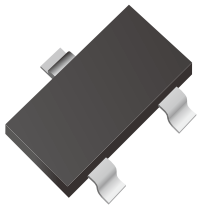
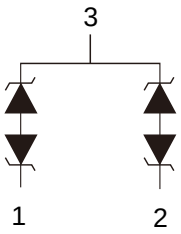
LTE23T712A02

Asymmetrical TVS Diode For Extended Common-Mode RS-485

Features





- 400 watts peak pulse power (tp=8/20μs)
- Transient protection for asymmetrical data lines to
  IEC 61000-4-2 (ESD) ±15kV(air), ±8kV(contact)
  IEC 61000-4-4 (FET) 40A (5/50ns)
  IEC 61000-4-5 (Lightning) 12A (8/20μs)
- Protects two +12V to -7V lines
- Low capacitance
- Low leakage current
- Low clamping voltage
- Solid-state silicon avalanche technology
- Lead free in comply with EU RoHS 2011/65/EU directives

Mechanical Data

- Case:SOT-23
- Flammability Rating: UL 94V-0
- Terminal: Matte tin plated
- Approx.Weight: 8.1mg

Applications

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

Ordering Information

Part Number	Marking	Shipping	Reel
LTE23T712A02-TR3	712 or C72	3000PCS Tape&Reel	7 inchs
LTE23T712A02-TR12	712 or C72	12000PCS Tape&Reel	13 inchs

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
P_{PP}	Peak Pulse Power (8/20μs)	400	W
I_{PP}	Peak Pulse Current (8/20μs)	17	A
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±15 ±8	kV
T_{OPT}	Operating Temperature	-55/+150	°C
T_{STG}	Storage Temperature	-55/+150	°C

Electrical Characteristics (TA=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Pin 1 to 3 and Pin 2 to 3 (12V) TVS			Pin 3 to 1 and Pin 3 to 2 (7V TVS)			Unit
			Min	Typ	Max	Min	Typ	Max	
V_{RWM}	Reverse Working Voltage				12			7	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA	13.3			7.5			V
I_R	Reverse Leakage Current	$V_R = V_{RWM}$			1			20	μA
V_{C1}	Clamping Voltage 1	I_{PP} = 5A, t_p = 8/20μs			20			12	V
V_{C2}	Clamping Voltage 2	I_{PP} = 17A, t_p = 8/20μs			26			16	V
C_{J1}	Junction Capacitance 1	V_R = 0V, f = 1MHz			75			75	pF
C_{J2}	Junction Capacitance 2	$V_R = V_{RWM}$, f = 1MHz		45			45		pF

