




SPECIFICATION SHEET

SPECIFICATION SHEET NO.	N0802-SMAJ12CA00S0XE
DATE	Aug. 02, 2021
REVISION	A0
DESCRIPTION	<p>SMD Transient Voltage Suppressor (TVs) Diodes, SMA/DO-214AC series, SMAJ12CA Type, 2 Pads, Bidirectional</p> <p>Reverse Stand-off Voltage 12.0V Max. Peak Pulse Power: 400 Watts Min.</p> <p>Operating Temp. Range -65°C ~+150°C</p> <p>Package in Tape/Reel, 5000pcs/13" Reel or 2000pcs/7" Reel</p> <p>RoHS/RoHS III compliant</p>
CUSTOMER	
CUSTOMER PART NUMBER	
CROSS REF. PART NUMBER	
ORIGINAL PART NUMBER	MDD SMAJ12CA
PART CODE	SMAJ12CA00S0XE

VENDOR APPROVE			
Issued/Checked/Approved			
DATE: Aug. 02, 2021			

CUSTOMER APPROVE	
DATE:	

SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMA SERIES



MAIN FEATURE

- The plastic package carries Underwriters Laboratory Flammability Classification 94V-0
- Low profile package
- Built-in strain relief
- High temperature soldering guaranteed: 260°C/ 10 seconds at terminals
- Glass passivated chip junction
- Low inductance
- Excellent clamping capability
- 400W peak pulse power capability at 10/1000µs waveform
- Repetition rate (duty cycle): 0.01%
- Fast response time
- Repetition rate (duty cycle): 0.01%
- Typical IR less than 1µA above 10V

APPLICATION

- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

RFQ

[Request For Quotation](#)

PART CODE GUIDE

SMA	J12CA00	S	OXE
1	2	3	4

- 1) **SMA**: SMD Transient Voltage Suppressor (TVs) Diodes, SMA /DO-214AC series,
- 2) **J12CA00**: Type code for original part number SMAJ12CA
- 3) **S**: Package code, Tape/reel, 5000pcs/13"Reel or 2000pcs/7" Reel
- 4) **OXE**: Marking code for "XE" on the case surface, Different Marking for different specification.

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MORE ITEMS AVAILABLE- Unidirectional Type

SMAJ050A00SOAE	SMAJ060A00SOAG	SMAJ070A00SOAM	SMAJ075A00SOAP	SMAJ085A00SOAT
SMAJ080A00SOAR	SMAJ090A00SOAV	SMAJ10A000SOAX	SMAJ11A000SOAZ	SMAJ12A000SOBE
SMAJ13A000SOBG	SMAJ14A000SOBK	SMAJ15A000SOBM	SMAJ16A000SOBP	SMAJ17A000SOBR
SMAJ18A000SOBT	SMAJ20A000SOBV	SMAJ22A000SOBX	SMAJ24A000SOBZ	SMAJ26A000SOCE
SMAJ28A000SOCG	SMAJ30A000SOCK	SMAJ33A000SOCM	SMAJ36A000SOCP	SMAJ40A000SOCR
SMAJ43A000SOCT	SMAJ45A000SOCV	SMAJ48A000SOCX	SMAJ51A000SOCZ	SMAJ54A000SORE
SMAJ58A000SORG	SMAJ60A000SORK	SMAJ64A000SORM	SMAJ70A000SORP	SMAJ75A000SORR
SMAJ78A000SORT	SMAJ85A000SORV	SMAJ90A000SORX	SMAJ100A00SORZ	SMAJ110A00SOSE
SMAJ120A00SOSG	SMAJ130A00SOSK	SMAJ150A00SOSM	SMAJ160A00SOSP	SMAJ170A00SOSR
SMAJ180A00SOST	SMAJ190A00SOSU	SMAJ200A00SOSV	SMAJ210A00SOSW	SMAJ220A00SOSGE
SMAJ250A00SOSZ	SMAJ300A00SOTE	SMAJ350A00SOTG	SMAJ400A00SOTK	SMAJ440A00SOTM
SMAJ065A00SOAK				

