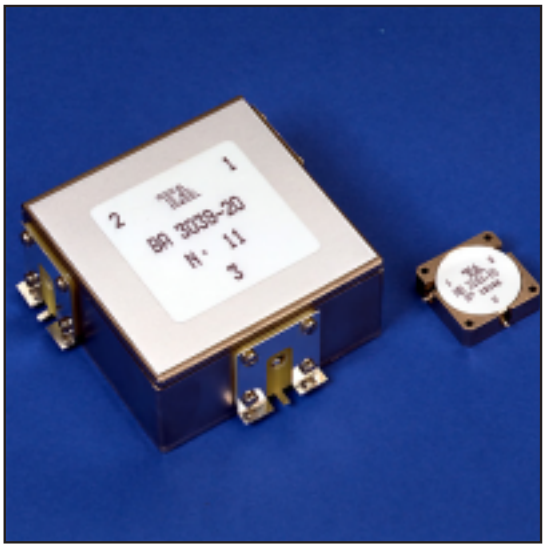
Miniaturized drop-in circulators & isolators

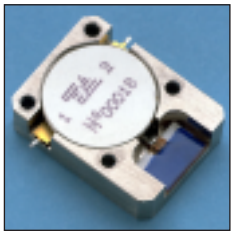
3-Port circulators & isolators

Model		Frequency range	Isolation (dB)		Insertion loss (dB)		V.S.W.R.	Power (W-CW)		Case	Operating temperature
Circulator	Isolator	(MHz)	typ.	min.	typ.	max.	max.	Input	Load*		° C
NB3040	NB1040	380-430	22	20	0.3	0.4		100	60	T58	-10 to +55
NC3104	NC1104	890-960	23	20	0.3	0.4	1.25	100	60	T42	-10 to +55
NC3106	NC1106	920-960	25	20	0.3	0.4	1.25	100	60	T42	-10 to +55
ND3100	ND1100	1030-1090	22	20	0.3	0.5	1.25	100	10	T42	-10 to +55
ND3141	ND1141	1270-1400	22	20	0.3	0.5	1.25	30	3	T42	-10 to +55
ND3161	ND1161	1452-1492	22	20	0.3	0.4	1.25	30	0.3	T42	-10 to +55
ND3162	ND1162	1525-1661	22	20	0.3	0.5	1.25	30	3	T42	-10 to +55
ND3183	ND1183	1710-1785	22	20	0.3	0.4	1.25	30	3	T44	-10 to +55
ND3184	ND1184	1805-1880	22	20	0.3	0.4	1.25	50	50	T44	-10 to +55
ND3181	ND1181	1805-1880	23	20	0.3	0.4	1.25	50	50	T42	-10 to +55
ND3186	ND1186	1930-1990	23	20	0.3	0.4	1.25	50	50	T44	-10 to +55
ND3182	ND1182	1930-1990	23	20	0.3	0.4	1.25	50	50	T42	-10 to +55
	NE1101	2100-2300	23	20	0.3	0.4	1.25	10	1	T44	-10 to +55
	NE1120	2300-2500	23	20	0.3	0.4	1.25	10	1	T44	-10 to +55
	NE1130	2700-2900	23	20	0.3	0.4	1.25	150	15	T44	-30 to +70
	NF1100	2700-3100	23	20	0.4	0.5	1.3	150	15	T44	-30 to +70
NG3142		5400 - 5900	22	20	0.3	0.4	1.22	1	1	T53	-30 to +70
NG3140	NG1140	5650 - 5850	25	23	0.3	0.4	1.25	10	1	T45	-30 to +70
	NJ1101	7900 - 8400	20	17	0.5	0.6	1.50	10	1	NJ1	-40 to +85
	NJ1111	8500 - 9500	20	17	0.6	0.7	1.50	10	1	NJ1	-40 to +85
	NJ1139	9820- 12600	18	16	0.6	0.7	1.45	1	1	NJ1	-40 to +85
NJ3130		11000- 11500	22	20	0.4	0.5	1.25	20		NJ3	-40 to +85
NJ3151		13000- 14000	22	20	0.4	0.5	1.25	30		NJ3	-40 to +90
	NJ1140	13000- 14000	22	20	0.6	0.8	1.50	10	2	NJ1	-45 to +125
	NJ1161	14000- 14500	22	20	0.5	0.6	1.25	20	1	NJ1	-45 to +125
	NJ1162	14500- 15500	22	20	0.5	0.6	1.50	10	1	NJ1	-40 to +85
	NJ1160	15500 - 16000	22	20	0.5	0.6	1.50	10	1	NJ1	-40 to +85