Characteristic Curves

Fig.1 Non-Repetitive Peak Pulse Power vs Pulse Time

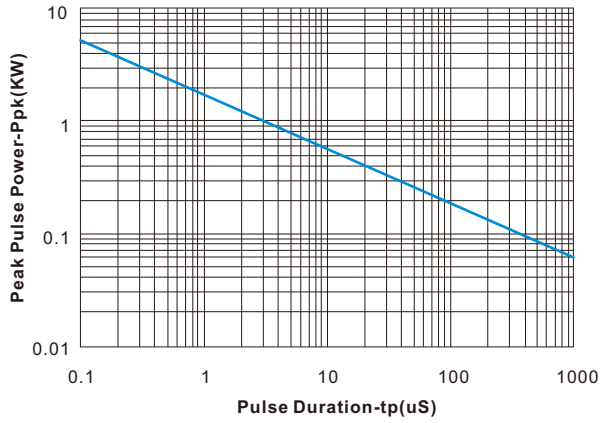


Fig.2 Power Derating Curve

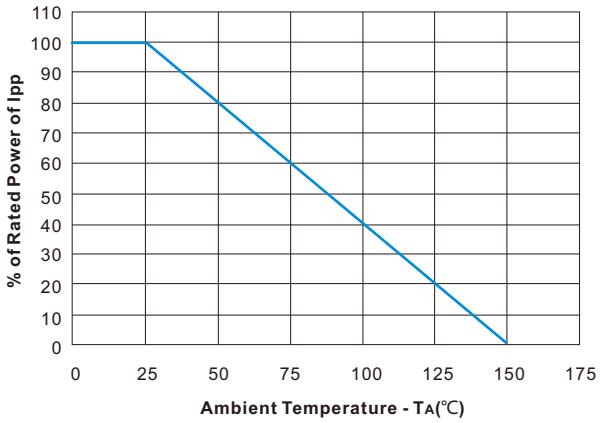


Fig.3 Pulse Waveform

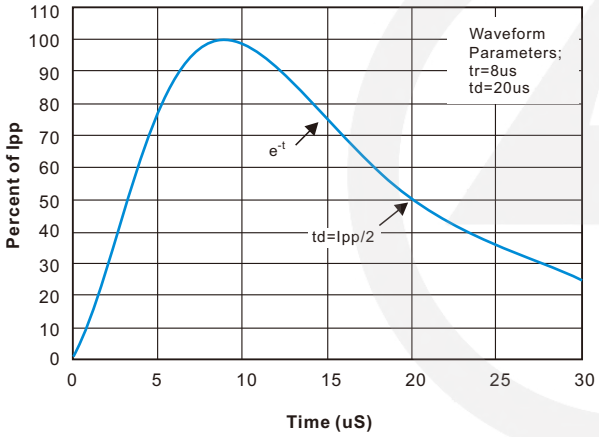


Fig.4 Clamping Voltage vs Peak Pulse Current

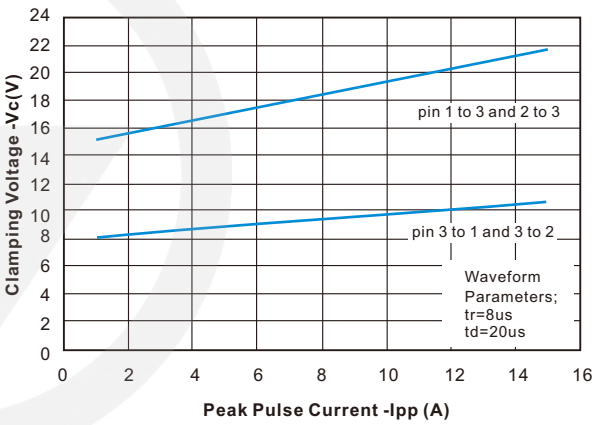
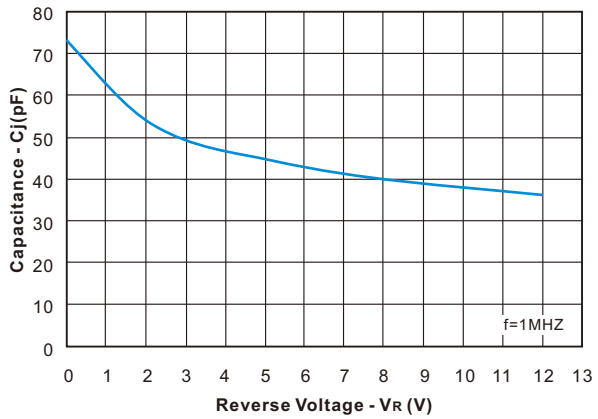
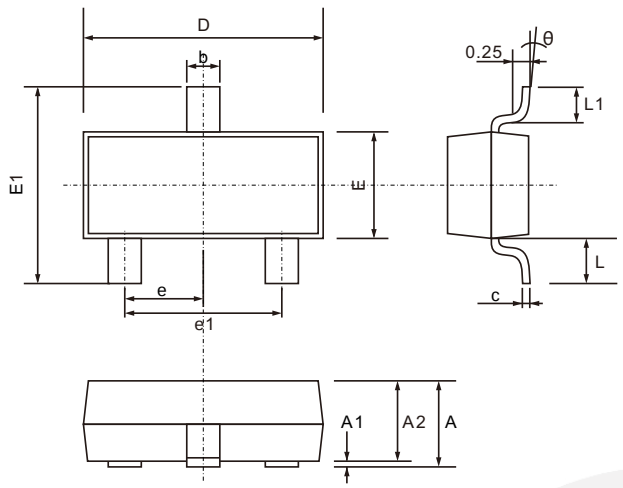


