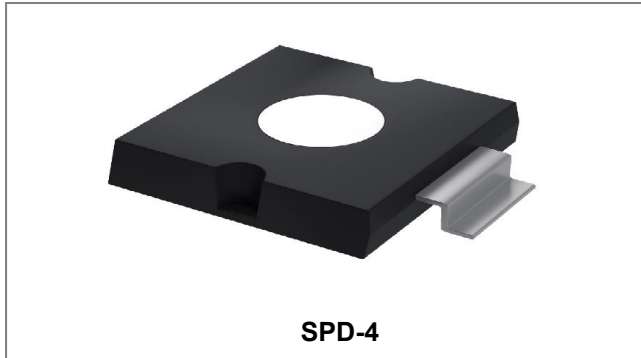


## TPK30KPXX TVS Rectifier



### Features

- Low profile surface mount
- Fast response
- Suppresses transients up to 30kW @ 10/1000µs and 200kW @ 8/20µs
- This is a Pb – Free Device
- Open top for heat dissipation and different connection options
- All SMC parts are traceable to the wafer lot
- All part are 100% tested: electrical, 1x surge test, visual inspection
- Additional testing can be offered upon request

### Circuit Diagram



### Applications

- Protection from switching transients and induced RF

### Maximum Ratings and Thermal Characteristics @T<sub>A</sub>=25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C
Thermal Resistance Junction to Ambient (Note 1)	R <sub>θJA</sub>	50	°C/W
Thermal Resistance Junction to Case	R <sub>θJC</sub>	1.0	°C/W
Peak Pulse Power @ 10/1000 µs (Note 2)	P <sub>PP</sub>	30,000	W
T <sub>Pclamping</sub> (0 volts to V <sub>(BR)</sub> min) Unidirectional		<100	ps
Forward Clamping Voltage @ 500 Amps (Note 3)	V <sub>FS</sub>	4.0	V
Forward Surge Current (Note 3)	I <sub>FSM</sub>	1500	A
Solder Temperature @ 10 s	T <sub>SP</sub>	260	°C
Steady-State Power dissipation @T <sub>A</sub> = 25°C @T <sub>A</sub> = 100°C	P <sub>D</sub>	2.5 (Note 1) 50 (Note 4)	W
Approximate Weight	wt	2.35	g

Note: 1. When mounted on FR4 board with recommended mounting pad(see pad layout).

