NextGen Components,Inc.

PART CODE: SOT23SM712S712

SPECIFICATION SHEET

SPECIFICATION SHEET NO.	N1004- SOT23SM712S712
DATE	Oct. 04, 2021
REVISION	A0
DESCRIPITION	SMD Plastic-Encapsulate ESD Protection Diodes, SOT-23 series, 3 pads SM712 Type, Asymmetrical TVS Diodes for extended Common-Mode RS-485 **Reverse Working Voltage : 12V/7V, Clamping Voltage 20V/12 Max.@5.0A** Operating Temp. Range -55°C ~+150°C, Package in Tape/Reel, 3000pcs/Reel RoHS/RoHS III compliant
CUSTOMER	
CUSTOMER PART NUMBER	
CROSS REF. PART NUMBER	
ORIGINAL PART NUMBER	MDD SM712
PART CODE	SOT23SM712S712

VENDOR APPROVE
Issued/Checked/Approved Mandy Xu Ruby Zhang Jack Zhang
DATE: Oct. 04, 2021

CUSTOMER APPROVE
DATE:

SMD ESD PROTECTION DIODES SOT-23 SERIES

MAIN FEATURE

- Peak power dissipation 400W (8/20μs)
- Transient protection for asymmetrical data lines
- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 12A (8/20μs)
- Protects Two +12V to -7V lines
- Low clamping voltage
- Low leakage current
- Low capacitance
- Solid-state silicon avalanche technology
- Meet MSL 1 requirement

APPLICATION

- Protection of RS-485 transceivers with extended
- Common-mode range
- Security system
- Automatic Teller Machines
- HFC systems
- Networks

RFQ
Request For Quotation

PART CODE GUIDE

SOT23	SM712	S	712
1	2	3	4

1) **SOT23:** SMD Plastic-Encapsulate ESD Protection Diodes, SOT-23 series, 3 pads

2) **SM712:** Type code for original part number SM712

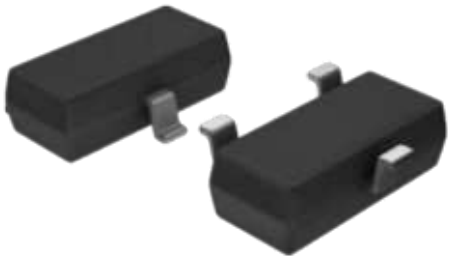
3) **S**: Package code, Package in Tape/Reel, 3000pcs/Reel

4) **712:** Marking code for “712 ” or “C72”on the case surface, Different Marking for different specification.

SMD ESD PROTECTION DIODES SOT-23 SERIES

DIMENSION (Unit: Inch/mm)

Image for reference

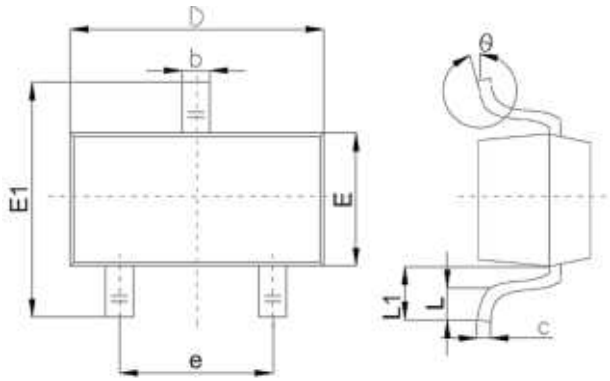


Marking: 712

or

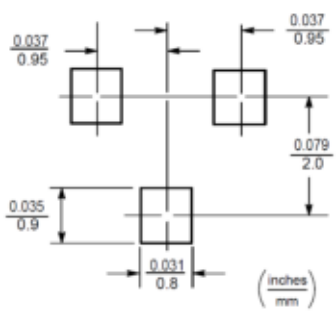
Marking: C72

SOT-23

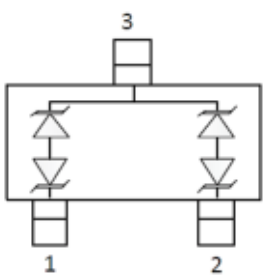


Symbol	Value (mm)		
	Min.	Typ.	Max.
A	0.89	1.00	1.4
A1	0.01	0.06	0.10
b	0.37	0.44	0.50
c	0.09	0.13	0.20
D	2.80	2.90	3.10
E	1.20	1.30	1.60
E1	2.10	2.40	2.80
e	1.78	1.9	2.04
L	0.10		0.30
L1	0.35	0.54	0.69
ϴ	0°		10°

