LAN ISOLATION TRANSFORMER CATALOG

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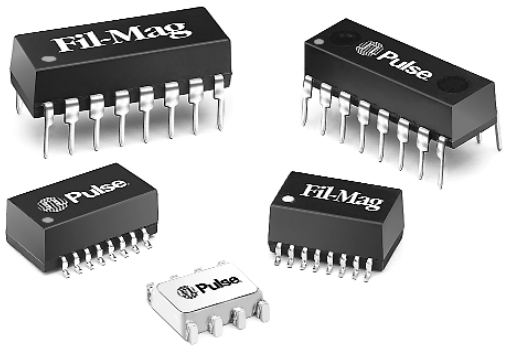
MECHANICALS

Surface Mount 8

Through Hole 10

ISOLATION TRANSFORMERS FOR 10BASE-T
For Adapter Cards, MAUs, Hubs, and Motherboard Applications

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- Meets IEEE 802.3 specification
- Available with common mode chokes for EMI suppression
- Through hole, auto-insertable, 16-pin DIP package

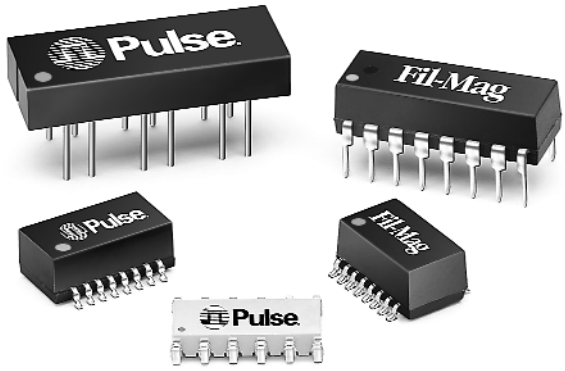
Electrical Specifications @ 25°C — Operating Temperature 0°C to 70°C

Part [2] Number	Turns Ratio (±5%) Transmit	Turns Ratio (±5%) Receive	Primary Pins	Common Mode Choke	Sine Wave Inductance OCL[1] (µH MIN)	Interwinding Capacitance Cww[1] (pF MAX)	Leakage Inductance LL[1] (µH MAX)	DCR (Ω MAX)	Hipot (Vrms)	Schem.	Mech
SURFACE MOUNT [2]										pages 6-7	pages 8-9
23Z114SM	1CT:1CT	1CT:1CT	1-3/6-8		200	12	0.3	0.3	2000	T4	SMT5
23Z128SM	1CT:1.414CT	1CT:1CT	6-8/1-3		200	15	0.5	0.4	2000	T4	SMT5
23Z356SM	1CT:1.414CT	1CT:1CT	6-8/1-3	X	200	12	0.5	0.6	2000	T7	SMT5
23Z435SM	2CT:1CT	1CT:1CT	1-3/6-8		100	10	0.4	0.5	2000	T4	SMT5
23Z467SM	1CT:2CT	1CT:1CT	6-8/1-3	X	140	12	0.2	0.6	2000	T7	SMT5
E2023 [4]	1CT: 2.5CT	1CT: 1CT	6-8/1-3	X	200	15	0.5	0.4	2000	T10	SMT4
E4001	1CT:2CT	1CT:1CT	6-8/1-3	X	112	8	0.3	0.8	3000	T5	SMT4
E4005	1CT: 2.5CT	1CT: 1CT	6-8/1-3	X	200	10	0.4	0.5	1500	T10	SMT4
E5017	1CT:1CT	1CT:1CT	1-3/6-8	X	200	10	0.25	1.0	1500	T6	SMT4
EX2024 [3]	1CT: 2.5CT	1CT:1CT	6-8/1-3	X	350	30	0.8	0.6	2000	T10	SMT4
PE-65454	1:1.414	1:1	3-4/1-2		140	12	0.2	0.4	2000	T1	SMT2
PE-65726	1CT:1CT	1CT:1CT	1-3/6-8		200	10	0.2	0.3	2000	T4	SMT4
PE-65745	1CT: 1.414CT	1CT:1CT	6-8/1-3		140	12	0.2	0.3	1500	T4	SMT4
PE-68023	1CT:2CT	1CT:1CT	1-3/6-8	X	200	12	0.3	1.0	1500	T6	SMT4
PE-68041	1CT:2CT	1CT:1CT	6-8/1-3		112	8	0.3	0.5	1500	T4	SMT4
PE-68042	2.828CT:1	1:1	2-4/7-9		200	14	1	0.5	1500	T9	SMT1
PE-68048	1CT: 1.414CT	1CT:1CT	6-8/1-3	X	110	15	0.4	1.0	1500	T5	SMT4
PE-68052	2CT:1CT	1CT:1CT	1-3/6-8	X	140	12	0.3	1.0	1500	T6	SMT4
PE-68810	—	1:1 (4X)	1-2/3-4		140	12	0.2	0.4	2000	T3	SMT4
PE-68820	1:1.414 (4X)	—	1-2/3-4 5-6/7-8		40	12	0.2	0.4	2000	T3	SMT4
THOURGH HOLE										pages 6-7	page 10
23Z128	1CT: 2CT	1CT:1CT	6-8/1-3		140	15	0.5	0.4	2000	T4	TH3
23Z435	2CT:1CT	1CT:1CT	1-3/6-8		80	10	0.4	0.5	2000	T4	TH3
PE-65263	1CT:1CT	1CT:1CT	1-3/6-8		200	15	0.25	0.3	2000	T4	TH4

