

# Surface Mount Transient Voltage Suppressor

## Stand-Off Voltage - 6.0 to 170 Volts

### 1000 Watt Peak Pulse Power

#### Features

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- Repetition Rate (duty cycle):0.05%
- Fast response time: typically less than 1.0ps from 0 Volts to V(BR) for unidirectional types
- Typical IR less than 1μA above 10V
- High Temperature soldering: 260°C/10 seconds at terminals
- Plastic package has Underwriters Laboratory Flammability 94V-O
- Pb-free plated



#### Mechanical Data

- **Case:** JEDEC DO-214AA. Molded plastic over glass passivated junction
- **Terminals:** Solderable per MIL-STD-750, Method 2026
- **Polarity:** Color band denoted positive end (cathode) except Bidirectional
- **Standard Packaging:** 12mm tape (EIA STD RS-481)
- **Weight:** 0.003ounce, 0.093gram

#### Devices For Bipolar Application

- For Bidirectional use C or CA Suffix for types TECC6.0 thru types TECC440 (e.g. TECC6.0C , TECC440CA)
- Electrical characteristics apply in both directions

#### Maximum Ratings And Characteristics

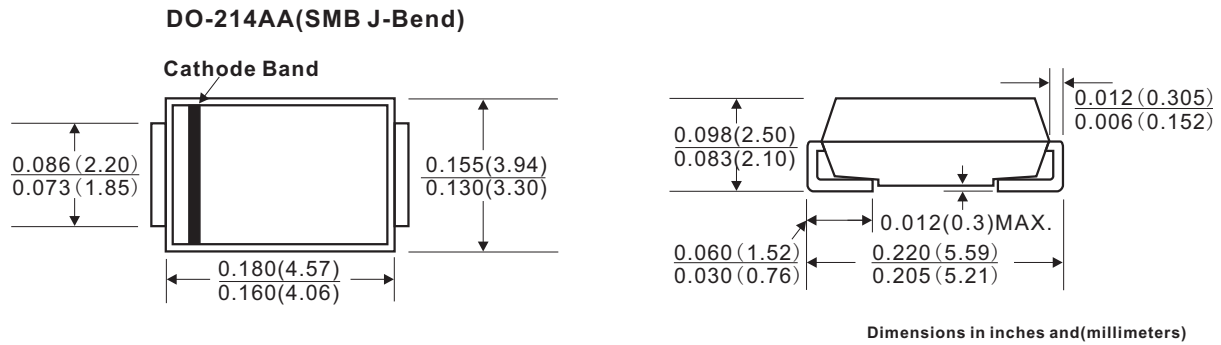
Ratings at 25°C ambient temperature unless otherwise specified.

RATING	SYMBOL	VALUE	UNITS
Peak Pulse Power Dissipation on 10/1000μs waveform (Note 1,2 ,FIG.1)	P <sub>PPM</sub>	Minimum 1000	Watts
Peak Pulse Current of on 10/1000μs waveform (Note 1,FIG.3)	I <sub>PPM</sub>	SEE TABLE 1	Amps
Peak Forward Surge Current,8.3ms Single Half Sine-Wave Superimposed on Rated Load,(JEDEC Method) (Note2,3)	I <sub>FSM</sub>	200	Amps
Operating junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

#### Notes :

- 1.Non-repetitive current pulse , per Fig. 3 and derated above TA = 25°C per Fig. 2 .
- 2.Mounted on 8.0mm x 8.0mm Copper Pads to each terminal
- 3.8.3ms single half sine-wave , or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

Dimensions (DO-214AA)



Electrical Characteristics

TABLE 1

TECC Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @IT		Test Current	Maximum Clamping Voltage @Ipp	Peak Pulse Current	Reverse Leakage @V <sub>RWM</sub>
UNI-Polar	BI-Polar	UNI	BI	V <sub>RWM</sub> (V)	V <sub>BR</sub> (V)Min.	V <sub>BR</sub> (V)Max.	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>pp</sub> (A)	I <sub>R</sub> (μA)
TECC6.0A	TECC6.0CA	6D	6H	6.0	6.67	7.37	10	10.3	174.8	200
TECC8.0A	TECC8.0CA	8D	8H	8.0	8.89	9.83	1	13.6	132.4	50
TECC12A	TECC12CA	12D	12H	12.0	13.30	14.70	1	19.9	90.5	1
TECC15A	TECC15CA	15D	15H	15.0	16.70	18.50	1	24.4	73.8	1
TECC16A	TECC16CA	16D	16H	16.0	17.80	19.70	1	26.0	69.2	1
TECC20A	TECC20CA	20D	20H	20.0	22.20	24.50	1	32.4	55.6	1
TECC22A	TECC22CA	22D	22H	22.0	24.40	26.90	1	35.5	50.7	1
TECC26A	TECC26CA	26D	26H	26.0	28.90	31.90	1	42.1	42.8	1
TECC28A	TECC28CA	28D	28H	28.0	31.10	34.40	1	45.4	39.6	1
TECC30A	TECC30CA	30D	30H	30.0	33.30	36.80	1	48.4	37.2	1
TECC33A	TECC33CA	33D	33H	33.0	36.70	40.60	1	53.3	33.8	1
TECC36A	TECC36CA	36D	36H	36.0	40.00	44.20	1	58.1	31.0	1
TECC40A	TECC40CA	40D	40H	40.0	44.40	49.10	1	64.5	27.9	1
TECC58A	TECC58CA	58D	58H	58.0	64.40	71.20	1	93.6	19.2	1
TECC60A	TECC60CA	60D	60H	60.0	66.70	73.70	1	96.8	18.6	1
TECC150A	TECC150CA	150D	150H	150.0	167.00	185.00	1	243.0	7.4	1
TECC170A	TECC170CA	170D	170H	170.0	189.00	209.00	1	275.0	6.5	1

