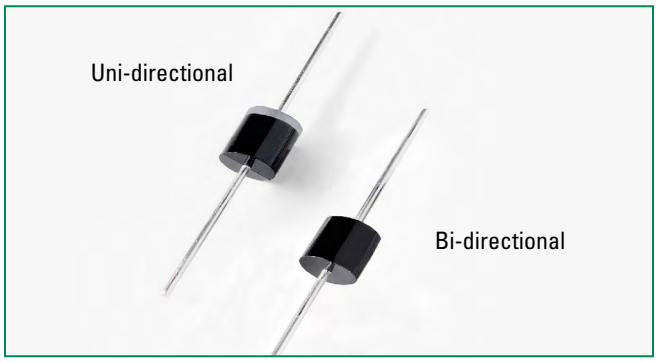
30KPA-HRA Series



Agency Approvals

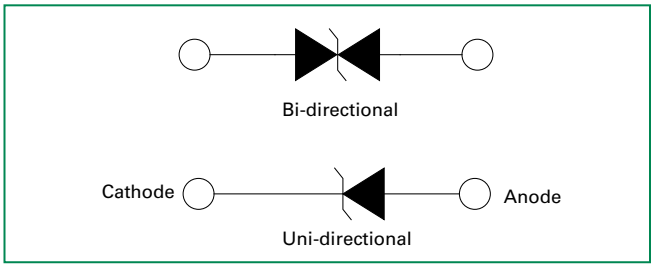
AGENCY	AGENCY FILE NUMBER
UL	E230531

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10/1000μs Test Waveform (Fig.2) (Note 1)	P_{PPM}	30000	W
Steady State Power Dissipation on Infinite Heat Sink at T_L=75°C (Fig. 5)	P_D	8.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional Only (Note 2)	I_{FSM}	400	A
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 175	°C
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	8.0	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	40	°C/W

Notes:
1. Non-repetitive current pulse , per Fig. 4 and derated above T_J (initial) =25°C per Fig 3.
2. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.

Functional Diagram



Descriptios

The 30KPA-HRA High Reliability Series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Features

- Glass passivated chip junction in P600 package
- 30000W peak pulse capability at 10/1000μs waveform, repetition rate (duty cycles):0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to BV min
- Excellent clamping capability
- Typical failure mode is short from over-specified voltage or current
- Whisker test is conducted based on JEDEC JESD201A per its table 4a and 4c
- IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- ESD protection of data lines in accordance with IEC 61000-4-2 (IEC801-2)
- EFT protection of data lines in accordance with IEC 61000-4-4 (IEC801-4)
- Low incremental surge resistance
- Typical I_R less than 2μA when V_{BR} min>73V
- High temperature to reflow soldering guaranteed: 260°C/40sec / 0.375", (9.5mm) lead length, 5 lbs., (2.3kg) tension
- V_{BR} @ T_J= V_{BR}@25°C x (1+αT x (T_J - 25)) (αT:Temperature Coefficient, typical value is 0.1%)
- Plastic package has underwriters laboratory flammability classification 94V-O
- Lead-free matte tin plated package
- Halogen free and RoHS compliant

Applications

TVS devices are ideal for the protection of I/O interfaces, V_{CC} bus and other vulnerable circuits used in telecom, computer, industrial and consumer electronic applications.

Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ I_T		Test Current I_T (mA)	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R @V_R (μ A)	Maximum Clamping Voltage V_C @ I_{PP} (V)	Agency Approval
			MIN	MAX					
30KPA28A-HRA	30KPA28CA-HRA	28	31.28	34.41	50	606.0	5000	50.0	X
30KPA30A-HRA	30KPA30CA-HRA	30	33.51	36.86	50	548.9	5000	55.2	X
30KPA33A-HRA	30KPA33CA-HRA	33	36.90	40.59	50	517.9	5000	58.5	X
30KPA36A-HRA	30KPA36CA-HRA	36	40.20	44.22	50	490.3	5000	61.8	X
30KPA39A-HRA	30KPA39CA-HRA	39	43.60	47.96	20	450.9	2000	67.2	X
30KPA42A-HRA	30KPA42CA-HRA	42	46.90	51.59	10	420.8	1000	72.0	X
30KPA43A-HRA	30KPA43CA-HRA	43	48.00	52.80	10	415.1	1000	73.0	X
30KPA45A-HRA	30KPA45CA-HRA	45	50.30	55.33	5	391.5	250	77.4	X
30KPA48A-HRA	30KPA48CA-HRA	48	53.60	58.96	5	371.3	150	81.6	X
30KPA51A-HRA	30KPA51CA-HRA	51	57.00	62.70	5	350.7	50	86.4	X
30KPA54A-HRA	30KPA54CA-HRA	54	60.30	66.33	5	331.5	20	91.4	X
30KPA58A-HRA	30KPA58CA-HRA	58	64.80	71.28	5	327.9	20	92.4	X
30KPA60A-HRA	30KPA60CA-HRA	60	67.00	73.70	5	297.1	15	102.0	X
30KPA64A-HRA	30KPA64CA-HRA	64	71.50	78.65	5	291.3	10	104.0	X
30KPA66A-HRA	30KPA66CA-HRA	66	73.70	81.07	5	283.2	2	107.0	X
30KPA70A-HRA	30KPA70CA-HRA	70	78.20	86.02	5	278.0	2	109.0	X
30KPA71A-HRA	30KPA71CA-HRA	71	79.30	87.23	5	271.7	2	111.5	X
30KPA72A-HRA	30KPA72CA-HRA	72	80.40	88.44	5	265.8	2	114.0	X
30KPA75A-HRA	30KPA75CA-HRA	75	83.80	92.18	5	253.8	2	119.4	X
30KPA78A-HRA	30KPA78CA-HRA	78	87.10	95.81	5	234.9	2	129.0	X
30KPA84A-HRA	30KPA84CA-HRA	84	93.80	103.18	5	217.7	2	139.2	X
30KPA90A-HRA	30KPA90CA-HRA	90	100.50	110.55	5	207.0	2	146.4	X
30KPA96A-HRA	30KPA96CA-HRA	96	107.20	117.92	5	194.2	2	156.0	X
30KPA102A-HRA	30KPA102CA-HRA	102	113.90	125.29	5	183.0	2	165.6	X
30KPA108A-HRA	30KPA108CA-HRA	108	120.60	132.66	5	172.9	2	175.2	X
30KPA120A-HRA	30KPA120CA-HRA	120	134.00	147.40	5	155.9	2	194.4	X
30KPA132A-HRA	30KPA132CA-HRA	132	147.40	162.14	5	142.3	2	213.0	X
30KPA144A-HRA	30KPA144CA-HRA	144	160.80	176.88	5	135.8	2	223.2	X
30KPA150A-HRA	30KPA150CA-HRA	150	167.60	184.36	5	129.8	2	233.4	X
30KPA156A-HRA	30KPA156CA-HRA	156	174.30	191.73	5	123.7	2	245.0	X
30KPA160A-HRA	30KPA160CA-HRA	160	178.70	196.57	5	120.0	2	252.6	X
30KPA168A-HRA	30KPA168CA-HRA	168	187.70	206.47	5	111.2	2	272.4	X
30KPA170A-HRA	30KPA170CA-HRA	170	189.90	208.89	5	110.2	2	275.0	X
30KPA180A-HRA	30KPA180CA-HRA	180	201.10	221.21	5	104.3	2	290.4	X
30KPA198A-HRA	30KPA198CA-HRA	198	221.20	243.32	5	94.7	2	319.8	X
30KPA216A-HRA	30KPA216CA-HRA	216	241.30	265.43	5	86.9	2	348.6	X
30KPA240A-HRA	30KPA240CA-HRA	240	268.10	294.91	5	78.3	2	387.0	X
30KPA258A-HRA	30KPA258CA-HRA	258	288.20	317.02	5	72.8	2	416.4	X
30KPA260A-HRA	30KPA260CA-HRA	260	290.40	319.44	5	72.8	2	416.0	X
30KPA270A-HRA	30KPA270CA-HRA	270	301.60	331.76	5	69.5	2	436.2	X
30KPA280A-HRA	30KPA280CA-HRA	280	312.80	344.08	5	65.3	2	464.0	X
30KPA288A-HRA	30KPA288CA-HRA	288	321.70	353.87	5	64.5	2	469.9	X
30KPA300A-HRA	30KPA300CA-HRA	300	334.00	367.40	5	62.0	2	484.0	

