



nuvotem

- Components for ISDN and LAN
- Common Mode Interface Chokes
- Interface Signal Transformers and Modules
- SO, E1/T1/PRI/CEPT, U, xDSL Interface Transformers

U Interface Transformers for Communications and Data Line Technology



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TALEMA PROFILE

Founded in 1975, The TALEMA International Group has established itself as a world leader in the manufacture of toroidal transformers and related magnetic components. Our strong technical engineering expertise has contributed to the growth of our current workforce to over 1,200 employees in manufacturing locations in the Czech Republic and India.

Over the years The Talema Group has succeeded in designing, producing and delivering in excess of 50 million transformers to its customers. The recent incorporation of xDSL technology into our extensive range of Telecom and LAN magnetics offerings, such as ISDN, 10Base-T, Ethernet transformers for 100/1000Base-T, has broadened our market offering to an even higher level.

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U_{PO} Interface

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Visit our web site for detailed electrical and mechanical specifications for Talema's extensive line of magnetic components for LAN, Ethernet & Telecom Applications - <http://www.talema-nuvotem.com>

QUALITY

The TALEMA Group has a total commitment to quality and employs Lean Six Sigma training for engineering, production and administrative staff to help achieve a goal of zero defects. All facilities maintain very stringent Quality Control and Quality Assurance procedures and are certified to and manufacture in accordance with ISO-9001:2000, TS-16949:2002 and meet a broad range of International Standards including UL, VDE, IEC, and EN.

Performance has been proven in the many design in's of our products. The fact that we maintain a ship-to-stock vendor rating with over 200 national and international companies is, to us, the best testimonial of our commitment to quality.

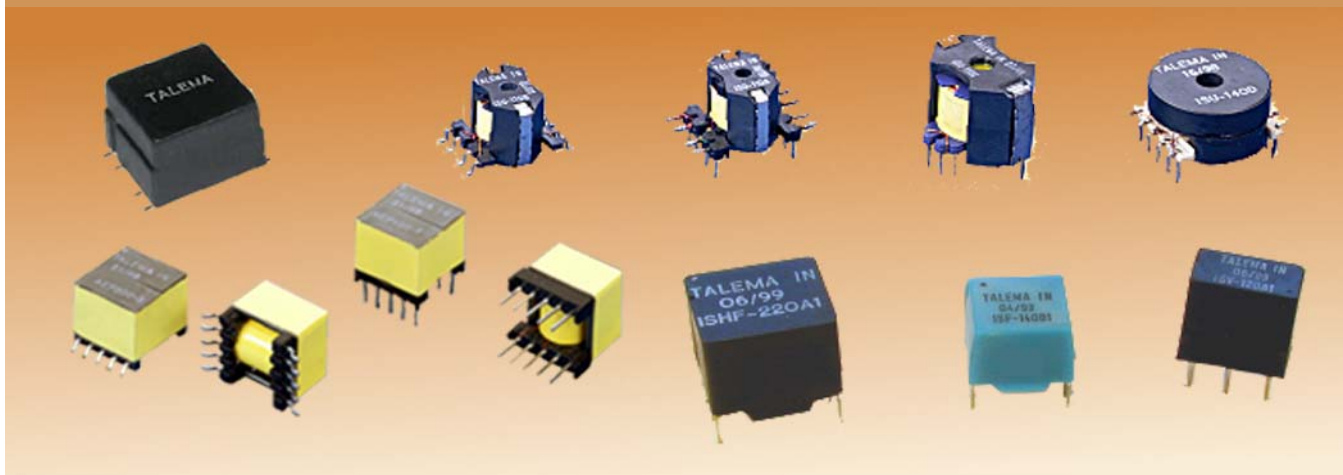
ENVIRONMENT

All TALEMA International Group manufacturing facilities are RoHS compliant and all chokes, inductors and HF components are produced in an Environment Management System (EMS) facility certified to ISO-14001:2004.



Page Nr.

IC Chipsets - U_{KO} Interface Transformer Selecton Guide



Talema has designed a cost effective range of U Interface transformers for 2B1Q and 4B3T applications for equipment transmission between customer premises and exchanges. The transformers meet all requirements of recognized U Interface IC's and ANSI standard T1.601 with a highly reliable pulse shape and return loss performance.

ISDN IC - U_{KO} Interface Transformer Cross Reference Guide

IC Mfg.	IC Part Number	Turns Ratio (Line:Chip)	Coding	Talema Part Number				
				RM6 - TH	RM6 - SMD	RM8 - TH	EPU	UK
Alcatel	MTC-20277/20279	2.00:1.25	4B3T	--	--	ISU-220C	--	
	MTC202/20277/20279	1.60:1	4B3T	--	ISU-180B & ISU-180G	ISU-180C	EPU-200B	UKJ-400
	MTC202/20276/20278	2.00:1	2B1Q	ISU-170A ISU-170A1	ISU-170B & ISU-170G	ISU-170C	EPU-400B EPU500E EPU-700E	
Legerity (AMD)	AM20902	1.32:1	4B3T	ISU-100A	ISU-100B & ISU-100G	ISU-100C	EPU-120B	UKJ-420 UKF-120 UKV-220 UKH-320
	AM2091	1.60:1	2B1Q	ISU-110A	ISU-110B & ISU-110G	ISU-110C	--	UKJ-430
Lucent	T7234/7237/7256/7264/	1.50:1	2B1Q	--	--	ISU-230C	--	
	T7262	2.50:1	2B1Q	--	--	ISU-120C	--	
Motorola	MC145572/145576	1.25:1	2B1Q	--	ISU-140B & ISU-140G	ISU-140C	EPU-300B & D	UKJ-440
National	TP34	2.00:1	2B1Q	--	--	--	EPU-400B	
	TP34/3410/3411	1.50:1	2B1Q	--	ISU-150B & ISU-150G	ISU-150C	--	
Infineon	PEB2491/8090/8091/8191	2.50:1	2B1Q	ISU-210A	--	--	EPU-110B	
	PEB2091/24902/24911 PSB21911 PEB8091/8191	1.60:1	2B1Q	ISU-110A	ISU-110B & ISU-110G	ISU-110C	EPU-100B	UKF-100 UKJ-430
	PEF80912/80913/81912 PEF81913/82912/82913	2:00:1	2B1Q	ISU-170A ISU-170A1	ISU-170B & ISU-170G	ISU-170C	EPU-400B EPU-500E EPU-700E	
	PEB2090/24901/24902 PEB8090/80900	1.32:1	4B3T	ISU-100A	ISU-100B & ISU-100G	ISU-100C	EPU-120B	UKJ-420 UKF-120 UKV-220
	PEF80902/81902/82902	1.60:1	4B3T	ISU-190A	--	--	--	UKJ-400
	PEF80902/81902/82902	2.00:1.25	4B3T	--	--	ISU-220C	--	UKV-210
	PEB80902/81902 PEF80902/81902/82902	1.80:1	4B3T	ISU-190A	ISU-190B & ISU-190G	--	EPU-200B EPU-600E	
STM (Thomson)	ST5411/5412	1.50:1	2B1Q	--	ISU-150B & ISU-150G	ISU-150C	--	
	ST5411/5412	2.00:1	2B1Q	--	--	--	EPU-400B	
	ST2071	1.32:1	4B1Q	ISU-100A	ISU-100B & ISU-100G	ISU-100C	EPU-120B	UKF-120 UKV-220 UKJ-420
Zarlink	MT8971/8971B/8172/8172B	2:1	Biphase	--	---	--	--	UKF-110

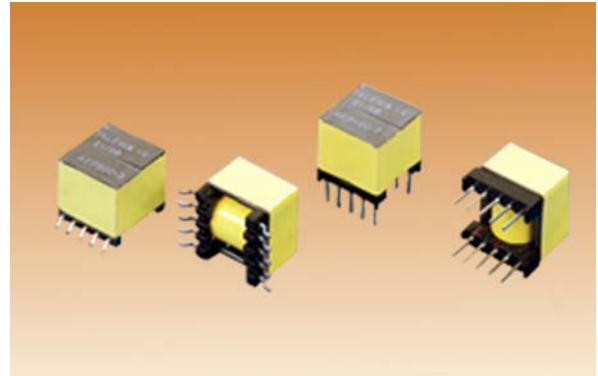
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EPU Series - U_{KO} Interface Transformers

Features

- compatibility with common transceiver IC's ensures maximum loop length
- complies with ANSI standard T1.601 when used with recommended chip
- all materials approved to UL94V-0
- manufactured in an ISO-9001:2000, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature: -40°C to +85°C
- fully RoHS compliant and meets lead free reflow level J-STD-020C



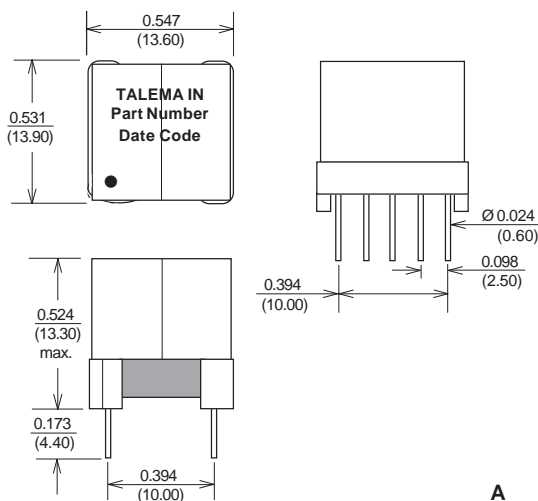
Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC Side Windings

EPU Series - U_{KO} Interface Transformers

Part Number	Lo ±8% mH	Turns Ratio ±2% Line : IC	I _{DC} mA	DCR Line Ohms Nom.	DCR IC Ohms Nom.	L _L Line Side µH Max.	C _C pF Nom.	V _P (Vrms)	Schematic
EPU-100A	16.0	1.65 : 1	60	8.4	5.2	80	45	2000	A
EPU-100B	16.0	1.65 : 1	60	8.4	5.2	80	45	2000	B
EPU-110B	14.5	1.25 : 1	60	8.2	6.7	70	50	2000	B
EPU-120A	7.9	1.32 : 1	60	5.3	4.1	60	45	2000	A
EPU-120B	7.9	1.32 : 1	60	5.3	4.1	60	45	2000	B
EPU-200A	6.15	1.6 : 1	60	3.6	2.3	40	40	2000	A
EPU-200B	6.15	1.6 : 1	60	3.6	2.3	40	40	2000	B
EPU-300B	28.0	1.25 : 1	60	19.5	16.0	150	60	2000	B
EPU-300D	28.0	1.25 : 1	60	19.5	16.0	150	60	2000	D
EPU-400B	16.0	2.00 : 1	60	8.4	4.3	80	50	2000	B
EPU-400C	16.0	2.00 : 1	60	8.4	4.3	80	50	2000	C
EPU-500E	14.5	1 : 1 : 1	60	8.4	4.3	80	80	2000	E
EPU-600E	7.5	0.9 : 0.9 : 1	60	5.4	3.0	90	45	2000	E
EPU-700E	14.5	1 : 1 : 1	60	8.6	3.2	80	60	2000	E