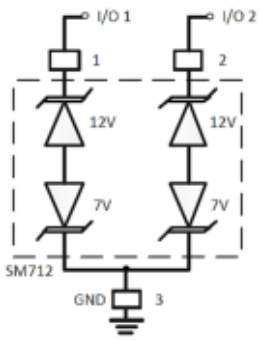
Recommend Pad Layout



Schematic & Pin Configuration



Circuit Diagram



SMD ESD PROTECTION DIODES SOT-23 SERIES

MECHANICAL DATA

Case	Flammability Rating	Terminals	Mounting Position	Weight per piece
JEDEC SOT-323 molded plastic body	UL 94V-0	Matte tin plated	-	-

ABSOLUTE MAX. RATINGS AT Ta=25 °C (unless otherwise specified)

Parameter	SYMBOLS	VALUE	UNITS
		LIMIT	
ESD per IEC 61000-4-2 (Air)	V_{ESD}	+/-15	KV
ESD per IEC 61000-4-2 (Contact)	V_{ESD}	+/-8	KV
Peak Pulse Power @8/20µs	P_{PP}	400	W
Peak Pulse Current @8/20µs	I_{PP}	17	A
Operating Temperature Range	T_J	-55 ~+ 150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C
Lead Solder Temperature- Max. (10 sec. Duration)	T_L	260 /10s	°C

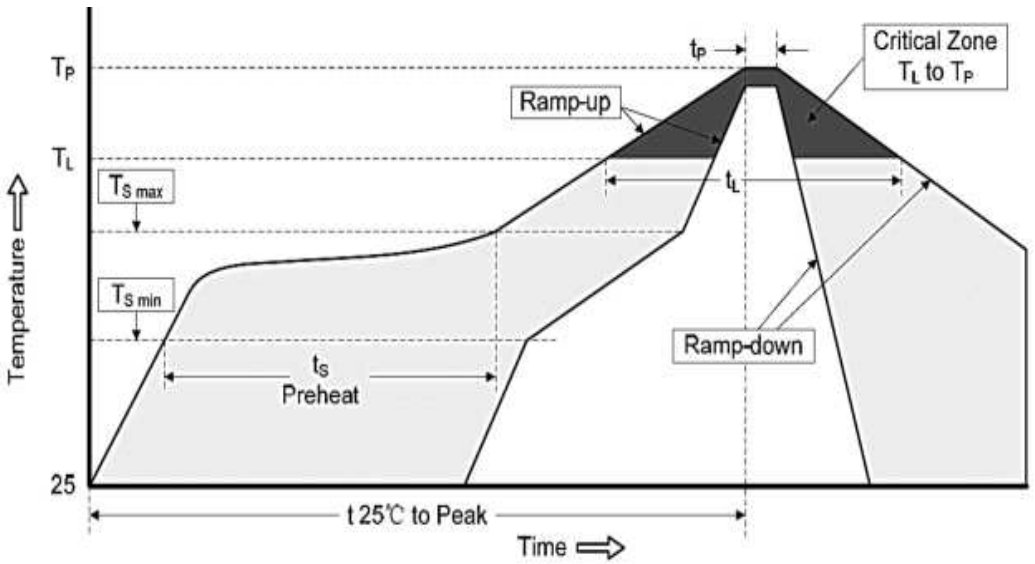
ELECTRICAL CHARACTERISTICS (Ta=25 °C unless otherwise specified)

Parameter	SYMBOLS	Pin 1 to Pin 3 and Pin 2 to pin 3 (12V) TVs			Pin 3 to Pin 1 and Pin 3 to pin 2 (7V) TVs			UNITS
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Reverse Working Voltage Pin 3 to Pin 1 or Pin 2 to Pin 1	V_{RWM}			12			7	V
Reverse Breakdown Voltage @ I_T = 1.0mA	V_{BR}	13.3			7.5			V
Reverse Leakage Current @$V_{RWM} = V_R$	I_R			1			20	µA
Clamping Voltage 1 @ I_{PP} = 5A, t p = 8/20µs	V_C			20			12	V
Clamping Voltage 2 @ I_{PP} = 17A, t p = 8/20µs	V_C			26			16	V
Junction Capacitance 1 @ V_R= 0V, f = 1MHz	C_T			75			75	pF
Junction Capacitance 2 @ $V_R = V_{RWM}$, f = 1MHz	C_T		45		45			pF

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	T_A=100°C for 1000 Hours at V_R=80% Rated V_R	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, T_A=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	T_A=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

