

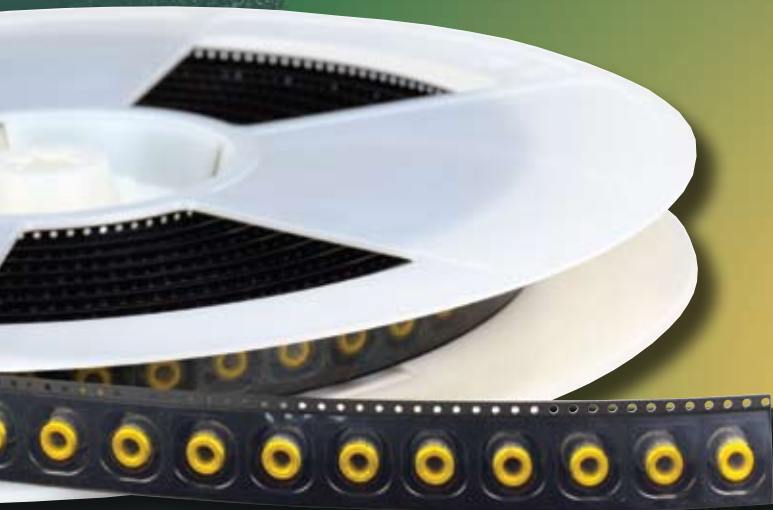


Surface

Mount

Fasteners

# BULLETIN



**ReelFast<sup>®</sup> SMT**

*Solutions*

# SMT

807

Revised 908

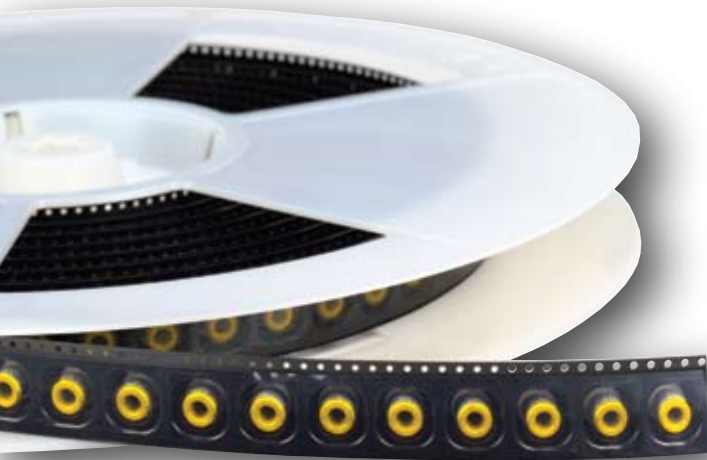
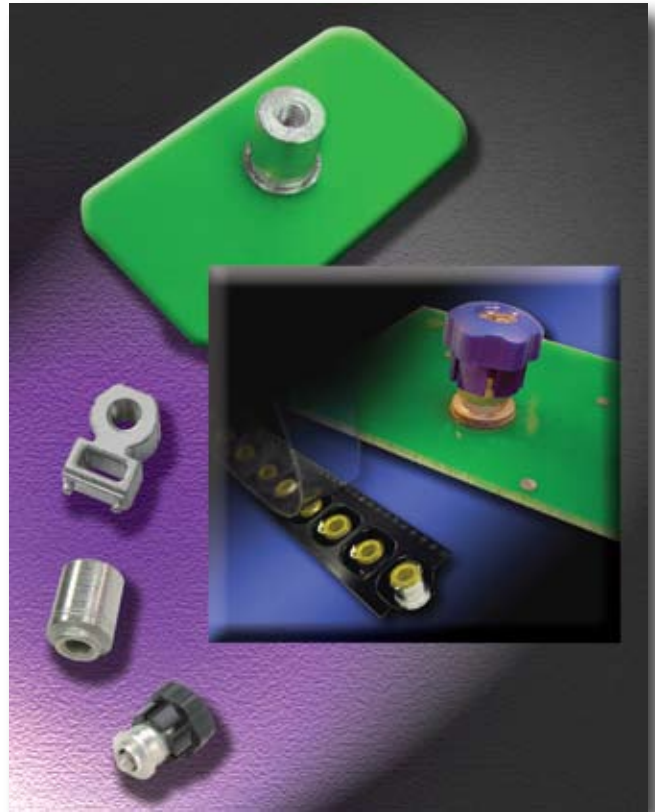
# SURFACE MOUNT FASTENERS