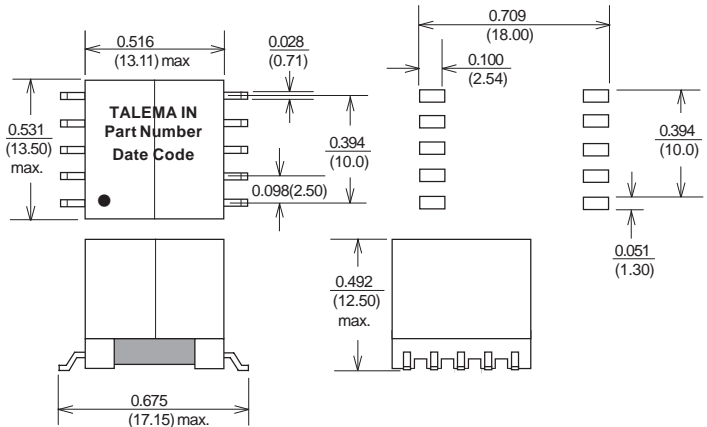
EPU-700E



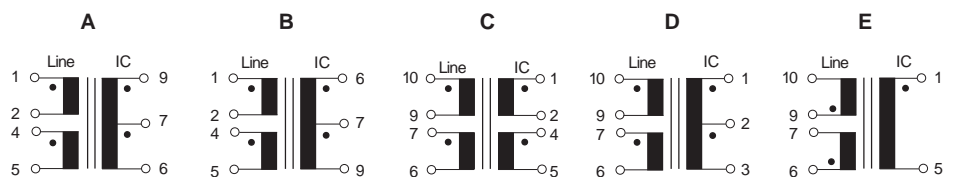
Dimensions: Inches (Millimeters)
Tolerance: ±0.010 (0.25)

Weight: 6.8 grams

EPU-100A - EPU-600E



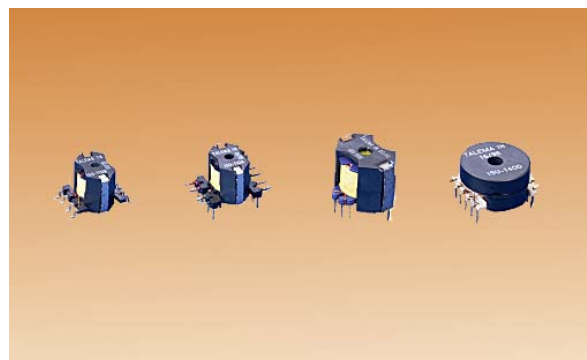
Schematics



ISU Series - U_{KO} Interface Transformers

Features

- compatibility with common transceiver IC's ensures maximum loop length
- complies with ANSI standard T1.601 when used with recommended chip
- 2000 Vrms minimum isolation
- industry standard footprints are available in four DIL and SMD package options
- manufactured in an ISO-9001:2000, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature: -40° to +85°C
- fully RoHS compliant and meets lead free reflow level J-STD-020C



Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC side windings

ISU Series - U_{KO} Interface Transformers

Part Number	Turns Ratio	L_P (mH)	I_{DC} (mA)	R_{CU^P} (Ohms)	R_{CU^S} (Ohms)	V_P (Vrms)	Package	Schematic
ISU-100A	1.32:1.32:1:1	7.1 - 8.7	60	5.4	4.1	2000	RM6 - THT	1
ISU-100B	1.32:1.32:1:1	7.1 - 8.7	60	5.4	4.1	2000	RM6-SMD-"B"	1
ISU-100C	0.66:0.66::1	7.1 - 8.7	60	2.3	1.8	2000	RM8 - THT	2
ISU-100G	1.32:1.32:1:1	7.1 - 8.7	60	5.4	4.1	2000	RM6-SMD-"G"	1
ISU-110A	1.6:1.6:1:1	13.0 - 16.0	60	6.4	5.9	2000	RM6 - THT	1
ISU-110B	1.6:1.6:1:1	13.0 - 16.0	60	5.8	5.9	2000	RM6-SMD-"B"	1
ISU-110C	0.8:0.8:1	13.0 - 16.0	60	3.8	2.5	2000	RM8 - THT	2
ISU-110G	1.6:1.6:1:1	13.0 - 16.0	60	6.4	5.9	2000	RM6-SMD-"G"	1
ISU-120C	2.50:1	14.5 - 18.0	60	5.0	2.2	2000	RM8 - THT	2
ISU-130D	2.00:1	25.5 - 28.5	60	11.6	6.4	2000	PT23 - THT	4
ISU-130C	2.00:1	25.5 - 28.5	60	7.9	3.3	2000	RM8 - THT	3
ISU-140B	1.25:1.25:1:1	26.5 - 29.7	60	11.2	9.1	2000	RM6-SMD-"B"	1
ISU-140E	1.25:1	26.5 - 29.7	80	12.0	7.0	2000	PT23 - THT	4
ISU-140C	1.25:1.25::1/1	26.5 - 29.7	80	6.0	4.0	2000	RM8 - THT	3
ISU-140G	1.25:1.25:1:1	26.5 - 29.7	60	11.2	9.1	2000	RM6-SMD-"G"	1
ISU-150B	1.5:1.5:1:1	25.5 - 28.5	60	11.5	7.6	2000	RM6-SMD-"B"	1
ISU-150D	1.50:1	25.5 - 28.5	60	20.0	3.0	2000	PT23 - THT	5
ISU-150C	0.75:0.75:1	25.5 - 28.5	60	18.0	7.5	2000	RM8 - THT	4
ISU-150G	1.5:1.5:1:1	25.5 - 28.5	60	11.5	7.6	2000	RM6-SMD-"G"	1
ISU-160D	1.50:1	14.2 - 16.0	60	16.0	2.5	2000	PT23 - THT	5
ISU-160C	1.50:1	14.2 - 16.0	60	5.0	3.4	2000	RM8 - THT	2
ISU-170A	1:1:1	13.0 - 16.0	60	5.2	3.3	2000	RM6 - THT	3
ISU-170A1	1:1:1	13.0 - 16.0	60	6.5	3.3	2000	RM6 - THT	5
ISU-170B	2:2:1:1	13.0 - 16.0	60	10.4	5.2	2000	RM6-SMD-"B"	1
ISU-170C	1:1:1	13.0 - 16.0	60	3.8	2.5	2000	RM8 - THT	2
ISU-170G	2:2:1:1	13.0 - 16.0	60	10.4	5.2	2000	RM6-SMD-"G"	1
ISU-180B	1.6:1.6:1:1	5.5 - 6.5	60	4.0	2.5	2000	RM6-SMD-"B"	1
ISU-180G	1.6:1.6:1:1	5.5 - 6.5	60	4.0	2.5	2000	RM6-SMD-"G"	1
ISU-190A	0.9:0.9:1	7.1 - 8.7	60	4.7	2.6	2000	RM6-THT	3
ISU-190B	0.9:0.9:1	7.1 - 8.7	60	4.7	2.6	2000	RM6-SMD-"B"	3
ISU-190G	0.9:0.9:1	7.1 - 8.7	60	4.7	2.6	2000	RM6-SMD-"G"	3
ISU-200A	1.60:1:1	25.5 - 30.2	60	10.0	12.0	2000	RM6 - THT	4
ISU-210A	1.25:1.25:1:1	13.0 - 16.0	60	6.6	6.8	2000	RM6 - THT	1
ISU-220C	1:1:1.25	6.9 - 8.1	60	2.0	1.4	2000	RM8 - THT	2
ISU-230C	0.75:0.75 : 1	72 - 88	60	14.5	7.5	2000	RM8 - THT	4

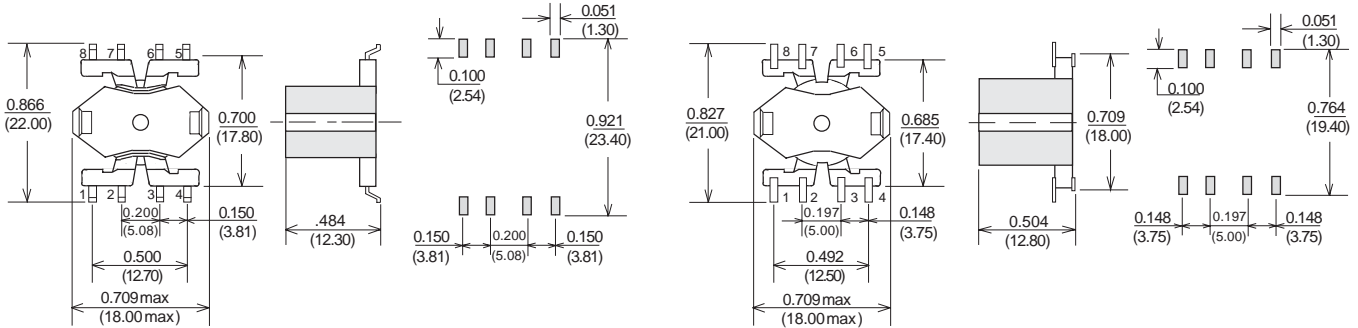
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Package Style

RM6

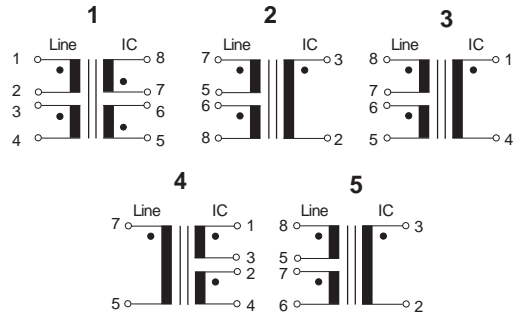
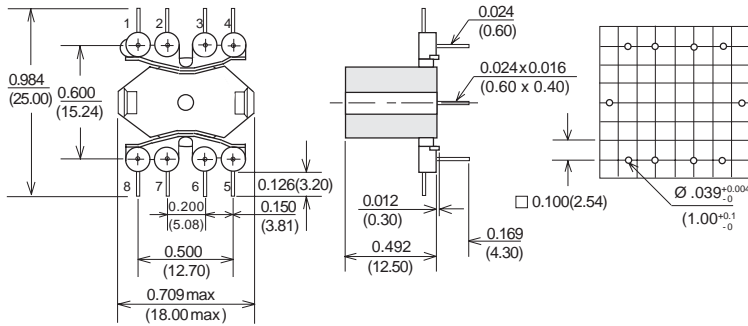
SMD - "B"