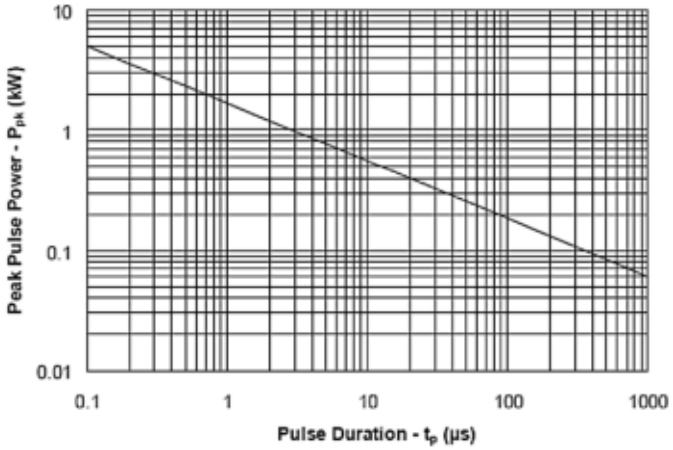
SUGGESTED REFLOW PROFILE (For Reference Only)



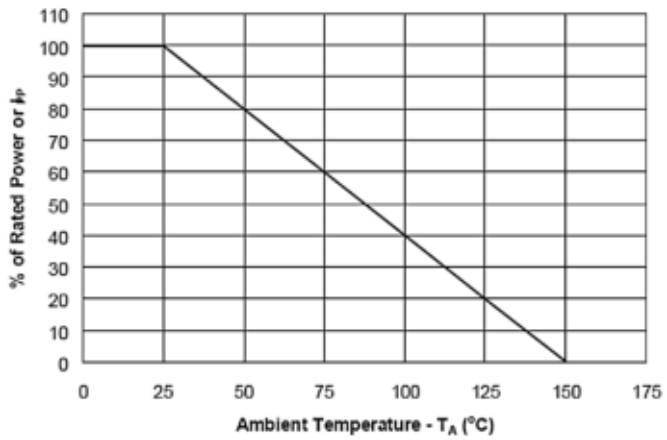
Profile Feature		Pb-Free Assembly
Average Ramp-up Rate (Ts Max to Tp)		3℃/second Max
Preheat	**Temperature Min (Ts Min.)**	150℃
	Temperature Max (Ts Max.)	200℃
	Time (ts Min. to ts Max.)	60 ~ 180 seconds
Time maintained above	**Temperature (TL)**	217℃
	Time (tL)	60 ~ 150 seconds
Peak/Classification Temperature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

RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

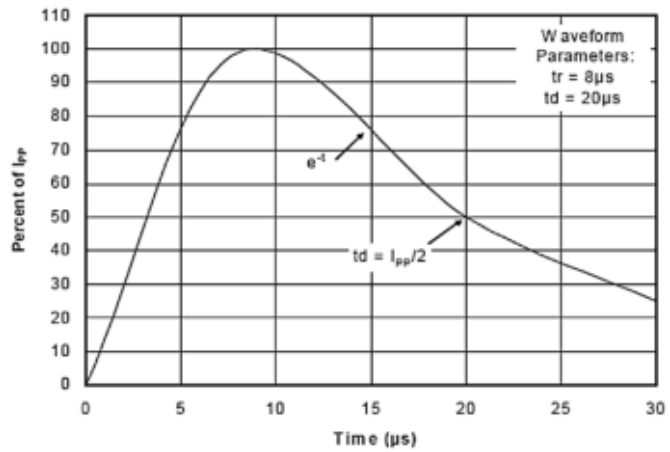
Non-Repetitive Peak Pulse Power vs. Pulse Time