1. **OCL, Cww** and **LL** are measured at 20 mVrms, 100 kHz.
2. For Tape & Reel packaging, add the suffix **"T"** to the end of the part number when ordering. e.g. E2023**T.**
3. Part numbers denoted "**EX**" are extended temperature parts -40°C to 85°C, electrical specifications @ 25°C.
4. E2023**NL** is the RoHS compliant version of E2023.

ISOLATION TRANSFORMERS FOR ETHERNET

AUI Transformers



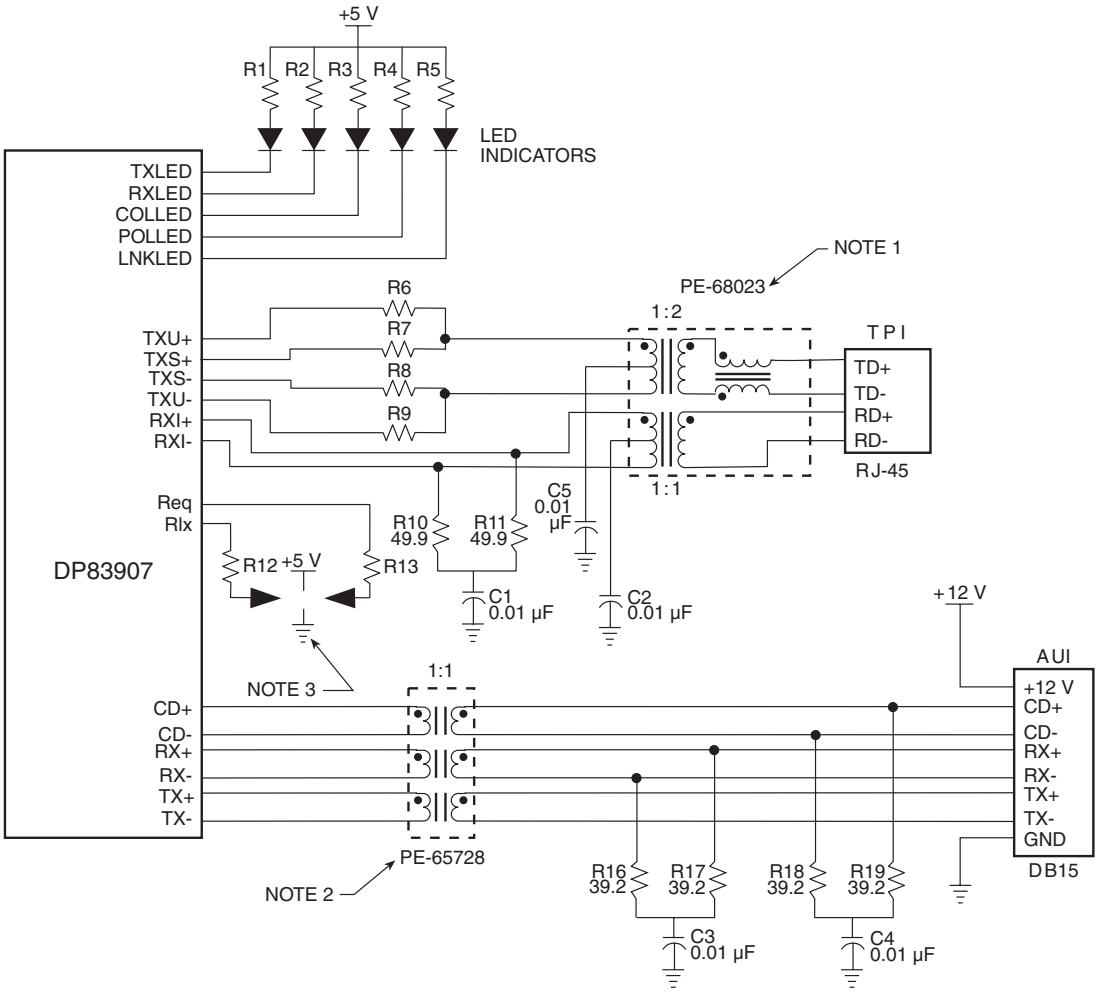
- Low leakage inductance and coupling capacitance for faster rise times
- Small form factor, 50 mil lead spacing
- Through hole, auto-insertable, 16-pin DIP package

