T1/E1/CEPT/ISDN-PRI TRANSFORMERS

Quad Port T1/E1 with 8 Transformers, 1500Vrms

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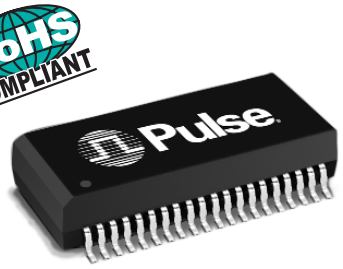


- Models matched to leading quad and dual T1/E1/CEPT/ISDN-PRI transceivers
- Crosstalk: -65dB or better
- UL1950 recognized (some parts pending approval)
- RoHS compliant versions available upon request

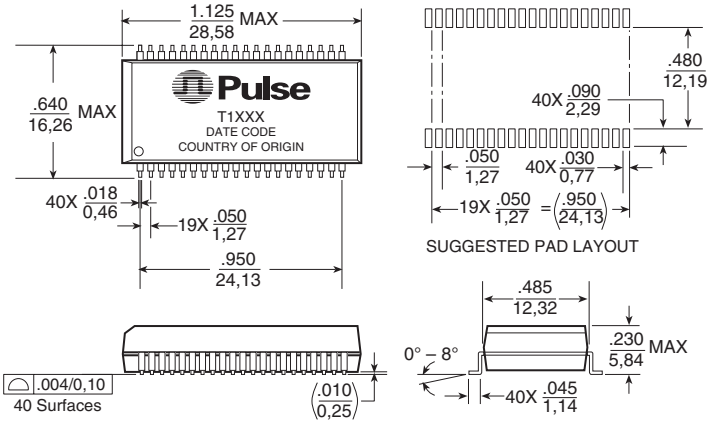
Electrical Specifications @ 25°C

Part Number [G]		Turns Ratio [A,B] (Pri:Sec ±2%)		OCL @ 25°C (mH MIN) [F]		LL (µH MAX)		Cw/w (pF MAX)		Package/ Schematic [E]	Primary Pins	
STD Temp.	EXT Temp.	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive		Transmit	Receive
T1063	**T1103**	1:1.36	1:1.36CT	1.2	1.2	.6	.6	35	35	TOU/1	1-2, 6-7, 11-12, 16-17	38-36, 33-31, 28-26, 23-21
T1064	**T1104**	1:1.14	1:1.14CT	1.2	1.2	.6	.6	35	35	TOU/1	1-2, 6-7, 11-12, 16-17	38-36, 33-31, 28-26, 23-21
T1065	**T1105**	1:2CT	1:2CT	1.2	1.2	.8	.8	35	35	TOU/3	4-5, 9-10, 14-15, 19-20	24-25, 29-30, 34-35, 39-40
T1066	**T1106**	1:2	1:2CT	1.2	1.2	.6	.6	35	35	TOU/4	1-2, 9-10, 11-12, 19-20	23-25, 26-28, 33-35, 36-38
T1067	**T1107**	1:1.36CT	1:2CT	1.2	1.2	.6	.6	35	35	TOU/3	24-25, 29-30, 34-35, 39-40	4-5, 9-10, 14-15, 19-20
T1068	**T1108**	1:2CT	1:1CT	1.2	1.2	.6	.6	35	35	TOU/2	1-2, 6-7, 11-12, 16-17	21-22, 26-27, 31-32, 36-37
T1069	**T1109**	1CT:1.41	1CT:1.41	1.2	1.2	.6	.6	35	35	TOU/3	1-3, 6-8, 11-13, 16-18	21-23, 26-28, 31-33, 36-38
T1070	**T1110**	1:1.15	1:2CT	1.2	1.2	.6	.6	35	35	TOU/1	1-2, 6-7, 11-12, 16-17	21-23, 26-28, 31-33, 36-38
T1071[D]	**T1111[D]**	1:1/1.26	1:2CT	1.2	1.2	.6	.6	35	35	TOU/2	1-2, 6-7, 11-12, 16-17	21-22, 26-27, 31-32, 36-37
T1072	**T1112**	1:1.15	1:1.15	1.2	1.2	.6	.6	35	35	TOU/5	1-3, 6-8, 11-13, 16-18	4-5, 9-10, 14-15, 19-20
T1073	**T1113**	1:2	1:2	1.2	1.2	.6	.6	35	35	TOU/5	1-3, 6-8, 11-13, 16-18	4-5, 9-10, 14-15, 19-20
