



# Frontier Electronics Corp.

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## LOW CAPACITANCE 500W TRANSIENT VOLTAGE SUPPRESSORS

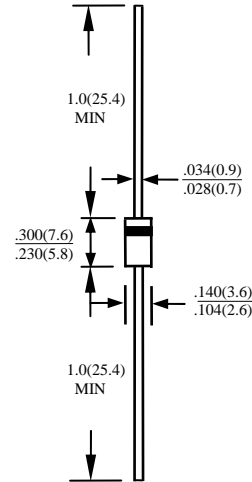
### SAC5.0 THRU SA50

#### FEATURES

- UL 94V0 FLAME RETARDANT EPOXY MOLDING COMPOUND
- DIFFUSED JUNCTION
- LOW COST
- LOW JUNCTION CAPACITANCE

#### MECHANICAL DATA

- CASE: MOLDED PLASTIC, CASE: DO15, DIMENSIONS IN INCHES AND (MILLIMETERS)
- TERMINALS: AXIAL LEADS SOLDERABLE PER MIL-STD-202, METHOD 208
- POLARITY: COLOR BAND DENOTES CATHODE END
- MOUNTING POSITION: ANY
- WEIGHT: 0.4 GRAMS



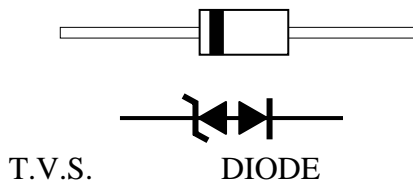
#### ABSOLUTE MAXIMUM RATING

CHARACTERISTICS	SYMBOL	CONDITIONS	T.V.S.	DIODE	UNITS
STORAGE TEMPERATURE RANGE	$T_{STG}$		-40 ~ 150	-40 ~ 150	°C
JUNCTION TEMPERATURE	$T_J$		150	150	°C
PEAK SURGE REVERSE POWER	$P_{RSM}$	Non-repetitive 10/1000 $\mu$ S	500	-	W

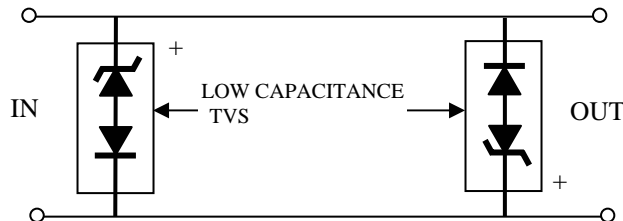
#### ELECTRICAL CHARACTERISTICS (UNLESS OTHERWISE STATED $T_C = 25^\circ\text{C}$ )

CHARACTERISTICS	SYMBOL	CONDITIONS	T.V.S.	DIODE	UNITS
LEAKAGE CURRENT	$I_R$	$V_R = V_{RM}$	Max. 5.0	Max. 5.0	$\mu$ A
REVERSE RECOVERY TIME	$t_{rr}$	IF/IR=0.1A/0.3A	-	Max. 500	nS
MAXIMUM JUNCTION CAPACITANCE AT 0 VOLTAGE	$C_j$		20		pf
STORAGE TEMPERATURE RANGE	$T_{STG}$		- 55 TO + 150		°C
OPERATING TEMPERATURE RANGE	$T_{OP}$		- 55 TO + 150		°C

#### NOTE : EQUIVALENT CIRCUIT



#### FIGURE 1 --AC Line Protection Application



APPLICATION NOTE : Devices must be used with two units in parallel, opposite in polarity as shown in circuit for AC Signal Line protection

## SAC SERIES ELECTRICAL CHARACTERISTICS @ 25°C

DEVICE	STAND-OFF VOLTAGE $V_{WM}$ (VOLTS)	MIN. BREAKDOWN VOLTAGE AT $I_T=1.0\text{ mA}$ $V(VR)$ (VOLTS)	MAX. REVERSE LEAKAGE AT $V_{RWM}$ $I_D$ $IR(\mu A)$	MAX. CLAMPING VOLTAGE At $I_{pp}=5.0A$ $V_c$ (VOLTS)	MAX PEAK PULSE CURRENT $I_{pp}$ (AMPS)	INVERSE BLOCKING LEAKAGE CURRENT AT $V_{WIB}$ $I_{IB}$ (mA)	WORKING INVERSE BLOCKING VOLTAGE $V_{WIB}$ (VOLTS)	MAX JUNCTION CAPACITANCE AT 0 VOLTS (Pf)	PEAK INVERSE BLOCKING VOLTAGE $V_{PIB}$ (VOLTS)
SAC5.0	5.0	7.60	300	10.0	44	1.0	75	50	100
SAC6.0	6.0	7.90	300	11.2	41	1.0	75	50	100
SAC7.0	7.0	8.33	300	12.6	38	1.0	75	50	100
SAC8.0	8.0	8.89	100	13.4	36	1.0	75	50	100
SAC8.5	8.5	9.44	50	14.0	34	1.0	75	50	100
SAC10	10	11.10	5.0	16.3	29	1.0	75	50	100
SAC12	12	13.30	5.0	19.0	25	1.0	75	50	100
SAC15	15	16.70	5.0	23.6	20	1.0	75	50	100
SAC18	18	20.00	5.0	28.8	15	1.0	75	50	100
SAC22	22	24.40	5.0	35.4	14	1.0	75	50	100
SAC26	26	28.90	5.0	42.3	11.1	1.0	75	50	100
SAC30	30	33.30	5.0	48.6	10.0	1.0	75	50	100
SAC36	36	40.00	5.0	60.0	8.6	1.0	75	50	100
SAC45	45	50.00	5.0	77.0	6.8	1.0	150	50	100
SAC50	50	55.50	5.0	88.0	5.8	1.0	150	50	100

NOTE1: The SAC series is a low capacitance silicon transient voltage suppressor for data or signal lines. It is designed for commercial and industrial applications. This series offers pricing, size, and capacitance advantages. This series employs a standard TVS in series with a rectifier which reduces the effective capacitance up through 70MHz with a minimum amount of signal loss or deformation. If bidirectional transient protection capability is required, two low capacitance TVS must be used in parallel, opposite in polarity for complete AC protection.