Electrical Specifications @ 25°C — Operating Temperature 0°C to 70°C

Part Number[3]	Turns Ratio (±5%)	Primary Pins	Primary Sine Wave OCL[1] (µH ±20%)	Primary ET-Constant (V-µs MIN)	Rise Time[2] (ns MAX)	Interwinding Capacitance Cww[1] (pF MAX)	Leakage Inductance L_L[1] (µH MAX)	DCR (Ω MAX)	Schem.	Mech.	Hipot (Vrms)
SURFACE MOUNT[3]									pages 6-7	pages 8-9	
23Z90SM	1:1	1-2/4-5/7-8	75	2.4	3.0	10	0.20	0.20	T2	SMT5	2000
23Z91SM	1:1	1-2/4-5/7-8	100	2.4	3.0	10	0.20	0.30	T2	SMT5	2000
23Z108SM[5]	1:1	1-2/4-5/7-8	350	2.5	3.5	16	0.30	0.35	T2	SMT5	2000
E6002	1:1	1-2/4-5/7-8	40 (MIN)	2.1	3.0	8	0.20	0.25	T2	SMT4	2000
PE-65723	1:1	1-2/4-5/7-8	75	1.8	3.0	8	0.20	0.30	T2	SMT4	2000
PE-65727	1:1	1-2/4-5/7-8	150	1.2	3.0	12	0.20	0.30	T2	SMT4	2000
PE-65728	1:1	1-2/4-5/7-8	100	1.8	3.0	9	0.20	0.30	T2	SMT4	2000
PE-68801	1:1	1-2/3-4/5-6	75	1.8	3.0	12	0.20	0.30	T8	SMT3	2000
THROUGH HOLE									pages 6-7	page 10	
PE-64102	1:1	1-2/4-5/7-8	75	2.1	3.0	10	0.20	0.20	T2	TH4	500
PE-64103	1:1	1-2/4-5/7-8	100	2.1	3.0	10	0.20	0.30	T2	TH4	500
PE-64104	1:1	1-2/4-5/7-8	150	2.1	3.5	12	0.20	0.30	T2	TH4	500
PE-64107	1:1	1-2/4-5/7-8	75	2.4	3.5	10	0.25	0.30	T2	TH2	2000
PE-64108	1:1	1-2/4-5/7-8	100	2.1	3.5	10	0.25	0.40	T2	TH2	2000
PE-64109	1:1	1-2/4-5/7-8	150	3.0	3.0	15	0.20	0.45	T2	TH2	2000
PE-64502	1:1	1-2/4-5/7-8	75	2.1	3.0	10	0.20	0.20	T2	TH4	2000
PE-64503	1:1	1-2/4-5/7-8	100	2.1	3.0	10	0.20	0.30	T2	TH4	2000

