

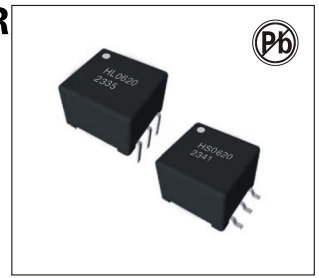
MAX253 COMPATIBLE CONVERTER TRANSFORMER HL/HS06 SERIES

FEATURES:

- RoHS compliant
- Maxim MAX253 compatible
- 3.3V and 5V versions
- Isolation to 4kVdc
- Frequency range to 500kHz
- Toroidal construction
- Industry-standard pinout
- UL 94 V-0 package materials
- Fully encapsulated
- Low profile

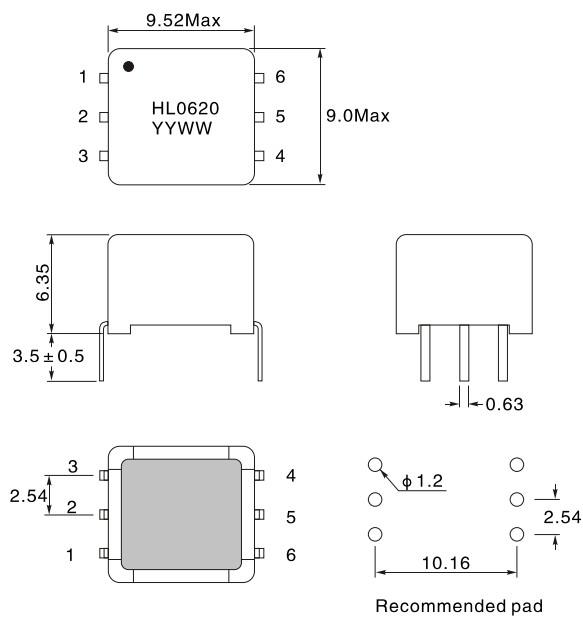
DESCRIPTION:

The HL/HS06 series of converter transformers are specifically designed for use with the MAX253 chip set to provide isolated power supplies. The 5V version can supply 1W and the 3.3V version can supply 500mW. A centre tapped Secondary winding allows for full bridge, half bridge or voltage doubling.

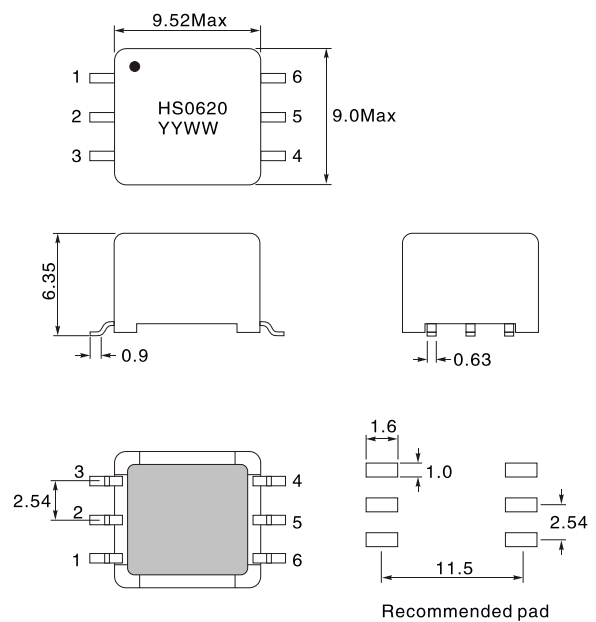


SHAPE AND DIMENSIONS Dimensions(mm)

HL06XX



HS06XX



ELECTRICAL CHARACTERISTICS:

Part No.	Input voltage (V)	Output voltage (V)	Max. output current (mA)	Isolation voltage (Vdc)	Turns ratio
HL0620	5.0	5.0	200	1500	1:1.31
HS0620	5.0	5.0	200	1500	1:1.31
HL0621	3.3	5.0	100	1500	1:2.27
HS0621	3.3	5.0	100	1500	1:2.27
HL0622	3.3	5.0	100	4000	1:2.14
HS0622	3.3	5.0	100	4000	1:2.14
HL0623	5.0	5.0	200	4000	1:1.33
HS0623	5.0	5.0	200	4000	1:1.33

Notes:

Operating free air temperature range-40°C~+85°C
 Storage temperature range-50°C~+125°C
 Lead Temperature 1.5mm from case for 10 seconds.....300°C
 Peak current I_{pk}.....400mA

HL/HS0620

Parameter	Conditions	Min.	Typ.	Max.	Units
Primary Inductance, L_p	100KHz, 250mV	0.6	0.83	1.10	mH
Secondary Inductance, L_s	100KHz, 250mV	1.1	1.40	1.70	mH
Leakage Inductance, L_L	100KHz, 250mV		0.35	1.00	uH
Interwinding Capacitance, C_{ww}	100KHz, 250mV		30	50	pF
Primary D.C. Resistance, R_{DC}	>0.1Vdc		0.70	1.50	Ω
Volt-time Product, E_t	Pins 1/2 or 2/3	40	50		Vus

HL/HS0621

Parameter	Conditions	Min.	Typ.	Max.	Units
Primary Inductance, L_p	100KHz, 250mV	0.3	0.38	0.46	mH
Secondary Inductance, L_s	100KHz, 250mV	1.6	2.00	2.40	mH
Leakage Inductance, L_L	100KHz, 250mV		0.30	1.00	uH
Interwinding Capacitance, C_{ww}	100KHz, 250mV		30	50	pF
Primary D.C. Resistance, R_{DC}	>0.1Vdc		0.40	1.00	Ω
Volt-time Product, E_t	Pins 1/2 or 2/3	30	35		Vus

HL/HS0622

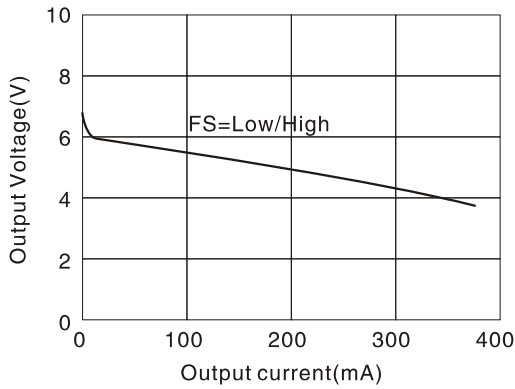
Parameter	Conditions	Min.	Typ.	Max.	Units
Primary Inductance, L_p	100KHz, 20mV	110	142	185	uH
Secondary Inductance, L_s	100KHz, 20mV	550	710	850	uH
Leakage Inductance, L_L	100KHz, 250mV		3.0	5.0	uH
Interwinding Capacitance, C_{ww}	100KHz, 250mV		4.2	8.0	pF
Primary D.C. Resistance, R_{DC}	>0.1Vdc		0.3	0.5	Ω
Volt-time Product, E_t	Pins 1/2 or 2/3	18	22		Vus