For bidirectional type having V<sub>RWM</sub> of 10 volts and less, the I<sub>R</sub> limit is double.  
For parts with A, the V<sub>BR</sub> is ±5%

Characteristic Curves (TA=25 °C unless otherwise noted)

Fig.1 Peak Pulse Power Rating

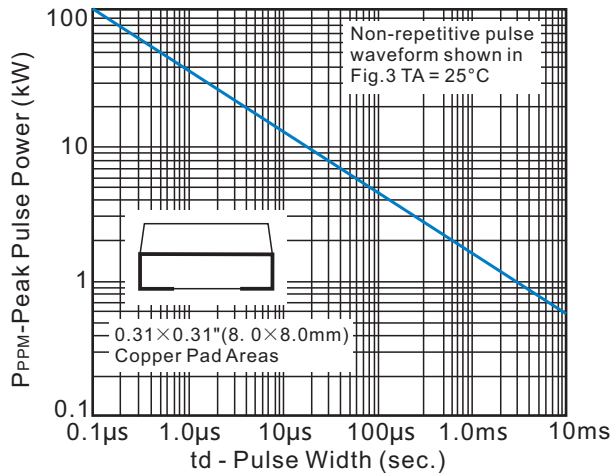


Fig.2 Pulse Derating Curve

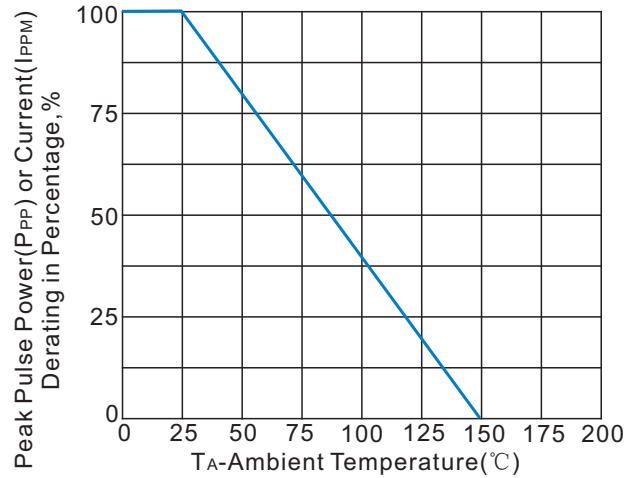


Fig.3 Pulse Waveform

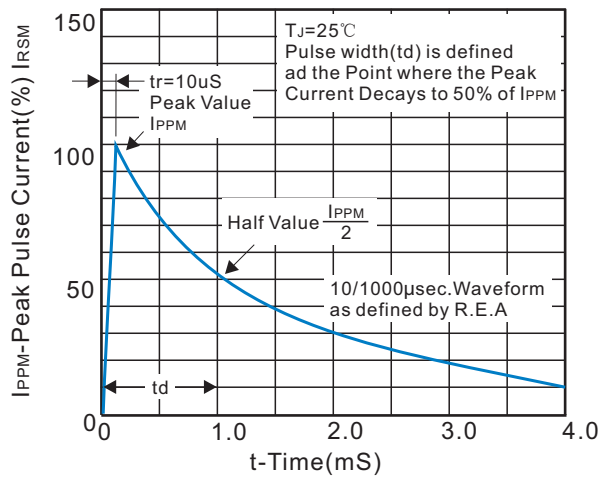


Fig.4 Typical Junction Capacitance

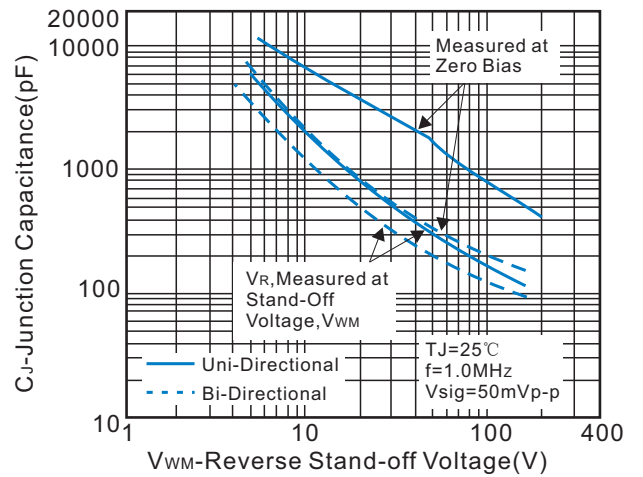


Fig.5 Typ. Transient Thermal Impedance

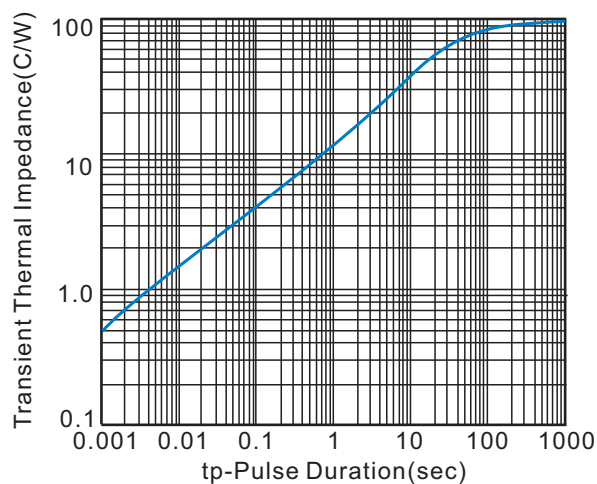
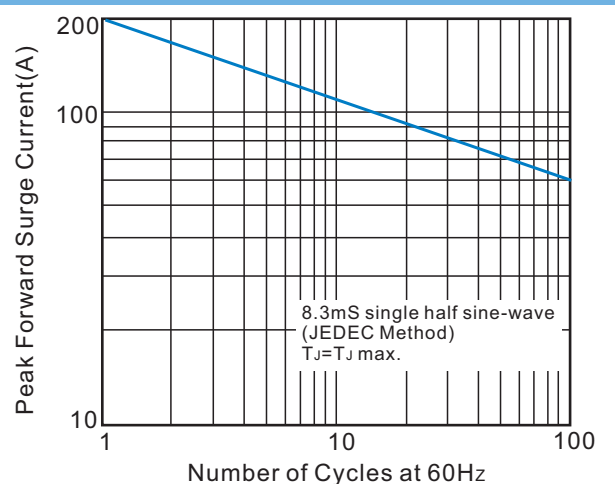


Fig.6 Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

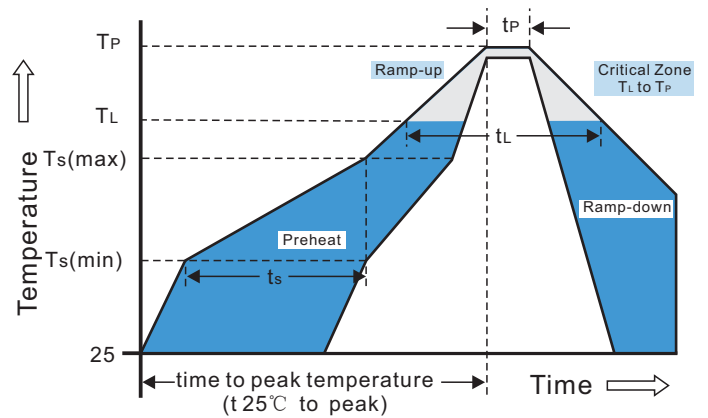


## Recommended Soldering Conditions

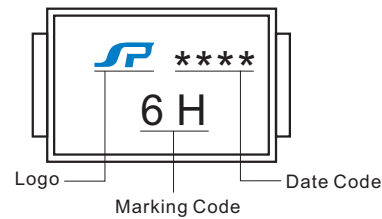