* Notes:

- For an isolator: power of the integrated load, 10 W-load optional,
- For a circulator: reflected power handling capability.





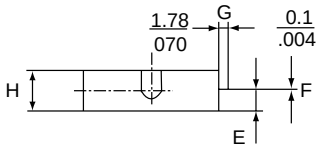
Outline drawings

3-Port circulators & isolators

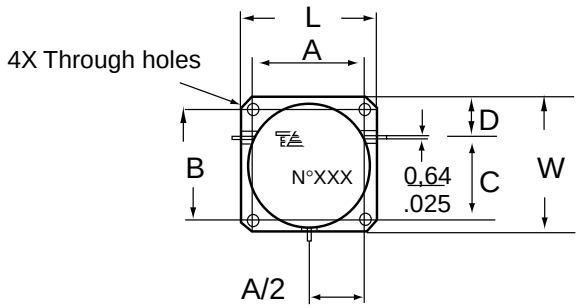
Dimensions in mm

Case	L	W	H	A	B	C	D	E	F	G	ø Holes
T42	25.4	Circ.: 25.4 Iso.: 31.75 max.	7.62	20.83	20.83	15.36	7.75	3.81	0.64	1.78	2.1
T44	19.05	Circ.: 19.05 Iso.: max. 25.4	6.35	14.50	14.50	10.57	6.20	3.13	0.64	1.78	2.03
T45	12.7	Circ.: 12.7 Iso.: max. 12.7	6.35	9.65	9.65	6.85	4.32	3	0.63	1.8	1.9 or M2.5
T54	51.5	51.5 Iso.: max. 51.5	12	41.8	41.8	34.15	12.5	3.5	2	1.75	3.3 M2.5
T58	51	51 Iso.: max. 51	19	42	42	34	12.5	4.2	0.5	7	3.5

