

## Surface Mount Transient Voltage Suppressors

High temperature stability and high reliability conditions



DO-218AB



### FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology.
- $T_J = 175^\circ\text{C}$  capability suitable for high reliability and automotive requirement.
- Low leakage current.
- Meets MSL-1, per J-STD-020, LF maximum peak of  $260^\circ\text{C}$ .
- AEC-Q101 qualified.
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC.

### TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump protection application.

### MECHANICAL DATA

**Case:** DO-218AB

Molding compound meets UL 94V-0 flammability rating

Base P/NHE3-RoHS-compliant, AEC-Q101 qualified

**Terminals:** Matte tin plated leads, solderable per J-STD-002

PRIMARY CHARACTERISTICS	
$V_R$	36V/51V
$P_{PP}$ (10/1000 $\mu\text{s}$ )	15000W
$I_{PP}$ (8/20 $\mu\text{s}$ )	1000A
$P_D$	8.0W
$T_{Jmax}$	$175^\circ\text{C}$
Polarity	Uni/Bi-directional
Package	DO-218AB

MAXIMUM RATINGS( $T_C=25^\circ\text{C}$ , RH=45%-75%, unless otherwise noted)			
Parameter	Symbol	Value	Unit
Peak pulse power dissipation at 10/1000 $\mu\text{s}$ waveform	$P_{PP}$	15000	Watts
Peak pulse current on 8/20 $\mu\text{s}$ waveform	$I_{PP}$	1000	Amps
Peak forward surge current, 8.3ms single half sine wave(Note 1)	$I_{FSM}$	300	Amps
Maximum instantaneous forward voltage at 100A for unidirectional only	$V_F$	5	Volts
Power dissipation on infinite heat sink at $T_C=25^\circ\text{C}$	$P_D$	8.0	Watts
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175	$^\circ\text{C}$
Typical thermal resistance, junction to case	$R_{\theta JC}$	0.9	$^\circ\text{C/W}$

### Note

(1) Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum

**ELECTRICAL CHARACTERISTICS**

Part Number		V <sub>R</sub>	I <sub>T</sub>	I <sub>R@V<sub>R</sub></sub>	V <sub>BR@I<sub>T</sub></sub>		V <sub>C@I<sub>PP</sub></sub>	I <sub>PP</sub> <sup>①</sup>
Uni-polar	Bi-polar	V	mA	μA	min(V)	max (V)	V	A
15KP36A-DB	15KP36CA-DB	36.0	5	10	36.69	44.20	55.0	272.7
15KP51A-DB	15KP51CA-DB	51.0	5	10	52.04	62.70	76.3	182.1

**Note:**

①.Surge waveform: 10/1000μs

V<sub>R</sub>: Stand-off voltage -- Maximum voltage that can be applied

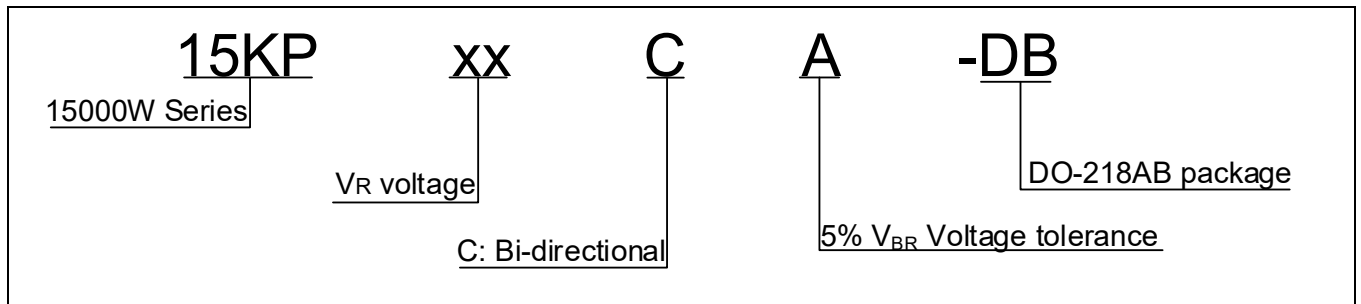
V<sub>BR</sub>: Breakdown voltage

V<sub>C</sub>: Clamping voltage -- Peak voltage measured across the suppressor at a specified I<sub>PP</sub>

