

ESD Protection Diode : TExSD52

SOD-523 package



■ Features

1. RoHS compliant and halogen-free
2. Low clamping voltage
3. Low leakage current
4. IEC 61000-4-2 (ESD) 15~30KV (air), 8~30KV (contact)



■ Recommended Applications

1. Notebooks, desktops, servers
2. Cellular handsets and accessories
3. Portable instrumentation
4. Serial and parallel ports

■ Mechanical Data

1. Case: SOD-523, molded plastic meets UL flammability rating 94V-0
2. Meets MSL level 1, per J-STD-020

■ Part Number Code

T	E	D	S	D	5	2	0	5	2	5	0	B
1	2	3	4	5	6	7	8	9	10	11	12	13

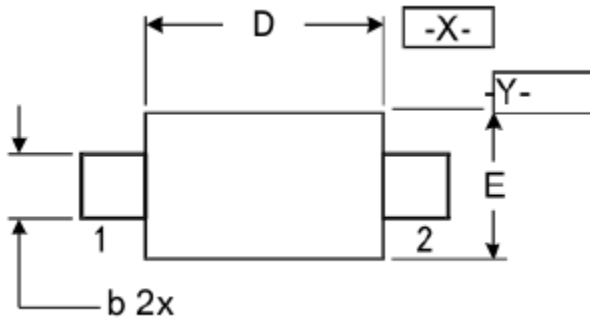
Product Series		Type code		Package		Reverse Stand off Voltage (V_{RWM})		Junction Capacitance (C_j)		Type Code	
TE	THINKING ESD Transient Voltage Suppression Diodes	D	Standard Capacitance >10pF	SD52	SOD-523, 2pins	3R	3.3V	0R5	0.5pF	U	Uni-directional
		L	Low Capacitance >1pF, ≤10pF			05	5V	0R6	0.6pF	B	Bi-directional
		U	Ultra-low Capacitance ≤1pF			12	12V	02H	2.7pF		
								030	3pF		
								080	8 pF		
								010	10pF		
								130	13pF		
								150	15pF		
								250	25pF		
								400	40pF		
								550	55pF		
								800	80pF		

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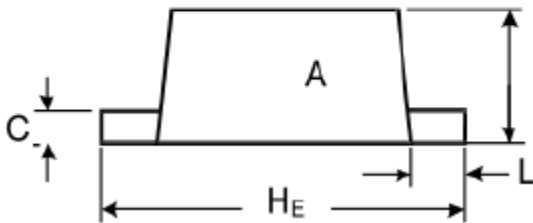
SOD-523 package



Structures and Dimensions



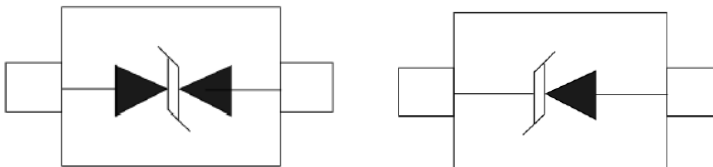
	0.08 (0.0032)	X	Y
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Unit: mm

Symbol	SOD-523	
	Min	Max
A	0.5	0.7
b	0.25	0.35
C	0.07	0.2
D	1.1	1.3
E	0.7	0.9
H _E	1.5	1.7
L	0.15	0.25

Schematic & PIN Configuration



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■ Electrical Characteristics (T_A=25°C unless otherwise noted)

P/N	Reverse Stand-off Voltage	Reverse Leakage Current	Product Polarity	Marking	Peak Pulse Power (8/20μs)	Peak Pulse Current (8/20μs)	ESD (contact)	ESD (air)	Operating Temp.	Storage Temp.
	V _{RWM} (V)	I _R (uA)	Uni/Bi		P _{PK} (W)	I _{PP} (A)	KV	KV	T _J (°C)	T _{stg} (°C)
	Max	Max								
TESD523R130B	3.3	500	Bi	CT	100	10	25	25	-55 to +150	-55 to +150
TESD523R800U	3.3	0.5	Uni	ZE	250	15	30	30	-55 to +150	-55 to +150
TEUSD52050R5B	5.0	0.5	Bi	5S	60	3	15	20	-55 to +125	-55 to +125
TEUSD52050R6U	5.0	0.5	Uni	5D	45	3.5	10	15	-55 to +125	-55 to +125
TEUSD520502HB	5.0	0.1	Bi	5B	40	3	10	15	-55 to +125	-55 to +125
TEUSD5205080B	5.0	0.2	Bi	5XB	75	5	25	25	-55 to +150	-55 to +150
TESD5205150B	5.0	1	Bi	5C	48	4	±8	±15	-55 to +150	-55 to +150
TESD5205400B	5.0	1	Bi	∞c	400	16	15	30	-55 to +150	-55 to +150
TESD5205800U	5.0	0.5	Uni	5H	250	15	30	30	-55 to +150	-55 to +150
TEUSD5212100B	12	0.5	Bi	AXB	120	5	30	30	-55 to +150	-55 to +150
TESD5212550U	12	1	Uni	ZM	350	10	8	15	-55 to +150	-55 to +150