MORE ITEMS AVAILABLE- Bidirectional Type

SMAJ050CA0S0WE	SMAJ060CA0S0WG	SMAJ070CA0S0WM	SMAJ075CA0S0WP	SMAJ080CA0S0WR
SMAJ085CA0S0WT	SMAJ090CA0S0WV	SMAJ10CA00S0WX	SMAJ11CA00S0WZ	SMAJ12CA00SOXE
SMAJ13CA00S0XG	SMAJ14CA00S0XK	SMAJ15CA00S0XM	SMAJ16CA00S0XP	SMAJ17CA00S0XR
SMAJ18CA00S0XT	SMAJ20CA00S0XV	SMAJ22CA00S0XX	SMAJ24CA00S0XZ	SMAJ26CA00S0YE
SMAJ28CA00S0YG	SMAJ30CA00S0YK	SMAJ33CA00S0YM	SMAJ36CA00S0YP	SMAJ40CA00S0YR
SMAJ43CA00S0YT	SMAJ45CA00S0YV	SMAJ48CA00S0YX	SMAJ51CA00S0YZ	SMAJ54CA00S0ZE
SMAJ58CA00S0ZG	SMAJ60CA00S0ZK	SMAJ64CA00S0ZM	SMAJ70CA00S0ZP	SMAJ75CA00S0ZR
SMAJ78CA00S0ZT	SMAJ85CA00S0ZV	SMAJ90CA00S0ZX	SMAJ100CA0S0ZZ	SMAJ110CA0S0VE
SMAJ120CA0S0VG	SMAJ130CA0S0VK	SMAJ150CA0S0VM	SMAJ160CA0S0VP	SMAJ170CA0S0VR
SMAJ180CA0S0VT	SMAJ190CA0S0YU	SMAJ200CA0S0VV	SMAJ210CA0S0YW	SMAJ220CA0S0VX
SMAJ250CA0S0VZ	SMAJ300CA0S0UE	SMAJ350CA0S0UG	SMAJ400CA0S0UK	SMAJ440CA0S0UM
SMAJ065CA0S0AK				

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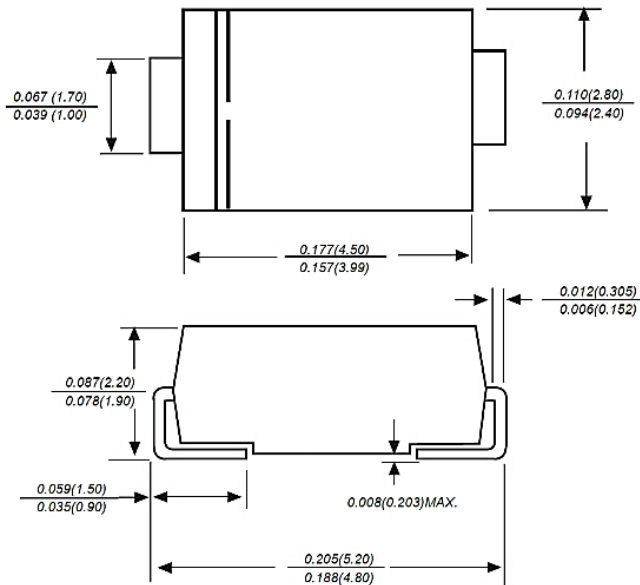
DIMENSION (Unit: Inch/mm)

Image for reference

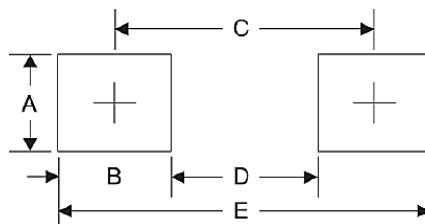


Marking: XE

SMA/DO-214AC



Recommend Pad Layout



Symbol	Unit (Inch)	Unit (mm)
A	0.066	1.680
B	0.060	1.520
C	0.154	3.900
D	0.095	2.410
E	0.215	5.450

SMD TRANSIENT VOLTAGE SUPPRESSORS DIODES SMA SERIES
MECHANICAL DATA

Case	Terminals	Polarity	Mounting Position	Weight per piece
JEDEC SMA/DO-214AC molded plastic body	Solder plated, Solderable per MIL-STD-750, Method 2026	Polarity symbol marking on case	Any	0.0020 Ounce, 0.0622 grams

