



PRODUCT DATA SHEET

**MICROPROFILE LINE
MATCHING TRANSFORMER****P2781****Features**

- * Subminiature
- * 7mm seated height
- * Reinforced Isolation
- * Vacuum encapsulated
- * Surface Mount
- * EN 41 003 and EN 60 950 certified
- * Tested to 6.5kVDC

Applications

- * Telecommunications
- * V.22bis modems
- * Line matching
- * Portable computers
- * Instrumentation

DESCRIPTION

P2781 is a microprofile transformer for applications where high performance and safety isolation to the most exacting international standards are required in an extremely small case size.

Designed specifically as a surface mount device, the P2781 features a 7mm seated height and is vacuum encapsulated and tested to 6500VDC.

Despite the subminiature case size, the performance is the equal of that of much larger components. The P2781 offers fully reinforced isolation, is ideal for voice telecommunications and for data communications to V.22bis (2,400 bits/second), whilst capable of being matched to both 600ohm and complex impedance telephone lines.

At moderate transmit power levels (e.g. -10dBm) performance to V.32bis may be achieved.

In instrumentation applications, the P2781 offers a wideband frequency response from 50Hz to 40kHz.

The P2781 is supported by specific recommended matching circuit components to meet the requirements of most National Telephone System Operators. In particular, the return loss characteristics of P2781 are excellent.

SPECIFICATIONS

Electrical

At T = 25°C and as circuit Fig. 2 unless otherwise stated.

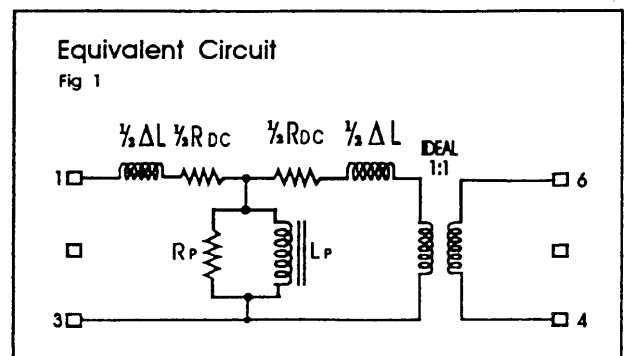
Parameter	Conditions	Min	Typ	Max	Units
Insertion Loss	f = 2kHz, R _L = 600Ω	-	-	2.0	dB
	f = 2kHz, R _L = 430Ω	-	-	4.0	dB
Frequency response	-3dB LF cutoff	-	50	-	Hz
	-3dB HF cutoff	-	40	-	kHz
	200Hz - 4kHz	-	-	±0.2	dB
Return Loss	200Hz - 4kHz	18	-	-	dB
Distortion ⁽¹⁾	f = 450Hz 0dBm in line, 3rd Harmonic	-	-60	-54	dBm
Balance	DC - 5kHz Method TG25	80	-	-	dB
Saturation	Excitation 50Hz 250Vrms. Output voltage across line	-	-	10	Vrms
		-	-	65	Vpeak
Voltage isolation ⁽²⁾	50Hz	3.88	-	-	kVrms
	DC	5.5	-	-	kV
Operating range: Functional Storage Humidity	Ambient temperature	-10	-	+70	°C
		-40	-	+125	°C
		-	-	95	%R.H.

Lumped equivalent circuit parameters as Fig. 1

DC resistance, R _{DC} ⁽³⁾	Sum of windings	205	-	245	Ω
Leakage inductance ΔL		4.2	-	4.9	mH
Shunt inductance L _p ⁽⁴⁾	-43dBm 200Hz	1.4	-	3.5	H
	-43dBm 1kHz	-	1.8	-	H
Shunt loss R _p ⁽⁴⁾	-43dBm 200Hz	5	-	15	kΩ
	-43dBm 1kHz	-	10	-	kΩ