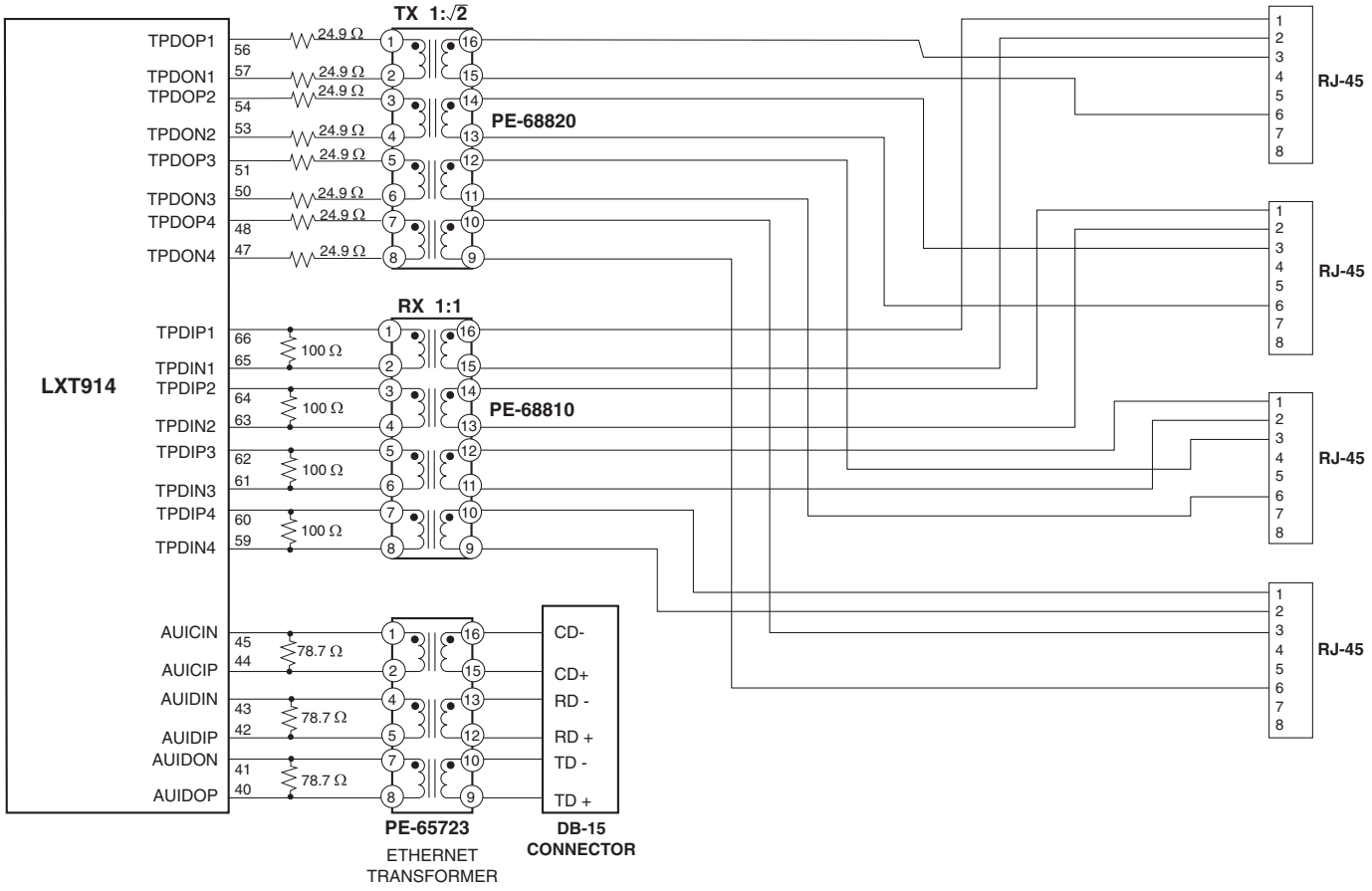
1. **OCL, C_{ww}** and **L_L** are measured at 20 mVrms, 100 kHz.
2. Rise time is measured in 75 Ω systems.
3. For Tape & Reel packaging, add a suffix **"T"** to the end of the part number when ordering. e.g. PE-65723**T.**

