

Features

- 350 Watts peak pulse power ($t_p = 8/20\mu s$)
- Low clamping voltage
- Working voltage: $V_{RWM} = 3V, 5V, 8V, 12V, 15V, 18V, 24V, 36V$
- Low reverse clamping voltage
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

HF

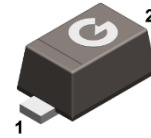


Typical Applications

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Portable instrumentation

Mechanical Data

- Case: SOD-523
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



SOD-523

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TSD03X	SOD-523	3000pcs / Tape & Reel	3U
TSD05X	SOD-523	3000pcs / Tape & Reel	5U
TSD08X	SOD-523	3000pcs / Tape & Reel	08X
TSD12X	SOD-523	3000pcs / Tape & Reel	6U
TSD15X	SOD-523	3000pcs / Tape & Reel	15W
TSD18X	SOD-523	3000pcs / Tape & Reel	7U
TSD24X	SOD-523	3000pcs / Tape & Reel	8U
TSD36X	SOD-523	3000pcs / Tape & Reel	D36

Maximum Ratings (@ $T_A = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
IEC 61000-4-2; ESD (Air)	V_{ESD-A}	± 30	kV
IEC 61000-4-2; ESD (Contact)	V_{ESD-C}	± 30	kV
Peak Pulse Power ($t_p = 8/20\mu s$)	P_{PP}	350	W

Thermal Characteristics

Parameter	Symbol	Value	Unit
Lead Solder Temperature (10 Seconds Duration)	T_L	260	°C
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	265	°C/W
Thermal Resistance Junction-to-Case ^{*1}	$R_{\theta JC}$	185	°C/W
Thermal Resistance Junction-to-Lead ^{*1}	$R_{\theta JL}$	171	°C/W
Junction Temperature	T_J	125	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Note 1: The data tested by surface mounted on a 22mm * 17mm * 1mm FR4-epoxy P.C.B

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
TSD03X TVS for 3V Lines						
Reverse Stand-off Voltage	V_{RWM}		-	-	3	V
Reverse Breakdown Voltage	$V_{(BR)}$	$I_T = 1\text{mA}$	4	-	6.5	V
Reverse Leakage Current	I_R	$V_{RWM} = 3\text{V}$	-	-	10	μA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$	-	-	7	V
		$I_{PP} = 25\text{A}$, $t_p = 8/20\mu\text{s}$	-	-	13.5	V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$	-	-	400	pF
TSD05X TVS for 5V Lines						
Reverse Stand-off Voltage	V_{RWM}		-	-	5	V
Reverse Breakdown Voltage	$V_{(BR)}$	$I_T = 1\text{mA}$	6	-	-	V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$	-	-	1	μA
Clamping Voltage	V_C	$I_{PP} = 5\text{A}$, $t_p = 8/20\mu\text{s}$	-	-	9.8	V
		$I_{PP} = 24\text{A}$, $t_p = 8/20\mu\text{s}$	-	-	14.5	V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$	-	-	350	pF
TSD08X TVS for 8V Lines						
Reverse Stand-off Voltage	V_{RWM}		-	-	8	V
Reverse Breakdown Voltage	$V_{(BR)}$	$I_T = 1\text{mA}$	8.5	-	-	V
Reverse Leakage Current	I_R	$V_{RWM} = 8\text{V}$	-	-	1	μA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$	-	-	12	V
		$I_{PP} = 20\text{A}$, $t_p = 8/20\mu\text{s}$	-	-	18	V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$	-	-	200	pF

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
TSD12X TVS for 12V Lines						
Reverse Stand-off Voltage	V_{RWM}		-	-	12	V
Reverse Breakdown Voltage	$V_{(BR)}$	$I_T = 1mA$	13.3	-	-	V
Reverse Leakage Current	I_R	$V_{RWM} = 12V$	-	-	1	μA
Clamping Voltage	V_C	$I_{PP} = 5A, t_p = 8/20\mu s$	-	-	19	V
		$I_{PP} = 15A, t_p = 8/20\mu s$	-	-	23	V
Junction Capacitance	C_J	$V_R = 0V, f = 1MHz$	-	-	150	pF
TSD15X TVS for 15V Lines						
Reverse Stand-off Voltage	V_{RWM}		-	-	15	V
Reverse Breakdown Voltage	$V_{(BR)}$	$I_T = 1mA$	16.7	-	-	V
Reverse Leakage Current	I_R	$V_{RWM} = 15V$	-	-	1	μA
Clamping Voltage	V_C	$I_{PP} = 5A, t_p = 8/20\mu s$	-	-	27	V
		$I_{PP} = 10A, t_p = 8/20\mu s$	-	-	40	V
Junction Capacitance	C_J	$V_R = 0V, f = 1MHz$	-	-	100	pF
TSD18X TVS for 18V Lines						
Reverse Stand-off Voltage	V_{RWM}		-	-	18	V
Reverse Breakdown Voltage	$V_{(BR)}$	$I_T = 1mA$	20	-	-	V
Reverse Leakage Current	I_R	$V_{RWM} = 18V$	-	-	1	μA
Clamping Voltage	V_C	$I_{PP} = 1A, t_p = 8/20\mu s$	-	-	29	V
		$I_{PP} = 9A, t_p = 8/20\mu s$	-	-	40	V
Junction Capacitance	C_J	$V_R = 0V, f = 1MHz$	-	-	80	pF
TSD24X TVS for 24V Lines						
Reverse Stand-off Voltage	V_{RWM}		-	-	24	V
Reverse Breakdown Voltage	$V_{(BR)}$	$I_T = 1mA$	26.3	-	31	V
Reverse Leakage Current	I_R	$V_{RWM} = 24V$	-	-	1	μA
Clamping Voltage	V_C	$I_{PP} = 1A, t_p = 8/20\mu s$	-	-	42	V
		$I_{PP} = 6A, t_p = 8/20\mu s$	-	-	56	V
Junction Capacitance	C_J	$V_R = 0V, f = 1MHz$	-	-	70	pF
TSD36X TVS for 36V Lines						
Reverse Stand-off Voltage	V_{RWM}		-	-	36	V
Reverse Breakdown Voltage	$V_{(BR)}$	$I_T = 1mA$	39	-	45	V
Reverse Leakage Current	I_R	$V_{RWM} = 36V$	-	-	200	nA
Clamping Voltage	V_C	$I_{PP} = 1A, t_p = 8/20\mu s$	-	-	55	V
		$I_{PP} = 3A, t_p = 8/20\mu s$	-	-	58	V
		$I_{PP} = 5A, t_p = 8/20\mu s$	-	-	65	V
Junction Capacitance	C_J	$V_R = 0V, f = 1MHz$	-	-	40	pF