PEM® ReelFast® surface mount nuts, spacers, panel fasteners and R'ANGLE® fasteners are mounted to printed circuit boards in the same manner as other surface mount components prior to the solder reflow process. The fasteners are provided on tape and reel compatible with existing SMT automated installation equipment. Nuts and spacers are available in threaded and unthreaded sizes.

Benefits of ReelFast® SMT fasteners are:

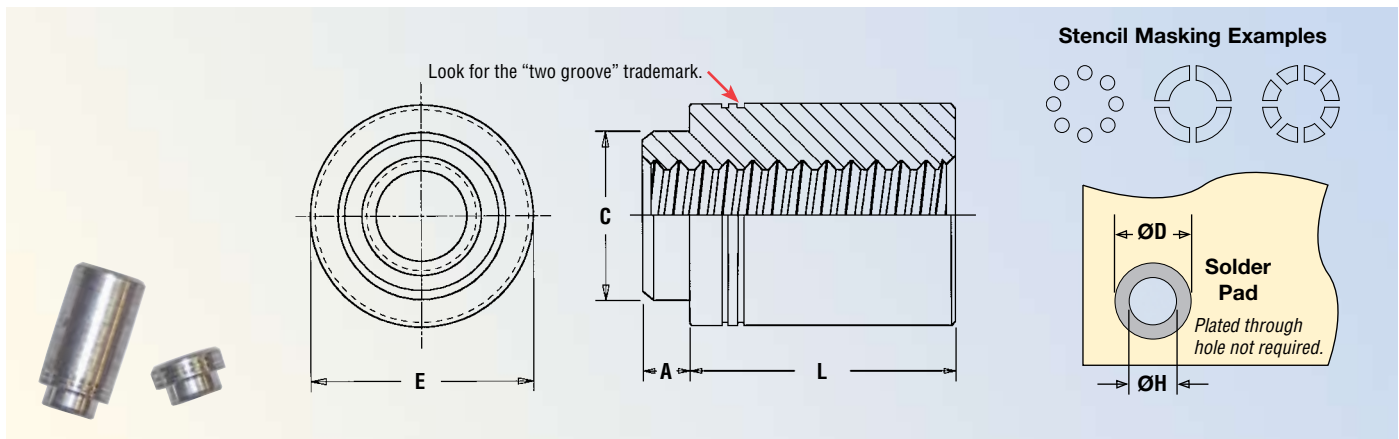
- Faster assembly
- Reduced scrap
- Reduced handling
- Reduced risk of board damage that may occur when fasteners are improperly installed with off-line equipment
- Reduced loose hardware

*ReelFast® SMT fasteners are recommended for reflow soldering designs. Contact our Applications Engineering Department for wave soldering solutions.*



 **ReelFast® SMT**  
Solutions

# TYPE SMTSO ReelFast® SMT SPACERS/NUTS



All dimensions are in inches.