2. With impulse repetition rate (duty factor) of 0.05% or less.

3. At 8.3ms Single half sine-wave (unidirectional devices only)

4. Case temperature controlled heat sink as specified.

5. See MicroNote 134 for derating when P<sub>PP</sub> also applying steady-state power.

**Electrical Characteristics @T<sub>A</sub>=25°C unless otherwise specified**

Part Number (Unidirectional)	Part Number (Bidirectional)	Stand-off Voltage V <sub>wm</sub> (Note 1) (V)	Breakdown Voltage V <sub>BR</sub> @ I <sub>BR</sub> (mA) (V)		Clamping Voltage V <sub>c</sub> (10*1000) @ I <sub>PP</sub> (V) Max	Stand By Current I <sub>R</sub> @ V <sub>wm</sub> (μA) Max	Stand By Current I <sub>R</sub> @ V <sub>wm</sub> T <sub>J</sub> =150°C (μA) Max	Peak Pulse Current I <sub>pp</sub> Max (A)	Temperatur e Coefficient Of V <sub>BR</sub> mV/°C Max
TPK30KP20	TPK30KP20C	20	22.2-27.1	5	37.6	45	800	798	19
TPK30KP20A	TPK30KP20CA	20	22.2-24.5	5	34.0	45	800	882	18
TPK30KP22	TPK30KP22C	22	24.4-29.8	5	40.2	10	200	747	22
TPK30KP22A	TPK30KP22CA	22	24.4-26.9	5	36.4	10	200	822	20
TPK30KP24	TPK30KP24C	24	26.7-32.6	5	44.0	10	200	681	24
TPK30KP24A	TPK30KP24CA	24	26.7-29.5	5	39.8	10	200	753	22
TPK30KP26	TPK30KP26C	26	28.9-35.3	5	47.6	10	200	630	27
TPK30KP26A	TPK30KP26CA	26	28.9-31.9	5	43.0	10	200	696	24
TPK30KP28	TPK30KP28C	28	31.1-38.0	5	51.6	10	200	582	29
TPK30KP28A	TPK30KP28CA	28	31.1-34.4	5	46.4	10	200	645	26
TPK30KP30	TPK 30KP30C	30	33.3-40.7	5	53.8	10	200	564	36
TPK30KP30A	TPK 30KP30CA	30	33.3-36.8	5	48.8	10	200	618	30
TPK30KP33	TPK30KP33C	33	36.7-44.9	5	59.0	10	200	510	37
TPK30KP33A	TPK30KP33CA	33	36.7-40.6	5	53.3	10	200	564	35
TPK30KP36	TPK30KP36C	36	40.0-48.9	5	63.4	10	200	468	40
TPK30KP36A	TPK30KP36CA	36	40.0-44.2	5	58.1	10	200	516	38
TPK30KP40	TPK30KP40C	40	44.4-54.3	5	71.4	10	200	420	48
TPK30KP40A	TPK30KP40CA	40	44.4-49.1	5	64.5	10	200	468	44
TPK30KP43	TPK30KP43C	43	47.8-58.4	5	76.7	10	200	390	53
TPK30KP43A	TPK30KP43CA	43	47.8-52.8	5	69.4	10	200	432	50
TPK30KP45	TPK30KP45C	45	50.0-61.1	5	80.3	10	200	372	54
TPK30KP45A	TPK30KP45CA	45	50.0-55.3	5	72.7	10	200	414	51
TPK30KP48	TPK30KP48C	48	53.3-65.1	5	85.5	10	200	348	60
TPK30KP48A	TPK30KP48CA	48	53.3-58.9	5	77.4	10	200	390	54
TPK30KP51	TPK30KP51C	51	56.7-69.3	5	91.1	10	200	330	65
TPK30KP51A	TPK30KP51CA	51	56.7-62.7	5	82.4	10	200	366	58
TPK30KP54	TPK30KP54C	54	60.0-73.3	5	96.3	10	200	312	68
TPK30KP54A	TPK30KP54CA	54	60.0-66.3	5	87.1	10	200	342	64
TPK30KP58	TPK30KP58C	58	64.4-78.7	5	103.0	10	200	294	75
TPK30KP58A	TPK30KP58CA	58	64.4-71.2	5	93.6	10	200	318	70
TPK30KP60	TPK30KP60C	60	66.7-81.5	5	107.0	10	200	282	80