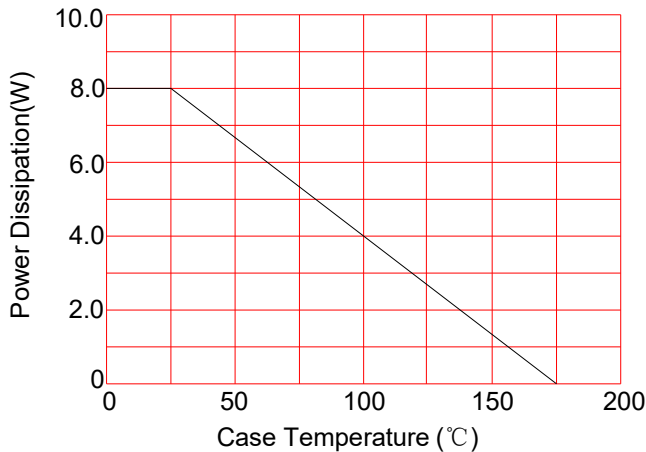
I<sub>R</sub>: Reverse leakage current

I<sub>T</sub>: Test current

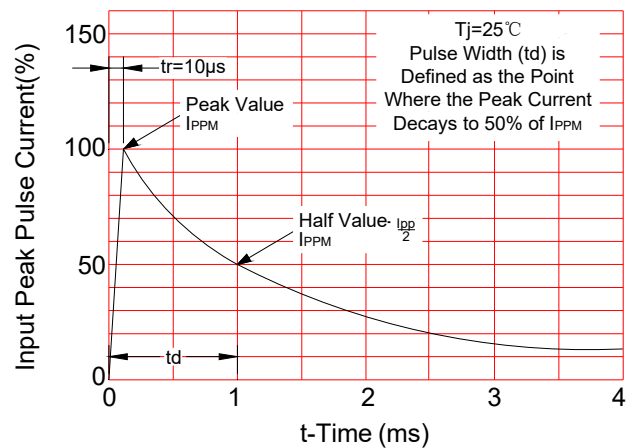
**ORDERING INFORMATION**



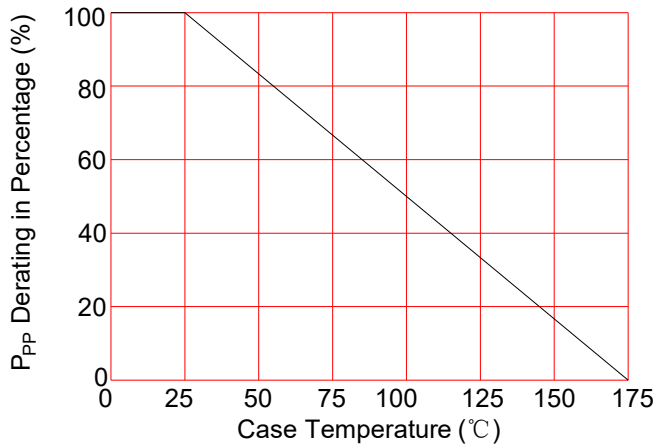
**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub>=25°C, unless otherwise noted)**