SMD - "G"



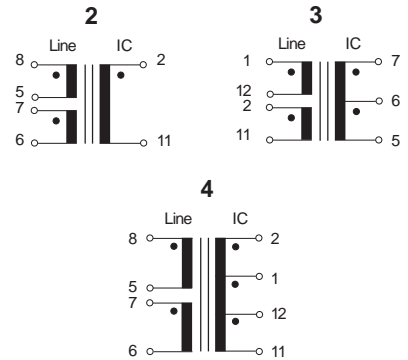
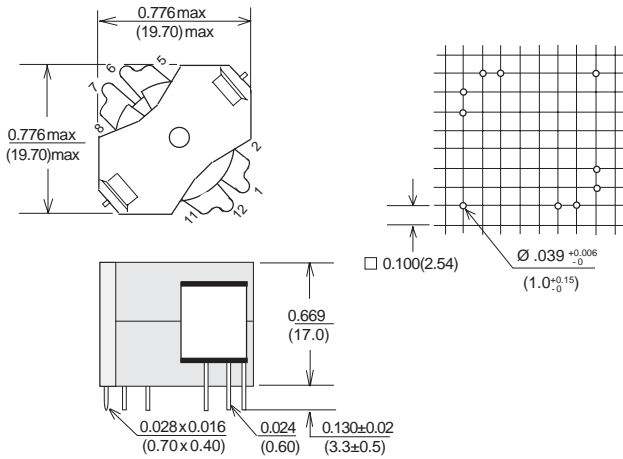
THT

RM6 - SMD & THT Schematic



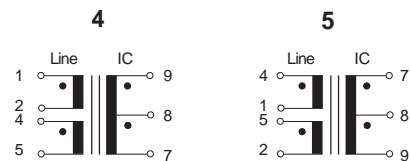
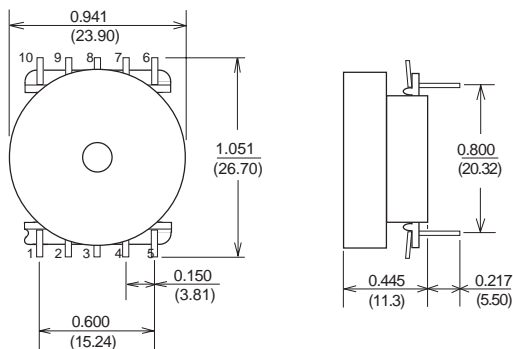
RM8 - THT

RM8 - THT Schematics



PT23 - THT

PT23 - THT Schematics

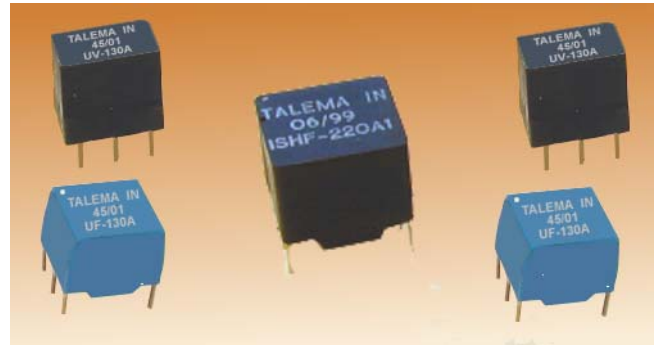




ISDN • U_{KO} THT Single Interface Transformer

Features

- compatibility with common transceiver IC's ensures maximum loop length
- complies with ANSI standard T1.601 when used with recommended chip
- all materials approved to UL94V-0
- manufactured in an ISO-9001:2000, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature: -40°C to +85°C
- fully RoHS compliant



Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC Side Windings

U _{KO} Interface Transformers									
Complies with Basic Insulation Level EN60950, UL1950 and UL1459									
Part Number	Turns Ratio ±1%	L _P (mH Min)	I _{DC} (mA)	L _L (μH)	C _C (pF Max)	DCR (Ohms per winding)		V _P (Vrms)	Schematic
						Pri	Sec		
UKF-100	0.8:0.8:1	12.6 - 15.4	60	20	200	9.0	5.1	2000	2
UKF-105	0.8:0.8:1	12.6 - 15.4	60	20	200	9.0	5.1	2000	3
UKF-110	2:1	10.8 - 13.8	60	2	55	1.3	0.7	2000	1
UKF-120	0.66:0.66:1	4.5 - 5.9	60	10	150	5.2	4.0	2000	3
UKV-210	1:1: 1.25	11.3 - 15.1	60	30	120	12	7.5	2000	3
UKV-220	0.66:0.66:1	4.5 - 5.9	60	15	150	5.2	4.0	2000	3
UKH-320	0.66:0.66:1	4.5 - 5.9	60	50	20	7.6	4.0	3000	4

Test Conditions:

Inductance: Line side windings in series - measurement @ 10kHz, 100mVrms

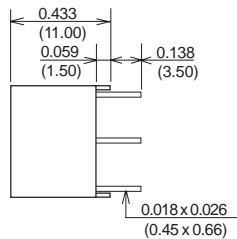
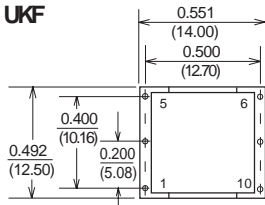
Leakage Inductance: Line side windings in series, IC side windings short circuited - measurement @100kHz, 100mVrms

Coupling Capacitance: IC side winding to Line side windings in parallel @ 10kHz, 100mVrms

Test Voltage: 2.0kV for 2 Sec. = line side windings in series to IC winding

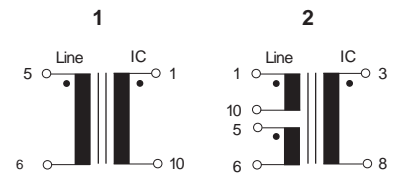
0.5kV for 2 Sec. - line side winding to line side winding

UKF

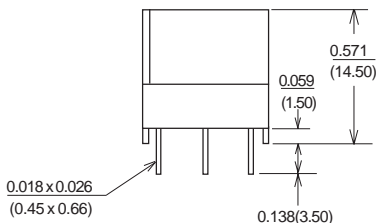
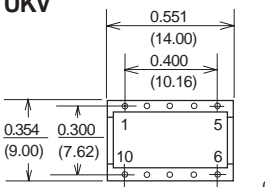


TALEMMAIN
WK/YR
UKF-100

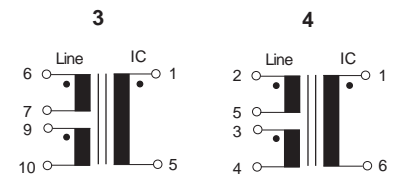
Schematic



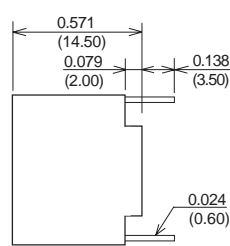
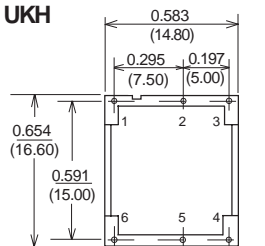
UKV



TALEMMAIN
WK/YR
UKV-210



UKH



TALEMMAIN
WK/YR
UKH-320

Dimensions: Inches (Millimeters)
Tolerance: ±0.010 (0.25) unless specified otherwise



ISDN - U_{KO} SMD Single Interface Transformers

Features

- compatibility with common transceiver IC's ensures maximum loop length
- complies with ANSI standard T1.601 when used with recommended chip
- compact sizes in surface mount package
- all materials approved to UL94V-0
- manufactured in an ISO-9001:2000, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature: -40°C to +85°C
- fully RoHS compliant and meets lead free reflow level J-STD-020C



Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC Side Windings

Surface Mount U _{KO} Interface Transformers									
Complies with Reinforced Insulation Level EN60950, UL1950 and UL1459									
Part Number	Turns Ratio ±2%	L _p (mH min)	L _L (μH)	I _{DC} (mA)	C _C (pF Max)	DCR (Ohms)		V _p (Vrms)	Schematic
						Primary	Secondary		
UKJ-400	0.8:0.8:1	4.6 - 6.2	10	60	150	5.2	3.5	2000	1
UKJ-420	0.66:0.66:1	4.5 - 6.1	10	60	220	5.2	4.0	2000	1
UKJ-430	0.8:0.8:1	11.3 - 15.1	26	60	210	5.4	3.3	2000	1
UKJ-440	1:1: 1.6	21.6 - 27.1	30	60	420	11.2	9.6	2000	2

Test Conditions:

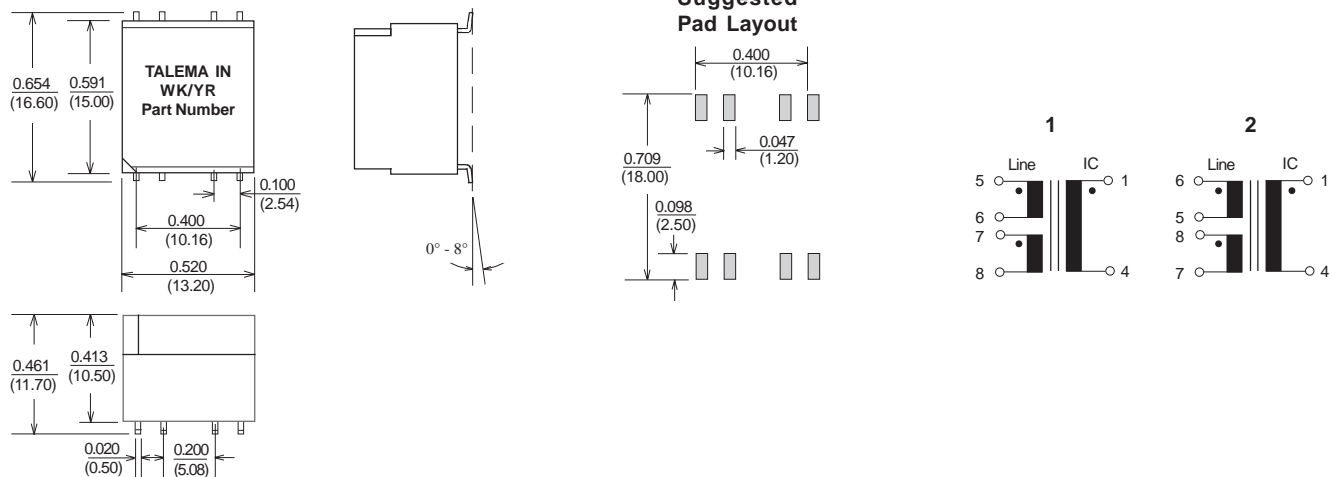
Inductance: Line side windings in series - measurement @ 10kHz, 100mVrms