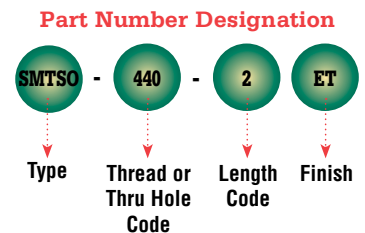
UNIFIED	Thread Size	Thru Hole +.004 –.003	Type	Thread or Thru Hole Code	Length Code "L" ±.005 (Length code in 32nds of an inch)				Min. Sheet Thickness	A Max.	C Max.	E ±.005	ØH Hole Size In Sheet +.003 –.000	ØD Min. Solder Pad
					.062	.125	.250	.375						
	.086-56 (#2-56)	—	SMTSO	256	2	4	8	12	.060	.060	.142	.219	.147	.244
	.112-40 (#4-40)	—	SMTSO	440	2	4	8	12	.060	.060	.161	.219	.166	.244
	.138-32 (#6-32)	—	SMTSO	632	2	4	8	12	.060	.060	.208	.281	.213	.306
	.164-32 (#8-32)	—	SMTSO	832	2	4	8	12	.060	.060	.245	.344	.25	.369
	—	.116	SMTSO	116	2	4	8	12	.060	.060	.161	.219	.166	.244
	—	.143	SMTSO	143	2	4	8	12	.060	.060	.208	.281	.213	.306

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Thru Hole +0.10 –0.08	Type	Thread or Thru Hole Code	Length Code "L" ±0.13 (Length code in millimeters)						Min. Sheet Thickness	A Max.	C Max.	E ±0.13	ØH Hole Size In Sheet +0.08	ØD Min. Solder Pad
	M2 x 0.4	—	SMTSO	M2	2	3	4	6	8	10	1.53	1.53	3.6	5.56	3.73	6.2
	M2.5 x 0.45	—	SMTSO	M25	2	3	4	6	8	10	1.53	1.53	4.09	5.56	4.22	6.2
	M3 x 0.5	—	SMTSO	M3	2	3	4	6	8	10	1.53	1.53	4.09	5.56	4.22	6.2
	M3.5 x 0.6	—	SMTSO	M35	2	3	4	6	8	10	1.53	1.53	5.28	7.14	5.41	7.77
	M4 x 0.7	—	SMTSO	M4	2	3	4	6	8	10	1.53	1.53	6.22	8.74	6.35	9.37
	—	3.6	SMTSO	3.6	2	3	4	6	8	10	1.53	1.53	5.28	7.14	5.41	7.77
	—	4.2	SMTSO	4.2	2	3	4	6	8	10	1.53	1.53	6.22	8.74	6.35	9.37

## Number Of Parts Per Reel / Pitch (mm) For Each Size

Thread/Thru-Hole Size	Length Code						
	2	3	4	6	8	10	12
256, 440, 632, 116, 143	1500 / 12	—	1000 / 12	—	650 / 12	—	300 / 16
832	1100 / 16	—	800 / 16	—	500 / 16	—	300 / 16
M2, M25, M3, M35, 3.6	1500 / 12	1000 / 12	900 / 12	650 / 12	375 / 16	300 / 16	—
M4, 4.2	1100 / 16	800 / 16	675 / 16	500 / 16	375 / 16	300 / 16	—



Packaged on 13" recyclable reels. Tape width is 24mm. Supplied with Kapton® patch for vacuum pick up. Reels conform to EIA-481.

**MATERIAL:** Carbon Steel.

**STANDARD FINISH:** ET - Electro Plated Bright Tin, ASTM B 545, Class A W/ Clear Preservative Coating.

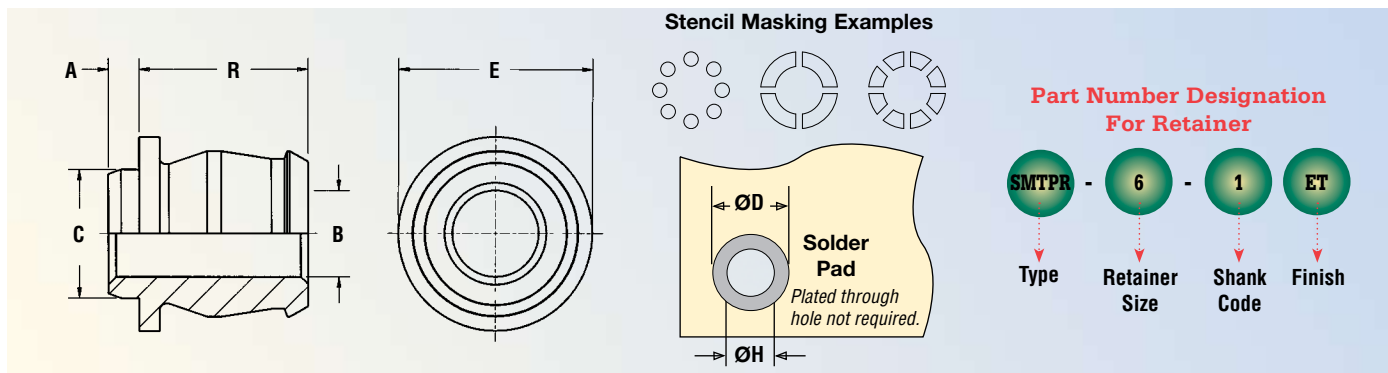
**OPTIONAL FINISH:** DT - Matte Electro-Tin ASTM B 545, Class A W/ Clear Preservative Coating, Annealed.