Fig.5 Capacitance vs Reverse Voltage



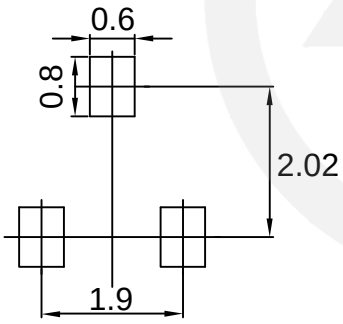
SOT-23 Package Outline



Unit: mm

SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.200
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.200
D	2.700	3.100
E	1.200	1.400
E1	2.200	2.600
e	0.950 TYP.	
e1	1.750	2.050
L	0.550 TYP.	
L1	0.300	0.500
θ	0°	8°

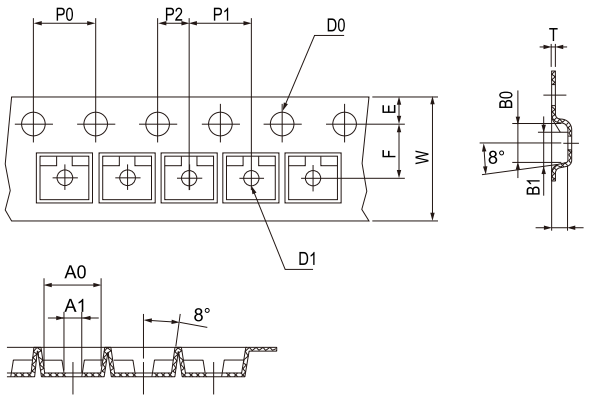
SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm
3.The pad layout is for reference purpose only.

Carrier Tape Dimensions

Unit：mm

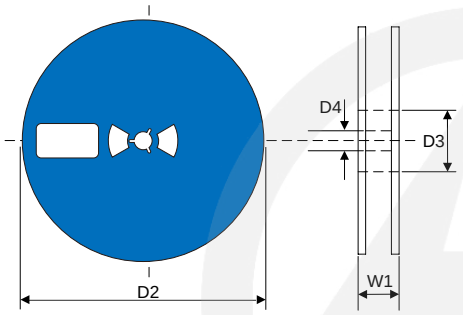


Symbol	Spec	Symbol	Spec
A0	3.15±0.10	P0	4.00±0.05
A1	1.09±0.10	P1	4.00±0.02
B0	2.77±0.10	W	8.00±0.10
B1	2.15±0.10	E	1.75±0.10
K0	1.22±0.10	F	3.50±0.05
D0	1.50±0.10	T	2.00±0.10
D1	1.00±0.10		