Leakage Inductance: Line side windings in series, IC side winding short circuited - measurement @ 100kHz, 100mVrms

Coupling Capacitance: IC side winding in series to Line side windings in series @ 10kHz, 100mVrms

Dimensions & Schematic

UKJ



Surface Coplanarity will be 0.004(0.10) maximum

Dimensions: Inches (Millimeters)

Tolerance: ±0.010 (0.25) unless specified otherwise

IC Chipsets - U_{PO} Interface Transformer Selection Guide

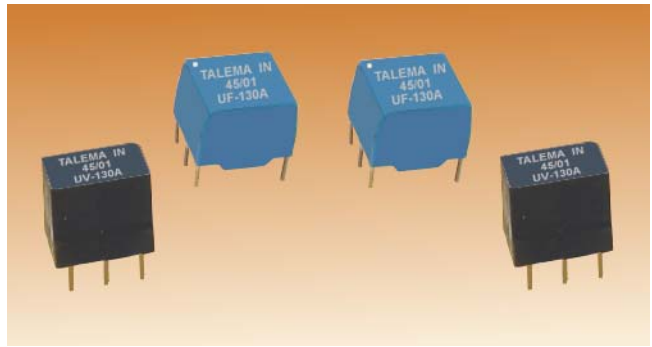


IC Manufacturer	IC Part Number	Talema Part Number	Mounting Style	Transformer						Choke
				Turns Ratio	I _{DC} (mA)	L _P (mH)	L _L (μH)	C _C (pF)	V _{rms}	L _N (mH)
Single TH & SMD Interface Transformers										
AMD	AM2095 & AM20950	UF-130A	THT	1:1:2.5	75	1.7	6	100	2500	--
		UV-130A	THT	1:1:2.5	75	1.7	6	100	2500	--
		UMJ-192S	SMD	1:1:1.25:1.25	75	1.7	10	140	1500	--
		UHF-230B	THT	1:1:2.5	100	1.7	20	20	3000	--
Infineon	PEB2095 IBS	UF-130A	THT	1:1:2.5	75	1.7	6	100	2500	--
		UV-130A	THT	1:1:2.5	75	1.7	6	100	2500	--
		UMJ-192S	SMD	1:1:1.25:1.25	75	1.7	10	140	1500	--
		UHF-230B	THT	1:1:2.5	100	1.7	20	20	3000	--
	PEB20590 & PEB20591	UMJ-190S	SMD	1:1:1:1	75	1.7	10	180	1500	--
		UWJ-185	SMD	1:1:2	140	1.7	10	100	1500	--
	PEB20590VIP/PEB20591VIP-8	UMJ-190S	SMD	1:1:1:1	75	1.7	10	180	1500	--
		UMJ-195S	SMD	1:1:2:2	75	1.7	10	180	1500	--
PSB2196 & PSB2197	UHJ-185	SMD	1:1:2:2	120	1.7	20	20	3000	--	
National	TP34 & TP3406	UMJ-190S	SMD	1:1:1:1	75	1.7	10	180	1500	--
		UWJ-185	SMD	1:1:2	140	1.7	10	100	1500	--
Dual SMD Interface Transformer										
Infineon	PEB2096, PSB2196 & PSB2197	UAJ-140C	SMD	1:1:2:2	75	1.7	5	150	1500	--
TH & SMD Interface Modules										
AMD	AM2095 & AM20950	UMF-130A-152	THT	1:1:2.5	75	1.0	6	100	1500	2 x 1.5
		UMV-130B-172	THT	1:1:2.5	75	1.7	6	100	2500	2 x 1.7
		UMV-130B-602	THT	1:1:2.5	75	1.7	6	100	2500	2 x 6.0
		UAJ-130A-502	SMD	1:1:2.5	75	1.7	5	100	1500	2 x 5.0
Infineon	PEB2095 IBS	UMF-130A-152	THT	1:1:2.5	75	1.0	6	100	1500	2 x 1.5
		UMV-130B-172	THT	1:1:2.5	75	1.7	6	100	2500	2 x 1.7
		UMV-130B-602	THT	1:1:2.5	75	1.7	6	100	2500	2 x 6.0
		UAJ-130A-502	SMD	1:1:2.5	75	1.7	5	100	1500	2 x 5.0
	PEB20590VIP/PEB20591VIP-8	UAJ-120A-502	SMD	1:1:2	75	1.7	5	100	1500	2 x 5.0
PEB2096, PSB2196 & PSB2197	UAJ-140B-502	SMD	1:1:2:2	75	1.7	10	180	1500	2 x 5.0	
National	TP34 & TP3406	UAJ-120A-502	SMD	1:1:2	75	1.7	5	100	1500	2 x 5.0



Features

- matched to Infineon's PEB2095 IBS and AMD's AM2095 & AM20950 chipsets
- excellent and consistent balance between windings
- complies fully with all international standards for U-Interface
- manufactured in an ISO-9001:2000, TSS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature -40° to +85°C
- fully RoHS compliant



Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC Side Windings

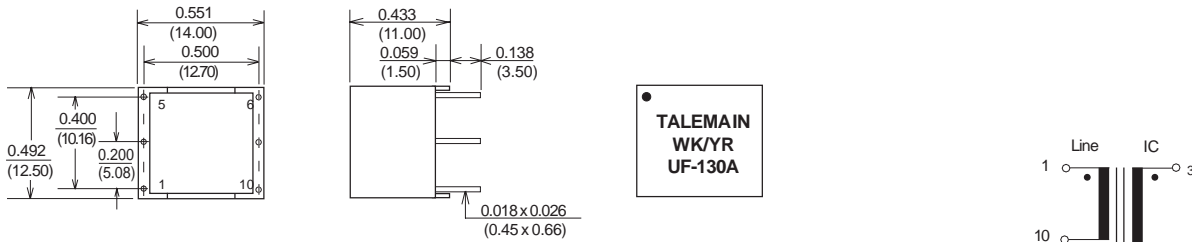
U _{PO} TH Interface Transformers								
Complies with Basic Insulation Level EN60950, UL1950 and UL1459								
Part Number	Turns Ratio ±1%	L _P (mH Min)	I _{DC} (mA)	L _L (µH)	C _C (pF Max)	DCR (Ohms per winding)		V _P (Vrms)
						Pri	Sec	
UF-130A	1:1:2,5	1,7	75	6	100	0,80	2,00	2500
UV-130A	1:1:2,5	1.7	75	6	100	0,80	2,00	2500

Test Conditions:

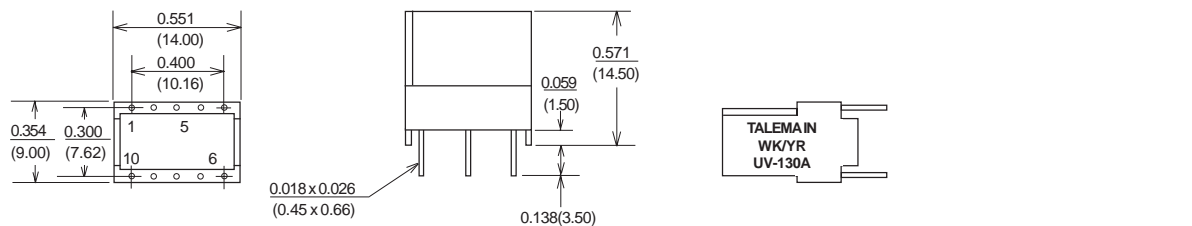
- Inductance: Line side windings in series - measurement @ 10kHz, 100mVrms
- Leakage Inductance: Line side windings in series, IC side windings short circuited - measurement @ 100kHz, 100mVrms
- Coupling Capacitance: IC side winding to Line side windings in parallel @ 10kHz, 100mVrms
- Test Voltage: 2,5kV for 1 sec. - Line side windings in series to IC winding
- 0,5kV for 2 sec. - Line side winding to winding

Dimensions & Schematic

UF



UV

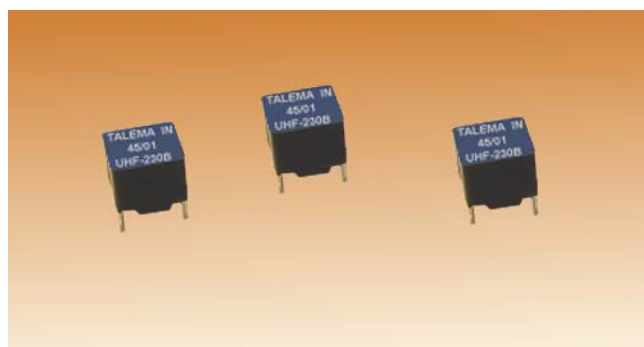


Dimensions: Inches (Millimeters)
Tolerance: ±0.010 (0.25) unless specified otherwise

ISDN • U_{PO} THT Single Interface Transformer

Features

- matched to Infineon's PEB2095 IBS and AMD's AM2095 & AM20950 chipsets
- excellent and consistent balance between windings
- complies fully with all international standards for U-Interface
- manufactured in an ISO-9001:2000, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature -40° to +85°C
- fully RoHS compliant



Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC Side Windings

U_{PO} TH Interface Transformers Complies with Reinforced Insulation Level EN60950 and UL1950

Part Number	Turns Ratio ±2%	L _P (mH Min)	I _{DC} (mA)	L _L (μH)	C _C (pF Max)	DCR (Ohms per winding)		V _P (Vrms)
						Pri	Sec	
UHF-230B	1:1: 2,5	1.7	100	20	20	1.2	2.1	4000

Test Conditions

Inductance: Line side windings in series - measurement @ 10kHz, 100mVrms

Leakage Inductance: Line side windings in series, IC side windings short circuited - measurement @ 100kHz, 100mVrms