**THREADS:** Internal, ANSI B1.1 2B ANSI/ASME B1.13M, 6H

# PANEL FASTENER COMPONENTS AND ASSEMBLY DATA

## RETAINER

Packaged on 13" recyclable reels of 465 pieces. Tape width is 24mm. Supplied with Kapton® patch for vacuum pick up. Reels conform to EIA-481.



All dimensions are in inches.

UNIFIED	Retainer Part Number	A (Shank) Max.	Min. Sheet Thickness	B ±.003	C Max.	E Nom.	R ±.005	ØH Hole Size In Sheet +.003 -.000	ØD Min. Solder Pad
	SMTPR-6-1	.060	.060	.167	.249	.375	.325	.250	.396

All dimensions are in millimeters.

METRIC	Retainer Part Number	A (Shank) Max.	Min. Sheet Thickness	B ±0.08	C Max.	E Nom.	R ±0.13	ØH Hole Size In Sheet +0.08	ØD Min. Solder Pad
	SMTPR-6-1	1.53	1.53	4.24	6.33	9.53	8.26	6.35	10.06

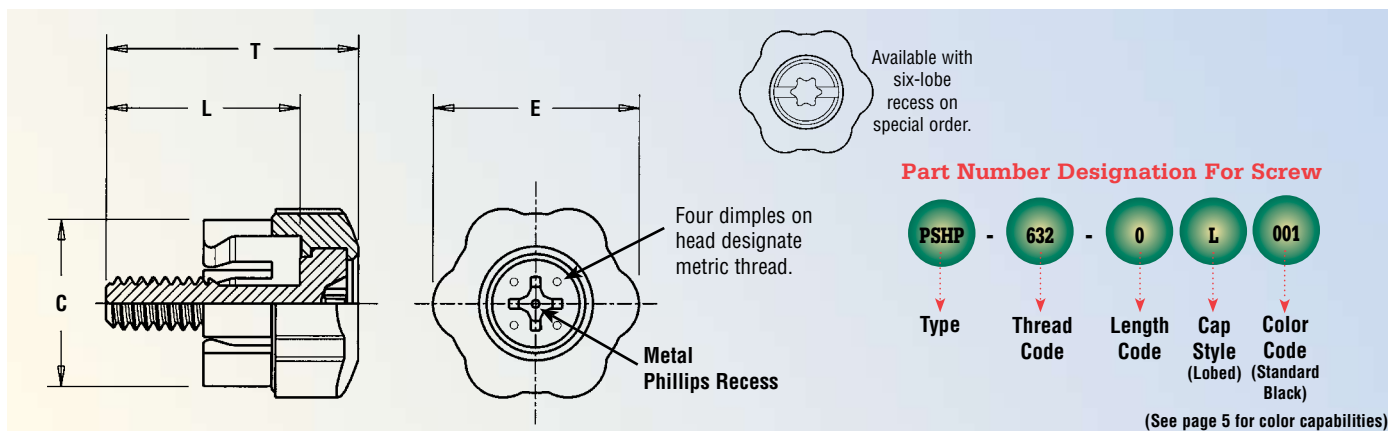
**RETAINER MATERIAL:** Carbon Steel.