Typical Application Circuit



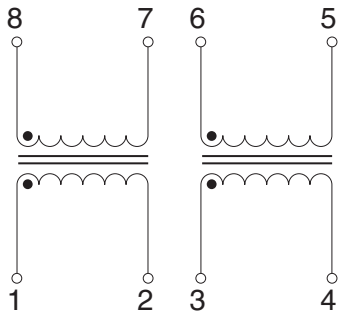
NOTES:
1. Connections at pins 12 and 13 apply to PE-68023 only. These are test points. **Do not ground.**
2. For specific information, see pages 2 and 3 in this catalog.
3. For specific connection, refer to National's Application Notes.

Typical 10Base-T Application Circuit

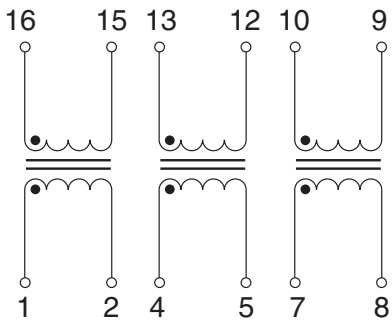


Schematics

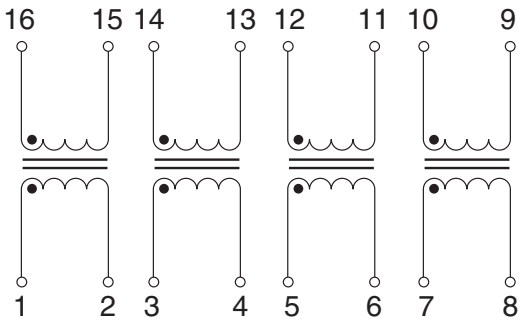
T1