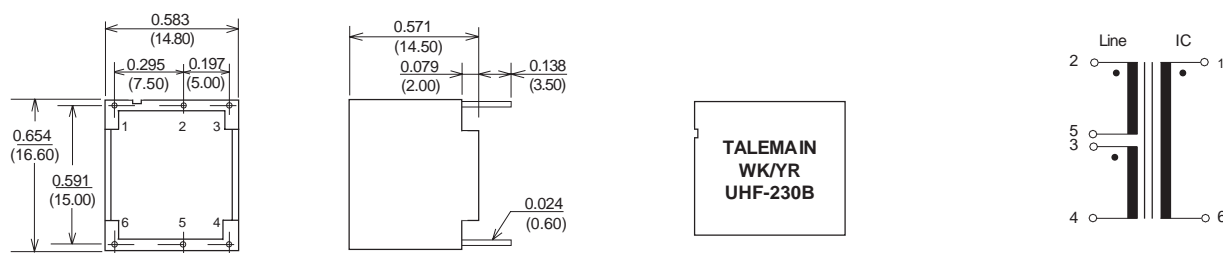
Coupling Capacitance: IC side windings in series to Line side windings in parallel @ 10kHz, 100mVrms

Test Voltage: 4,0kV for 2 sec. - Line side windings in series to IC winding

3,0kV for 1 min. - Line side windings in series to IC winding

Dimensions & Schematic

UHF



Dimensions: Inches (Millimeters)

Tolerance: ±0.010 (0.25) unless specified otherwise

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ISDN - U_{PO} SMD Single Interface Transformers

Features

- matched to Infineon's PEB20950 & PEB20951 and National's TP34 & TP3406 chipsets
- excellent and consistent balance between windings
- complies fully with all international standards for U-Interface
- manufactured in an ISO-9001:2000, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature: -40° to +85°C
- fully RoHS compliant and meets lead free reflow level J-STD-020C



Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC Side Windings

U _{PO} SMD Interface Transformers								
Complies with Basic Insulation Level EN60950, UL1950 and UL1459								
Part Number	Turns Ratio ±2%	L _P (mH min)	L _L (µH)	I _{DC} ^Δ (mA)	C _C (pF Max)	DCR (Ohms)		V _P (Vrms)
						Primary	Secondary	
UWJ-180	1:1:4	1.7	10	140	100	1.5	5.2	1500
UWJ-185	1:1:2	1.7	20	140	90	1.5	3.0	1500

Test Conditions:

Inductance: Line side windings in series - measurement @ 10kHz, 100mVrms

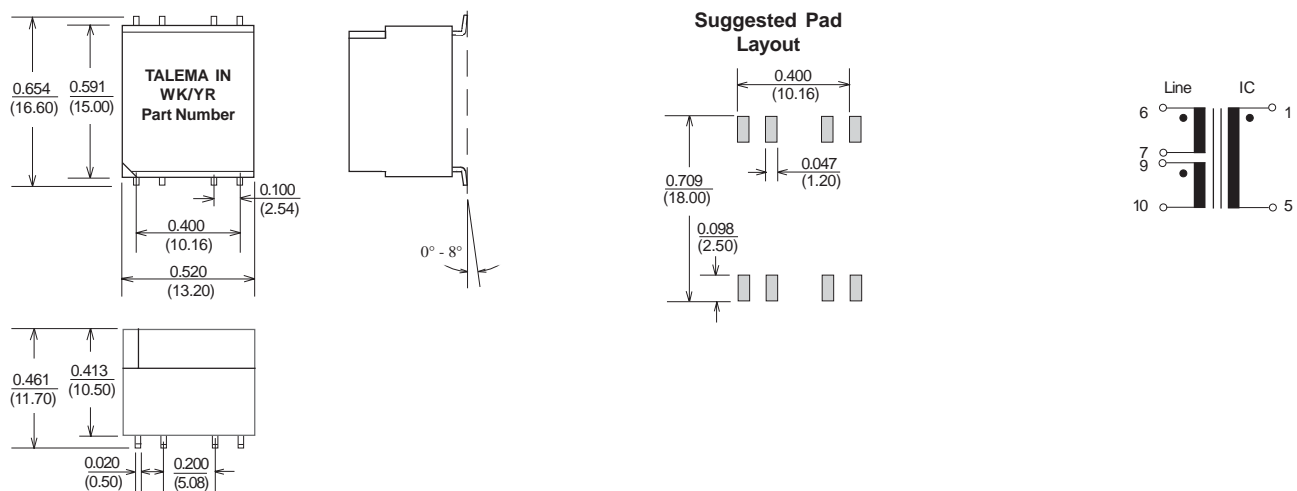
Leakage Inductance: Line side windings in series, IC side winding short circuited - measurement @ 100kHz, 100mVrms

Coupling Capacitance: IC side winding to Line side windings in series @ 10kHz, 100mVrms

Test Voltage: 1500 V for 2 Sec. Line side windings in series to IC side winding

Dimensions & Schematic

UWJ



Surface Coplanarity will be 0.004(0.10)

Dimensions: Inches (Millimeters)

Tolerance: ±0.010 (0.25) unless specified otherwise

ISDN - U_{PO} SMD Single Interface Transformers

Features

- matched to Infineon's PSB2196 & PSB2197 chipsets
- excellent and consistent balance between windings
- complies fully with all international standards for U-Interface
- manufactured in an ISO-9001:2000, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature: -40° to +85°C
- fully RoHS compliant and meets lead free reflow level J-STD-020C



Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC Side Windings

Surface Mount U_{PO} Interface Transformers Complies with Reinforced Insulation Level EN60950, UL1950 and UL1459

Part Number	Turns Ratio ±2%	L _P (mH min)	L _L (µH)	I _{DC} ¹ (mA)	C _C (pF Max)	DCR (Ohms)		V _P (Vrms)
						Primary	Secondary	
UHJ-185	1:1:2:2	1.7	20	120	20	1.3	1.3	3000

Test Conditions:

Inductance: Line side windings in series - measurement @ 10kHz, 100mVrms

Leakage Inductance: Line side windings in series, IC side winding short circuited - measurement @ 100kHz, 100mVrms

Coupling Capacitance: IC side winding in series to Line side windings in series @ 10kHz, 100mVrms

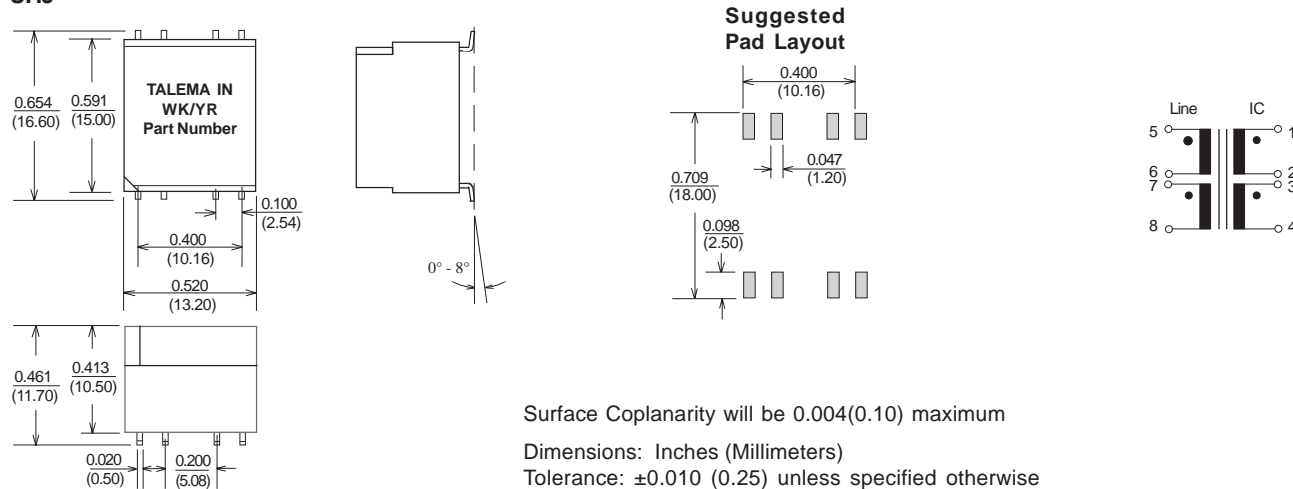
Test Voltage: 3kV for 2 sec. Line side windings to IC side windings

Reinforced Insulation: Line Side in series to IC side in series

Working Voltage: 250Vrms

Dimensions & Schematic

UHJ



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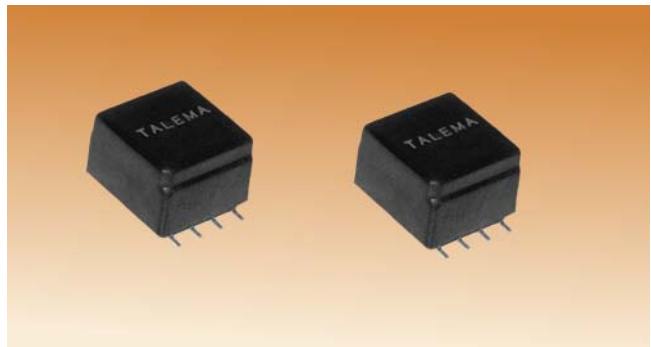
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 Web Site: www.talemaindia.com



Features

- designed for optimum compatability with all established interface IC's
- excellent and consistent balance between windings
- compact size in surface mount package
- complies fully with all international standards for U-Interface
- manufactured in an ISO-9001:2000, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature -40° to +85°C
- fully RoHS compliant and meets lead free reflow level J-STD-020C



Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC Side Windings

U _{PO} Interface Transformer								
Complies with Basic Insulation Level EN6-950, UL1950 and UL1459								
Part Number	Turns Ratio ±2%	L _P (mH Min)	I _{DC} (mA)	L _L (µH)	C _C (pF Max)	DCR (Ohms per winding)		V _P (Vrms)
						Pri	Sec	
UMJ-190S	1:1:1:1	1.7	75	10	180	0.8	0.8	1500
UMJ-192S	1:1:1: 25:1,25	1.7	75	5	140	0.5	1.0	1500
UMJ-195S	1:1: 2:2	1.7	75	10	180	0.8	1.6	1500

Test Conditions:

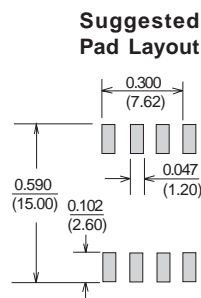
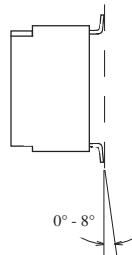
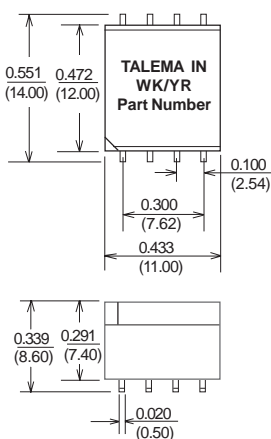
Inductance: Line side windings in series - measurement @ 10kHz, 100mVrms

Leakage Inductance: Line side windings in series, IC side windings short circuited - measurement @ 100kHz, 100mVrms

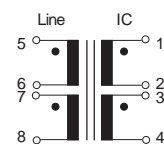
Coupling Capacitance: IC side windings in series to Line side windings in series @ 10kHz, 100mVrms

Test Voltage: 1,5kV - Line side winding in series to IC side winding in series

Dimensions & Schematic



Schematic



Surface Coplanarity will be 0.004(0.10) maximum

Dimensions: Inches (Millimeters)

Tolerance: ±0.010 (0.25) unless specified otherwise

Sales & Marketing, Design and Manufacturing Facilities

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ISDN • U_{PO} SMD Interface Transformer Modules

Features

- matched to Infineon's PEB2096, PSB2196 & PSB2197 chipsets
- excellent and consistent balance between windings
- compact size in surface mount package
- complies fully with all international standards for U-Interface
- manufactured in an ISO-9001:2001, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature -40° to +85°C
- fully RoHS compliant and meets lead free reflow level J-STD-020C



Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC Side Windings

Surface Mount U_{PO} Interface Transformer Modules Complies with Basic Insulation Level EN60950, UL1950 and UL1459

Part Number	Turns Ratio ±2%	L _P (mH min)	I _{DC} (mA)	L _L (µH)	C _C (pF Max)	DCR (Ohms per winding)		V _P (Vrms)	Schematic
						Pri	Sec		
UAJ-140C	1:1:2:2	1.7	75	5	150	0.8	1.6	1500	C

Test Conditions:

Inductance: Line side windings in series - measurement @ 10kHz, 100mVrms

Leakage Inductance: Line side windings in series, IC side winding/s short circuited - measurement @ 100kHz, 100mVrms

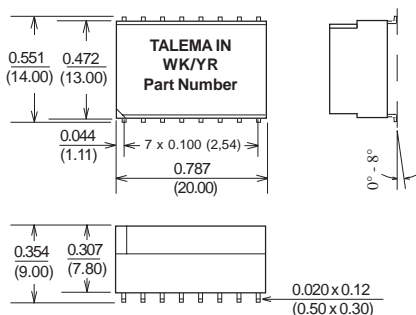
Coupling Capacitance: IC side winding (windings in series) to Line side windings in series @ 10kHz, 100mVrms

Test Voltage: 1.5kV for 2 sec. - w1+w2 to w3+w4

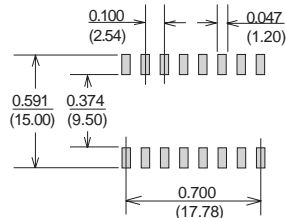
0.5kV for 2 sec. - w1+w3 to w2+w4

High Voltage Test: U_{PULSE}(w1+w2 to w3+w4); 2kV_{OP} for 10µs/700µs wave form, 10 pulses in 10 second cycle with changing polarity.

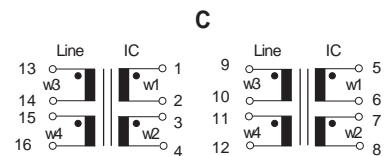
Dimensions



Suggested Pad Layout



Schematic



Surface Coplanarity will be 0.004(0.10)

Dimensions: Inches (Millimeters)

Tolerance: ±0.010 (0.25) unless specified otherwise



Features

- designed for optimum compatibility with all established interface IC's
- excellent and consistent balance between windings
- compact size in surface mount package
- complies fully with all international standards for U-Interface
- manufactured in an ISO-9001:2000, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature -40° to +85°C
- fully RoHS compliant and meets lead free reflow level J-STD-020C



Electrical Specifications @ 25°C

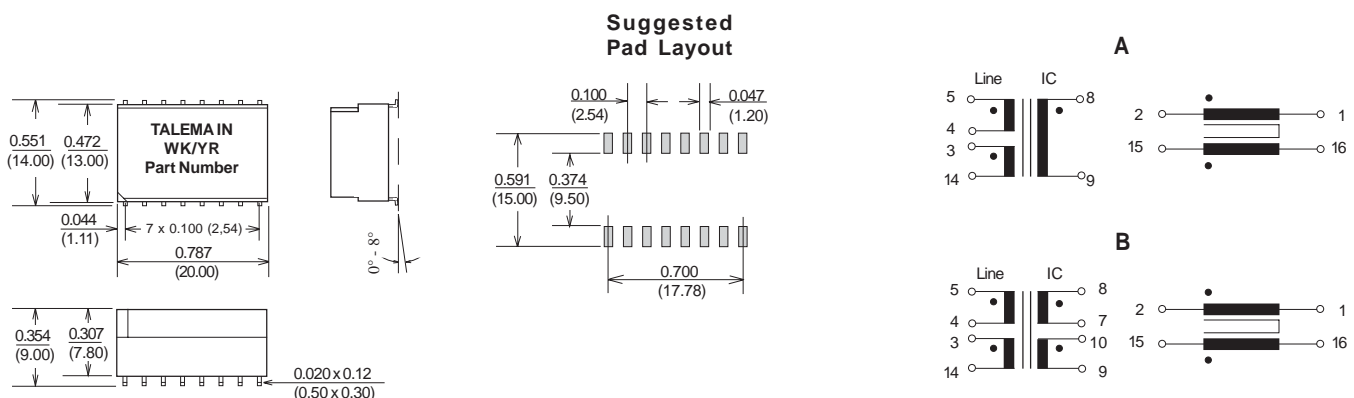
Turns Ratio: **Bold** = IC Side Windings

Surface Mount U _{PO} Interface Transformer Modules											
Complies with Basic Insulation Level EN60950, UL1950 and UL1459											
Part Number	Turns Ratio ±2%	L _P (mH min)	I _{DC} (mA)	L _L (µH)	C _C (pF Max)	DCR (Ohms per winding)		V _P (Vrms)	Schematic	Double Choke	
						Pri	Sec			L _N (mH)	DCR (Ohms)
UAJ-120A-502	1:1:2	1.7	75	5	100	0.8	1.6	1500	A	5	0.4
UAJ-130A-502	1:1: 2,5	1.7	75	5	100	0.5	1.0	1500	A	5	0.4
UAJ-140B-502	1:1: 2:2	1.7	75	5	180	0.8	1.6	1500	B	5	0.4

Test Conditions:

- Inductance: Line side windings in series - measurement @ 10kHz, 100mVrms
- Leakage Inductance: Line side windings in series, IC side winding/s short circuited - measurement @ 100kHz, 100mVrms
- Coupling Capacitance: IC side winding (windings in series) to Line side windings in series @ 10kHz, 100mVrms
- Test Voltage: 1.5kV for 2 Sec. - Line side windings in series to IC side winding (IC windings in series)
- Inductance CM Choke: Measured @ 10kHz, 100mVrms

Dimensions & Schematic



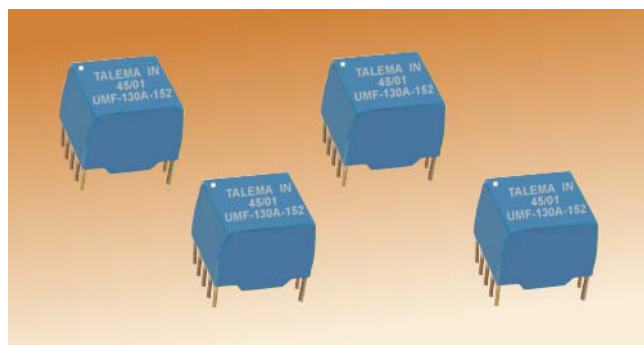
Surface Coplanarity will be 0.004(0.10) maximum

Dimensions: Inches (Millimeters)
Tolerance: ±0.010 (0.25) unless specified otherwise

ISDN • U_{PO} THT Interface Transformer Module

Features

- matched to Infineon's PEB2095 IBS and AMD's AM2095 & AM20950 chipsets
- excellent and consistent balance between windings
- compact size in through-hole package
- complies fully with all international standards for U-Interface
- manufactured in an ISO-9001:2000, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature -40° to +85°C
- fully RoHS compliant and meets lead free reflow level J-STD-020C



Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC Side Windings

U_{PO} TH Interface Transformer Module Complies with Basic Insulation Level EN60950, UL1950 and UL1459

Part Number	Turns Ratio ±1%	L _P (mH Min)	I _{DC} (mA)	L _L (µH)	C _C (pF Max)	DCR (Ohms per winding)		V _P (Vrms)	Schematic	Double Choke	
						Pri	Sec			LN (mH)	DCR (Ohms)
UMF-130A-152	1:1:2,5	1,0	75	6	100	0,31	0,65	1500	A	1,5	0,36

Test Conditions:

Inductance: Line side windings in series - measurement @ 10kHz, 100mVrms

Leakage Inductance: Line side windings in series, IC side windings short circuited - measurement @ 100kHz, 100mVrms

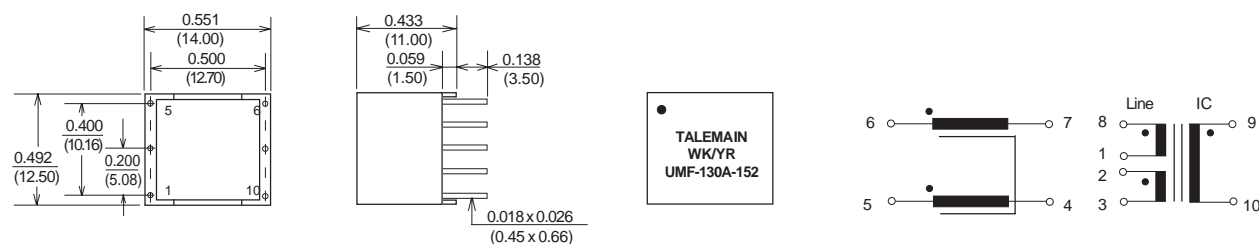
Coupling Capacitance: IC side winding to Line side windings in parallel @ 10kHz, 100mVrms

Test Voltage: Transformer - 1,5kV for 1 sec. - Line side windings in series to IC winding

