

### DESCRIPTION:

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.



SMC

### FEATURES:

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 5000W peak pulse power capability at 10×1000μs waveform.
- ✧ Typical I<sub>r</sub> less than 1μA above 30V.
- ✧ Fast response time: typically less than 1.0ps from 0V to V<sub>BR</sub> min.
- ✧ High temperature to reflow soldering: 260°C/40s at terminals.
- ✧ Plastic package has under writers laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD020, LF maximum peak of 260°C.
- ✧ For surface mounted applications in order to optimize board space.
- ✧ Marking: 5LM33CA

Symbol



Bi-directional

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating junction and storage temperature range	T <sub>J</sub> / T <sub>STG</sub>	-55 to +150	°C
Steady state power dissipation at T <sub>L</sub> =75°C	P <sub>M(AV)</sub>	6.5	W
Peak pulse power dissipation on 10/1000μs waveform	P <sub>PP</sub>	5000	W
Maximum instantaneous forward voltage at 100A for unidirectional only	V <sub>F</sub>	5.0	V
Peak forward surge current, 8.3ms single half sine wave(Note 1)	I <sub>FSM</sub>	300	A
Typical thermal resistance junction to lead	R <sub>θJL</sub>	15	°C/W
Typical thermal resistance junction to ambient	R <sub>θJA</sub>	75	°C/W

#### Notes:

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 (T<sub>A</sub>=25°C)

PART NUMBER	REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE V <sub>BR</sub> (V)MAX.@I <sub>T</sub>		TEST CURRENT	REVERSE LEAKAGE @V <sub>RWM</sub>	PEAK PULSE CURRENT	MAXIMUM CLAMPING VOLTAGE @I <sub>pp</sub>
		V <sub>BR</sub> MIN(V)	V <sub>BR</sub> MAX(V)				
BI-POLAR	V <sub>RWM</sub> (V)	V <sub>BR</sub> MIN(V)	V <sub>BR</sub> MAX(V)	I <sub>T</sub> (mA)	I <sub>R</sub> (μA)	I <sub>pp</sub> (A)	V <sub>C</sub> (v)
5LM33CA	33.0	36.70	40.60	1	1	151.2	38

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

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

FIG.1:V- I curve characteristics

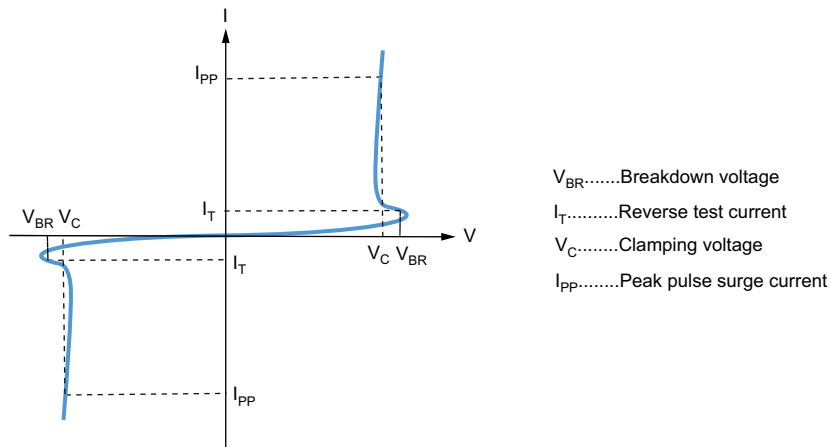


FIG.2: Pulse waveform

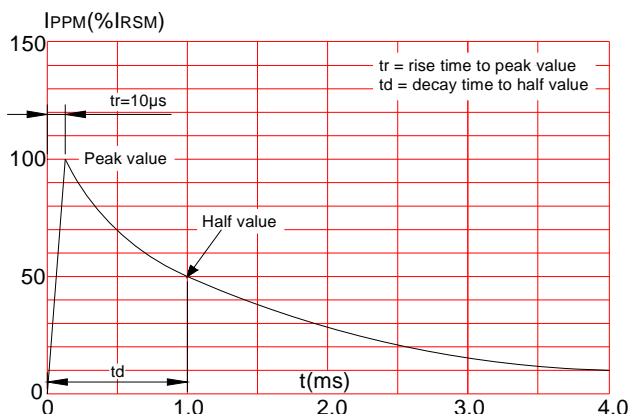
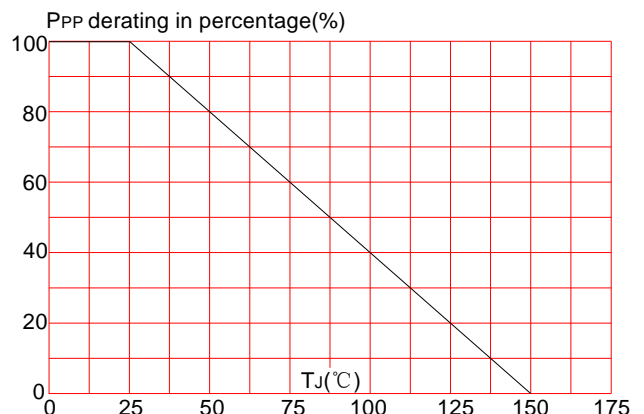
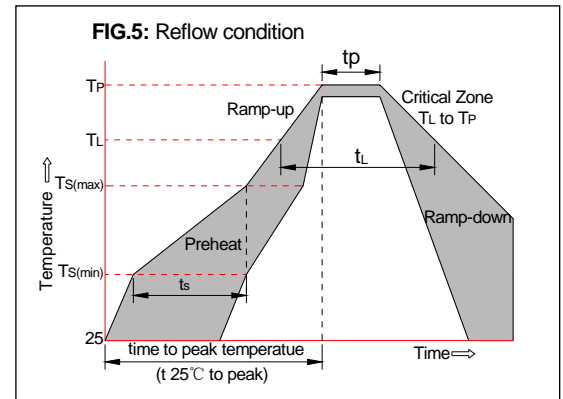