HL/HS0623

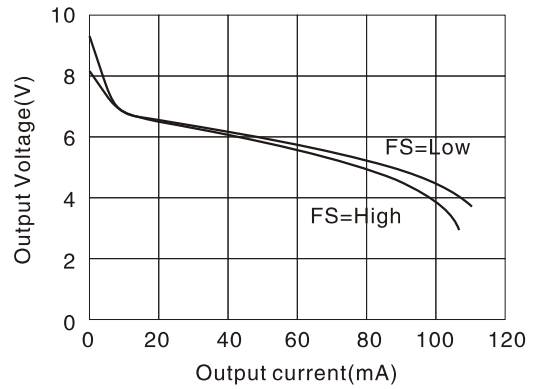
Parameter	Conditions	Min.	Typ.	Max.	Units
Primary Inductance, L_p	100KHz, 20mV	190	240	310	uH
Secondary Inductance, L_s	100KHz, 20mV	350	444	540	uH
Leakage Inductance, L_L	100KHz, 250mV		5.2	8.0	uH
Interwinding Capacitance, C_{ww}	100KHz, 250mV		4.2	8.0	pF
Primary D.C. Resistance, R_{DC}	>0.1Vdc		0.4	0.6	Ω
Volt-time Product, E_t	Pins 1/2 or 2/3	25	28		Vus

