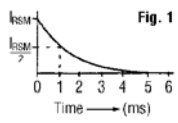
TVS (Transient Voltage Suppressors)

Transient Voltage Suppressors are designed for applications requiring protection of voltage sensitive electronic devices in danger of destruction by high energy voltage transients. The purpose of this section is to present the families of ON Semiconductor Zeners that are specified with the key transient voltage suppressor parameters and limits, e.g., maximum clamping voltage at maximum surge current rating and working peak reverse (stand-off) voltage.



Axial Leaded for Through-Hole Designs

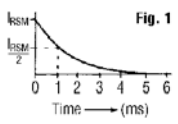
Peak Power Dissipation* (500 Watts @ 1 ms Surge — Figure 1) Case 59-04 — Mini Mosorb
Electrical Characteristics (T_A = 25°C unless otherwise noted) V_F=3.5 V Max., I_F=35 A Pulse (except bidirectional devices).

Mfr.'s Type		Working Peak Reverse Voltage V_{RWM} (V)	Breakdown Voltage			Maximum Reverse Leakage @ V_{RWM} I_R (μA)	Maximum Reverse Surge Current I_{RSM} Figure 1 (A)	Maximum Reverse Voltage @ I_{RSM} (Clamping Voltage) V_{RSM} (V)
			V_{BR} (V)		@ I_T Pulse (mA)			
Unidirectional	Bidirectional**		Min.	Max.				
SA5.0A	—	5	6.40	7.00	10	600	54.3	9.2
SA12A	SA12CA	12	13.30	14.70	1	1	25.1	19.9
SA13A	—	13	14.40	15.90	1	1	23.2	21.5
SA15A	SA15CA	15	16.70	18.50	1	1	20.6	24.4

*Steady state power dissipation = 3 watt maximum rating. **For bidirectional devices use CA suffix. These devices have the cathode polarity band on each end.

Peak Power Dissipation* (600 Watts @ 1 ms Surge — Fig. 1)
Case 17 — Surmetic 40

Electrical Characteristics (T_A=25°C unless otherwise noted) V_F=3.5 V Max., I_F=50 A Pulse (except bidirectional devices).



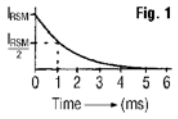
Mfr.'s Type††		Working Peak Reverse Voltage V_{RWM} (V)	Breakdown Voltage†		Maximum Reverse Leakage @ V_{RWM} I_R (μA)	Maximum Reverse Surge Current I_{RSM} Figure 1 (A)	Maximum Reverse Voltage @ I_{RSM} (Clamping Voltage) V_{RSM} (V)
			V_{BR} (V)	@ I_T Pulse (mA)			
Unidirectional	Bidirectional**		Nom.				
—	P6KE6.8CA	5.80	6.8	10	1000	57.0	10.5
P6KE15A	—	12.80	15.0	1	5	28.0	21.2
P6KE18A	—	15.30	18.0	1	5	24.0	25.2
—	P6KE20CA	17.10	20.0	1	5	22.0	27.7
P6KE30A	—	25.60	30.0	1	5	14.4	41.4
P6KE33A	P6KE33CA	28.20	33.0	1	5	13.2	45.7
P6KE36A	—	30.80	36.0	1	5	12.0	49.9
P6KE39A	—	33.30	39.0	1	5	11.2	53.9

*Steady state power dissipation=5 watt maximum rating. **For bidirectional devices use CA suffix. These devices have the cathode polarity band on each end. †Breakdown voltage tolerance is ±5% for A suffix. ††UL recognition for classification of protectors (QVGV2) under UL standard for safety 497B and file #E116110 for entire series including CA suffixes.

Peak Power Dissipation* (1500 Watts @ 1 ms Surge — Fig. 1)
Case 41A — Mosorb

13

Electrical Characteristics (T_A=25°C unless otherwise noted) V_F=3.5 V Max., I_F=100 A Pulse (except bidirectional devices).



Mfr.'s Type††			Working Peak Reverse Voltage V_{RWM} (V)	Breakdown Voltage†		Maximum Reverse Leakage @ V_{RWM} I_R (μA)	Maximum Reverse Surge Current I_{RSM} Figure 1 (A)	Maximum Reverse Voltage @ I_{RSM} (Clamping Voltage) V_{RSM} (V)
				V_{BR} (V)	@ I_T Pulse (mA)			
JEDEC	Unidirectional	Bidirectional**		Nom.				
1N6267A	1.5KE6.8A	1.5KE6.8CA	5.80	6.8	10	1000	143.0	10.5
—	1.5KE8.2A	—	7.02	8.2	10	200	124.0	12.1
—	—	1.5KE12CA	10.20	12.0	1	5	90.0	16.7
1N6275A	1.5KE15A	—	12.80	15.0	1	5	71.0	21.2
1N6276A	1.5KE16A	—	13.60	16.0	1	5	67.0	22.5
1N6277A	1.5KE18A	1.5KE18CA	15.30	18.0	1	5	59.5	25.2
1N6278A	1.5KE20A	1.5KE20CA	17.10	20.0	1	5	54.0	27.7
—	1.5KE22A	—	18.80	22.0	1	5	49.0	30.6
1N6280A	—	—	20.50	24.0	1	5	45.0	33.2
1N6282A	1.5KE30A	—	25.60	30.0	1	5	36.0	41.4
1N6283A	1.5KE33A	—	28.20	33.0	1	5	33.0	45.7
1N6284A	1.5KE36A	1.5KE36CA	30.80	36.0	1	5	30.0	49.9
1N6285A	1.5KE39A	—	33.30	39.0	1	5	28.0	53.9
1N6286A	1.5KE43A	—	36.80	43.0	1	5	25.3	59.3
1N6287A	—	—	40.20	47.0	1	5	23.2	64.8
1N6288A	—	—	43.60	51.0	1	5	21.4	70.1
1N6290A	—	—	53.00	62.0	1	5	17.7	85.0
—	—	1.5KE82CA	70.10	82.0	1	5	13.3	113.0
1N6294A	—	—	77.80	91.0	1	5	12.0	125.0
—	—	1.5KE130CA	111.00	130.0	1	5	8.4	179.0
—	—	1.5KE150CA	128.00	150.0	1	5	7.2	207.0
1N6302A	—	—	154.00	180.0	1	5	6.1	246.0
1N6303A	1.5KE200A	—	171.00	200.0	1	5	4.5	274.0
—	1.5KE220A	1.5KE220CA	185.00	220.0	1	5	4.6	328.0
—	1.5KE250A	—	214.00	250.0	1	5	5.0	344.0

*Steady state power dissipation=5 watts maximum rating. **For bidirectional devices use CA suffix. These devices have the cathode polarity band on each end. †Breakdown voltage tolerance is ±5% for A suffix. ††UL recognition for classification of protectors (QVGV2) under the UL standard for safety 497B file #E116110 for 1.5KE6.8A,CA thru 1.5KE250A,CA.