**RETAINER STANDARD FINISH:** ET - Electro Plated Bright Tin ASTM B 545, Class A W/Preservative Coating.

**RETAINER OPTIONAL FINISH:** DT - Matte Electro-Tin ASTM B 545, Class A W/ Clear Preservative Coating, Annealed.

## SCREW

Packaged in bags.



All dimensions are in inches.

UNIFIED	Type	Thread Code	Screw Length Code	C ±.010	E ±.010	L ±.015	T Nom.	Driver Size
	PSHP	440	0	.440	.542	.510	.663	#1
			1			.570	.723	
	PSHP	632	0	.440	.542	.510	.663	#2
			1			.570	.723	

All dimensions are in millimeters.

METRIC	Type	Thread Code	Screw Length Code	C ±0.25	E ±0.25	L ±0.38	T Nom.	Driver Size
	PSHP	M3	0	11.18	13.77	12.95	16.84	#1
			1			14.48	18.36	
	PSHP	M3.5	0	11.18	13.77	12.95	16.84	#2
			1			14.48	18.36	

**CAP MATERIAL:** ABS. Temperature limit is 200° F / 93° C.

**SCREW MATERIAL:** Carbon Steel.

**SCREW FINISH:** CN - Bright Nickel over Copper Flash.

Retainer and screw are sold separately.

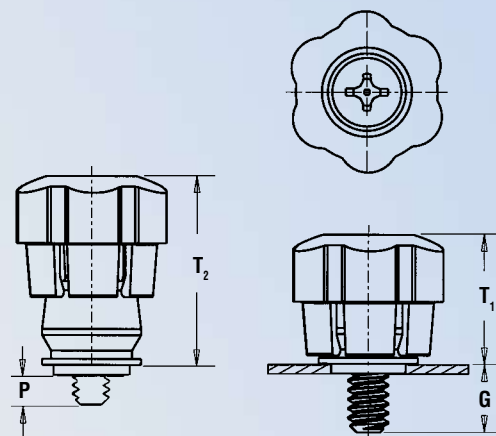
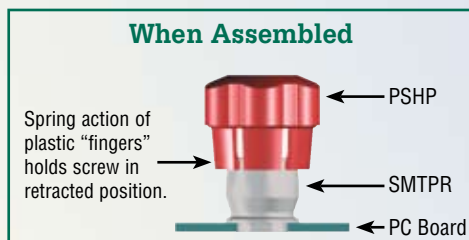
**SMT-4** PennEngineering • [www.pemnet.com](http://www.pemnet.com)

**THREADS:** External, ANSI B1.1, 2A ANSI/ASME B1.13M, 6g.<sup>(1)</sup>

<sup>(1)</sup> As with all external plated threads, Class 2A/6g, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/6h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

## ASSEMBLY

- Simply snap screw into retainer to complete assembly.
- Black ABS cap standard.
- Optional molded-thru colors available.



All dimensions are in inches.

UNIFIED	Thread Size	Screw Part Number			Retainer Part Number	G ± .025	P ± .025	T <sub>1</sub> Nom.	T <sub>2</sub> Nom.	Total Radial Float
		Type	Thread Code	Screw Length Code						
	.112-40 (#4-40)	PSHP	440	0	SMTPR-6-1	.188	.000	.478	.646	.015
				1		.248	.026			
	.138-32 (#6-32)	PSHP	632	0	SMTPR-6-1	.188	.000	.478	.646	.020
				1		.248	.026			

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Screw Part Number			Retainer Part Number	G ± 0.64	P ± 0.64	T <sub>1</sub> Nom.	T <sub>2</sub> Nom.	Total Radial Float
		Type	Thread Code	Screw Length Code						
	M3 x 0.5	PSHP	M3	0	SMTPR-6-1	4.78	0	12.14	16.41	.38
				1		6.3	.66			
	M3.5 x 0.6	PSHP	M3.5	0	SMTPR-6-1	4.78	0	12.14	16.41	.51
				1		6.3	.66			

## COLOR CAPABILITIES FOR TYPE PSHP SCREW

The colors shown here (codes #002 thru #007) are non-stocked standards and available on special order. Since actual cap colors may vary slightly from those represented at the right, we recommend that you request samples for color verification. If you require a custom color or you need a "color matched" cap, please contact us.

Std. Black #001   Red #002   Orange #003   Yellow #004



Green #005   Blue #006   Violet #007

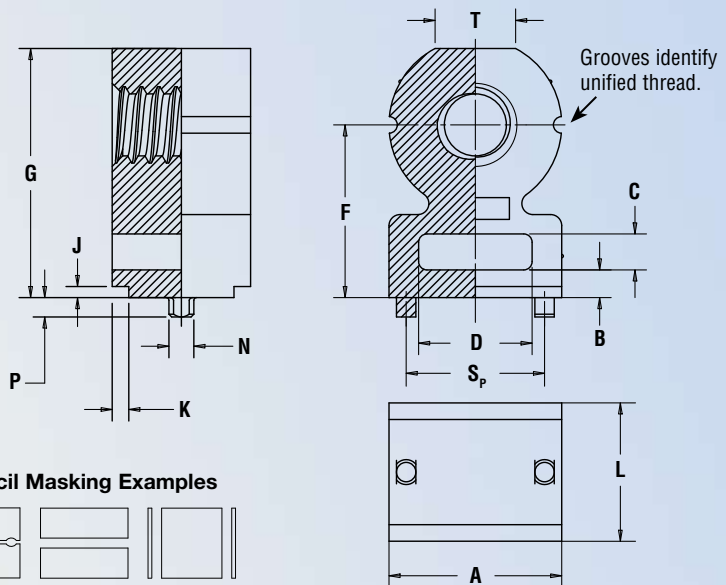
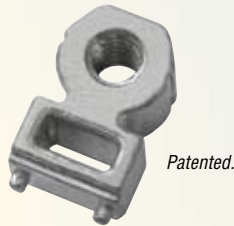
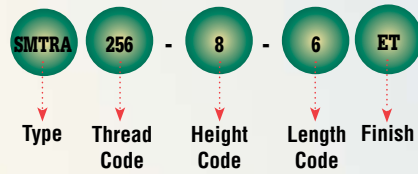
Non-flammable UL 94-V0 plastic caps are available on special order.



# SURFACE MOUNT R'ANGLE® FASTENER

- Strong re-usable threads at right angle to PC board.

## Part Number Designation



## Stencil Masking Examples



All dimensions are in inches.

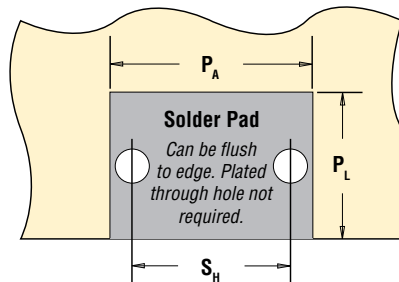
UNIFIED	Thread Size	Type	Thread Code	Height Code	Length Code	Length L ±.005	Min. Sheet Thickness	Hole Size In Sheet +.003 -.000	A ±.006	B ±.006	C ±.006	D ±.006	Height F ±.006	G ±.006	J Nom.	K Nom.	N Max.	P Max.	S <sub>p</sub> ±.003	T Nom.
	.086-56 (#2-56)	SMTRA	256	8	6	.188	.040	.053	.218	.040	.060	.140	.250	.345	.020	.030	.048	.040	.157	.105
	.112-40 (#4-40)	SMTRA	440	9	6	.188	.040	.053	.250	.050	.065	.160	.281	.390	.020	.030	.048	.040	.188	.125
	.138-32 (#6-32)	SMTRA	632	10	8	.250	.040	.053	.312	.050	.065	.205	.312	.450	.020	.030	.048	.040	.250	.145
	.164-32 (#8-32)	SMTRA	832	12	9	.281	.040	.053	.375	.050	.075	.250	.375	.535	.020	.030	.048	.040	.312	.195