VOLTAGE CURVES

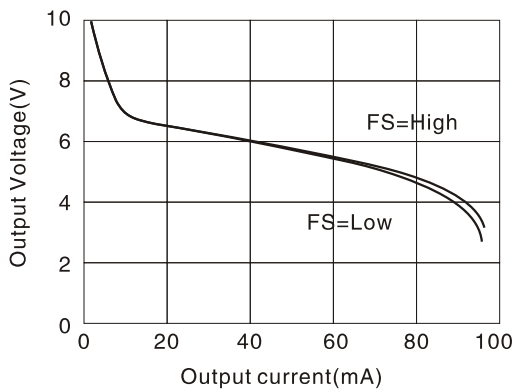
HL/HS0620



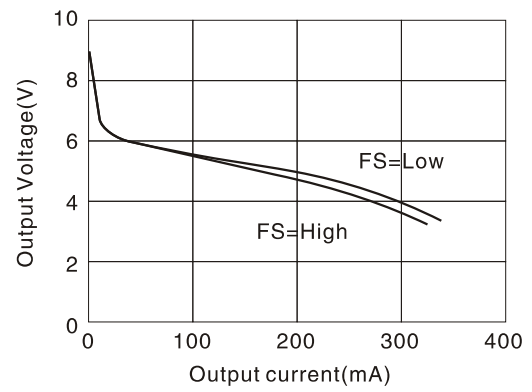
HL/HS0621



HL/HS0622

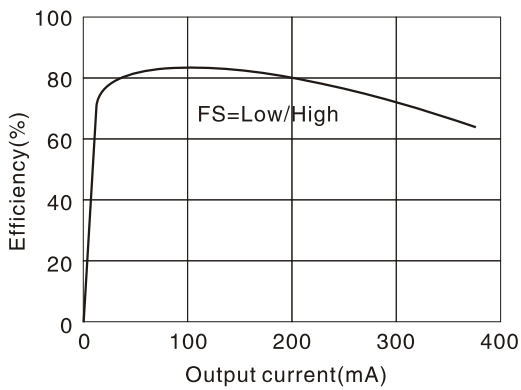


HL/HS0623

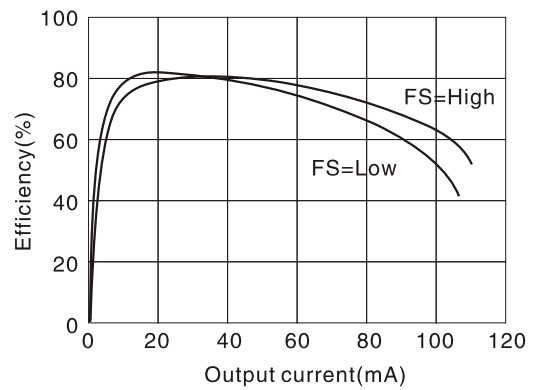


EFFICIENCY CURVES

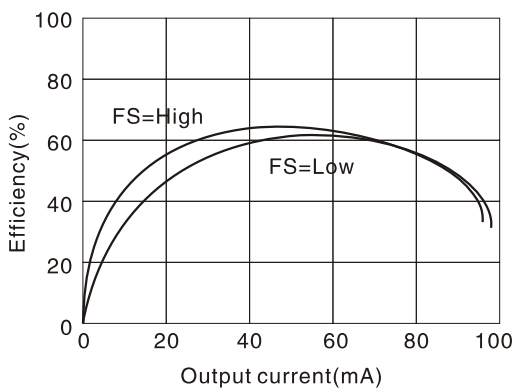
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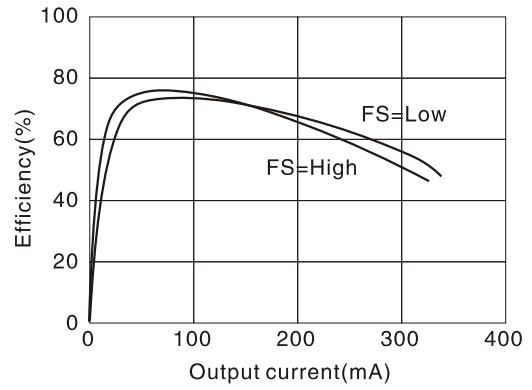
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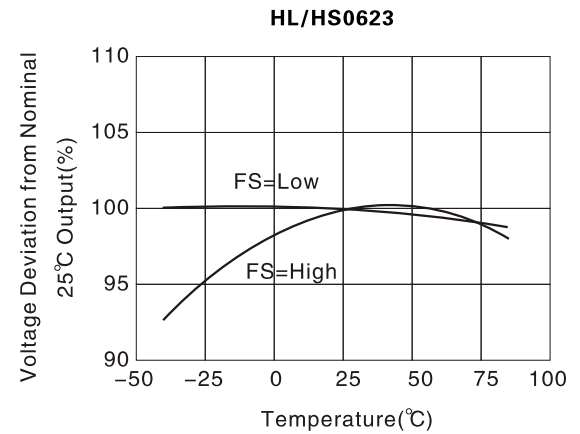
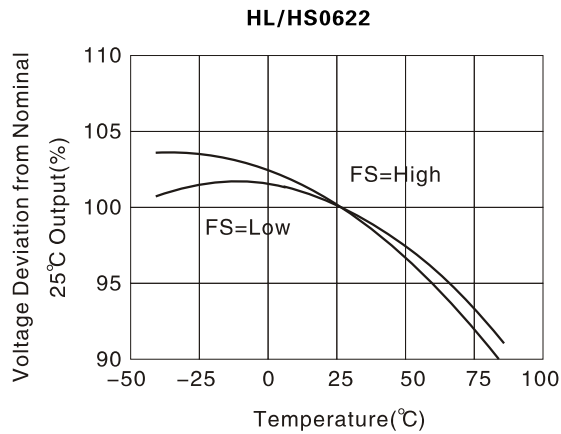
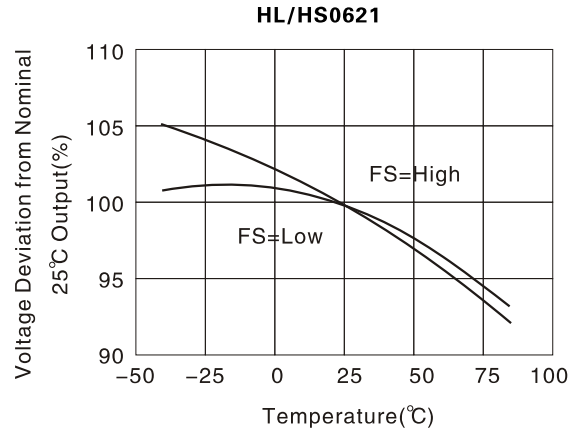
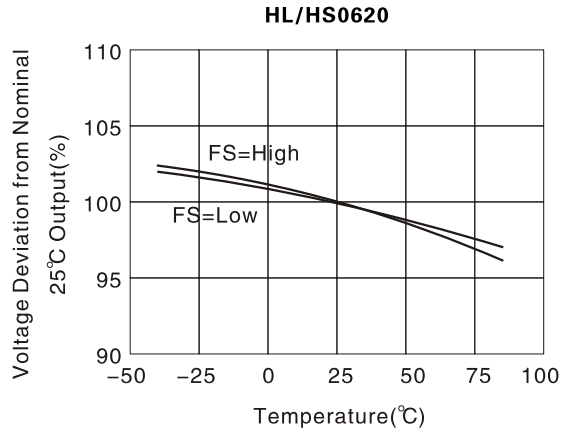
HL/HS0622



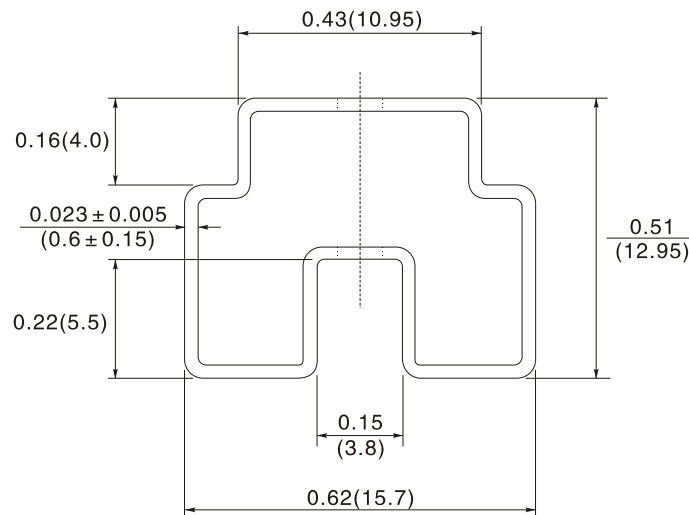
HL/HS0623



VOLTAGE DEVIATION



TUBE OUTLINE DIMENSIONS (HL06XX)



Tube length: 18.3 ± 0.08 (465 ± 2).

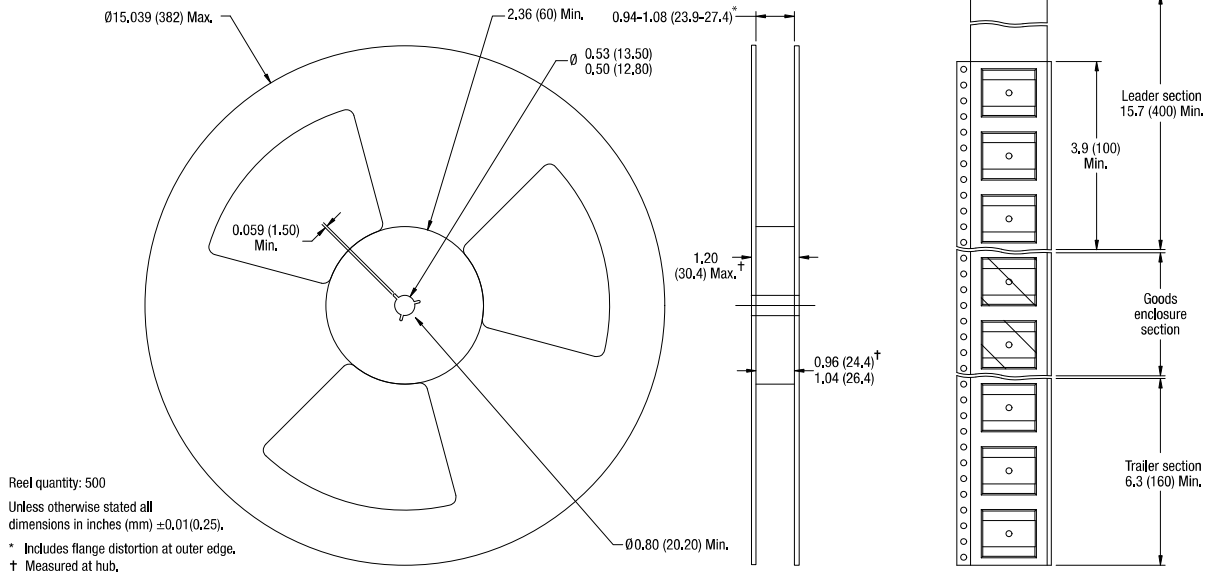
Tube quantity: 50.