MAX. RATING & CHARACTERISTICS - Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	SYMBOLS	VALUE			UNITS
		Min.	Typical	Max.	
Peak pulse power dissipation at 10/1000µs waveform (Note1, Note2, Fig.1)	P ppm	400			W
Peak pulse current of at 10/1000µs waveform (Note 1, Fig.3)	I ppm			20.1	A
Steady state power dissipation at TA=50°C (Fig.5)	P M(AV)		3.3		W
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method)	I FSM		40		A
Thermal resistance junction to lead	R QJL		30		°C/W
Thermal resistance junction to ambient	R QJA		120		°C/W
Operating junction temperature range	T J	-65		+150	°C
Storage temperature range	T STG	-65		+150	°C

Note

1. Non-repetitive current pulse, per Fig 3 and derated above TA=25 °C per Fig 2
2. Mounted on 5.0*5.0mm(Thickness 0.03mm) copper pads to each terminal
3. 8.3ms single half sine – wave or equivalent square wave, duty cycle – 4 pulsed per minute Max

ELECTRICAL CHARACTERISTICS - Ratings at 25°C

Parameter	SYMBOLS	VALUE	UNITS
Reverse Stand-Off Voltage	V RWM	12	V
Breakdown Voltage @I T	V BR	13.300~14.70	V
Test Current	I T	1	mA
Maximum Clamping Voltage @I PP	V C	19.90	V
Peak Pulse Current	I PP	20.1	A
Reverse Leakage @V RWM	I R	1	µA

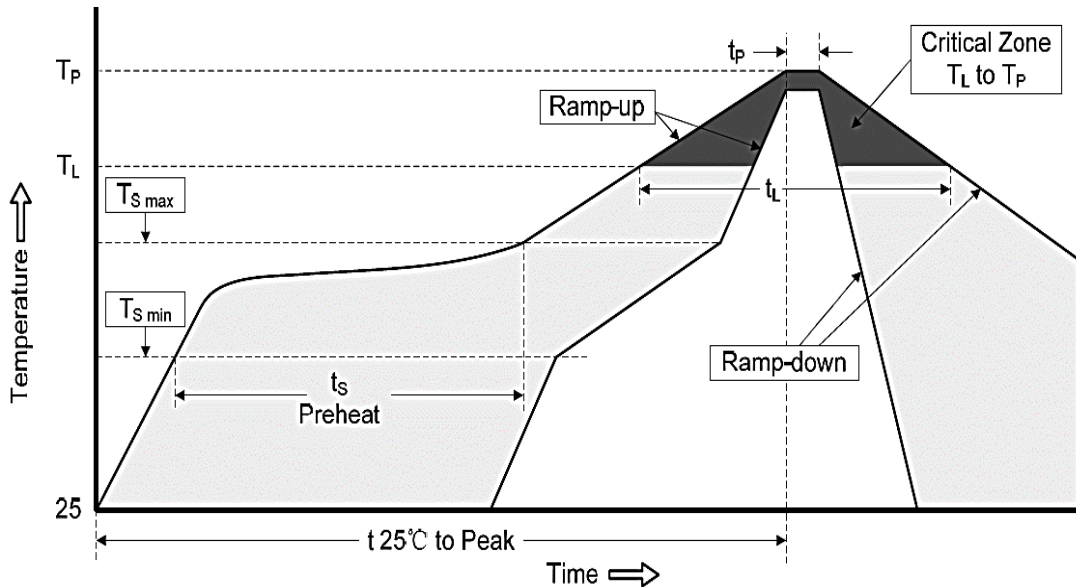
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RELIABILITY