TPK30KP60A	TPK30KP60CA	60	66.7-73.7	5	96.8	10	200	312	72
TPK30KP64	TPK30KP64C	64	71.1-86.9	5	114.0	10	200	264	85
TPK30KP64A	TPK30KP64CA	64	71.1-78.6	5	103.0	10	200	294	75

**Technical Data**  
**Data Sheet N0051, Rev. G**



Part Number (Unidirectional)	Part Number (Bidirectional)	Stand-off Voltage $V_{WM}$ (Note 1) (V)	Breakdown Voltage $V_{BR}$ @ $I_{BR}$ (mA) (V)		Clamping Voltage $V_C$ (10*1000) @ $I_{PP}$ (V) Max	Stand By Current $I_D$ @ $V_{WM}$ ( $\mu$ A) Max	Stand By Current $I_D$ @ $V_{WM}$ $T_J=150^\circ C$ ( $\mu$ A) Max	Peak Pulse Current $I_{PP}$ Max	Temperatur e Coefficient Of $V_{BR}$ $mV/^\circ C$ Max
TPK30KP70	TPK30KP70C	70	77.8-95.1	5	125	10	200	240	93
TPK30KP70A	TPK30KP70CA	70	77.8-86.0	5	113	10	200	264	84
TPK30KP75	TPK30KP75C	75	83.3-102.0	5	134	10	200	222	100
TPK30KP75A	TPK30KP75CA	75	83.3-92.1	5	121	10	200	246	90
TPK30KP78	TPK30KP78C	78	86.7-106.0	5	139	10	200	216	104
TPK30KP78A	TPK30KP78CA	78	86.7-95.8	5	126	10	200	240	95
TPK30KP85	TPK30KP85C	85	94.4-115.0	5	151	10	200	198	115
TPK30KP85A	TPK30KP85CA	85	94.4-104.0	5	137	10	200	216	104
TPK30KP90	TPK30KP90C	90	100-122	5	160	10	200	186	120
TPK30KP90A	TPK30KP90CA	90	100-111	5	146	10	200	204	109
TPK30KP100	TPK30KP100C	100	111-136	5	179	10	200	168	134
TPK30KP100A	TPK30KP100CA	100	111-123	5	162	10	200	186	122
TPK30KP110	TPK30KP110C	110	122-149	5	196	10	200	156	147
TPK30KP110A	TPK30KP110CA	110	122-135	5	177	10	200	168	132
TPK30KP120	TPK30KP120C	120	133-163	5	214	10	200	140	161
TPK30KP120A	TPK30KP120CA	120	133-147	5	193	10	200	156	145
TPK30KP130	TPK30KP130C	130	144-176	5	231	10	200	130	174
TPK30KP130A	TPK30KP130CA	130	144-159	5	209	10	200	142	157
TPK30KP150	TPK30KP150C	150	167-204	5	268	10	200	112	202
TPK30KP150A	TPK30KP150CA	150	167-185	5	243	10	200	124	183
TPK30KP160	TPK30KP160C	160	178-218	5	287	10	200	104	216
TPK30KP160A	TPK30KP160CA	160	178-197	5	259	10	200	116	195
TPK30KP170	TPK30KP170C	170	189-231	5	304	10	200	98	229
TPK30KP170A	TPK30KP170CA	170	189-209	5	275	10	200	110	207
TPK30KP180	TPK30KP180C	180	200-244	5	321	10	200	94	242
TPK30KP180A	TPK30KP180CA	180	200-221	5	291	10	200	104	219
TPK30KP200	TPK30KP200C	200	222-271	5	356	10	200	84	269
TPK30KP200A	TPK30KP200CA	200	222-245	5	322	10	200	94	243
TPK30KP220A	TPK30KP220CA	220	245-271	5	356	10	200	84	269
TPK30KP260A	TPK30KP260CA	260	289-320	5	419	10	200	71	318
TPK30KP280A	TPK30KP280CA	280	311-345	5	451	10	200	66	344
TPK30KP300A	TPK30KP300CA	300	333-369	5	483	10	200	62	368
TPK30KP350A	TPK30KP350CA	350	389-431	5	564	10	200	53	430
TPK30KP400A	TPK30KP400CA	400	444-492	5	644	10	200	46	490