Tube material: Antistatic coated clear pvc.

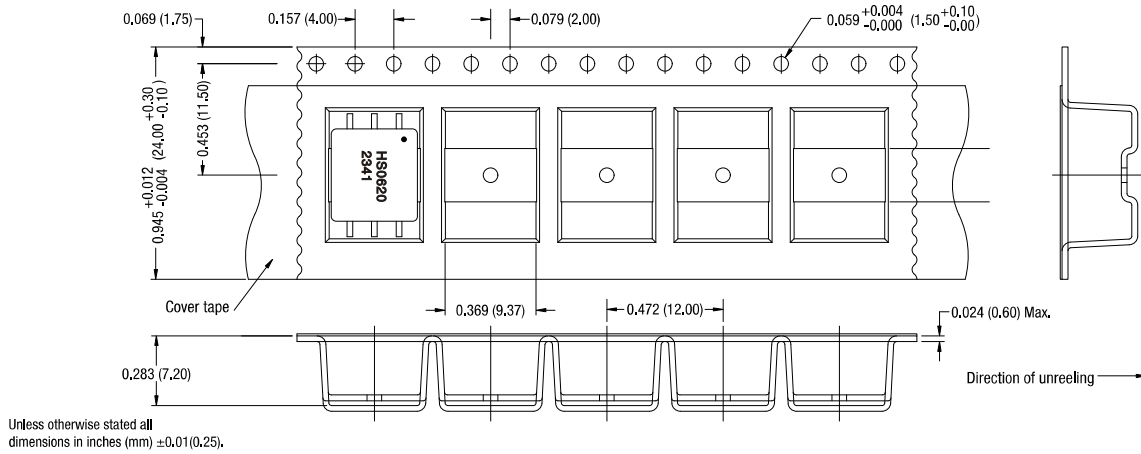
Unless otherwise stated all dimensions in inches(mm) ± 0.01 (0.25).

TAPE & REEL SPECIFICATIONS(HS06XX)

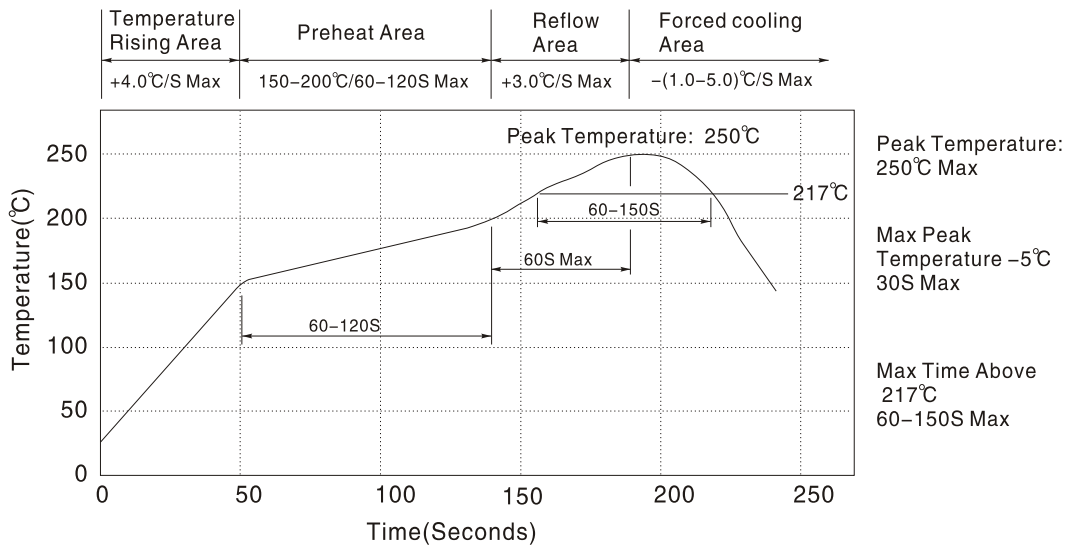
REEL OUTLINE DIMENSIONS

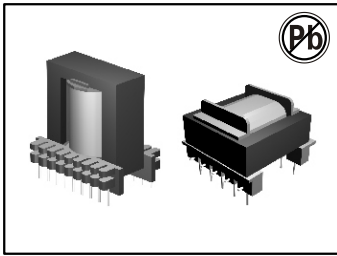


TAPE OUTLINE DIMENSIONS



SOLDERING PROFILE





SWITCHING TRANSFORMERS

TEE, TEI SERIES

FEATURES:

- Possessing of high permeability
- High saturation flux density
- Low loss, at 100°C the power loss goes bottom

OPTIONS:

- Bulk packaging is standard
- Custom design available

COMMON APPLICATIONS:

- Drive transformers
- Main transformers
- Smoothing chokes
- General purpose use