Note:

1. For bidirectional type having V_R of 60 volts and less, the I_R limit is double.

Revised: 05/27/15

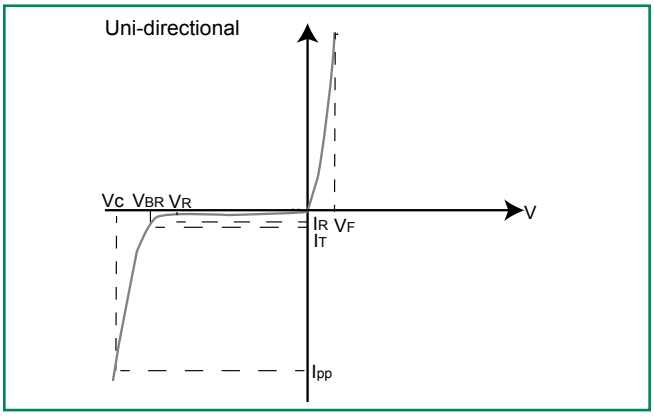
Transient Voltage Suppression Diodes
Axial Leaded – 30000W > 30KPA-HRA series

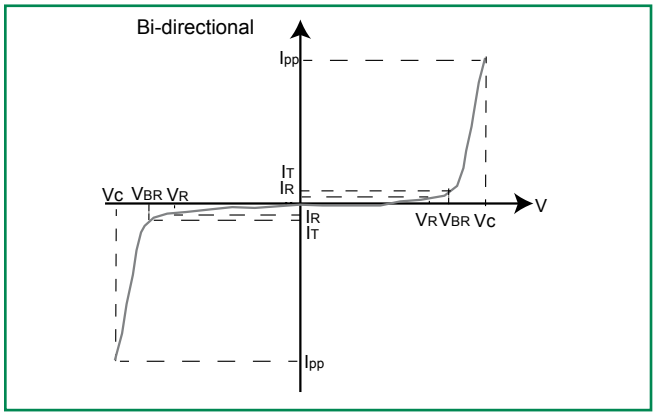
Screen Process

100% Vision Inspection	MIL-STD-750 method 2074
100% High Temperature Storage Life (168hrs,175°C)	MIL-STD-750 method 1031
100% Temperature Cycle Test (-55 to150°C, 20 cycles, dwell time 15 min)	MIL-STD-750 method 1051
100% Surge Test (2x)	MIL-STD-750 method 4066
100% HTRB 150°C Bias=VR(80% breakdown voltage, 96hrs, and each direction at 96 hrs for Bi-directional products)	MIL-STD-750 method 1038
Final Electrical Test(100% 3 sigma limit, 100% dynamic test and PAT limit)	MIL-STD-750 method 4016.4021.4011

Note: Up-screen program can be specified by customer's request via contacting Littelfuse service

I-V Curve Characteristics





P_{PPM} Peak Pulse Power Dissipation – Max power dissipation
V_R Stand-off Voltage – Maximum voltage that can be applied to the TVS without operation
V_{BR} Breakdown Voltage – Maximum voltage that flows though the TVS at a specified test current (I_T)
V_C Clamping Voltage – Peak voltage measured across the TVS at a specified Ippm (peak impulse current)
I_R Reverse Leakage Current – Current measured at V_R
V_F Forward Voltage Drop for Uni-directional

Ratings and Characteristic Curves (T_A=25°C unless otherwise noted)