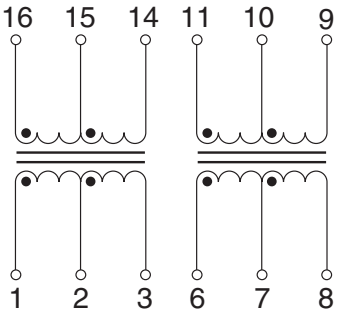
T2



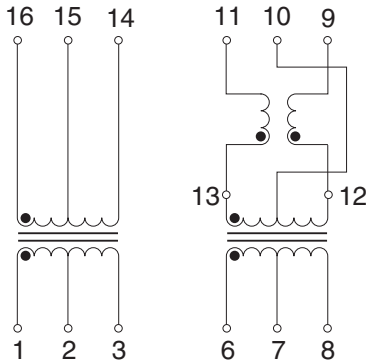
T3



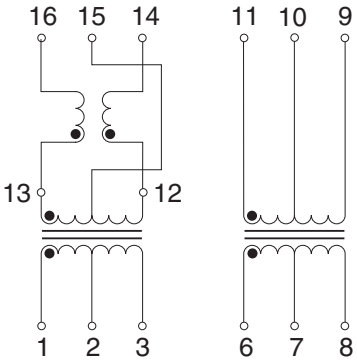
T4



T5

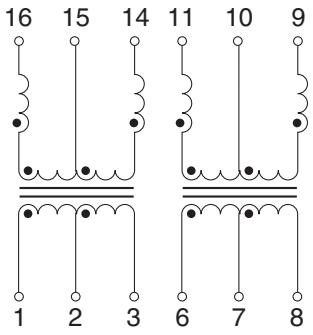


T6

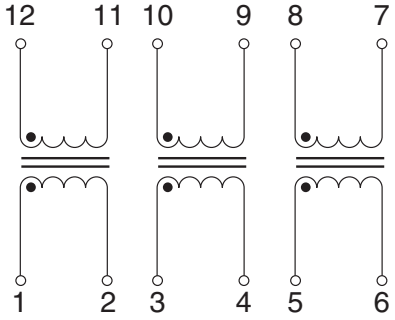


Schematics *(continued)*

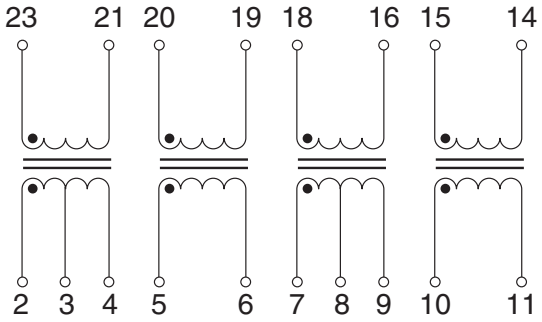
T7



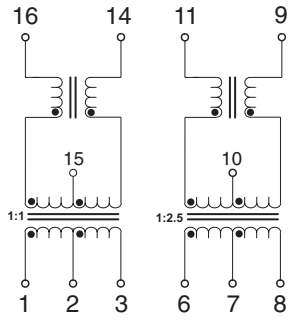
T8



T9



T10

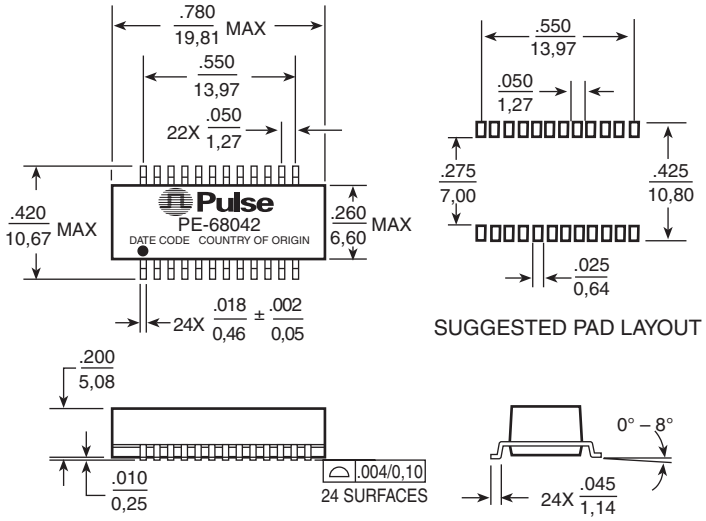


PINS 4, 5, 12 AND 13 NOT CONNECTED.