T1078	—	1:1.08	1.08CT:1	1.2	1.2	.4	.5	35	35	TOU/1	1-2, 6-7, 11-12, 16-17	38-36, 33-31, 28-26, 23-21
T1124	**T1114**	1:2CT	1CT:2	1.2	1.2	.6	.6	35	35	TOU/3	4-5, 9-10, 14-15, 19-20	1-3, 6-8, 11-13, 16-18
T1125	—	1:1.70	1:1.36CT	1.2	1.2	.8	.6	35	35	TOU/1	1-2, 6-7, 11-12, 16-17	21-23, 26-28, 31-33, 36-38
T1129	—	1:1.36CT	1:1CT	1.2	1.2	.6	.6	35	35	TOU/3	24-25, 29-30, 34-35, 39-40	4-5, 9-10, 14-15, 19-20
T1142	**T1231**	1:2.4	1:1	1.0	1.0	.5	.5	35	35	TOU/6	1-2, 8-9, 11-12, 18-19	24-25, 27-28, 34-35, 37-38
—	**TX1268**	1:2.8	1:1	1.0	1.0	.5	.5	35	35	TOU/6	1-2, 8-9, 11-12, 18-19	24-25, 27-28, 34-35, 37-38
—	**T1226**	1:1.5	1.41:1	1.0	1.0	.5	.5	35	35	TOU/6	1-2, 8-9, 11-12, 18-19	24-25, 27-28, 34-35, 37-38
T1145[D]	—	1:2/2.4	1:0.79/1	1.0	1.0	1.0	1.0	35	35	TOU/7	1-2, 9-10, 11-12, 19-20	37-36, 35-34, 27-26, 25-24
T1180	—	1:2.42	1:2.42	1.2	1.2	.6	.6	35	35	TOU/5	1-3, 6-8, 11-13, 16-18	4-5, 9-10, 14-15, 19-20
T1181	—	1:2.1CT	1:2.1CT	1.2	.6	.6	.6	35	35	TOU/2	1-2, 6-7, 11-12, 16-17	21-22, 26-27, 31-32, 36-37
T1182	—	1:2.45CT	1:2.45CT	1.2	.6	.6	.6	35	35	TOU/2	1-2, 6-7, 11-12, 16-17	21-22, 26-27, 31-33, 36-37
—	**TX1262**	1:2	1:2	1.2	1.2	.7	.7	35	35	TOU/6	1-2, 6-7, 11-12, 16-17	3-4, 8-9, 13-14, 18-19
—	**TX1264**	1:2CT	1CT:1	1.2	1.2	.6	.6	35	35	TOU/3	4-5, 9-10, 14-15, 19-20	1-3, 6-8, 11-13, 16-18
—	**TX1266**	1:2	1:1	1.2	1.2	.6	.6	35	35	TOU/5	1-3, 6-8, 11-13, 16-18	4-5, 9-10, 14-15, 19-20
—	**TX1292**	1:1.36	1:1	1.2	1.2	.6	.6	40	40	TOU/5	1-3, 6-8, 11-13, 16-18	4-5, 9-10, 14-15, 19-20
—	**TX1294**	1:1CT	1:1CT	1.2	1.2	.6	.6	35	35	TOU/3	4-5, 9-10, 1 4-15, 19-20	24-25, 29-30, 34-35, 39-40
—	**TX1295**	1:1.26CT	1:1.26CT	1.2	1.2	.6	.6	35	35	TOU/3	4-5, 9-10, 1 4-15, 19-20	24-25, 29-30, 34-35, 39-40
—	**TX1298**	1:1	1:1	1.2	1.2	.7	.7	35	35	TOU/5	1-3, 6-8, 11-13, 16-18	4-5, 9-10, 14-15, 19-20

Note: RoHS-6 compliant parts can be ordered by adding an "**NL**" suffix to the part number (i.e. T1063 becomes T1063**NL**).