Choke - 0,5kV for 1 sec. - winding to winding

Dimensions & Schematic

UMF



Dimensions: Inches (Millimeters)

Tolerance: ±0.010 (0.25) unless specified otherwise

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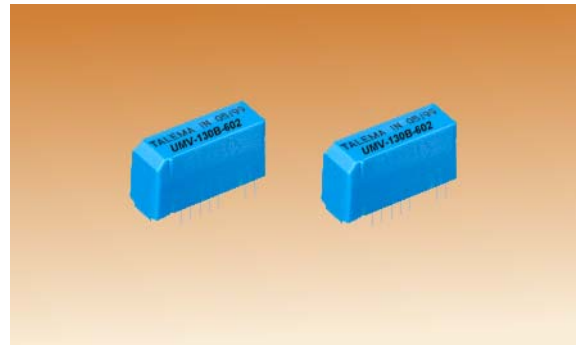
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Features

- matched to Infineon's PEB2095 IBS and AMD's AM2095 & AM20950 chipsets
- excellent and consistent balance between windings
- compact size in through-hole package
- complies fully with all international standards for U-Interface
- manufactured in an ISO-9001:2000, TS-16949:2002 and ISO-14001:2004 certified Talema facility
- operating temperature -40° to +85°C
- fully RoHS compliant and meets lead free reflow level J-STD-020C



Electrical Specifications @ 25°C

Turns Ratio: **Bold** = IC Side Windings

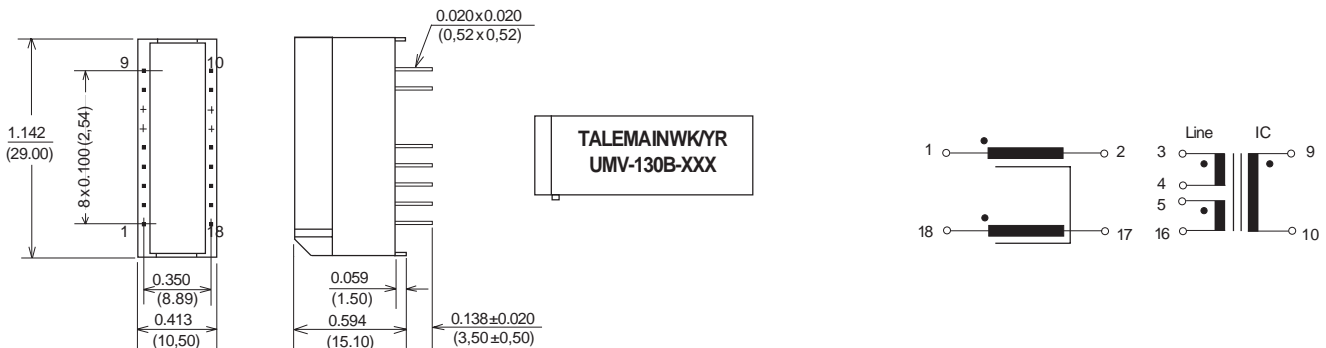
U _{PO} TH Interface Transformer Modules											
Complies with Basic Insulation Level EN60950, UL1950 and UL1459											
Part Number	Turns Ratio ±1%	L _P (mH Min)	I _{DC} (mA)	L _L (µH)	C _C (pF Max)	DCR (Ohms per winding)		V _P (Vrms)	Schematic	Double Choke	
						Pri	Sec			LN (mH)	DCR (Ohms)
UMV-130B-172	1:1: 2,5	1,7	75	6	100	0,80	2,00	2500	B	1,7	0,25
UMV-130B-602	1:1: 2,5	1.7	75	6	100	0,80	2,00	2500	B	6,0	0,80

Test Conditions:

- Inductance: Line side windings in series - measurement @ 10kHz, 100mVrms
- Leakage Inductance: Line side windings in series, IC side windings short circuited - measurement @ 100kHz, 100mVrms
- Coupling Capacitance: IC side winding to Line side windings in parallel @ 10kHz, 100mVrms
- Test Voltage:
 - Transformer - 2,5kV for 1 sec. - Line side windings in series to IC winding
 - 0,5kV for 1 sec. - Primary winding to Primary winding
 - Choke - 0,5kV for 1 sec. - winding to winding

Dimensions & Schematic

UVM



Dimensions: Inches (Millimeters)
Tolerance: ±0.010 (0.25) unless specified otherwise

Common Mode Interface Chokes - DIL and SMD

Current compensated EMI noise suppression chokes for data and signal line filtering

Talema manufactures a comprehensive range of common mode noise suppression chokes designed for interfacing and reduction of electromagnetic interference (EMI). These chokes provide both differential and common mode noise attenuation while allowing the signal to pass through virtually undistorted. The chokes are available in sizes ranging from standard to ultra miniature in both DIL and SMD styles and offer compatibility with all common footprints. The quick reference chart shown below provides a quick overview of choices available from the broad selection being offered by Talema.



DIL and SMD Common Mode Interface Chokes

Series	Inductance Range	Number of Lines	Mounting Style	No. Contacts & Pitch	Max. Board Area W x L x Ht (mm)	Data Sheet Page Nr.
CTJ-2-XXX Data Line	11µH - 4.7mH	2	"J" Lead SMD	4 x 1.27	5.0 x 3.3 x 3.3	4 - 4
CTJ-2-XXX-S Power Line	11µH - 51µH	2				
CLJ-2-XXX Data Line	5µH - 47mH	2	"J" Lead SMD	4 x 2.54	8.9 x 5.4 x 4.8	5 - 6
CLJ-2-XXX-S Power Line	6µH - 51µH	2				
CLJ-4-XXX	11µH - 12mH	4	"J" Lead SMD	8 x 1.27	9.0 x 5.8 x 5.3	7
CMJ-2-XXX	5µH - 47mH	2				8 - 9
CMJ-4-XXX	5µH - 12mH	4	"J" Lead SMD	8 x 1.27	11.5 x 7.8 x 7.2	10
CFJ-3-XXX	24µH - 4.7mH	3				11
CFJ-4-XXX	33µH - 4.7mH	4	"J" Lead SMD	8 x 2.54	11.5 x 9.6 x 7.2	12 - 13
CSJ-2-XXX	11µH - 47mH	2				
CSJ-3-XXX	11µH - 12mH	3	"J" Lead SMD	6 x 2.54	8.0 x 6.6 x 4.5	14 - 15
CSJ-4-XXX	11µH - 12mH	4				
CCJ-2-XXX	26µH - 70mH	2	"J" Lead SMD	4 x 7.62	14.0 x 11.0 x 9.0	16 - 18
CCJ-4-XXX	26µH - 58mH	4				
CDJ-XXX	1.0mH - 70mH	2	"J" Lead SMD	4 x 10.16	16.6 x 13.2 x 11.7	19
CQJ-XXX	1.0mH - 90mH	4				
CDF-XXX	1.0mH - 70mH	2	Flat - THT	4 x 10.16	14.0 x 12.5 x 11.0	20
CDV-XXX		2	Vertical - THT			
CQF-XXX	1.0mH - 90mH	4	Flat - THT	8 x 2.54	14.0 x 12.5 x 11.0	21
CQV-XXX		4	Vertical - THT			
CKV-XXX Data Line	120µH - 68mH	2	Vertical - THT	4 x 2.54/5.08	7.4 x 15.2 x 17.6	22 - 23
CKV-XXX-S Power Line	4.7mH - 47mH	2				
COJ-16-XXX	24µH - 5.0mH	16	"J" Lead SMD	40 x 1.27	16.2 x 28.0 x 6.0	24 - 26
CUJ-XXX-16E	24µH - 4.7mH	4	"J" Lead SMD	16 x 1.27	9.6 x 12.8 x 6.0	
CUJ-XXX-16C		6				
CUJ-XXX-16D		6				
CUJ-XXX-16A		8				
CUJ-XXX-16B		8				
Data Line Filters		2 to 16	"J" Lead SMD	Various		

Visit our web site <http://www.talema-nuvotem.com> to obtain data sheets or "Current Compensated EMI Noise Suppression Chokes" brochure.

Germany: Int.+4989-841 00-0 • Ireland: Int.+35 374 - 954 8666 • Czech Rep: Int.+420 377 - 338 351 • India: Int.+91 427-244 1325
<http://www.talema-nuvotem.com>



