SMD3191 Line matching transformer

Description:

The SMD3191 is a low distortion microprofile transformer for appli-cations where high performance and safety isolation to international standards are required in an extremely small case size.
The part is compliant with RoHS Directive 2002/95/EC, and suitable for lead-free and conventional placement and reflow.
Despite the subminiature size, the performance issuperior to that of much larger components. The SMD3191 offers reinforced insulation, is ideal for data communications at high data rates, and can be matched to both 600Ω and complex impedance telephone lines.
When used with 600Ω lines no external compensation components are required.
At moderate transmit power levels (e.g. -10dBm) performance to 33,600 bits/second may be achieved.

Product picture printing is for reference only, subject to the actual product

Features:

* Lead-free (Pb-free)
* Surface mount
* Vacuum encapsulated
* Simple 600Ω match

Applications:

* Telecommunications
*V.34 modems
* Portable computers
* Fax/Modems

Electrical parameters:The following parameters are typical values. The actual values shall be subject to the actual measurement of the product

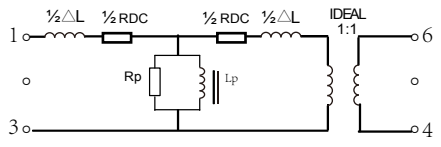
Parameter	Conditions	Minimum value	Typical value	Maximum value	Unit
Insertion loss	f = 2kHz	-	-	4.5	dB
Frequency response	-3dB LF cutoff	-	50	-	Hz
	-3dB HF cutoff	-	35	-	kHz
	200Hz - 4kHz	-	-	±0.2	dB
Return loss	200Hz - 4kHz	16	-	-	dB
Third harmonic distortion	600Hz -10dBm in line	-	-93	-	dBm
Balance	DC - 5kHz	80	-	-	dB
	Method TG25				
Saturation	Excitation 50Hz 250Vrms.				
	Output voltage	-	-	10	Vrms
	across line	-	-	65	Vpeak
Voltage isolation	50Hz	3.88	-	-	kVrms
	DC	5.5	-	-	kV
Operating range	Ambient temperature	-25	-	+85	°C
Functional		–40	-	+125	°C
Storage humidity		-	-	95	%R.H.

Lumped equivalent circuit parameters are shown in the figure on the right:

DC resistance	Main winding	270	-	340	Ω
Leakage inductance		-	5.6	-	mH
Shunt inductance	10mv 200Hz	2.4	-	-	H
Shunt loss	10mV 200Hz	7	-	-	kΩ

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

Equivalent circuit:



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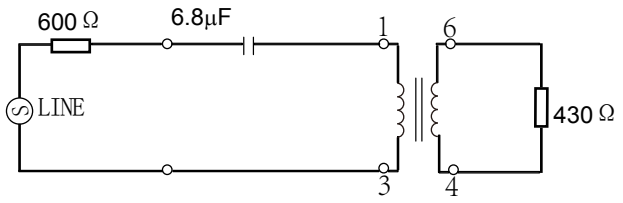
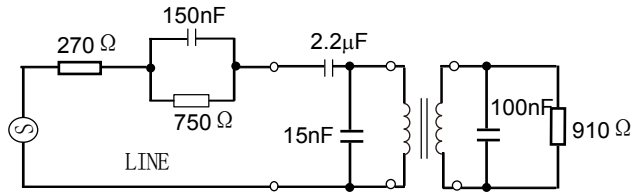
600Ω matching circuit:

Recommended circuit:



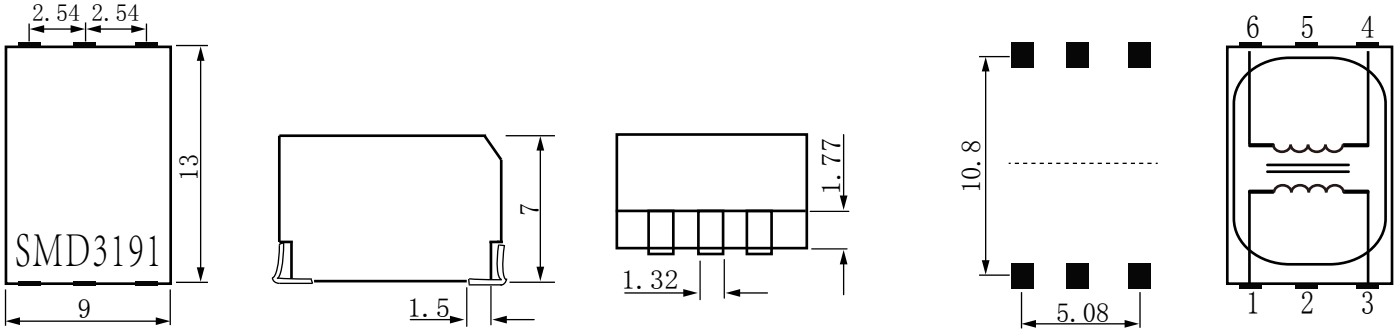
European CTR21 composite matching circuit:

Recommended circuit:



In practice, the 910Ω load resistor will connect to a low output impedance TX driver. The 100nF capacitor should appear in parallel with the 910Ω load resistor (rather than in parallel with transformer winding) toobtain optimum TX flatness to line.

Dimensions: (in:mm±0.3):



Security:

Manufactured from materials conforming to flammability requirements of UL94V-0.
Distance through reinforced insulation 0.4mm minimum.
Creepage and clearances in circuit are 7mm minimum where PCB pads do not exceed 3mmØ.
250Vrms maximum working voltage.

Welding (reflow soldering) precautions:

Welding temperature: ≤260℃
Welding time: ≤10S