Mechanical

TOU



Weight . . . . . .4.0 grams
Tape & Reel 250/reel
Tube 15/tube

Dimensions: Inches / mm

Unless otherwise specified, all tolerances are ± .010 / 0,25

T1/E1/CEPT/ISDN-PRI TRANSFORMERS
Quad Port T1/E1 with 8 Transformers, 1500Vrms

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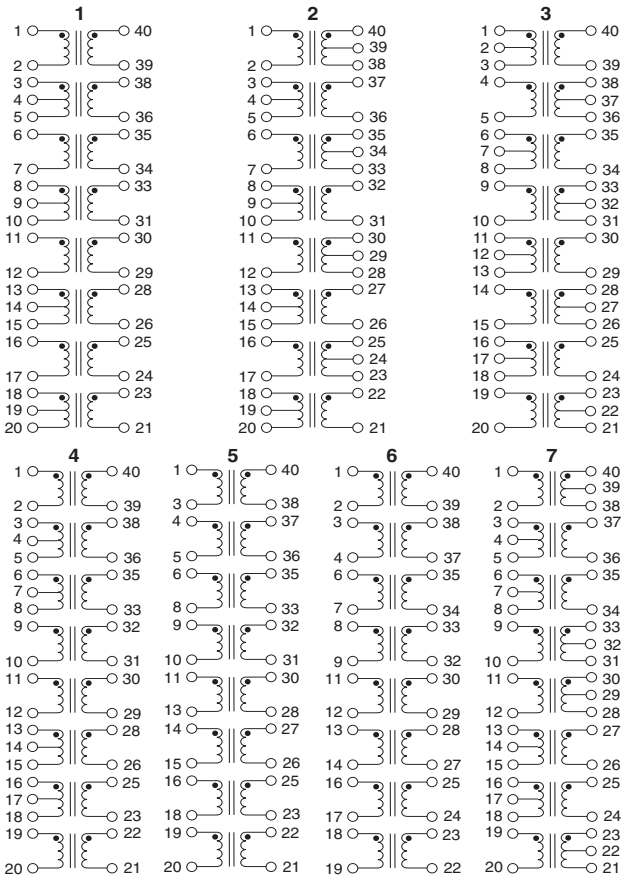
Transformer Selection Guide