Number	Experiment Items	Experiment Method And Conditions	Reference Documents
1	Solder Resistance Test	Test 260°C± 5°C for 10 ± 2 sec. Immerse body into solder 1/16" ± 1/32"	MIL-STD-750D METHOD-2031.2
2	Solderability Test	230°C ±5°C for 5 sec.	MIL-STD-750D METHOD-2026.1 0
3	Pull Test	1 kg in axial lead direction for 10 sec.	MIL-STD-750D METHOD-2036.4
4	Bend Test	0.5Kg Weight Applied To Each Lead, Bending Arcs 90 °C ± 5 °C For 3 Times	MIL-STD-750D METHOD-2036.4
5	High Temperature Reverse Bias Test	TA=100°C for 1000 Hours at VR=80% Rated VR	MIL-STD-750D METHOD-1038.4
6	Forward Operation Life Test	TA=25°C Rated Average Rectified Current	MIL-STD-750D METHOD-1027.3
7	Intermittent Operation Life Test	On state: 5 min with rated IRMS Power Off state: 5 min with Cool Forced Air. On and off for 1000 cycles.	MIL-STD-750D METHOD-1036.3
8	Pressure Cooker Test	15 PSIG, TA=121°C, 4 hours	MIL-S-19500 APPENOIXC
9	Temperature Cycling Test	-55°C~+125°C; 30 Minutes For Dwelled Time 5 minutes for transferred time. Total: 10 cycles.	MIL-STD-750D METHOD-1051.7
10	Thermal Shock Test	0°C for 5 minutes., 100°C for 5minutes, Total: 10 cycles	MIL-STD-750D METHOD-1056.7
11	Forward Surge Test	8.3ms Single Sale Sine-wave One Surge.	MIL-STD-750D METHOD-4066.4
12	Humidity Test	TA=65°C, RH=98% for 1000 hours.	MIL-STD-750D METHOD-1021.3
13	High Temperature Storage life Test	150°C for 1000 Hours	MIL-STD-750D METHOD-1031.5

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SUGGESTED REFLOW PROFILE (For Reference Only)



Profile Feature		Pb-Free Assembly
Average Ramp-up Rate (Ts Max to Tp)		3°C/second Max
Preheat	Temperature Min (Ts Min.)	150°C
	Temperature Max (Ts Max.)	200°C
	Time (ts Min. to ts Max.)	60 ~ 180 seconds
Time maintained above	Temperature (Tl)	217°C
	Time (tL)	60 ~ 150 seconds
Peak/Classification Temperature (Tp)		260 °C
Time within 5°C of actual Peak Temperature (tp)		20 ~ 40 seconds
Ramp-down rate		6 °C /Second Max.
Time 25 °C to Peak Temperature		8 minutes Max.
Suggest reflow times		3 Times Max.

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RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

Figure 1. Peak Pulse Power Rating Curve

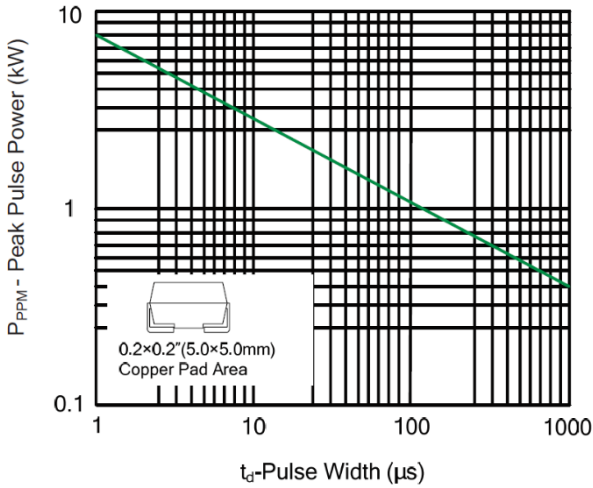


Figure 2. Pulse Derating Curve

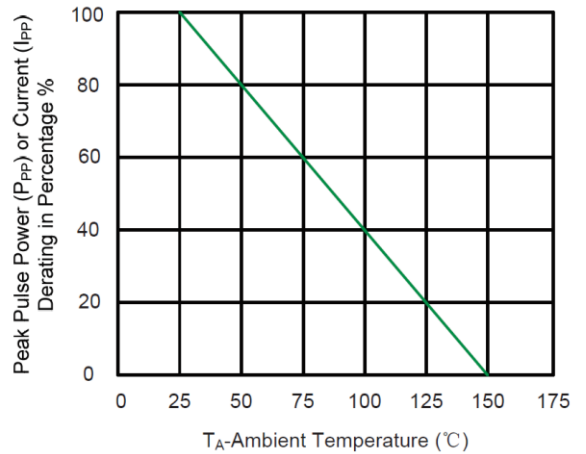


Figure 3. Pulse Waveform

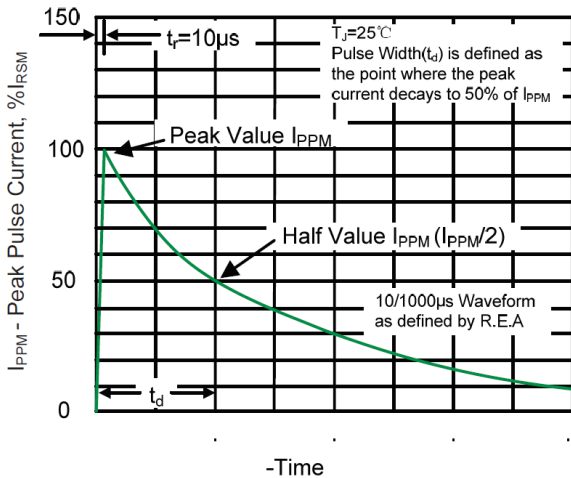


Figure 4. Typical Junction Capacitance

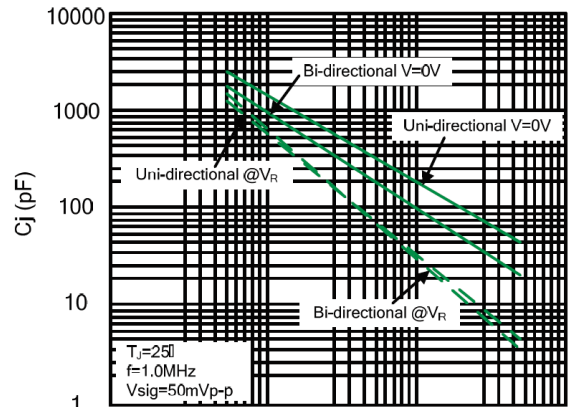


Figure 5. Steady State Power Dissipation Derating curve

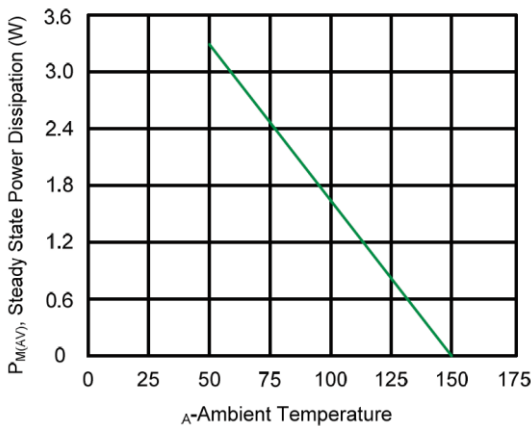
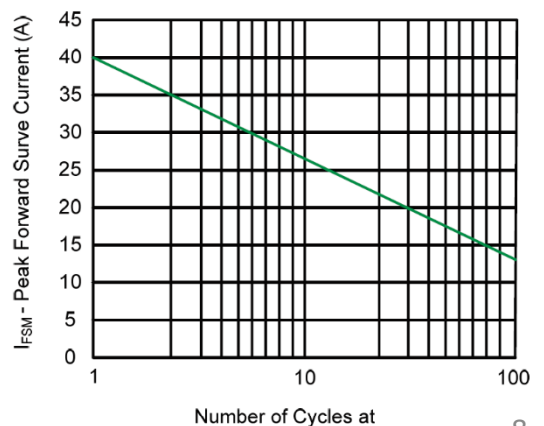