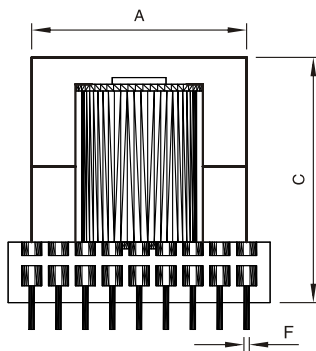
ELECTRICAL CHARACTERISTICS

Part No.	Type	No. of Terminal pins	Dimensions(mm)						Max. output (VA)
			Max	Max	Max	± 0.3	± 0.5	± 0.1	
			A	B	C	D	E	F	
TEI 8.3-A	V	6	8.5	8.5	9.0	2.5	6.0	0.5	3
TEE 8.3-B	H	6	8.5	8.5	7.0	2.5	6.0	0.5	3
TEE 8.3-C	H	4	8.5	9.5	9.0	5.0	6.8	0.5	3
TEI 10-A	V	8	10.5	11.0	11.0	2.5	8.0	0.5	5
TEI 10-B	H	8	11.0	13.0	10.5	2.5	10.5	0.5	5
TEI 10-C	H	4	10.0	9.5	10.0	5.0	6.8	0.5	5
TEI 12.5-A	V	10	13.0	13.0	10.0	2.5	7.5	0.6	8
TEE 12-A	H	4	12.5	11.0	12.5	8.0	9.0	0.6	8
TEE 13-A	V	10	13.5	13.0	12.0	2.5	8.7	0.6	9
TEI 14-A	V	6	14.5	14.5	13.0	3.5	11.0	0.6	15
TEE 16-A	V	6	16.5	13.5	13.0	3.0	9.0	0.6	25
TEE 16-B	H	8	16.5	14.5	15.0	3.0	11.0	0.6	25
TEE 16-C	H	8	16.5	14.5	15.0	3.5	12.0	0.6	25
TEE 16-D	V	10	16.5	13.5	14.5	3.25	10.5	0.6	25
TEE 16-F	H	10	16.5	19.0	14.0	3.2	15.5	0.8	25
TEEL 16-A	V	10	22.0	16.5	30.0	4.0	10.3	0.6	25
TEE 19-A	V	6	20.0	18.0	18.0	4.1	14.0	0.7	35
TEE 19-B	V	6	20.0	16.0	18.0	4.7	11.6	0.6	35
TEE 19-C	H	8	20.0	18.0	16.5	3.8/5	12.5	0.7	35
TEEL 19-A	V	8	20.0	20.5	32.0	3.8/4.8	15.0	0.8	35
TEEL 19-B	H	6	19.5	32.0	13.0	5	24.2	0.8	35
TEEL 19-C	V	10	23.0	16.5	32.0	4	10.0	0.8	35
TEE 20-A	H	8	20.5	19.0	13.0	5	15.0	0.8	35
TEE 22-A	V	10	22.5	16.5	20.0	4	10.2	0.8	45
TEE 22-B	V	8	22.5	17.0	20.0	5	12.4	0.8	45
TEE 22-C	H	9	22.5	24.5	16.5	3.5/5	17.2	0.8	45
TEE 25-A	V	8	25.5	18.0	22.0	5	12.4	0.8	65
TEE 25-B	V	10	26.0	20.5	22.0	5	15.2	0.8	65
TEE25-C	H	10	27.0	24.0	24.0	4.0/5	14.6	0.8	65
TEEL 25-A	H	14	27.5	33.5	21.0	4.0	27.1	0.8	65

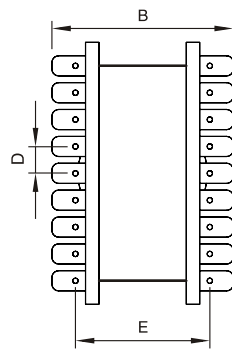
Part No.	Type	No. of Terminal pins	Dimensions(mm)						Max. output (VA)
			Max	Max	Max	± 0.3	± 0.5	± 0.1	
			A	B	C	D	E	F	
TEL 25-B	V	14	27.5	21.0	35.0	4.0	15.0	0.8	65
TEI 28-A	V	12	29.5	25.0	24.0	5.0	17.5	0.8	100
TEI 28-B	V	10	28.5	25.0	35.0	5.0	20.0	0.8	100
TEI 28-C	H	8	28.5	25.0	25.0	5.0	17.5	0.8	100
TEI 30-A	V	10	31.0	22.0	26.0	5.0	17.6	0.8	155
TEI 30-B	V	12	31.0	26.0	26.0	5.0	20.0	0.8	155
TEE 30-A	H	10	30.5	30.0	20.5	5.0	25.0	0.8	155
TEE 30-B	H	12	30.5	30.0	20.5	5.0	25.0	0.8	155
TEI 33-A	V	14	34.0	28.0	30.0	5.0	22.5	0.8	200
TEI 33-B	V	12	34.0	28.0	30.0	5.0	22.5	0.8	200
TEI 33-C	V	16	39.0	29.0	30.0	5.0	22.5	0.8	200
TEE 35-A	H	12	38.0	30.0	26.0	3.8/5.1	22.0	0.8	215
TEE 35-B	V	10	35.5	26.0	28.0	5.0	20.0	0.8	215
TEE 35-C	V	14	35.5	26.0	28.0	5.0	20.0	0.8	215
TEEL 35-A	V	15	36.5	27.5	50.0	5.0	22.5	0.8	215
TEI 35-A	V	12	35.5	28.5	29.0	5/7.5	20.0	1.0	215
TEI 40-A	V	12	40.5	29.0	32.0	5.0	22.5	0.8	345
TEI 40-B	H	12	40.5	37.0	27.0	5.0	28.2	1.0	345
TEI 40-C	V	16	42.0	28.0	35.0	5.0	22.5	0.8	345
TEI 40-D	H	14	40.5	35.0	29.0	5.0	25.8	0.8	345
TEE 42-A	H	16	44.5	42.0	41.5	5.0	34.0	1.0	400
TEE 42-B	H	12	47.0	42.0	39.5	5/7.5	33.0	1.0	400
TEE 42-C	V	18	46.0	32.5	46.0	5.0	27.5	1.0	400
TEE 42-D	V	12	46.0	42.5	37.0	7.4	36.4	1.0	420
TEE 42-E	V	12	43.0	40.5	45.0	5.0	32.5	1.0	420
TEE 42-F	H	17	43.0	47.0	45.0	2.5/5	37.7	1.0	420
TEE 42-G	V	18	46.0	38.0	47.0	5.0	30.0	1.0	420
TEE 50-A	V	18	51.0	40.0	40.0	5.0	30.5	1.0	500
TEE 55-A	H	20	56.0	55.0	50.5	5/7.5	45.2	1.0	814

Note: The output power is only for forward model and the frequency at 100kHz

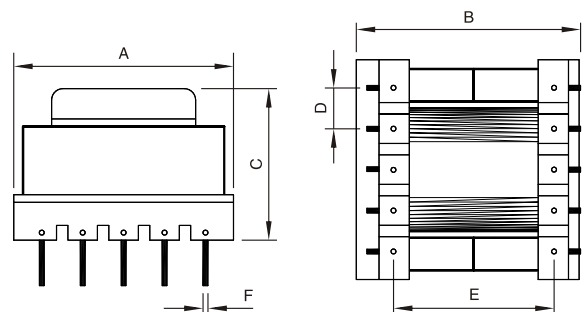
PHYSICAL CHARACTERISTICS



Type V

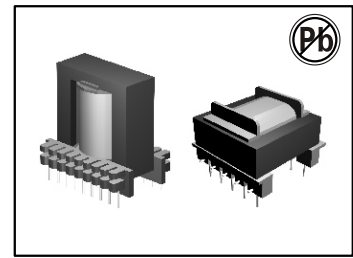


Type H



SWITCHING TRANSFORMERS

TER SERIES



FEATURES:

- Centre section of the core is round easily design high-power switch transformers
- Low leakage

OPTIONS:

- Bulk packaging is standard
- Custom design available

COMMON APPLICATIONS:

- Drive transformers
- Main transformers
- Smoothing chokes
- General purpose use

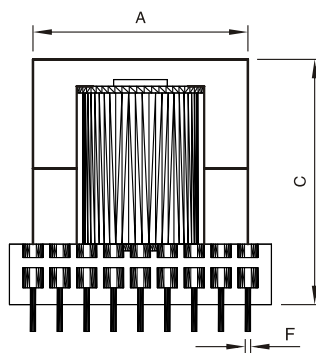
ELECTRICAL CHARACTERISTICS

Part No.	Type	No. of Terminal pins	Dimensions(mm)						Max. output (VA)
			Max	Max	Max	± 0.3	± 0.5	± 0.1	
			A	B	C	D	E	F	
TER 11.5-A	V	8	14	14	12	2.6	9.0	0.6	3
TER 25-A	V	8	27	22	28	5.0	12.5	0.8	87
TER 25-B	V	10	27	22	28	5.0	15.0	0.8	87
TER 28-A	H	20	35	32	25	2.54	28.0	0.5	203
TER 25-B	H	12	31	32	25	5.0	25.0	0.8	203
TER 28-C	V	10	27	25	32	5.0	17.3	0.8	203
TER 28-D	V	12	32	28	32	4.9	22.0	0.6	203
TERL 28-A	V	10	32	25	36	5.0	17.5	0.8	228
TERL 28-B	V	12	32	25	38	5.0	17.5	0.8	228
TERL 28-C	V	12	32	25	36	5.0	20.2	0.8	228
TERL 28-D	V	18	30	25	38	4.0	20.0	0.8	228
TERL 28-E	V	10	30	25	38	5.0	17.5	0.8	228
TERL 28-F	V	14	32	28	38	5.0	20.0	0.8	228
TERL 28-G	H	11	36	38	26	5.0	25.5	0.8	228
TERL 28-H	H	12	32	38	28	5.0	30.4	0.8	228
TER 33-A	V	14	37	31	40	5.0	25.0	1.0	235
TER 33-B	V	14	37	29	40	5.0	22.5	1.0	235
TER 34-A	V	14	36	29	40	5.0	22.3	1.0	240
TER 35-A	V	12	38	30	46	5.0	22.5	1.0	325
TER 35-B	V	14	37	30	44	5.0	22.5	1.0	325
TER 35-C	V	16	41	30	46	5.0	22.55	1.0	325

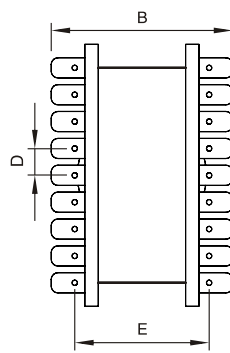
Part No.	Type	No. of Terminal pins	Dimensions(mm)						Max. output (VA)
			Max	Max	Max	± 0.3	± 0.5	± 0.1	
			A	B	C	D	E	F	
TER 35-D	H	16	41	45	29	5.0	35.0	1.0	325
TER 35-E	H	12	38	45	27	5.3	37.1	1.0	325
TER 35-F	H	12	45	37	30	5.4	37.1	1.0	325
TER 39-A	V	16	44	32	53	5.0	25.0	1.0	370
TER 39-B	V	14	40	32	54	5.0	25.2	1.0	370
TER 39-C	V	18	45	32	53	5.0	25.0	1.0	370
TER 39-D	H	16	43	45	35	5.0	30.6	1.0	370
TER 39-E	H	16	43	47	35	5.0	35.3	1.0	370
TER 40-A	V	16	42	33	51	5.0	25.2	1.0	421
TER 40-B	V	16	42	34	52	5.0	27.5	1.0	421
TER 40-C	V	12	42	33	48	5.0	25.0	1.0	421
TER 40-D	H	16	42	50	37	5.0	35.2	1.0	421
TER 42-A	V	18	47	33	47	5.0	27.4	1.0	433
TER 42-B	V	14	44	32	49	5.0	24.8	1.0	433
TER 42-C	V	18	47	39	52	5.0	30.2	1.0	509
TER 42-D	H	14	45	45	36	5.0	34.8	1.0	509
TER 49-A	V	22	55	37	62	5.0	27.5	1.0	680
TER 49-B	V	18	52	38	57	5.0	27.5	1.0	680
TER 49-C	V	20	55	41	60	5.0	32.5	1.0	680
TER 53-A	V	18	55	41	55	5.0	32.5	1.0	800
TER 54-B	V	18	60	42	60	5.0	32.0	1.0	850

Note: The output power is only for forward model and the frequency at 100kHz

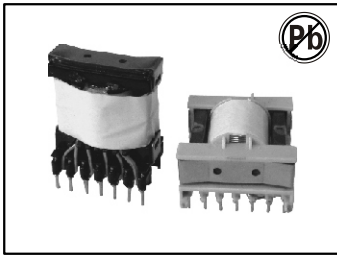
PHYSICAL CHARACTERISTICS



Type V



Type H



SWITCHING TRANSFORMERS TETD SERIES

FEATURES:

- Centre section of the core is round easily design high-power switch transformers

OPTIONS:

- Bulk packaging is standard
- Custom design available

COMMON APPLICATIONS:

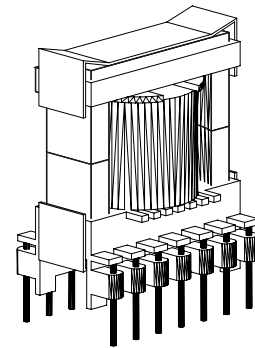
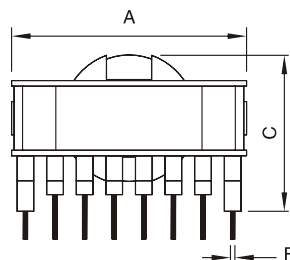
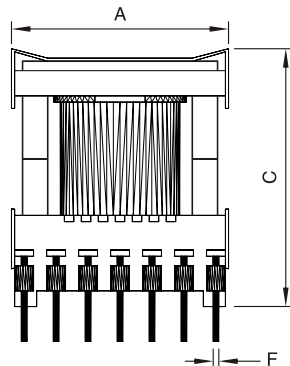
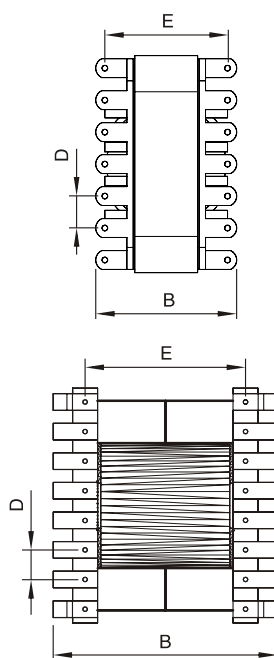
- Drive transformers
- Main transformers
- Smoothing chokes
- General purpose use