Figure 1 - TVS Transients Clamping Waveform

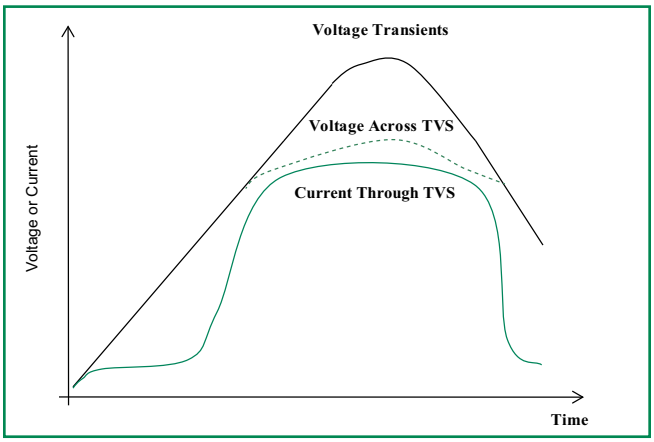
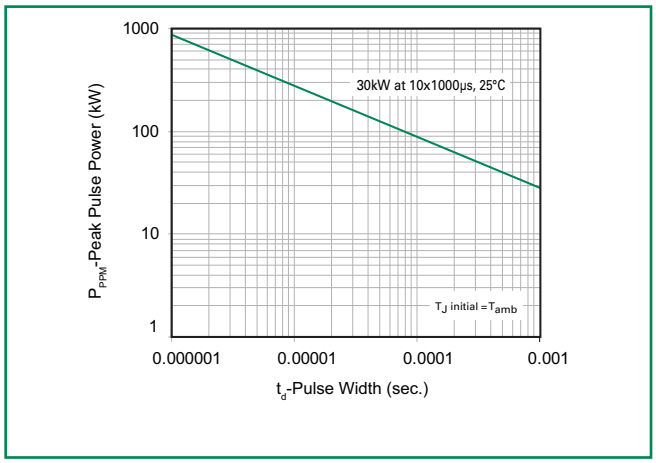


Figure 2 - Peak Pulse Power Rating Curve



Revised: 05/27/15

Ratings and Characteristic Curves (T_A=25°C unless otherwise noted) (Continued)