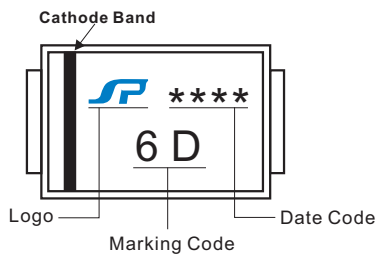
### Recommended Conditions

Reflow Condition		Pb-Free assembly (see Fig.1)
Pre Heat	-Temperature Min( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time(Min to Max)( $t_s$ )	60-180secs
Average ramp up rate (Liquidus Temp( $T_L$ ) to peak)		3°C/sec.Max.
$T_{s(max)}$ to $T_L$ -Ramp-up Rate		3°C/sec.Max.
Reflow	-Temperature( $T_L$ )(Liquidus)	+217°C
	-Temperature( $t_L$ )	60-150secs
Peak Temp( $T_P$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp( $t_P$ )		30 secs.Max.
Ramp-down Rate		6°C/sec.Max.
Time 25°C to Peak Temp( $T_P$ )		8 min.Max.
Do not exceed		+260°C

### Reflow Soldering



## Marking Code



## Tape And Reel Specification

Symbol	Ea Per Reel	REEL DIA (mm)	Industry Standard
TECC***	3000	330	EIARS-481