Ratings and Characteristic Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

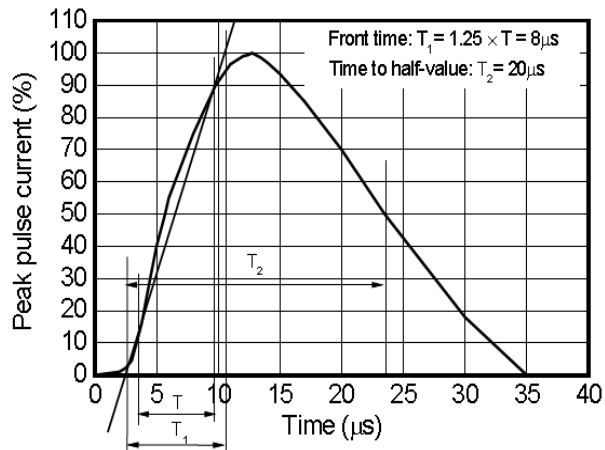


Fig 1 8/20 μs waveform per IEC61000-4-5

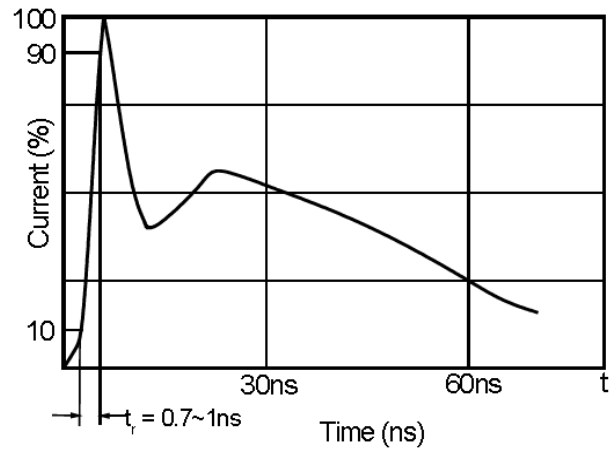


Fig 2 ESD pulse waveform according to
IEC61000-4-2

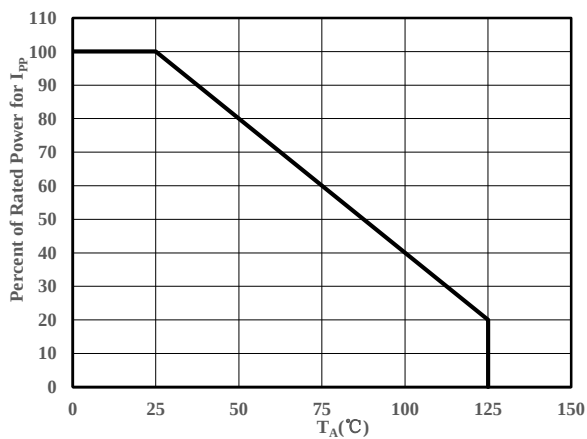
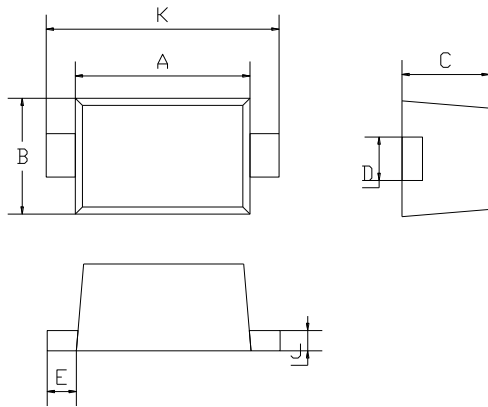


Fig 3 Power Derating Curve

Package Outline Dimensions (Unit: mm)



SOD-523		
Dimension	Min.	Max.
A	1.10	1.30
B	0.70	0.90
C	0.50	0.70
D	0.25	0.35
E	0.15	0.25
J	0.05	0.15
K	1.50	1.70

Mounting Pad Layout (Unit: mm)

SOD-523