FIG.3: Pulse derating curve

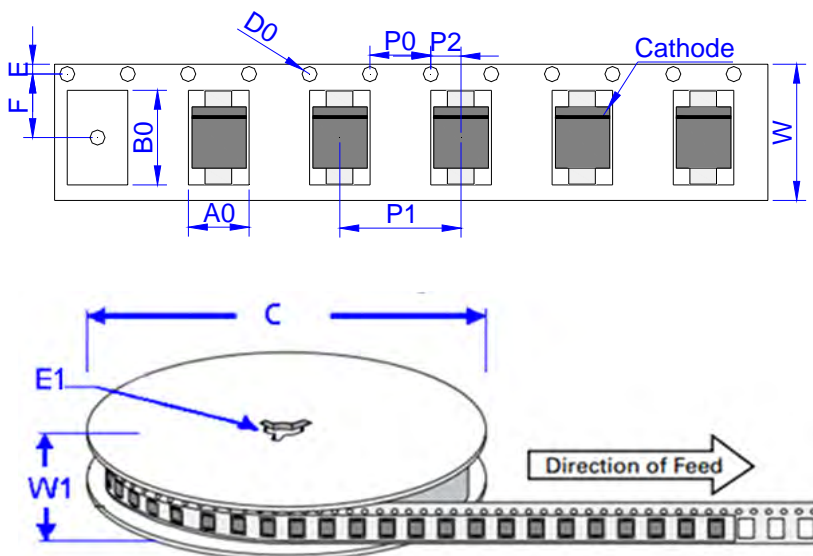


## SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) ( $t_s$ )	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

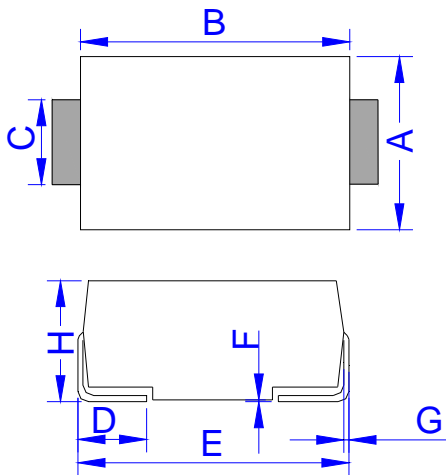


## TAPE AND REEL SPECIFICATION-SMC

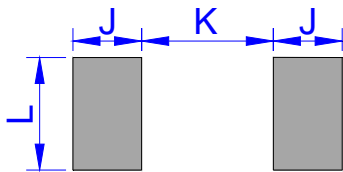


Ref.	Dimensions	
	Millimeters	Inches
A0	6.05 ± 0.3	0.238 ± 0.012
B0	8.31 ± 0.3	0.327 ± 0.012
C	330.0	13.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524 ± 0.012
F	7.50 ± 0.2	0.295 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	8.00 ± 0.2	0.3145 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	16.0 ± 0.2	0.630 ± 0.008
W1	19.7 ± 2.0	0.776 ± 0.079

PACKAGE MECHANICAL DATA



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	5.59	6.22	0.220	0.245
B	6.60	7.11	0.260	0.280
C	2.85	3.27	0.112	0.129
D	0.76	1.52	0.030	0.060
E	7.75	8.13	0.305	0.320
F	0.00	0.20	0.000	0.008
G	0.15	0.31	0.006	0.012
H	1.99	2.61	0.078	0.103



DO-214AB (SMC)

Ref.	Dimensions	
	Millimeters	Inches
	Typ.	Typ.
J	3.03	0.119
K	3.84	0.151
L	3.82	0.150

PART No.	PACKAGE	QUANTITY	TAPE & REEL
5LM33CA	SMC(DO-214AB)	3,000	13 inch

NOTICE

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