Figure 3 - Peak Pulse Power Derating Curve

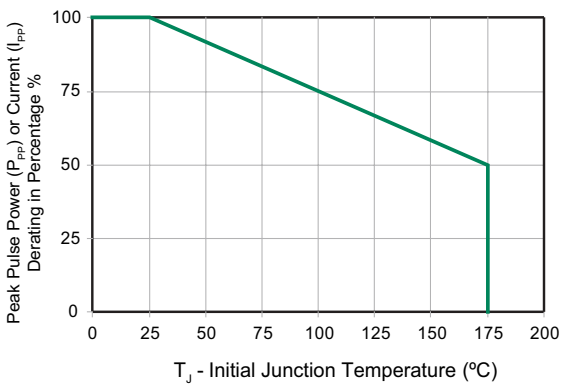


Figure 4 - Pulse Waveform

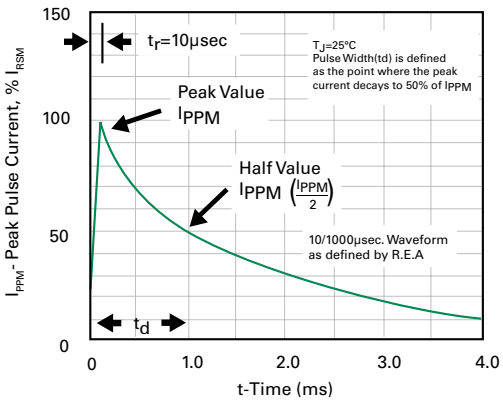


Figure 5 - Typical Junction Capacitance

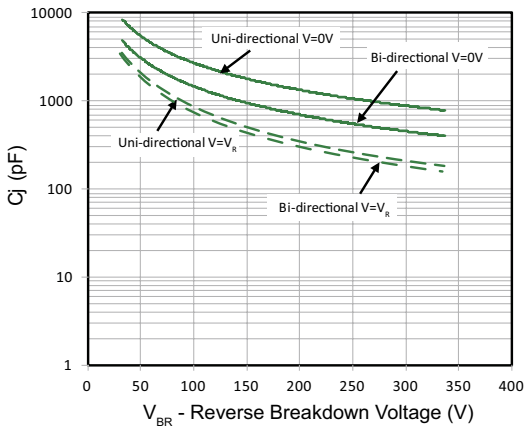


Figure 6 - Typical Transient Thermal Impedance

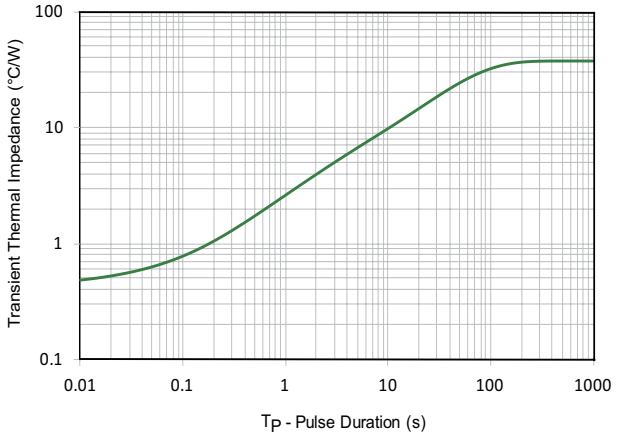


Figure 7 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

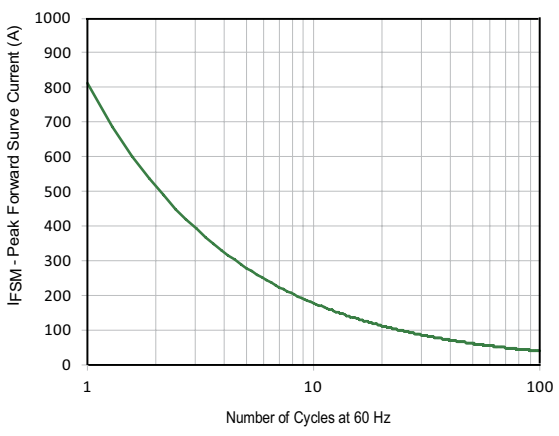
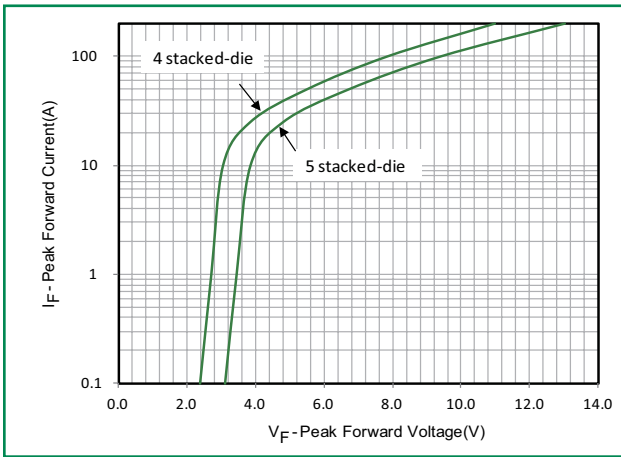


Figure 8 - Peak Forward Voltage Drop vs Peak Forward Current (Typical Values)



Revised: 05/27/15

Transient Voltage Suppression Diodes

Axial Leaded – 30000W > 30KPA-HRA series

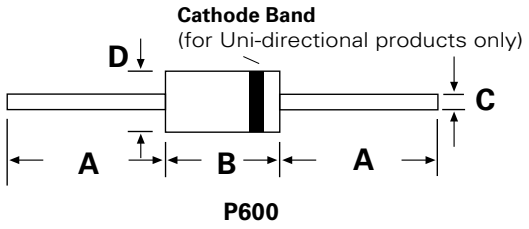
Physical Specifications

Weight	0.07oz., 2.5g
Case	P600 molded plastic body over passivated junction.
Polarity	Color band denotes the cathode except Bipolar.
Terminal	Matte Tin axial leads, solderable per JESD22-B102.