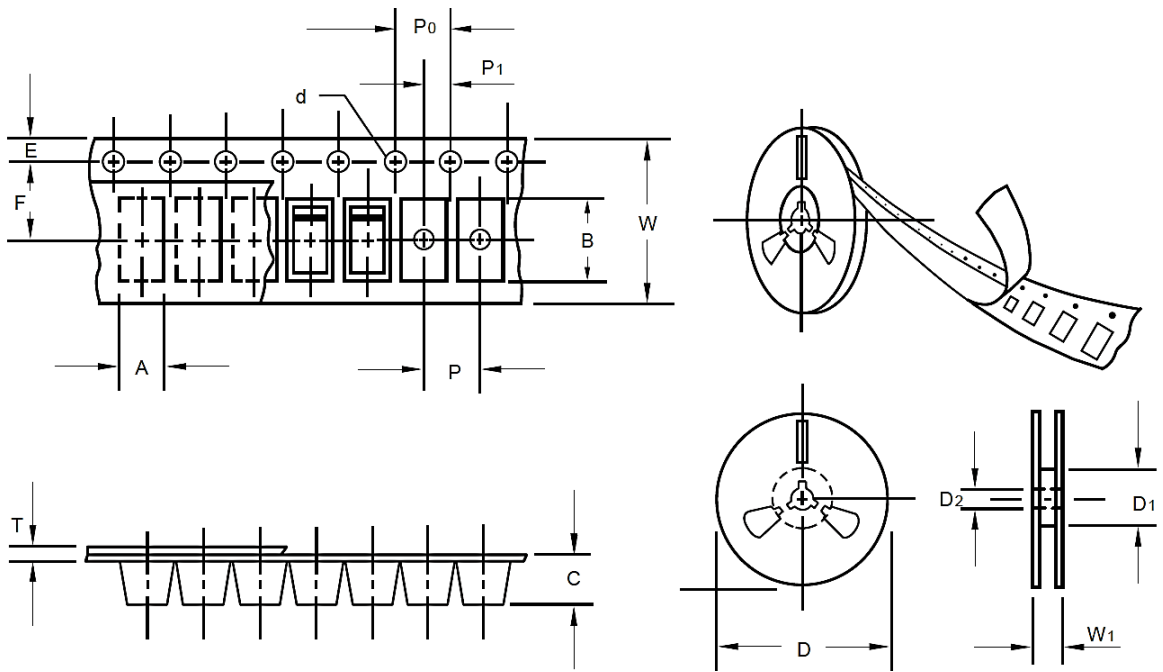
Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



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TAPE/REEL (Unit: mm)

All Devices are packed in accordance with EIA standard RS-481-A and specifications.

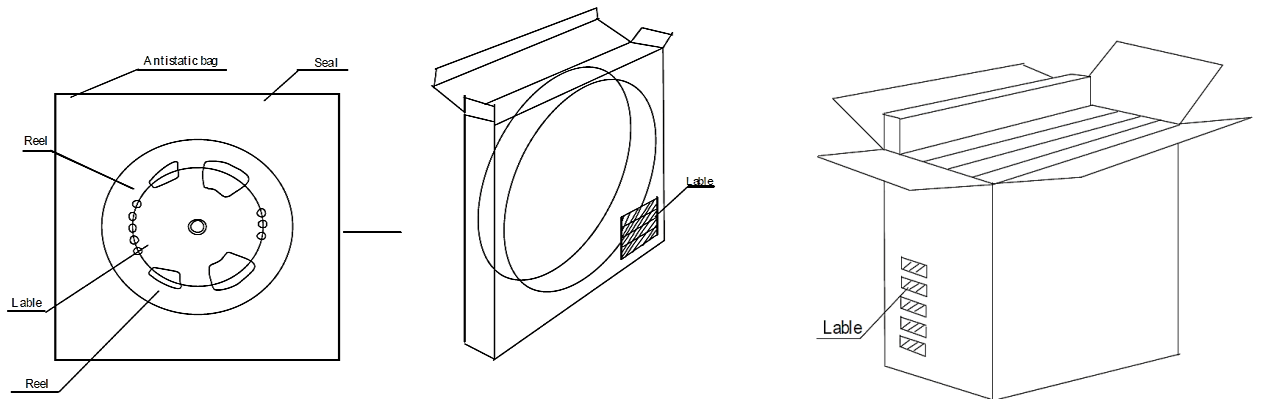


Item	Symbol	Tolerance	SMA/DO-214AC
Carrier width	A	0.1	2.8
Carrier Length	B	0.1	5.33
Carrier Depth	C	0.1	2.36
Sprocket hole	d	0.05	1.50
13" Reel outside diameter	D	2.0	330.0
13" Reel inner diameter	D1	-	50.0Min.
7" Reel outside diameter	D	2.0	178.0
7" Reel inner diameter	D1	-	62.0
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.0
Overall tape thickness	T	0.1	0.28
Tape width	W	0.3	12.00
Reel width	W1	1.0	18.0

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PACKAGE

Case Code	Reel Size	MPQ (pcs)	Component Spacing (mm)	Qty. Per Box (pcs)	Inner Box L*W*H (mm)	Reel Size (mm)	Carton size L*W*H (mm)	Qty. Per Carton (pcs)	G. W (kg)
SMA	7"	2,000		2,000	185*185*40	178	400*400*250	80,000	12.0
SMA	13"	5,000		5,000	335*335*40	330	380*380*380	80,000	12.0



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