■ Electrical Characteristics (T_A=25°C unless otherwise noted)

TEDSD523R130B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			3.3	V	
Breakdown Voltage	V _{BR}	4.0			V	IT = 1mA
Reverse Leakage Current	I _R			500	uA	VR = VRWM
Clamping Voltage	V _C			10	V	IPP = 10A (8/20μs pulse)
Junction Capacitance	C _J		13	15	pF	VR = 0V, f = 1MHz

TEDSD523R800U						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			3.3	V	
Breakdown Voltage	V _{BR}	4.5			V	IT = 1mA
Reverse Leakage Current	I _R			0.5	uA	VR = VRWM
Clamping Voltage	V _C		12	18	V	IPP = 15A (8/20μs pulse)
Junction Capacitance	C _J		80		pF	VR = 0V, f = 1MHz

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TEUSD52050R5B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5.0	V	
Breakdown Voltage	V_{BR}	6.0	8.5		V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R		0.1	0.5	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			20	V	$I_{PP} = 3\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		0.5	0.9	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

TEUSD52050R6U						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5.0	V	
Breakdown Voltage	V_{BR}	6.0	7.5		V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R		0.1	0.5	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			13	V	$I_{PP} = 3.5\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		0.6	0.9	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

TEUSD520502HB						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5.0	V	
Breakdown Voltage	V_{BR}	5.5	6.5		V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			0.1	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			13	V	$I_{PP} = 3\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		2.7	3.5	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

TEUSD5205080B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5.0	V	
Breakdown Voltage	V_{BR}	6.0			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			0.2	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			15	V	$I_{PP} = 5\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		8	10	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

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TEDSD5205150B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5.0	V	
Breakdown Voltage	V_{BR}	5.6		7.8	V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			1	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			12	V	$I_{PP} = 4\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		15		pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

TEDSD5205400B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5.0	V	
Breakdown Voltage	V_{BR}	6.0			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			1	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			22	V	$I_{PP} = 16\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		40	45	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

TEDSD5205800U						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5.0	V	
Breakdown Voltage	V_{BR}	6.0			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			0.5	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C		12	18	V	$I_{PP} = 15\text{A}$ (8 x 20 μs pulse)
Junction Capacitance	C_J		80		pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

TELSD5212100B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			12	V	
Breakdown Voltage	V_{BR}	13.3			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			0.5	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			24	V	$I_{PP} = 5\text{A}$ (8 x 20 μs pulse)
Junction Capacitance	C_J		10		pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

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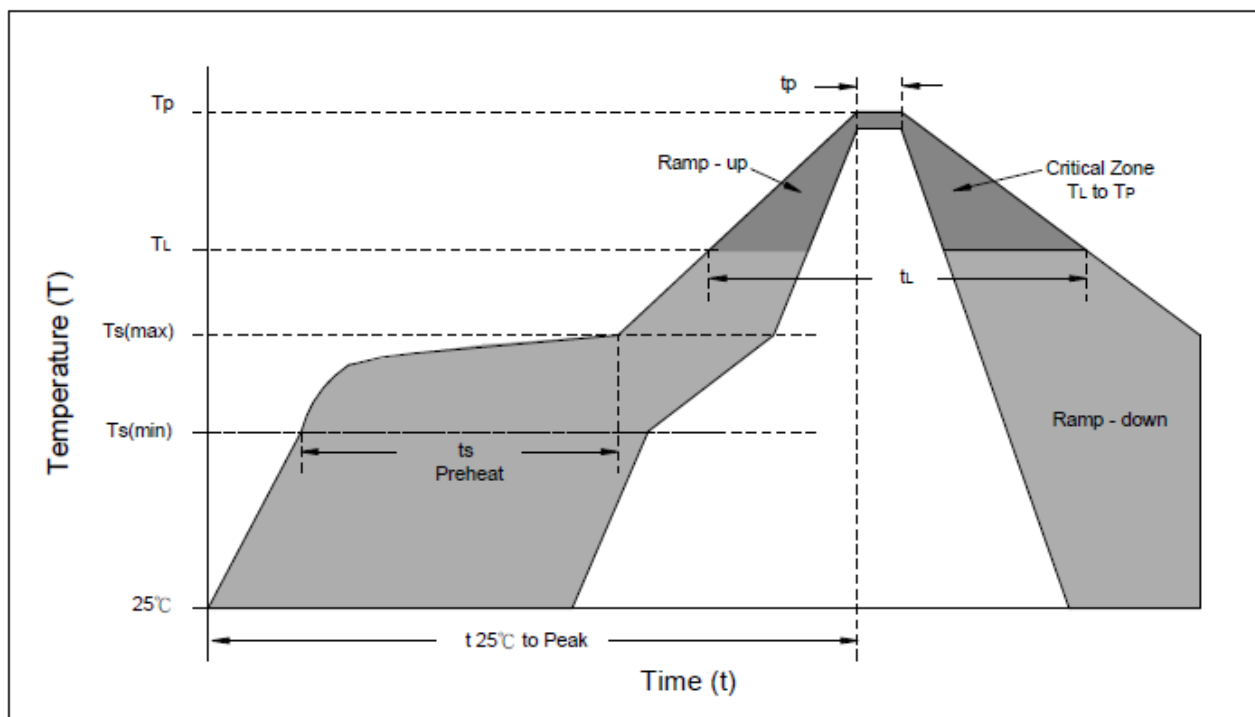
TEDSD5212550U						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			12	V	
Breakdown Voltage	V_{BR}	13.3			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			1	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			35	V	$I_{PP} = 10\text{A}$ (8 x 20 μs pulse)
Junction Capacitance	C_J		55		pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