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type	Thread Code	Height Code	Length Code	Length L ±0.13	Min. Sheet Thickness	Hole Size In Sheet +0.08	A ±0.15	B ±0.15	C ±0.15	D ±0.15	Height F ±0.15	G ±0.15	J Nom.	K Nom.	N Max.	P Max.	S <sub>p</sub> ±0.08	T Nom.
	M2 x 0.4	SMTRA	M2	6	5	5	1	1.35	5.5	1	1.5	3.5	6	8.4	0.5	0.75	1.22	1	4	2.65
	M2.5 x 0.45	SMTRA	M25	6	5	5	1	1.35	5.5	1	1.5	3.5	6	8.4	0.5	0.75	1.22	1	4	2.65
	M3 x 0.5	SMTRA	M3	7	5	5	1	1.35	6.35	1.25	1.65	4	7	9.75	0.5	0.75	1.22	1	4.75	3.2
	M4 x 0.7	SMTRA	M4	9	7	7	1	1.35	9.53	1.25	1.65	6.35	9	13.1	0.5	0.75	1.22	1	7.9	4.8

UNIFIED	Thread Code	Pad Width P <sub>A</sub> Min.	Pad Length P <sub>L</sub> Min.	Hole Spacing S <sub>H</sub> ±.002	Hole Size In Sheet +.003 -.000
	256	.262	.171	.157	.053
	440	.294	.171	.188	.053
	632	.356	.233	.250	.053
	832	.419	.264	.312	.053

METRIC	Thread Code	Pad Width P <sub>A</sub> Min.	Pad Length P <sub>L</sub> Min.	Hole Spacing S <sub>H</sub> ±0.05	Hole Size In Sheet +0.08
	M2	6.62	4.57	4	1.35
	M25	6.62	4.57	4	1.35
	M3	7.47	4.57	4.75	1.35
	M4	10.65	6.57	7.9	1.35



Part Number	Parts Per Reel	Pitch (mm)	Tape Width (mm)
SMTRA256-8-6	375	16	24
SMTRA440-9-6	300	16	24
SMTRA632-10-8	200	20	32
SMTRA832-12-9	200	20	32
SMTRAM2-6-5	375	16	24
SMTRAM25-6-5	375	16	24
SMTRAM3-7-5	300	16	24
SMTRAM4-9-7	200	20	32

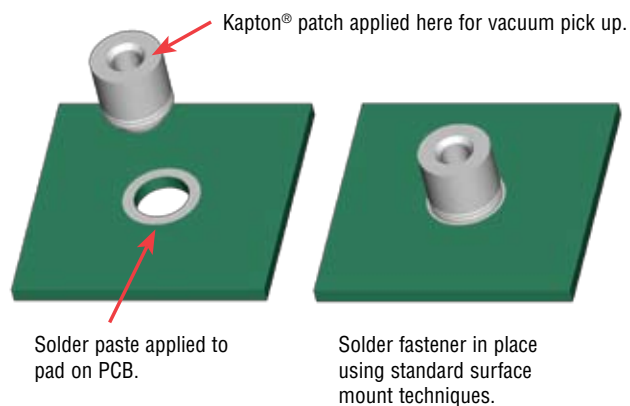
**MATERIAL:** Zinc Diecast.