Environmental Specifications

High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Temperature Cycling	JESD22-A104
H3TRB	JESD22-A101
RSH	JESD22-B106

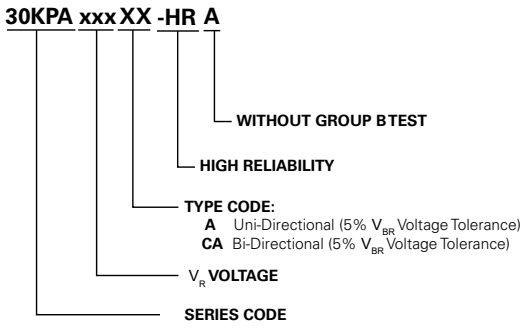
Dimensions



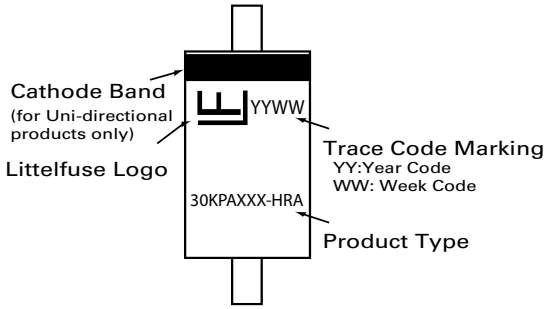
P600

Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	1.000	-	25.40	-
B	0.340	0.360	8.60	9.10
C	0.048	0.052	1.22	1.32
D	0.340	0.360	8.60	9.10

Part Numbering System



Part Marking System

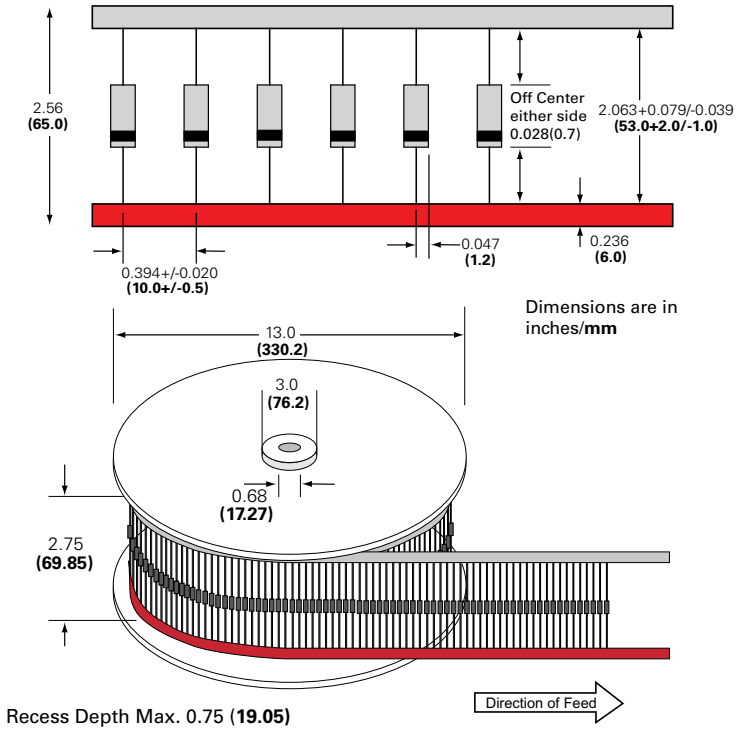


Packing Options

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
30KPAxxxXX-HRA	P600	800	Tape & Reel	EIA STD RS-296

Revised: 05/27/15

Tape and Reel Specification



Recess Depth Max. 0.75 (**19.05**)

Revised: 05/27/15