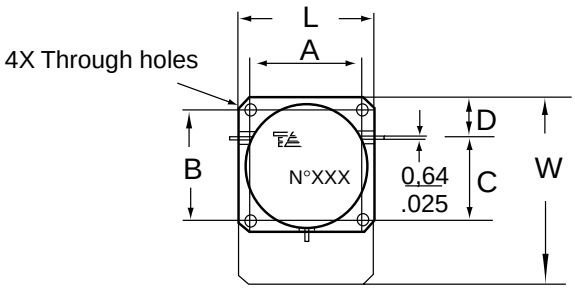
T42 -T44 -T45 -T54 -T58 SERIES

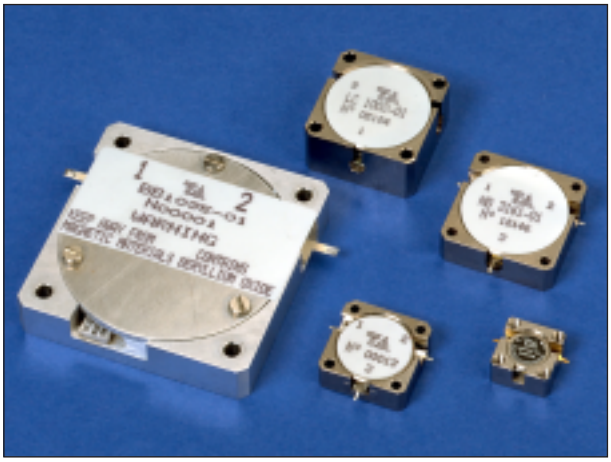


Circulator

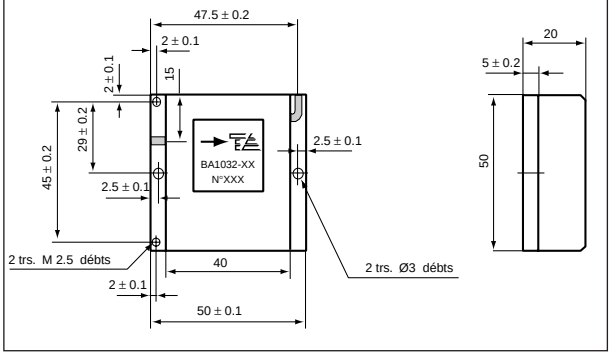


Circulator

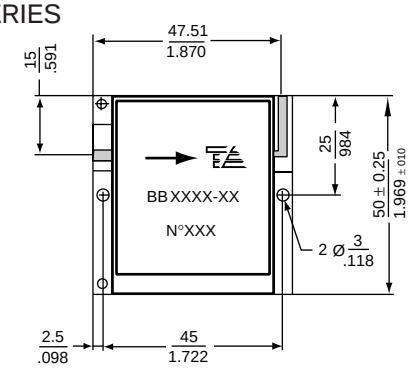




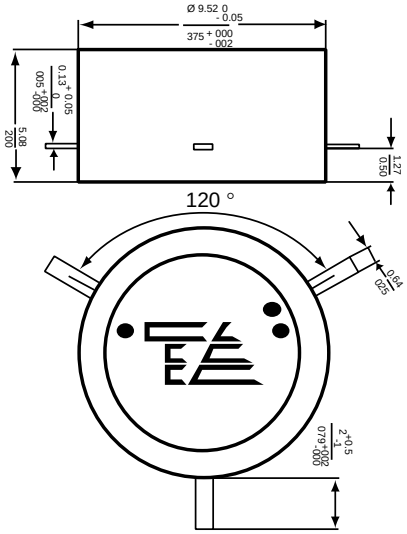
T52 SERIES



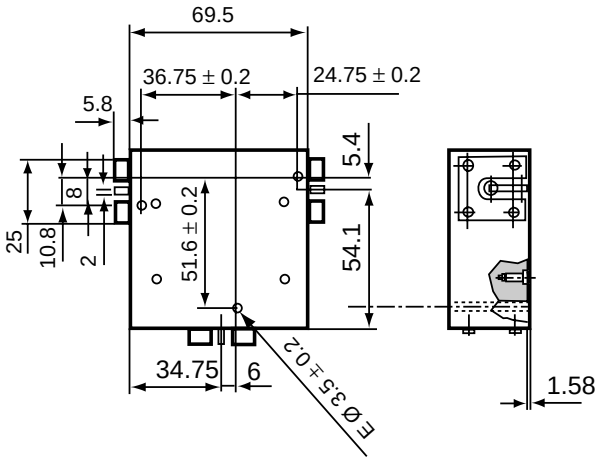
T50 SERIES



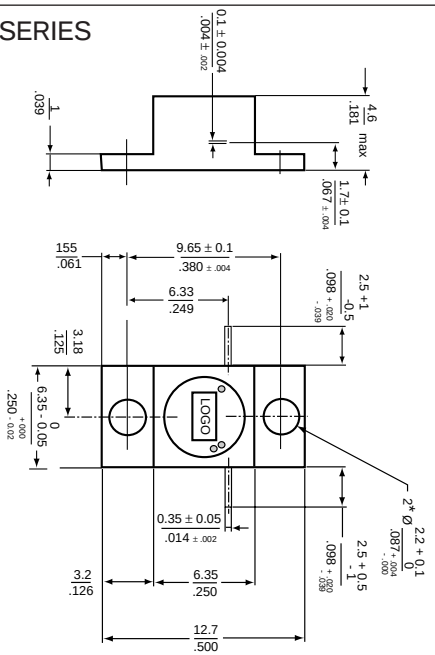
T53 SERIES



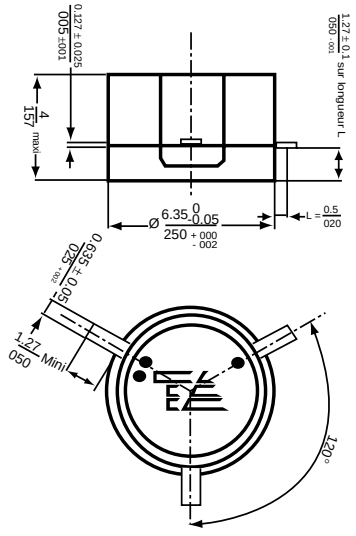
T0 SERIES



NJ1-SERIES



NJ3-SERIES



4-Port circulators

Model Circulator	Frequency range (MHz)	Isolation (dB) typ.	Isolation (dB) min	Insertion loss (dB) typ.	Insertion loss (dB) max	V.S.W.R. typ.	V.S.W.R. max	Power (W-CW) Input	Case	Operating temperature
NC4112	920-960	46	40	0.4	0.7	1.20	1.25	100	P55	-10° to +55° C
NC4116	920-960	46	40	0.4	0.7	1.20	1.25	100	P42	-10° to +55° C
ND4112	1805-1880*	46	40	0.4	0.7	1.20	1.25	100	P55	-10° to +55° C
ND4224	1805-1880*	46	40	0.4	0.7	1.20	1.25	100	P44	-10° to +55° C
ND4117	1805-1880*	46	40	0.4	0.7	1.20	1.25	100	P42	-10° to +55° C