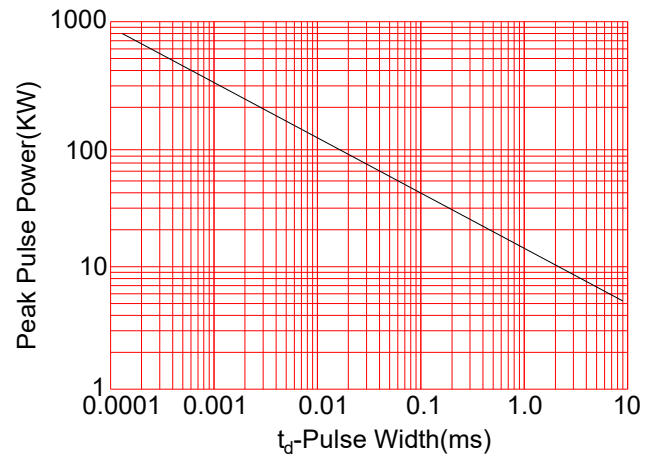
**FIG.1: Power Derating Curve**



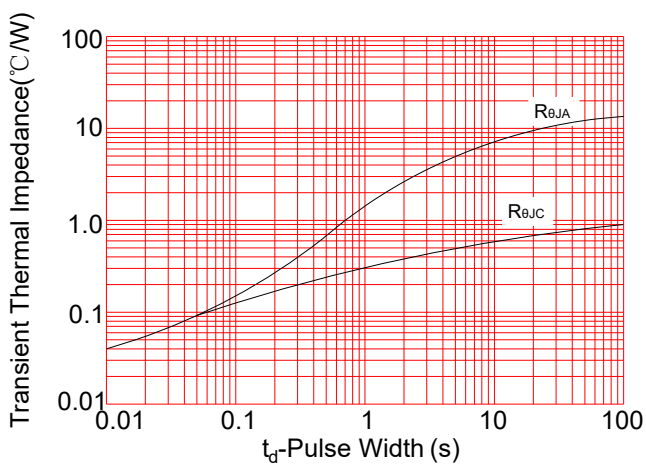
**FIG.2: Pulse Waveform**



**FIG.3: Peak Power Dissipation**

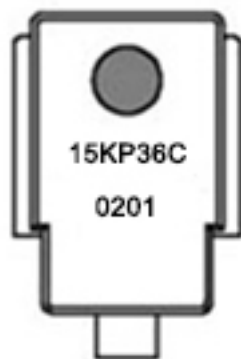


**FIG.4: Pulse Derating Curve**



**FIG.5: Typical Transient Thermal Impedance**

**MARKING**



**15KP36C:** Device marking code

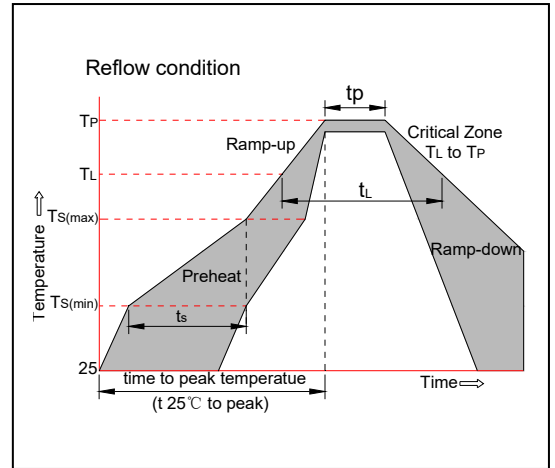
**0201:** "0" -- 2020 (year)

"2"--2 (month)