NOTE2: The SAC series of low capacitance silicon transient voltage suppressors, rated at 400 watts, provides board level protection for data or signal lines from the damaging effects of electrostatic discharge(ESD), and electromagnetic pluse (EMP).It will clamp the inductive overshoot voltage caused by very fast impulse rise times. The low capacitance assures minimum signal attenuation.

NOTE3: A TVS is normally selected according to the reverse " Stand Off Voltage" ( $V_R$ ) which should be equal to or greater than the DC or continuous peak operating voltage level

# RATINGS AND CHARACTERISTIC CURVES SAC5.0 THRU SAC50

FIG. 1 - PEAK PULSE POWER RATING CURVE

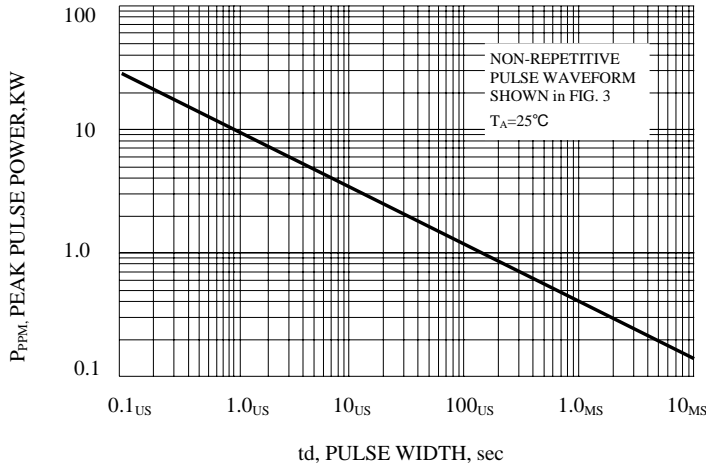


FIG. 2 - PULSE DERATING CURVE

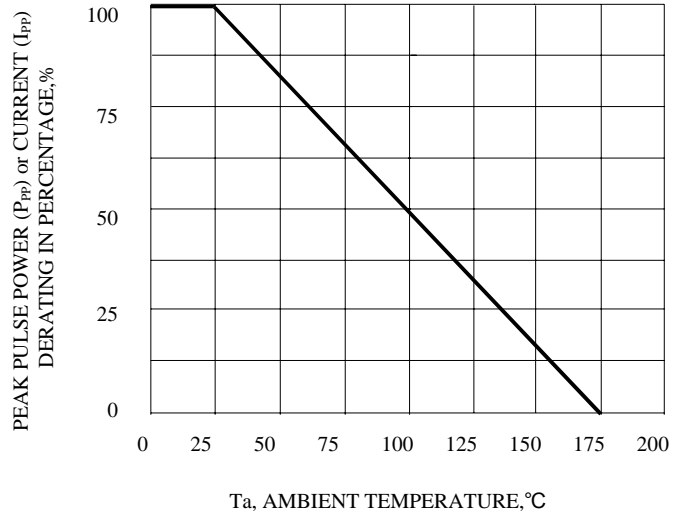


FIG. 3 - PULSE WAVEFORM

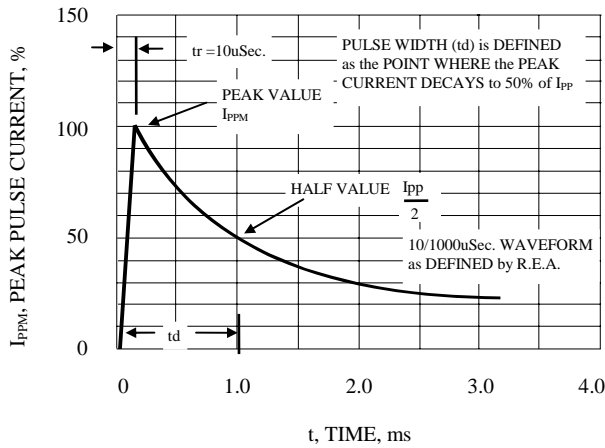


FIG. 4 - TYPICAL REVERSE LEAKAGE CHARACTERISTICS

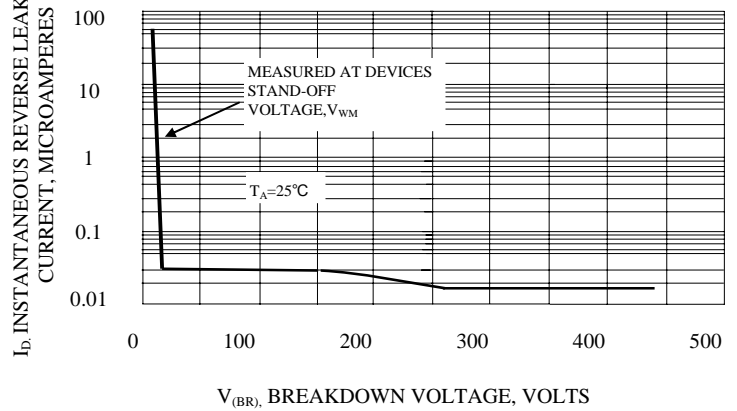


FIG. 5 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY