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Surface Mount Mechanicals

SMT1

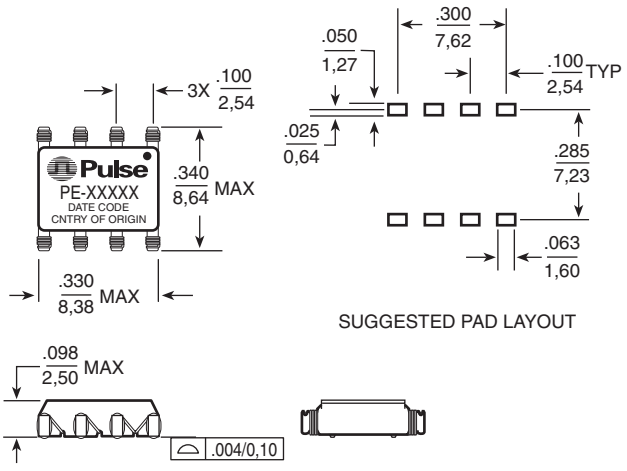


Dimensions: Inches / mm

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

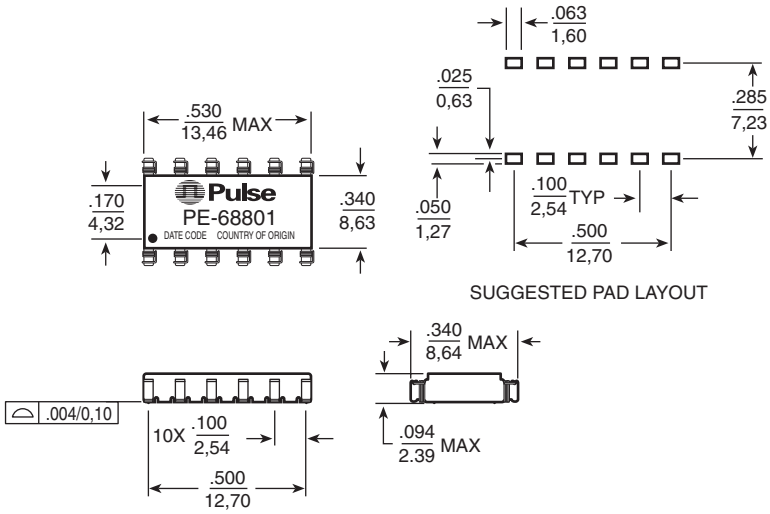
Weight . . . . . .1.15 grams
Tube 25/tube
Tape & Reel 350/reel

SMT2



Weight . . . . . .0.22 grams
Tube 60/tube
Tape & Reel 1500/reel

SMT3



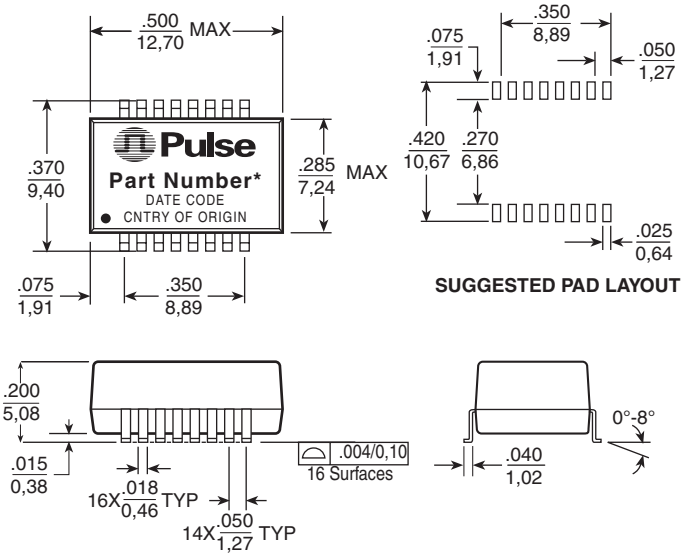
Dimensions: Inches / mm Unless otherwise specified, all tolerances are ± .010 / 0,25