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■ Soldering Recommendation



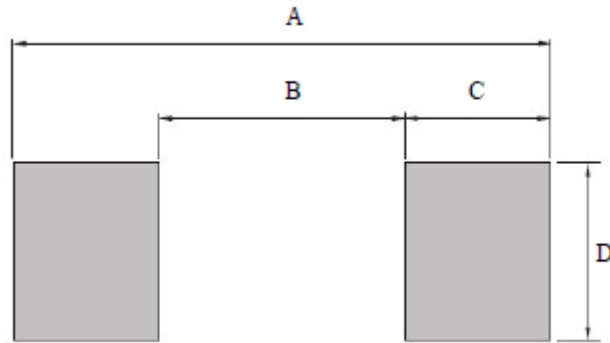
Reflow Condition	Lead-free assembly
Preheat -Temperature Min(Ts min) -Temperature Min(Ts max) -Time (min to max) (ts)	150°C 200°C 60 – 180 seconds
Average ramp up rate -Temperature Liquidus (TL) to peak	3°C/second max
Ts(max) to TL -Ramp-up Rate	3°C/second max.
Reflow -Temperature Liquidus (TL) -Time (tL)	217°C 60 – 150 seconds
Peak 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(TP)	8 minutes max.
Do not exceed	260°C

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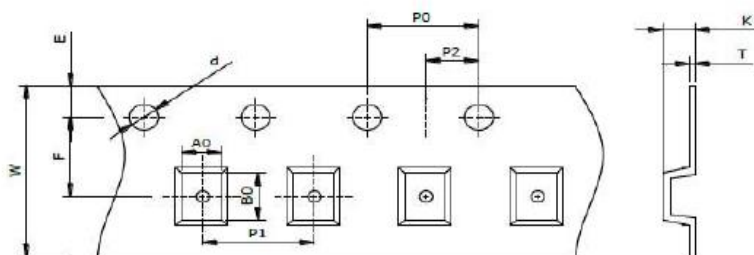
Recommended Soldering Pad Dimensions



Unit: mm

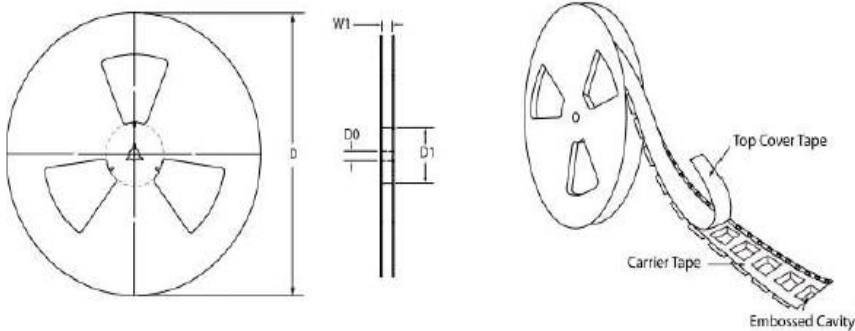
Package Type	A	B	C	D
SOD-523	2.02	0.82	0.60	0.70

Packaging



Unit: mm

Symbol	SOD-523
A0	0.80 ± 0.10
B0	1.95 ± 0.10
K	0.50 ± 0.10
d	1.50 ± 0.10
D	178.00 ± 2.00
D0	13.00 ± 0.20
D1	MIN. 54.00
E	1.75 ± 0.10
F	3.50 ± 0.10
P0	4.00 ± 0.10
P1	4.00 ± 0.10
P2	2.00 ± 0.10
T	0.20 ± 0.05
W	8.00 ± 0.20
W1	MAX. 13.50



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■ Quantity

MPQ: 5,000pcs

Package Type	Reel Size (inch)	Reel (Kpcs)
SOD-523	7	5

■ Warehouse Storage Conditions of product

- Storage condition:
 1. Storage Temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
 2. Relative Humidity: $\leq 75\% \text{RH}$
 3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year.