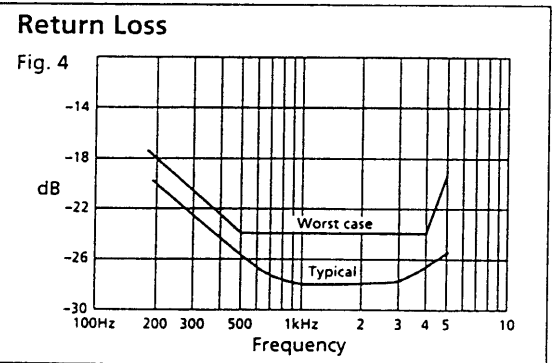
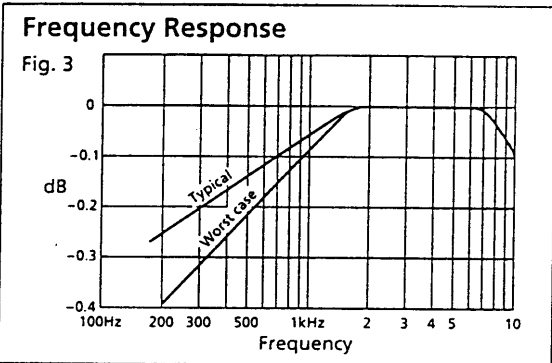
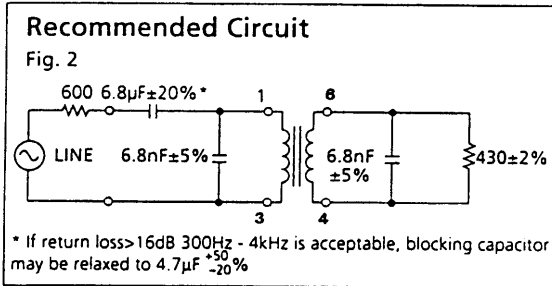
Notes

- Third harmonic typically exceeds other harmonics by 20dB.
- Components are 100% tested at 6.5 kVDC.
- Caution: do not pass DC through windings. Telephone line current, etc. must be diverted using choke or semiconductor line hold circuit.
- At signal levels greater than -20dBm, L_p will increase and R_p will decrease slightly but the effect is usually favourable to the return loss characteristic.

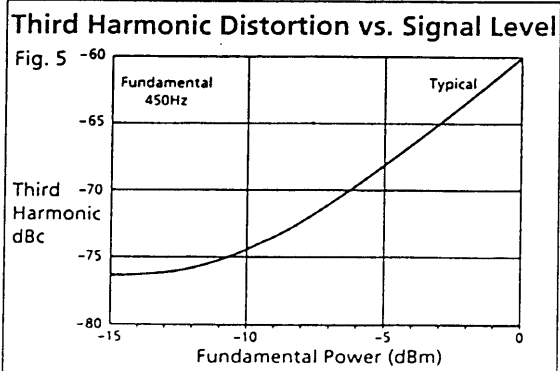


PERFORMANCE CHARACTERISTICS

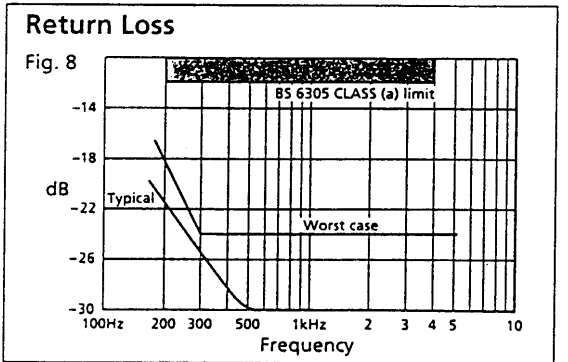
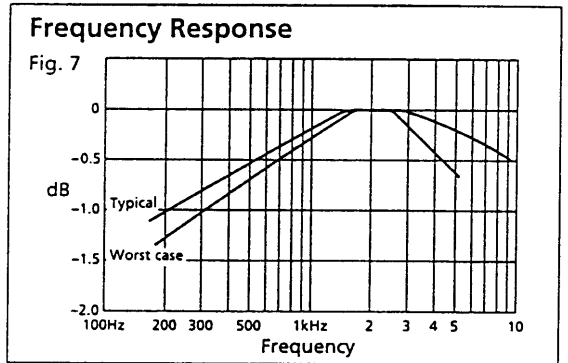
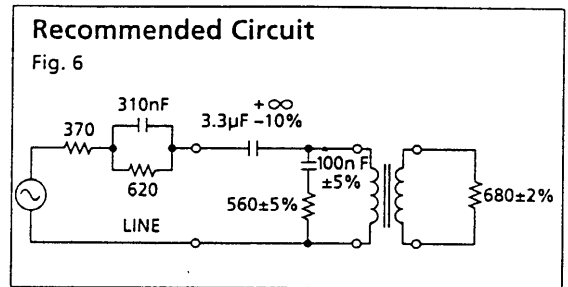
600Ω MATCH



Frequency response driven by terminal equipment (voltage source with 430Ω series resistance) measured across 600Ω is within ± 0.2dB 200Hz to 4kHz.