Weight . . . . . .0.28 grams
Tube 35/tube
Tape & Reel 1500/reel

Surface Mount Mechanicals *(continued)*

SMT4

***PE-6XXXX, EXXX, EX2XXX**

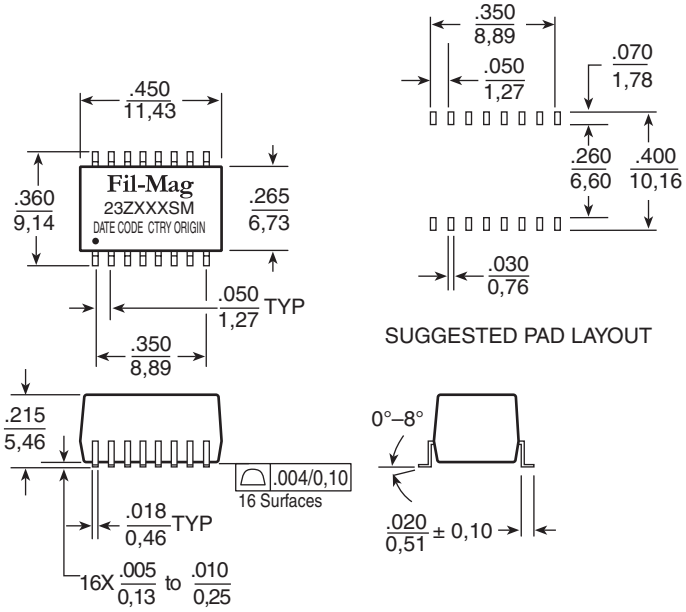


Dimensions: Inches / mm

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

Weight . . . . . .0.82 grams
Tube 40/tube
Tape & Reel 900/reel

SMT5



Dimensions: Inches / mm

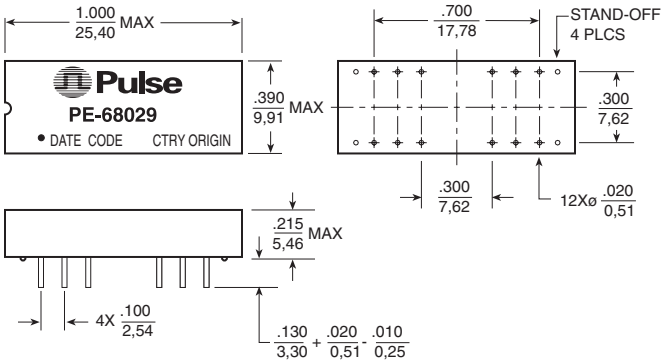
Unless otherwise specified, all tolerances are ± .005 / 0,13

Weight . . . . . .0.85 grams
Tube 50/tube
Tape & Reel 750/reel

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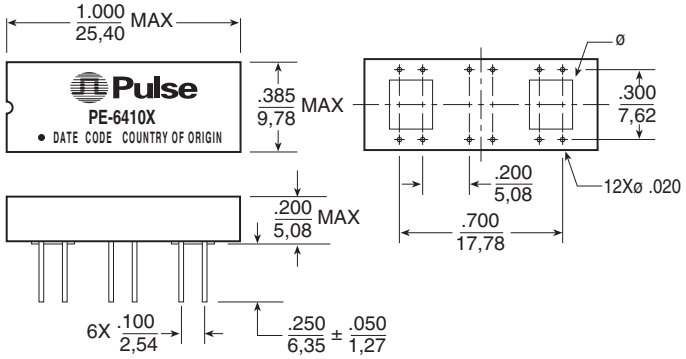
Through Hole Mechanicals

TH1



Weight . . . . . .2.17 grams
Tube 20/tube

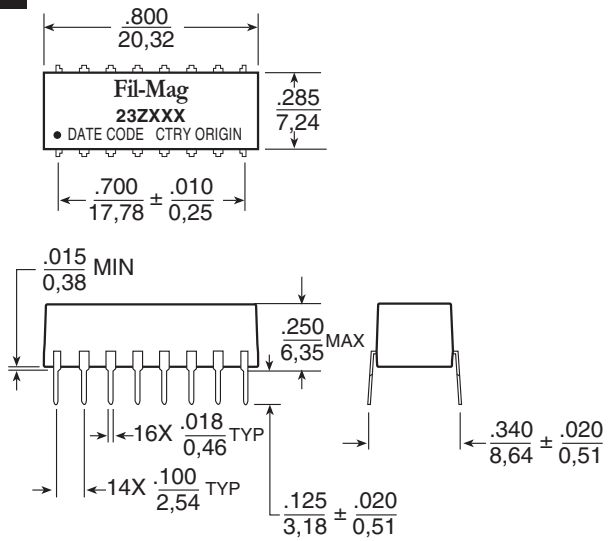
TH2



Weight . . . . . .2.18 grams
Tube 20/tube

Dimensions: Inches / mm Unless otherwise specified, all tolerances are ± .010 / 0,25

TH3

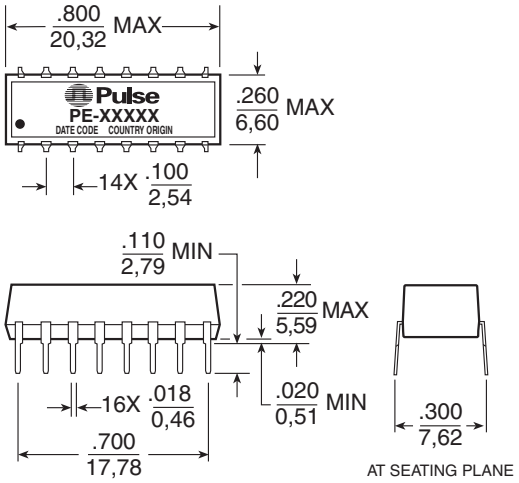


Weight . . . . . .1.7 grams
Tube 28/tube

Dimensions: Inches / mm

Unless otherwise specified, all tolerances are ± .005 / 0,13

TH4



Dimensions: Inches / mm

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

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