**NOTE 1:** Transient Voltage Suppressors are normally selected with reverse "Stand Off Voltage"  $V_{WM}$  which should be equal to or greater than the dc or continuous peak operating voltage level.

SYMBOLS & DEFINITIONS			
Symbol	Definition	Symbol	Definition
$V_{WM}$	Working Peak(Standoff) Voltage	$I_{PP}$	Peak Pulse Current
$V_{(BR)}$	Breakdown Voltage	$V_C$	Claming Voltage
$I_D$	Standby Current	$I_{(BR)}$	Breakdown Current for $V_{(BR)}$

**Ratings and Characteristics Curves**

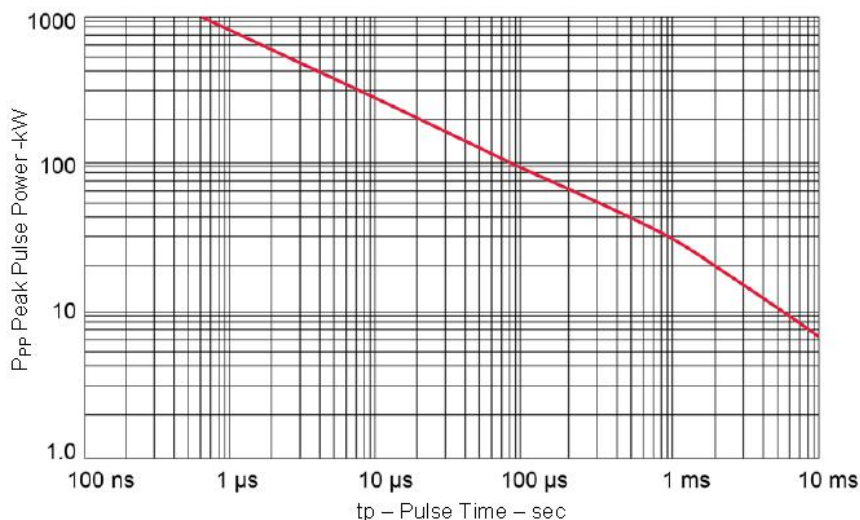


FIGURE 1  
Peak Pulse Power vs. Pulse Time

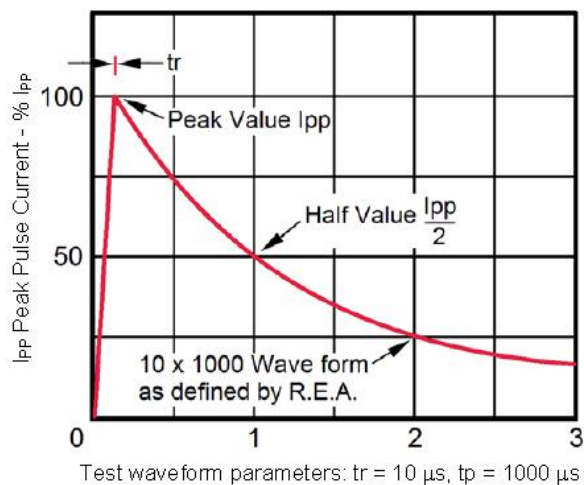


Figure 2  
Pulse Waveform

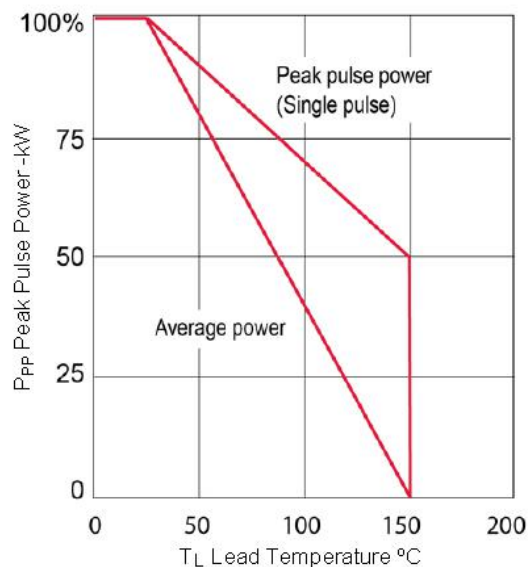
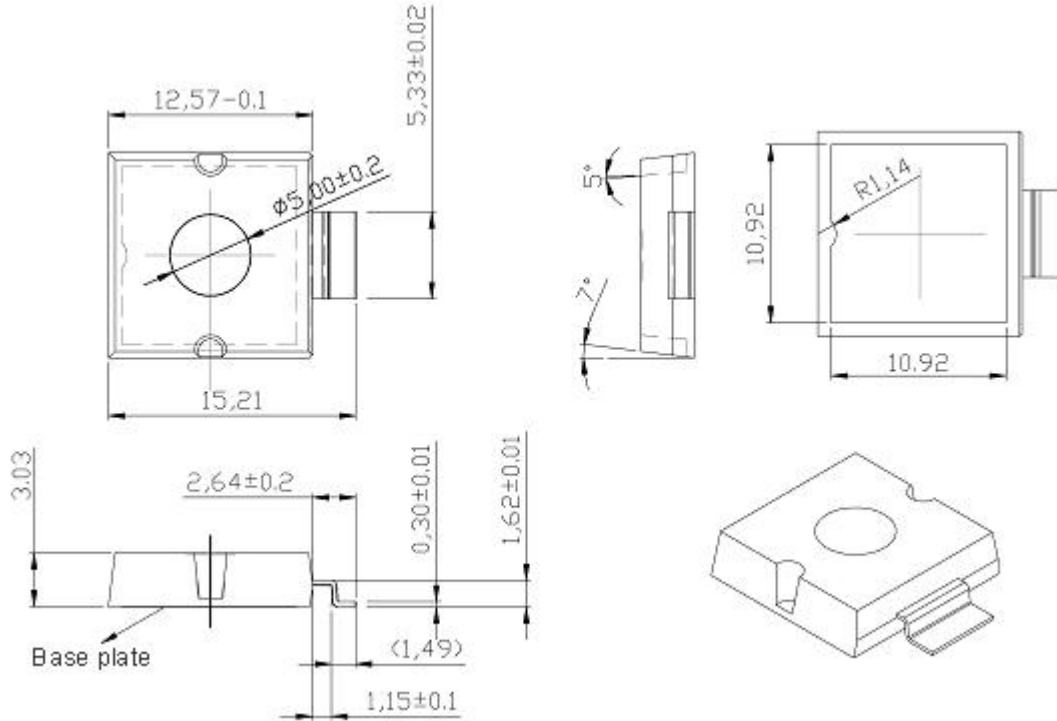


FIGURE 3  
Derating Curve

**Mechanical Dimensions SPD-4(Millimeters)**

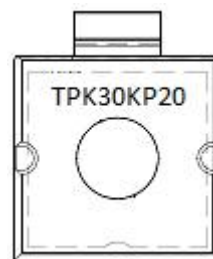


**Ordering Information**

Device	Package	Shipping
TPK30KPXX	SPD-4 (Pb-Free)	64pcs/bag

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

**Marking Diagram**



TPK30KP20 = Part Number

**Cautions:** Molding resin  
Epoxy resin UL:94V-0

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