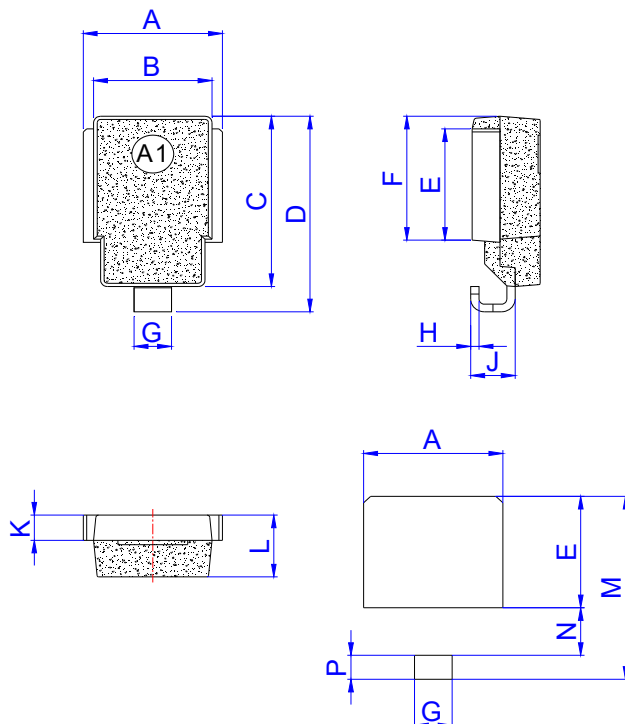
"01" -- (lot)

**SOLDERING PARAMETERS**

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
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( $t_L$ )	60-150 secs.
Peak Temp ( $T_P$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_P$ )		8 min. Max
Do not exceed		+260°C



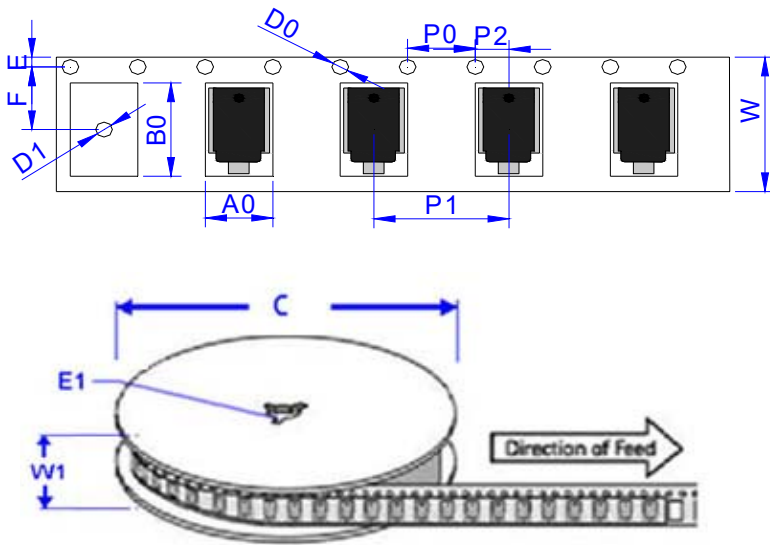
**PACKAGE MECHANICAL DATA**



DO-218AB

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	9.5	10.5	0.374	0.413
B	8.3	8.7	0.327	0.342
C	13.3	13.7	0.524	0.539
D	15.0	16.0	0.592	0.628
E	8.5	9.1	0.335	0.358
F	9.5	10.1	0.374	0.398
G	2.4	3.0	0.094	0.118
H	0.5	0.7	0.020	0.028
J	2.7	3.7	0.106	0.146
K	1.9	2.1	0.075	0.083
L	4.7	5.1	0.185	0.201
M	14.2	14.8	0.559	0.583
N	3.5	4.1	0.138	0.161
P	1.6	2.2	0.063	0.087

TAPE AND REEL SPECIFICATION-DO-218AB



Ref.	Dimensions	
	Millimeters	Inches
A0	10.80 ± 0.3	0.425± 0.012
B0	16.13 ± 0.3	0.635 ± 0.012
C	330.0 ± 0.3	13.0 ± 0.012
D0	1.55 ± 0.2	0.061 ± 0.008
D1	1.55 ± 0.2	0.061± 0.008
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.30 ± 0.2	0.524 ± 0.008
F	11.50 ± 0.2	0.453 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	16.00 ± 0.2	0.630 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	24.00 ± 0.2	0.945 ± 0.008
W1	25.85 ± 0.2	1.018 ± 0.008

ORDERING INFORMATION			
PART No.	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
15KPxxA(CA)-DB	750	3000	13 inch reel pack

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