ELECTRICAL CHARACTERISTICS

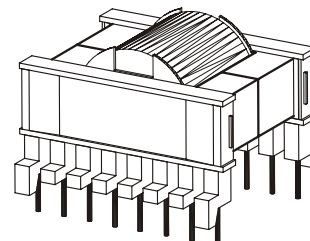
Part No.	Type	No. of Terminal pins	Dimensions(mm)						Max. output (VA)
			Max	Max	Max	± 0.3	± 0.5	± 0.1	
			A	B	C	D	E	F	
TETD 24-A	V	12	36.5	25.0	38.0	5.08	17.8	1.1	110
TETD 29-A	H	14	36.0	36.0	25.5	5.0	25.6	0.8	170
TETD 29-B	H	13	37.0	37.0	27.0	5.0	25.8	0.8	170
TETD 29-C	V	12	42.0	24.5	43.0	5.08	20.32	0.8	170
TETD 34-A	V	12	34.5	30.0	37.0	5.0	25.5	1.0	270
TETD 34-B	H	14	41.0	41.0	27.0	5.0	25.5	2.0	270
TETD 34-C	V	14	39.0	28.0	45.0	5.0	22.9	1.0	270
TETD 39-A	V	16	46.0	30.5	49.6	5.0	25.4	1.0	380
TETD 39-B	H	16	45.0	45.0	36.0	5.0	30.2	1.0	380
TETD 44-A	H	18	50.0	51.0	40.0	5.0	35.8	1.0	520
TETD 44-B	V	18	46.0	33.0	51.0	5.0	27.5	1.0	520
TETD 49-A	V	22	55.0	37.0	55.0	5.0	27.5	1.0	680
TETD 49-B	H	20	56.0	55.0	41.0	5.0	40.4	1.0	680
TETD 54-A	H	22	61.0	60.0	47.0	5.0	44.8	1.0	750
TETD 59-A	H	24	68.0	68.0	52.5	5.0	51.0	1.0	900

Note: The output power is only for forward model and the frequency at 100kHz

PHYSICAL CHARACTERISTICS



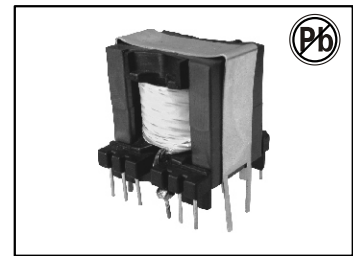
Type V



Type H

SWITCHING TRANSFORMERS

TPQ SERIES



FEATURES:

- Design in the fittest shape
- Applied in the power: (50W-1kW)100kHz
- Cut down installation cubage with multi-pluge and boobins, easily wire connection to meet the request
- Low leakage

OPTIONS:

- Bulk packaging is standard
- Custom design available

COMMON APPLICATIONS:

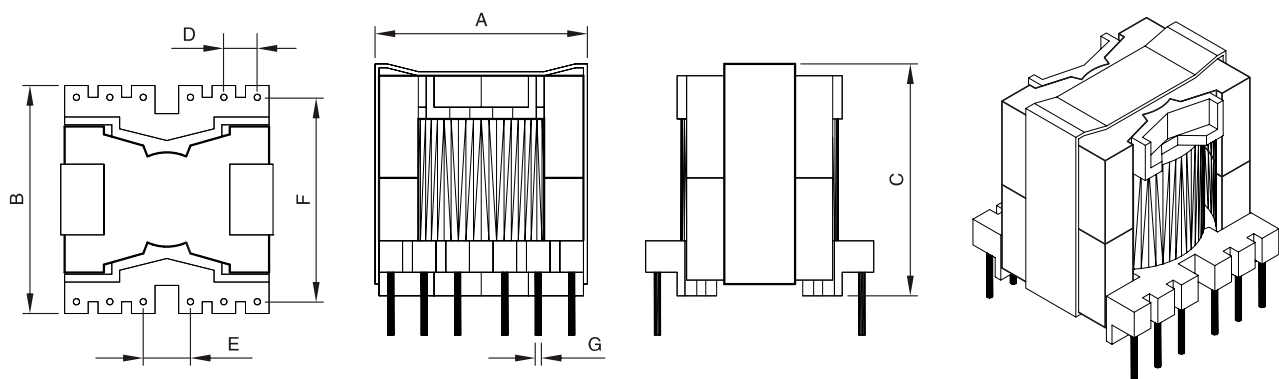
- Drive transformers
- Main transformers
- Smoothing chokes
- Switching power supplies
- AC-DC, DC-DC converters

ELECTRICAL CHARACTERISTICS

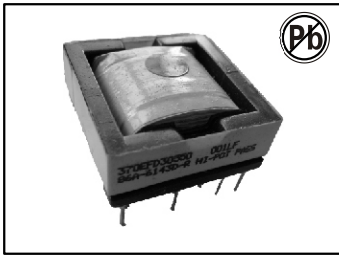
Part No.	Type	No. of Terminal pins	Dimensions(mm)							Max. output (VA)
			Max	Max	Max	± 0.3	± 0.4	± 0.5	± 0.1	
			A	B	C	D	E	F	G	
TPQ 2020-A	V	14(6+8)	24.0	24.0	22.0	3.8/2.5	5.1	20.3	0.6	92
TPQ 2620-A	V	12	28.0	32.0	22.0	3.8	7.6	25.4	0.6	170
TPQ 2620-B	V	12	28.0	32.0	21.0	3.8	7.6	25.4	0.6	170
TPQ 2625-A	V	12	28.5	31.0	28.0	3.8	7.5	25.5	0.7	195
TPQ 3220-A	V	12	33.0	35.0	24.0	5.0	7.5	30.0	0.8	232
TPQ 3220-B	V	12	33.0	36.0	22.0	5.1	7.6	30.5	0.8	232
TPQ 3225-A	V	12	35.5	35.0	27.0	5.0	7.4	30.0	0.8	280
TPQ 3230-A	V	12	33.0	36.0	32.0	5.05	7.6	30.3	0.8	331
TPQ 3535-A	V	12	37.0	41.0	38.5	5.0	10.0	35.0	0.8	452
TPQ 4040-A	V	12	41.0	44.0	43.0	5.0	15.1	38.0	0.8	596
TPQ 5050-A	V	12	52.0	53.0	54.0	7.62	15.24	45.72	1.2	1045

Note: The output power is only for forward model and the frequency at 100kHz

PHYSICAL CHARACTERISTICS



Type V



SWITCHING TRANSFORMERS TEFD SERIES

FEATURES:

- Horizontal installation
- Multi out-put applied in denseness installation

OPTIONS:

- Bulk packaging is standard
- Custom design available

COMMON APPLICATIONS:

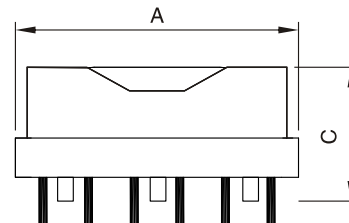
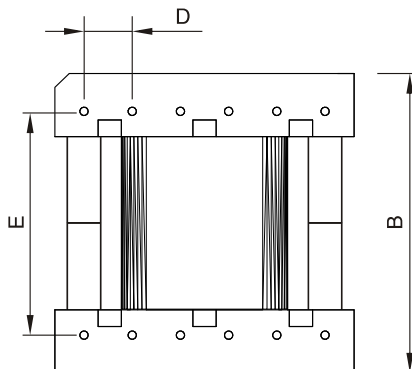
- Drive transformers
- Main transformers
- Smoothing chokes
- General purpose use
- Switching power supplies
- AC-DC, DC-DC converters

ELECTRICAL CHARACTERISTICS

Part No.	Type	No. of Terminal pins	Dimensions(mm)						Max. output (VA)
			Max	Max	Max	± 0.3	± 0.5	± 0.1	
			A	B	C	D	E	F	
TEFD 15-A	H	8	17	18	9.5	3.7	13.7	0.6	5
TEFD 15-B	H	8	17	18	9.5	3.75	13.75	0.6	5
TEFD 15-C	H	8	17	18	9.5	3.8	13.7	0.6	5
TEFD 20-A	H	8	22	23	11.0	5.0	17.5	0.6	18
TEFD 20-B	H	9	22	23	11.0	5.0	17.5	0.6	18
TEFD 20-C	H	10	22	26	15.0	3.8	23.8	0.6	18
TEFD 25-A	H	10	27	28	13.0	5.0	22.45	0.8	45
TEFD 25-B	H	10	27	28	15.0	5.0	22.5	0.8	45
TEFD 30-A	H	12	32	33	14.0	5.0	27.4	0.8	70
TEFD 30-B	H	12	32	36	18.0	5.0	30.0	0.8	70
TEFD 30-C	H	12	32	37	14.0	5.0	32.0	0.8	70

Note: The output power is only for forward model and the frequency at 100kHz

PHYSICAL CHARACTERISTICS



Type H

SMD LOW PROFILE SWITCHING TRANSFORMER

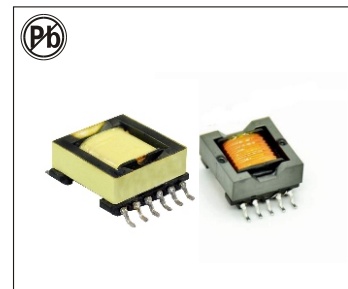
STefd SERIES

FEATURES:

- Multiple Combination
- Series Mode or Parallel Mode
- Low Profile

COMMON APPLICATIONS:

- SMPS DC-DC converter
- CMC, Differential
- Flyback, Boost, Buck
- ADSL/VDSL
- Switching power supplier



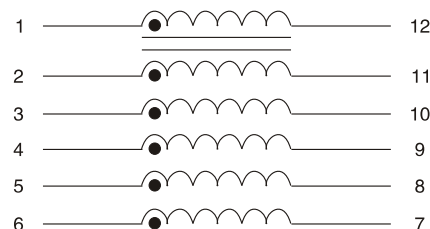
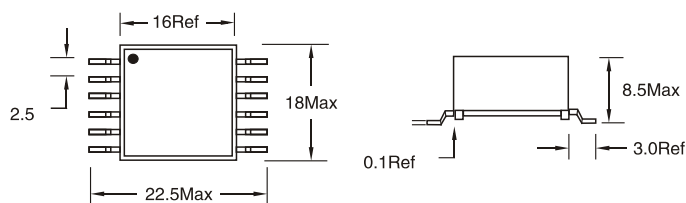
STANDARD SPECIFICATIONS @25°C

Part Number		L (μH) ± 20%	Leakage (μH) Typ.	DCR Max (Ω) Max	1rms Typ (mA) Typ.
EFD15	STefd15-3R8	3.8	0.06	0.07	1.5
	STefd15-4R5	4.5	0.06	0.07	1.5
	STefd15-6R8	6.8	0.06	0.07	1.5
	STefd15-110	11.3	0.06	0.07	1.5
	STefd15-630	63	0.06	0.07	1.5
EFD20	STefd20-3R5	3.5	0.11	0.05	2.1
	STefd20-4R5	4.5	0.11	0.05	2.1
	STefd20-5R3	5.3	0.11	0.05	2.1
	STefd20-100	10	0.11	0.05	2.1
	STefd20-770	77	0.11	0.05	2.1

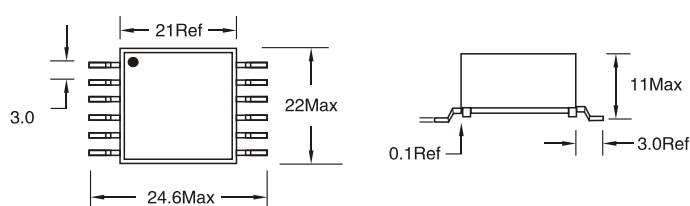
TECHNICAL INFORMATION & PHYSICAL CHARACTERISTICS

Dimensions:mm

STefd15



STefd20



- Inductance measure at Pin 1-2, 100KHz 0.1VRms.
 - DCR measure at individual winding
 - Leakage measure at pin 1-12 with all other windings shorted
 - Insulation Resistance: 500 VDC, 1KM Ohm min.
 - Turns ratio: 1:1:1:1:1:1
 - Soldering temperature: 260°C for 4 ± 1 seconds
 - Operating temperature: 0°C to 70°C
 - Storage Temperature: -25°C to 85°C
 - Different package available per special request
- Note: All specifications subject to change without notice.