Reel Dimensions

Unit：mm

7” Reel

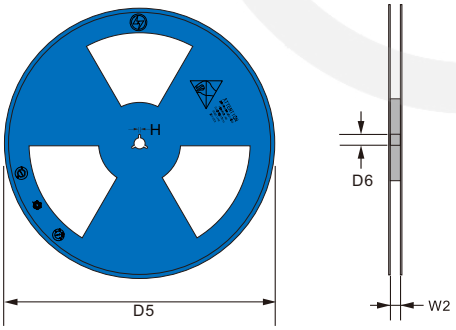


D2	Φ178.0±2.0
D3	Φ50
D4	13.0±0.5
W1	12±0.5
Quantity: 3000PCS	

Reel Dimensions

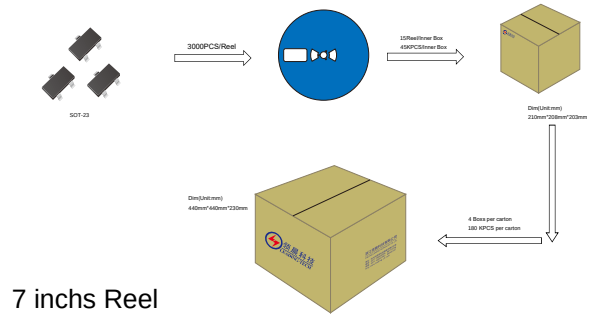
Unit：mm

13” Reel

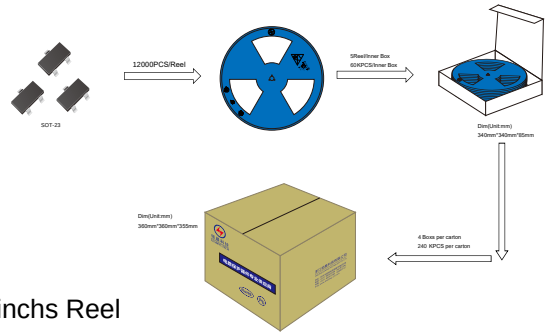


D5	Φ330.0±2.0
D6	Φ13.5±0.5
H	2.5±1.0
W2	12±2.0
Quantity: 12000PCS	

Packaging



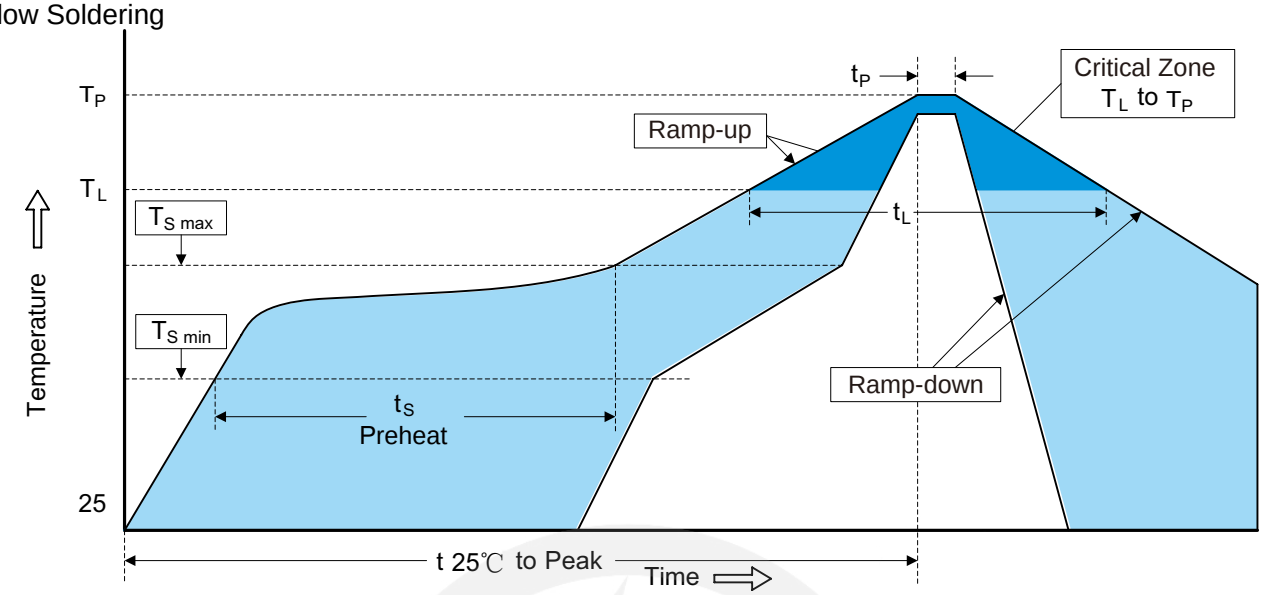
7 inchs Reel



13 inchs Reel

Recommended Soldering Conditions

Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_S)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

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Version Update Information

Series NO.	Enactment/Revision Date	Effective Date	Version	Revision Content	Revision Reason	Revision Person	Note
01	2024.03.18	2024.03.18	3.0	New file	/	Ding	
02	2025.06.16	2025.06.16	3.1	Update packaging information	/	Ding	
03	2026.03.06	2026.03.06	3.2	Package outline E1(max)=2.6mm	/	Ding	