IC Mfr.	IC Part Number	Comments	Octal SMT	
			STD temp	EXT temp
Mindspeed	BT8510	T1/E1	T1071	T1111
(Conexant)	BT8510	T1/E1	T1071	T1111
	CN8380		T1124	T1114
	BT8370/5/6	Better RI	T1067	T1107
	BT8370/5/6	Low Power	T1070	T1110
Cirrus Logic	61318	120 E1	T1068	T1108
(Crystal)	61577	T1 & E1	T1065	T1105
	61304A/5A/535A/574A,/75	T1	T1070	T1110
	61304A/5A/535A/574A,/75	75 E1	T1068	T1108
	61304A/5A/535A/574A,/75	120 E1	T1071	T1111
	61582, 61583		T1064	T1104
	61310, 61581		T1068	T1108
	61881		T1070	T1110
	61584/84A	IQ3	T1065	T1105
	61584/82/83/A	IQ5	T1064	T1104
Maxim	DS2196		T1068	T1108
(Dallas)	DS2151/2152/2153/2154		T1070	T1110
	DS2151/2152/2153/2154		T1067	T1107
	DS2148/Q48	3V	T1068	T1108
	DS2148/Q48	5V	T1067	T1107
	DS21352/Q352,DS21354/Q354		T1068	T1108
	DS21552/Q552,DS21554/Q554		T1070	T1110
	DS21552/Q552,DS21554/Q554		T1067	T1107
Exar	T5683A, 59L91		T1065	T1105
	T5894,T5897,T5997		T1065	T1105
	T5791/93/94/95		T1071	T1111
	81L27,82L24,82D20		T1067	T1107
	83L30/34/38		T1065	T1105
	T5684,T7288,82D20		T1067	T1107
Infineon	PEB 2254/55	E1/T1 & J1	T1069	T1109
Technologies	PEB 2254/55	E1/T1 & J1	T1069	T1109
(Siemens)	PEB 22504	3.3V	T1142	T1231
	PEB 22504	5V	T1226	T1226
	PEB22554	3.3V	T1142	T1231
	PEB2256 3.3 V	E1/T1/J1	T1142	T1231
Intel	LXT 300/301		T1065	T1105
(Level One)	LXT 304/305/307	T1,E1	T1065	T1105
	LXT 304/305/307	T1	T1070	T1110
	LXT 304/305/307	75E1,120E1	T1071	T1111
	LXT 310/317/318		T1068	T1108
	LXT 331	T1,E1	T1068	T1108
	LXT 331, LXT 332		T1065	T1105
	LXT 331, LXT 332		T1070	T1110
	LXT 334, LXT 335	T1/E1	T1065	T1105
	LXT 334, LXT 335	120/75 E1	T1067	T1107
	LXT 334, LXT 335	75 E1	T1071	T1111
	LXT 336		T1065	T1105
	LXT 350, LXT 351, LXT 359	T1,E1	T1068	T1108
	LXT 350, LXT 351		T1070	T1110
	LXT 360/361/362/363	T1,E1	T1068	T1108
	LXT 360/361/362/363		T1070	T1110
	LXT 380/381/384/386/388	T1/E1	T1068	T1108
	LXT 380/381/384/386/388	T1/E1	T1124	T1114
	LXT 3104, LXT 3108		T1068	T1108
Lucent	T7288, T290A	CEPT	T1067	T1107
Technologies	T7289A	DS1	T1070	T1110
	T7688, T7690, T7698	CEPT	T1063	T1103
	T7689, T7690, T7698	DS1	T1064	T1104
	T7693,T7697	CEPT	T1180	
	TLIU04C1	DS1	T1064	T1104
	TLIU04C1	CEPT	T1063	T1103
Zarlink	MT9071, MT9076		T1180	
(Mitel)	MT9076, MT9075		T1142	T1231
	MT9074, MT9075		T1068	T1108
PMC-Sierra	PM4341/6341/4314		T1067	T1107
	PM4318		T1065	T1105
	PM4351/4354	COMET	T1180	TX1299

Schematics



NOTES FROM TABLES

A. OCL (primary inductance) is measured at the primary winding. Turns ratio is specified primary: secondary. (CT = Center Tap).

B. To make a 1CT:1 ratio from a 1CT:2CT ratio, use only one-half of the secondary (2CT) winding.

C. It is possible to use the same transformer model for the three impedance levels of T1 (100Ω) and CEPT (75Ω & 120Ω). For specific connection information and resistor values, refer to IC vendors' data book.

D. Dual Ratio Transformer **(T1071, T1111 and T1145)** — These transformers have tapped secondary windings to provide two turns ratios (T/R). Use the entire primary winding and connect the secondary pins listed below to obtain desired turns ratio:

Part Number	Turns Ratio 1	Secondary Pins	Turns Ratio 2	Secondary Pins
T1071 and T1111	1:1	40-39	1:1.26	40-38
	1:1	35-34	1:1.26	35-33
	1:1	30-29	1:1.26	30-28
	1:1	25-24	1:1.26	25-23
T1145	1:2	40-39	1:2.4	40-38
	1:2	33-32	1:2.4	33-31
	1:2	30-29	1:2.4	30-28
	1:2	23-22	1:2.4	23-21

E. Standard packaging for the surface mount package is anti-static tubes. Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number, (i.e. T1063**T**).