BS6305 CLASS (A) MATCH



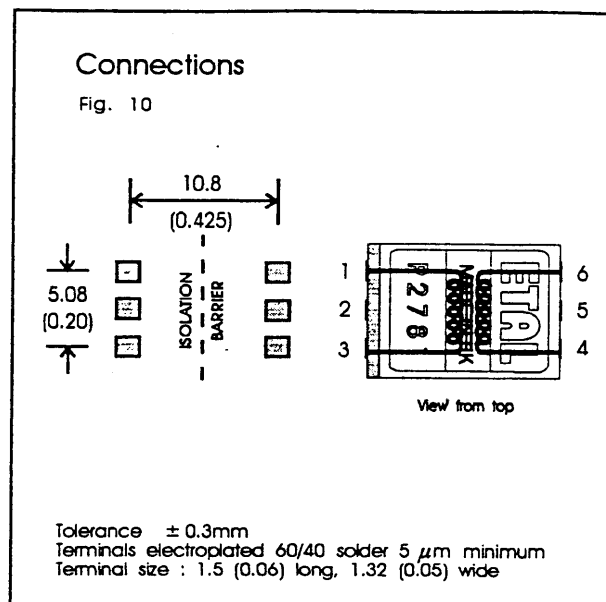
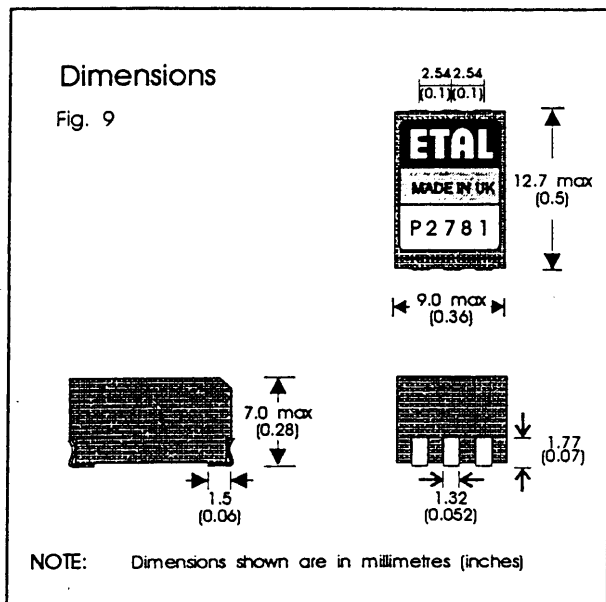
For recommended matching to other PTT requirements please contact ETAL

Note:

To obtain harmonic distortion power in dBm, add fundamental power in dBm to third harmonic in dBc e.g. at -10dBm power in line at 450Hz third harmonic power is -10 + (-74) = -84dBm typical

P2781

CONSTRUCTION



Dimensions shown are in millimetres (inches).
Geometric centres of outline and pad grid coincide within a tolerance circle of $0.3\text{mm}\varnothing$.
Windings may be used interchangeably as primary or secondary.

SAFETY

Manufactured from materials conforming to flammability requirements of UL94V-0 and EN 60 950:1992 (BS7002:1992) sub-clause 1.2.13.2 (V-0).
Distance through reinforced insulation 0.4mm minimum.
Creepage and clearances in circuit are 7mm minimum where PCB pads do not exceed $3\text{mm}\varnothing$.
Constructed and fully encapsulated in accordance EN 60 950:1992 (BS7002:1992) and EN 41 003:1991 (reinforced), excess voltage 250Vrms.

CERTIFICATION

Certified by BSI (Certificate 7536) to EN 41 003:1991 sub-clauses 4.2.3(a) and 4.5.3(a); EN 60 590:1992 (BS7002:1992) sub-clauses 2.2.2, 2.9.1, 2.9.7, 4.4.3 (Class V-0) and 5.3 (at 3750Vrms).
Additionally, ETAL certifies all transformers as providing voltage isolation of 3.88kVrms, 5.5kVDC minimum. All shipments are supported by a certificate of conformity to current BS requirements.



P2781

ABSOLUTE MAXIMUM RATINGS

(Ratings of components independent of circuit).

Short term isolation voltage (2s)	4.6 kVrms, 6.5 kVDC
DC current	100 μ A
Storage temperature	-40°C to +125°C
Reflow temperature (10s)	260°C

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