U_{KO} Interface Transformer Cross Reference to VAC

VAC Part Number	Talema Part Number	Transformer						
		Turns Ratio	I _{DC} (mA)	L _p (mH)	L _L (μH)	C _C (pF)	V _{rms}	Package
Single TH & SMD Interface Transformers								
T60403-M4021-X038	UKF-110	2:1	60	10.8 - 13.8	2	55	2000	Flat - THT
T60403-M4021-X104	UKF-100	0.8:0.8:1	60	12.6 - 15.4	20	200		
T60403-M4021-X113	UKF-120	0.66:0.66:1	60	4.5 - 5.9	10	150		
T60403-M4021-X119	UKF-105	0.8:0.8:1	60	12.6 - 15.4	20	200		
T60403-M4025-X126	UKV-220	0.66:0.66:1	60	4.5 - 5.9	15	150	2000	Vertical - THT
T60403-M4025-X138	UKV-210	1:1:1.25	60	11.3 - 15.1	30	120		
T60403-M4096-X035	UKH-320	0.66:0.66:1	60	4.5 - 5.9	50	20	3000	Flat - THT
T60403-M5032-X041	UKJ-420	0.66:0.66:1	60	4.5 - 6.1	10	220	2000	Flat - SMD
T60403-M5032-X049	UKJ-400	0.8:0.8:1	60	4.6 - 6.2	10	150		
T60403-M5032-X052	UKJ-430	0.8:0.8:1	60	11.3 - 15.1	26	210		
T60403-M5032-X067	UKJ-440	1:1:1.6	60	21.6 - 27.1	30	420		
T60403-M6276-X002	ISU-140G	1.25:1.25:1:1	60	26.5 - 29.7			2000	RM6 - SMD
T60403-M6276-X003	ISU-170G	2:2:1:1	60	13.0 - 16.0				
T60403-M6276-X004	ISU-150G	1.5:1.5:1:1	60	25.5 - 28.5				
T60403-M6276-X005	ISU-100G	1.32:1.32:1:1	60	7.1 - 8.7				
T60403-M6276-X006	ISU-180G	1.6:1.6:1:1	60	5.5 - 6.5				
T60403-M6276-X007	ISU-110G	1.6:1.6:1:1	60	13.0 - 16.0				
T60403-M6276-X011	ISU-190G	0.9:0.9:1	60	7.1 - 8.7				
T60403-M6290-X045	ISU-100C	0.66:0.66:1	60	7.1 - 8.7			2000	RM8 - THT
T60403-M6290-X054	ISU-110C	0.8:0.8:1	60	13.0 - 16.0				
T60403-M6290-X058	ISU-110C	0.8:0.8:1	60	13.0 - 16.0				
T60403-M6290-X082	ISU-150C	0.75:0.75:0.33/0.33/0.33	60	25.5 - 28.5				
T60403-M6290-X091	ISU-110C	0.8:0.8:1	60	13.0 - 16.0				
T60403-M6296-X002	ISU-200A	1.6:1:1	60	25.5 - 30.2			2000	RM6 - THT
T60403-M6296-X014	ISU-110A	1.6:1.6:1:1	60	13.0 - 16.0				
T60403-M6296-X015	ISU-210A	1.25:1.25:1:1	60	13.0 - 16.0				
T60403-M6296-X025	ISU-100A	1.32:1.32:1:1	60	7.1 - 8.7				
T60403-M6296-X027	ISU-170A1	1:1:1	60	13.0 - 16.0				
T60403-M6296-X032	ISU-170A	1:1:1	60	13.0 - 16.0				
T60403-M6296-X035	ISU-190A	0.9:0.9:1	60	7.1 - 8.7				
T60403-M6298-X001	ISU-140C	1.25:1.25:1/1	80	26.5 - 28.5			2000	RM8 - THT
T60403-M6298-X002	ISU-230C	0.75:0.75:1	60	72 - 88				
T60403-M6298-X030	ISU-170C	1:1:1	60	13.0 - 16.0				
T60403-M6298-X032	ISU-220C	1:1:1.25	60	6.9 - 8.1				
T60403-M6384-X001	EPU-100B	1:65:1	60	16.0			2000	EP13 - SMD
T60403-M6384-X002	EPU-120B	1.32:1	60	7.9				
T60403-M6384-X003	EPU-400B	2:1	60	16.0				
T60403-M6384-X004	EPU-200B	1.6:1	60	6.15				
T60403-M6384-X005	EPU-110B	1.25:1	60	14.5				
T60403-M6384-X006	EPU-300B	1.25:1	60	28.0				
T60403-M6384-X024	EPU-500E	1:1:1	60	14.5				
T60403-M6384-X031	EPU-600E	0.9:0.9:1	60	7.5				
T60403-M6394-X009	EPU-700E	1:1:1	60	14.5				

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U_{PO} Interface Transformer Cross Reference to VAC and IC Chipsets

VAC Part Number	Talema Part Number	Transformer						Choke	IC Manu.	IC Part Number
		Turns Ratio	I_{DC} (mA)	L _P (mH)	L _L (μH)	C _C (pF)	Vrms	L _N (mH)		
Single TH & SMD Interface Transformers										
T60403-M4021-X028	UF-130A	1:1:2.5	75	1.7	6	100	2500	--	Infineon AMD	PEB2095 IBS AM2095 / 20950
T60403-M4025-X023	UV-130A	1:1:2.5	75	1.7	6	100	2500	--	Infineon AMD	PEB2095 IBS AM2095 / 20950
T60403-M5024-X002	UMJ-192S	1:1:1.25:1.25	75	1.7	10	140	1500	--	Infineon AMD	PEB2095 IBS AM2095 / 20950
T60403-M5024-X008	UMJ-190S	1:1:1:1	75	1.7	10	180	1500	--	Infineon Infineon National	PEB20590 / 20591 PEB20590VIP/20951VIP-8 TP34 & TP3406
T60403-M5024-X022	UMJ-195S	1:1:2:2	75	1.7	10	180	1500	--	Infineon	PSB2196 / 2197
T60403-M4096-X026	UHF-230B	1:1:2.5	100	1.7	20	20	3000	--	Infineon AMD	PEB2095 IBS AM2095 / 20950
T60403-M5032-X085	UWJ-185	1:1:2:2	140	1.7	10	100	1500	--	Infineon Infineon National	PEB20590 / 20591 PSB2196 / 2197 TP34 & TP3406
T60403-M5032-X072	UHJ-185	1:1:2:2	120	1.7	10	180	3000	--	Infineon	PEB2196 / 2197
Dual SMD Interface Transformer										
T60407-M5026-X013	UAJ-140C	1:1:2:2	75	1.7	5	150	1500	--	Infineon	PEB2096, PSB2196 / 2197
TH & SMD Interface Moules										
T60407-L4021-X101	UMF-130A-152	1:1:2.5	75	1.0	6	100	1500	2 x 1.5	Infineon AMD	PEB2095 IBS AM2095 / 20950
T60407-L5051-X010	UMV-130B-602	1:1:2.5	75	1.7	6	100	2500	2 x 6.0	Infineon AMD	PEB2095 IBS AM2095 / 20950
T60407-L5051-X012	UMV-130B-172	1:1:2.5	75	1.7	6	100	2500	2 x 1.7	Infineon AMD	PEB2095 IBS AM2095 / 20950
T60407-L5026-X007	UAJ-120A-502	1:1:2	75	1.7	5	100	1500	2 x 5.0	Infineon	PEB20590VIP / 20591VIP-8
T60407-L5026-X008	UAJ-140B-502	1:1:2:2	75	1.7	10	180	1500	2 x 5.0	Infineon	PEB2096, PSB2196 / 2197
T60407-L5026-X012	UAJ-130A-502	1:1:2.5	75	1.7	5	100	1500	2 x 5.0	Infineon AMD	PEB2095 IBS AM2095 / 20950

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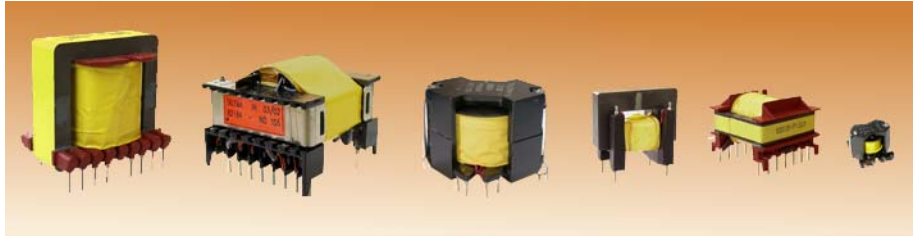
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Summary
TOTAL PROGRAM

SECTION 1

- TOROIDAL 50/60Hz TRANSFORMERS



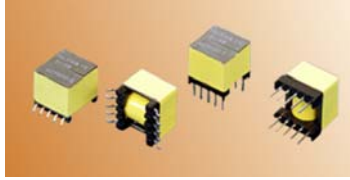
SECTION 2

- TOROIDAL PCB TRANSFORMERS



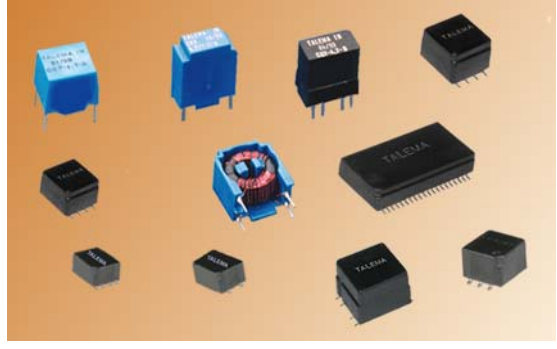
SECTION 3

- ELEVEN GOOD REASONS TO SELECT TALEMA TOROIDAL TRANSFORMERS



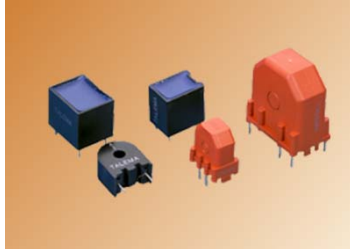
SECTION 4

- CHOKES, INDUCTORS AND TRANSFORMERS FOR POWER APPLICATIONS



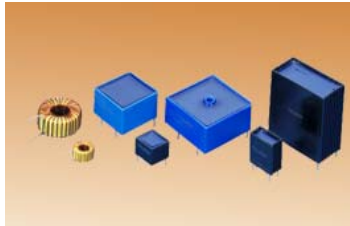
SECTION 5

- COMPONENTS FOR TELECOMMUNICATIONS AND DATA LINE TECHNOLOGY



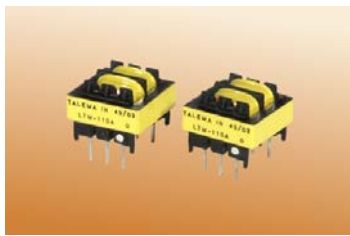
SECTION 6

- CURRENT COMPENSATED EMI NOISE SUPPRESSION CHOKES



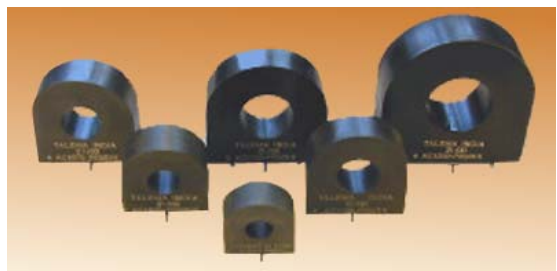
SECTION 7

- CURRENT SENSE TRANSFORMERS AND INDUCTORS



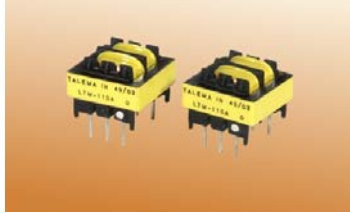
SECTION 8

- LAN MAGNETIC COMPONENTS FOR ETHERNET APPLICATIONS



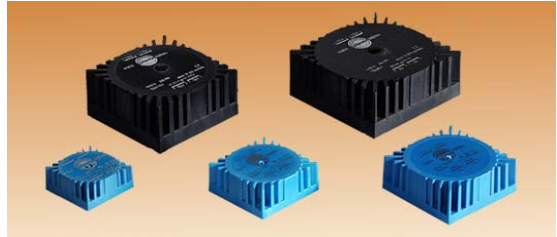
SECTION 9

- T1/E1/CEPT-PRI - T3/DS3/E3/STS-1 FOR TELECOMMUNICATION PRODUCTS



SECTION 10

- U INTERFACE TRANSFORMERS FOR COMMUNICATIONS AND DATA LINE TECHNOLOGY



SECTION 11

- TRANSFORMERS FOR BROADBAND ACCESS AND FIBRE CHANNEL INTERFACE