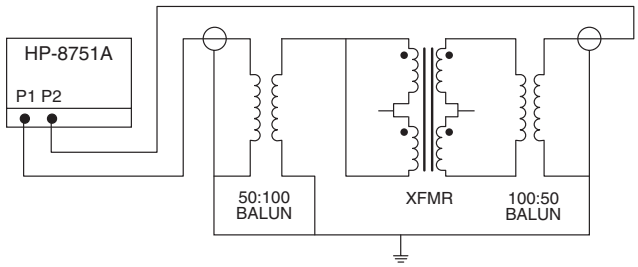
F. **Extended Temperature Range Models** — For extended temperature range transformers (-40°C to +85°C operating temperature range), OCL (Open Circuit Inductance for the primary winding) is specified at both -40°C and +25°C. At -40°C, OCL is 600 µH minimum. All other parameters are specified at +25°C only. Standard temperature range is 0°C to +70°C.

1. **ET Product** — All coils have an ET product of 10V-µsec minimum.

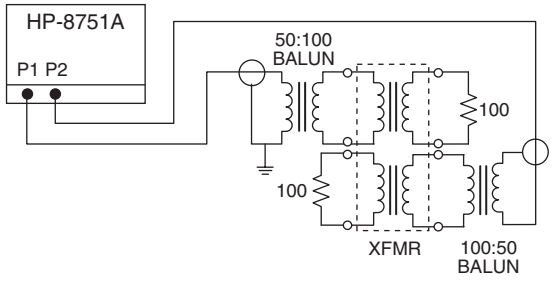
2. **Flammability** — Materials used in the products are recognized as UL94-VO approved. Products meet the requirements of IEC 695-2-2 (Needle Flame Test).

3. **Balance Characteristics** — The transformers meet the requirements for longitudinal balance of FCC part 68.

4. **Common Mode Rejection Ratio** — the CMRR for all transformers is better than 50dB at 1MHz. A typical test circuit is shown below.



5. **Crosstalk Attenuation** — In the packages which contain transmit and receive transformers side by side, sufficient crosstalk attenuation is achieved by the inherent characteristics of the toroid cores as well as by their proper positioning. The crosstalk attenuation is typically 65dB or better. This result was established with the test circuit shown below.



6. **Return Loss** — ITU-T G.703 and European national regulatory documents specify minimum return loss levels. The transformers will allow these limits to be complied within the situations where they are applicable.

Frequency	50-100kHz	100kHz-2MHz	2-3MHz
Return Loss			
XMIT	9dB	15dB	11dB
RCV	12dB	18dB	14dB

7. **Surge Voltage Capability** – All transformers and chokes meet surge voltage tests according to the most stringent regulatory documents, when used with the proper voltage and current suppression devices:

   Metallic Voltage: 800V peak, 10/560µsec

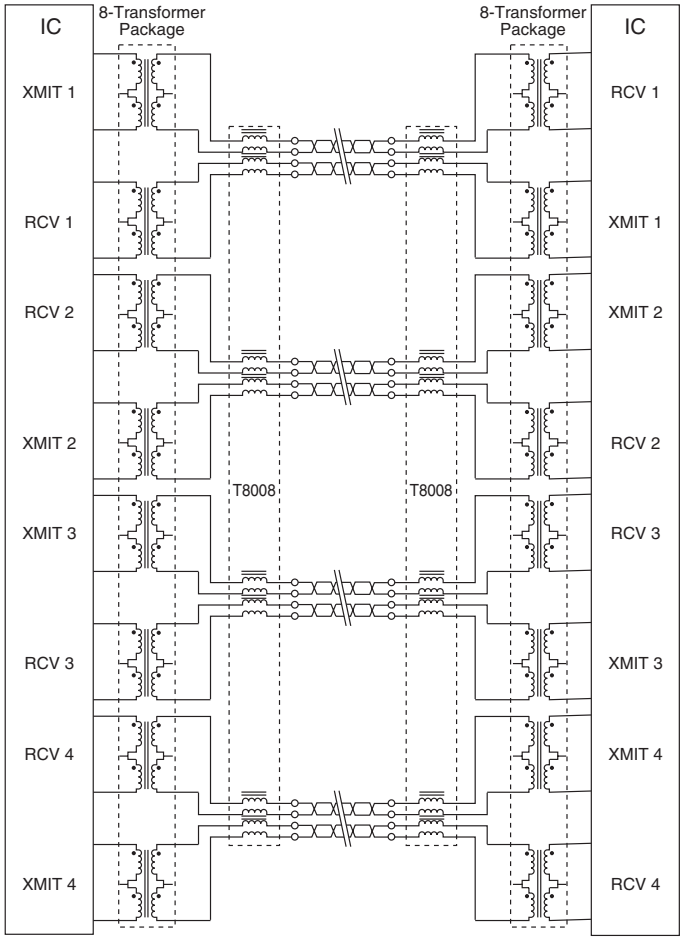
   Longitudinal Voltage: 2,400V peak, 10/700µsec

8. **Isolation Voltage** — 100% of transformers are tested during production to the specified isolation voltage level.

9. **General Information** — The transformers are specifically designed for use in 1.544Mbps (T1), 2.048Mbps (CEPT) and ISDN Primary rate (PRI) interface applications. They are matched to the majority of the line interface transceiver ICs currently available. Use of the proper transformer allows the interface circuit to comply with ITU-T G.703 and other standards regarding pulse waveform, return loss, and balance.

10. **Common Mode Chokes** — Additional high-frequency 4-line common mode chokes may be used to provide an effective means of complying with national and international regulations on EMI. The common mode chokes are designed to be used in conjunction with Pulse's T1/CEPT transformers as shown in the typical application below. Crosstalk is typically -65dB or better.

Typical Application



T1/E1/CEPT/ISDN-PRI TRANSFORMERS
Quad Port T1/E1 with 8 Transformers, 1500Vrms

Pulse® A TECHNITROL COMPANY

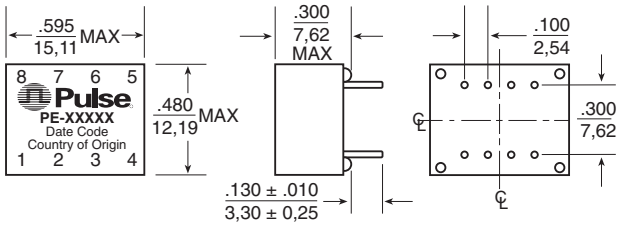
Electrical Specifications @ 25°C

Pulse Part Number	Number of Lines	Turns Ratio (±5%)	OCL (µH MIN)	$C_{W/W}$ (pF MAX)	L_L (µH MAX)	DCR (Ω MAX)	Isolation (Vrms MIN)	Package/ Schematic
HIGH FREQUENCY COMMON MODE CHOKES								
T8008	**16 (8 x 2 line)**	1:1 (8 places)	47.0	25	.18	0.40	500	TOU/2 (Surface Mount)
PE-65554	4	1:1:1:1	24.0	15	.20	0.30	500	IN/1 (Through Hole)
PE-65555	4	1:1:1:1	8.0	10	.20	0.25	500	IN/1 (Through Hole)
PE-65854	4	1:1:1:1	47.0	16	.20	0.30	500	SH/1 (Surface Mount)
PE-65857	4	1:1:1:1	24.0	15	.23	0.30	500	LA/1 (Surface Mount)