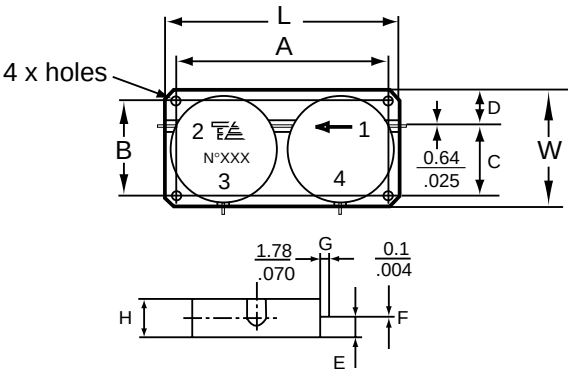
***Also available in 1930-1990 MHz Band.**
Customized devices available

Outline drawings

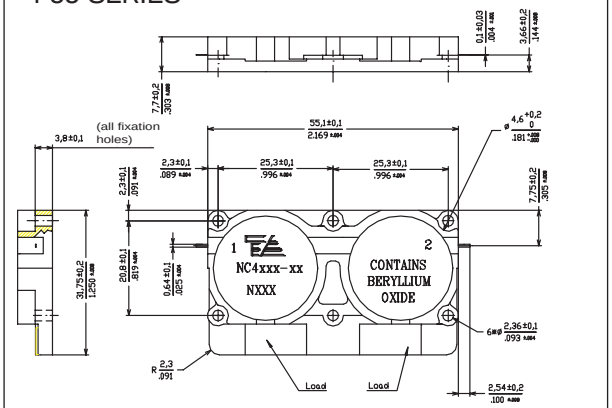
Dimensions in mm

Case	L	W	H	A	B	C	D	E	F	G	ø Holes
P42	50.8	25.40	7.62	46.23	20.83	15.36	7.75	3.81	3.81	3.81	2.1
P44	38.1	19.05	6.35	33.50	14.50	10.57	6.35	2.00	2.00	2.00	2.5

P42 - P44 SERIES



P55 SERIES



How to order

Please specify:

- ❏ Model number,
- ❏ Center frequency and desired bandwidth, or frequency range,
- ❏ Direction of circulation (clockwise or counter clockwise).

Test jig

Drop-in miniaturized circulators and isolators are measured in custom designed test jigs, in order to simulate operating environmental conditions. Special customer application and environmental details must be specified when ordering, to avoid correlation problems between TEMEX COMPONENTS tests and customer results. TEMEX COMPONENTS test jig is recommended to verify product performances.