Power Derating Curve

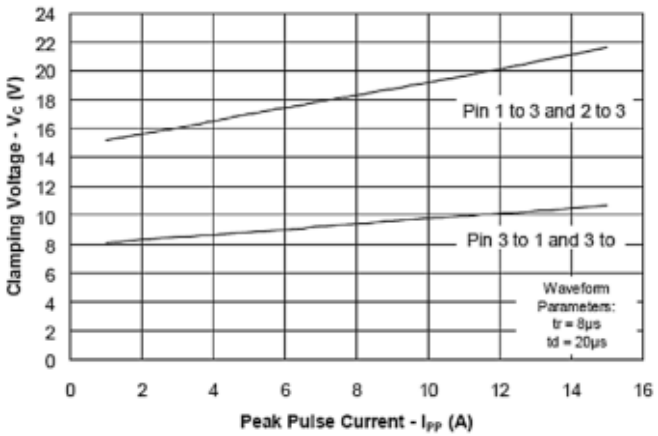


Pulse Waveform

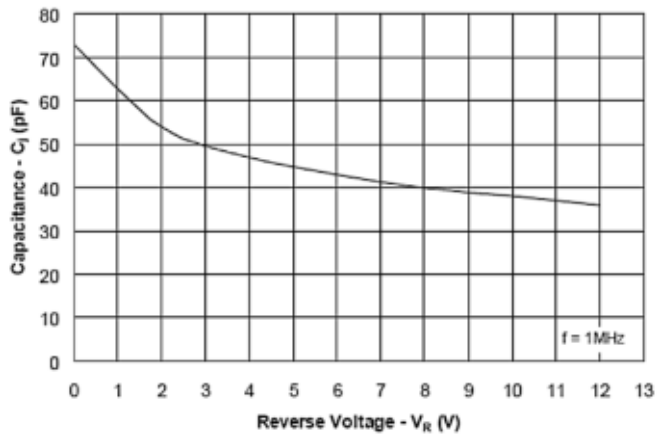


RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

Clamping Voltage vs. Peak Pulse Current

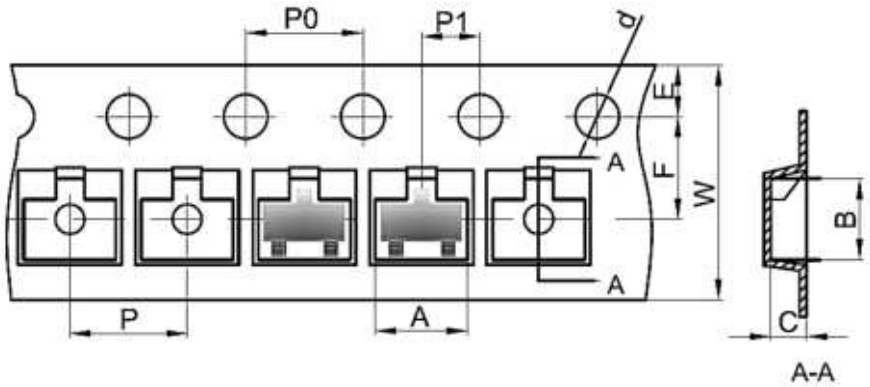


Capacitance vs. Reverse Voltage

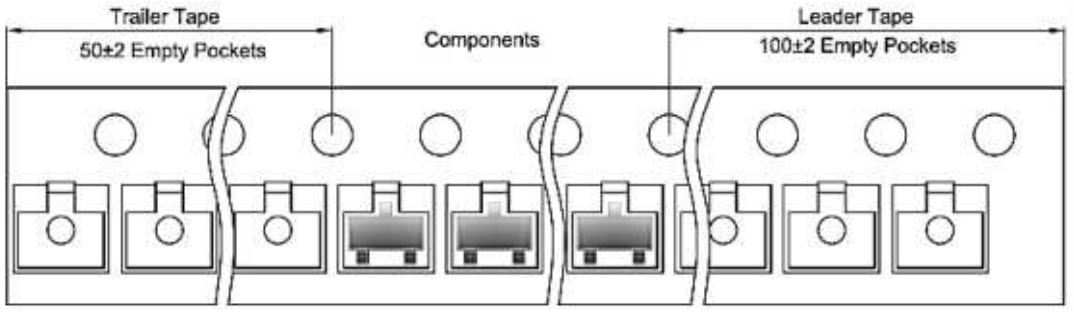


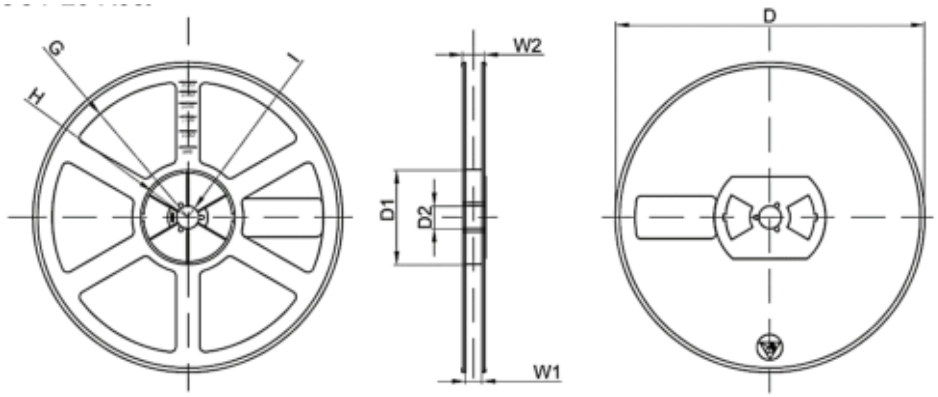
TAPE/REEL (Unit: mm)

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



Case	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.5	1.75	3.5	4.0	4.0	2.0	8.0





Reel Size	D	D1	D2	G	H	I	W1	W2
7”	Ø178	54.4	13.0	R78.0	R25.6	R6.5	9.5	12.3

SPQ PACKAGE for Reference

Item	Unit	Value
Case Code		SOT-23
Reel Size	Inch	7
Reel Size	mm	178
Tape Space	mm	/
SPQ /Reel	pcs	3000
Weigh /SPQ	LBs	-
Weigh /SPQ	KGs	-
Qty. Per Box	pcs	6000
Inner Box	Inch	L8.0*W8.0*H1.5

DISCLAIMER

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