**STANDARD FINISH:** ET - Electro Plated Bright Tin, ASTM B 545, Class A W/ Clear Preservative Coating.

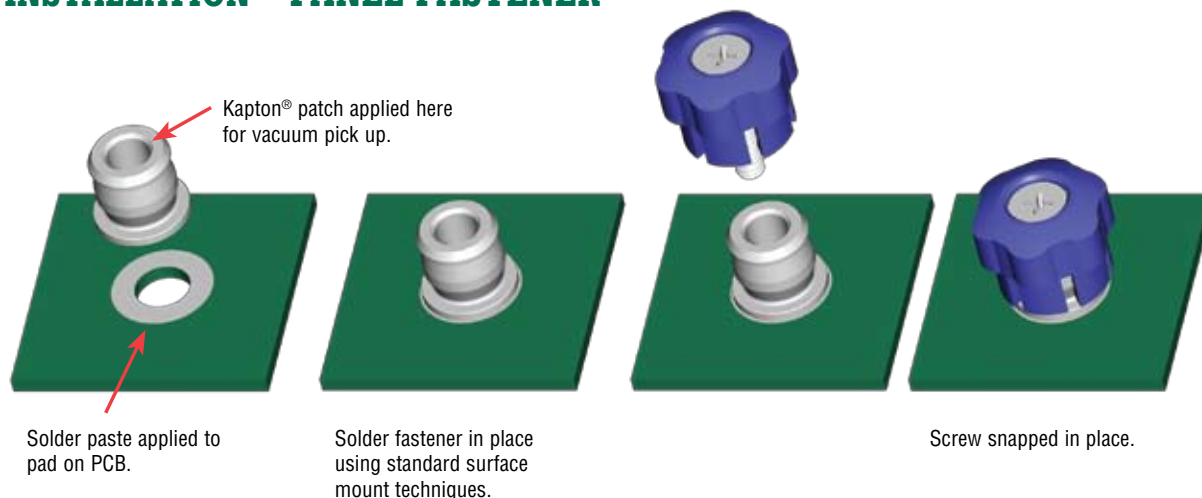
**OPTIONAL FINISH:** DT - Matte Electro-Tin ASTM B 545, Class A W/ Clear Preservative Coating, Annealed.

**THREADS:** Internal, ANSI B1.1 2B ANSI/ASME B1.13M, 6H

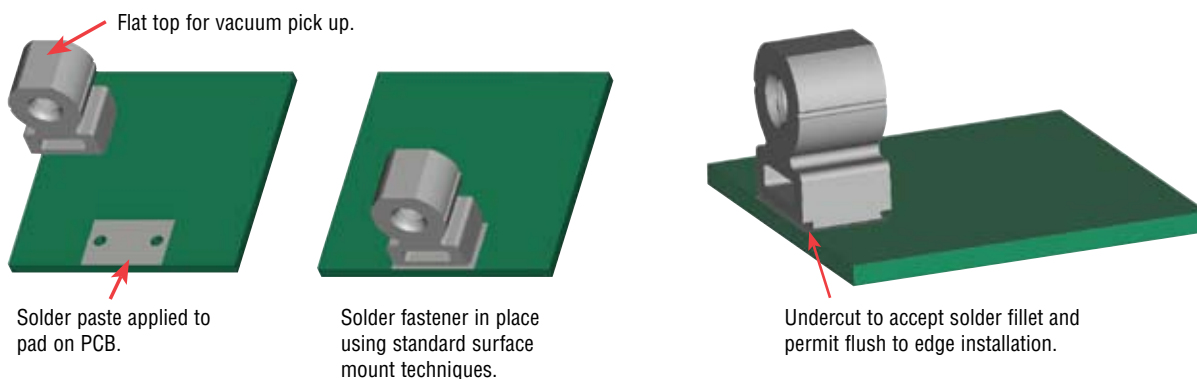
## INSTALLATION - NUTS AND SPACERS



## INSTALLATION - PANEL FASTENER



## INSTALLATION - R'ANGLE FASTENER



***ReelFast® product performance is dependent upon application variables. We will be happy to provide samples for you to install. If required, we can also test your installed hardware and provide you with specific performance data.***

## ADDITIONAL REELFAST® SMT SOLUTIONS

Surface mount technology can be applied to other fastener designs.  
Contact our Applications Engineering department for more information.

*RoHS compliance information can be found on our website.*

*Specifications subject to change without notice.  
Check our website for the most current version of this bulletin.*

**PennEngineering®**



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