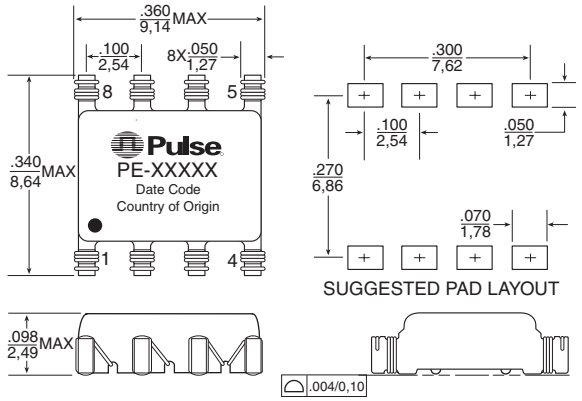
NOTE: For additional Common Mode Chokes, refer to data sheets **G002, T627, T661, T639** and **T673**.

Mechanicals

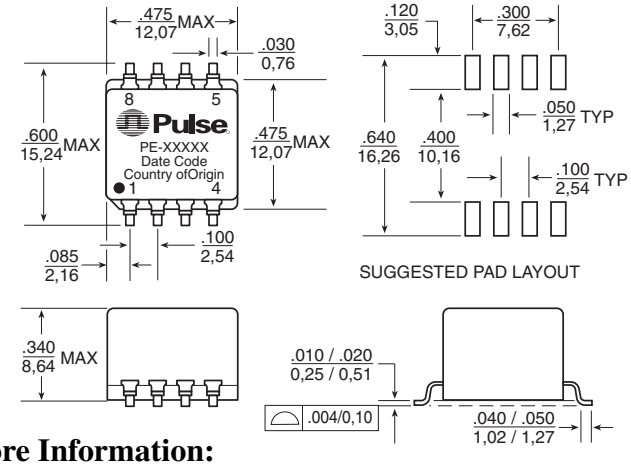
IN



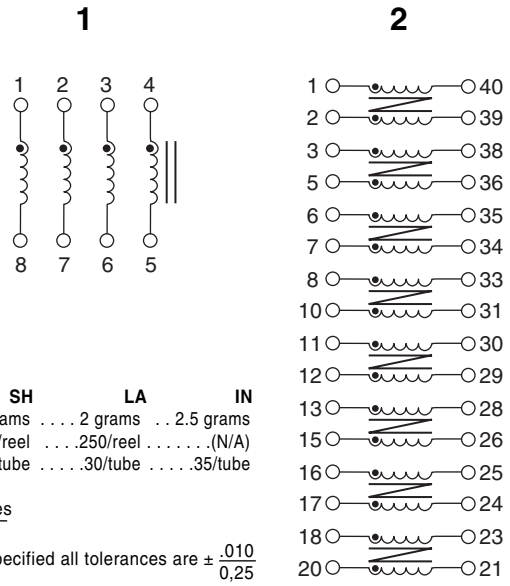
SH



LA



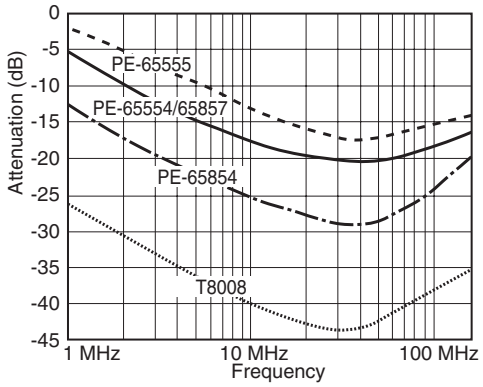
Schematics



	SH	LA	IN
Weight	0.3 grams	2 grams	2.5 grams
Tape & Reel	1500/reel	250/reel	(N/A)
Tube	25/tube	30/tube	35/tube

Dimensions: Inches / mm

Unless otherwise specified all tolerances are ± .010 / 0,25



Typical common mode attenuation for high frequency common mode chokes based on a 100Ω system.

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