

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

MSESD223F24PUA

Product specification

Features

- 3-pin lead-less package
- Junction capacitance (Max value: 1400pF)
- Peak Pulse Current (8/20μs) MAX: 200A
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
- Low clamping voltage
- Low leakage current
- Working voltages: 24V
- RoHS Compliant

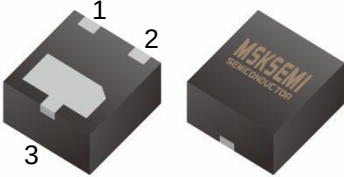
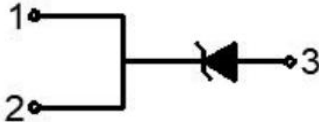
Mechanical Characteristics

- Package: DFN2020-3L
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020

Applications

- Power Management
- Industrial Application
- Power Supply Protection

Reference News

DFN2020-3L	Graphic symbol	Marking
		

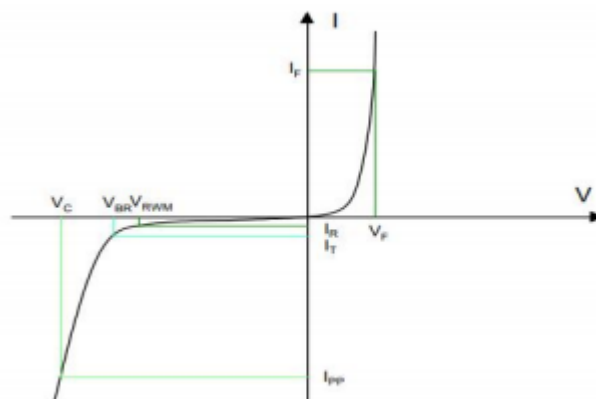
Absolute Maximum Ratings (T=25°C, RH=45%-75%, unless otherwise noted)

Parameters	Symbol	Value	Unit
Peak Pulse Power (tp=8/20μs waveform)	P _{PP}	9000	W
Peak Pulse Current (8/20μs)	I _{PP}	200	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V _{ESD}	±30 ±30	KV
Operating Temperature Range	T _J	-55 to +125	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C

Electrical Characteristics (T=25°C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V _{RWM}				24	V
Reverse Breakdown Voltage	V _{(BR)R}	I _R = 1mA	24.8		30	V
Reverse Leakage Current	I _R	V _R = 24V			1	uA
Clamping voltage	V _C	I _{PP} = 1A, T _P =8/20us			36	V
Clamping voltage	V _C	I _{PP} = 200A, T _P =8/20us		38	45	V
Junction capacitance	C _J	V _R = 0V, f = 1MHz			1400	pF

Symbol	Parameter
V _{RWM}	Peak Reverse Working Voltage
I _R	Reverse Leakage Current @V _{RWM}
V _{BR}	Breakdown Voltage @I _T
I _T	Test Current
I _{PP}	Maximum Reverse Peak Pulse Current
V _C	Clamping Voltage @I _{PP}
P _{PP}	Peak Pulse Power
C _J	Junction Capacitance
I _F	Forward Current
V _F	Forward Voltage @I _F



Typical Characteristics

FIG1: Power rating derating curve

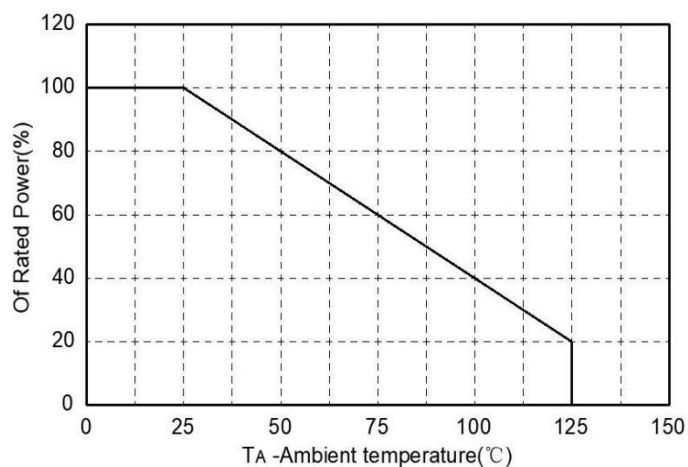


FIG2: pulse Waveform

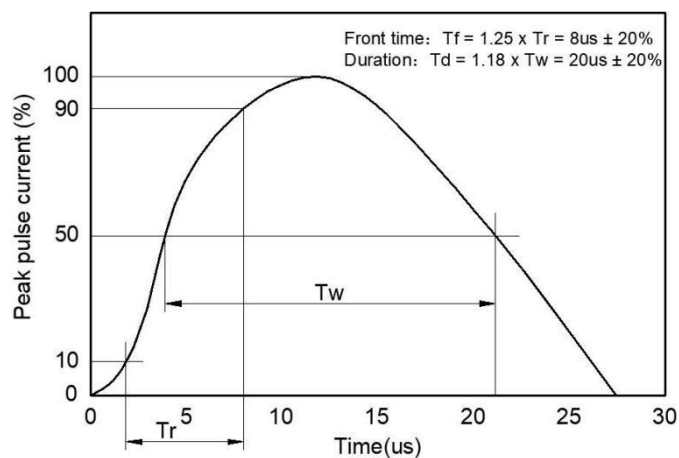


FIG3: Capacitance between teminals charateristics

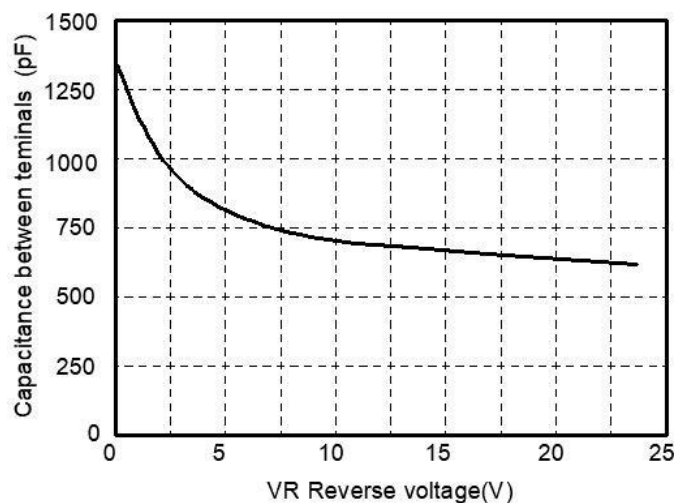
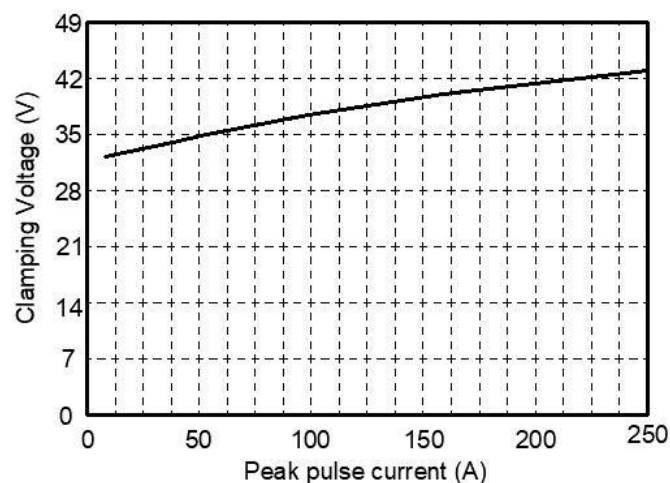
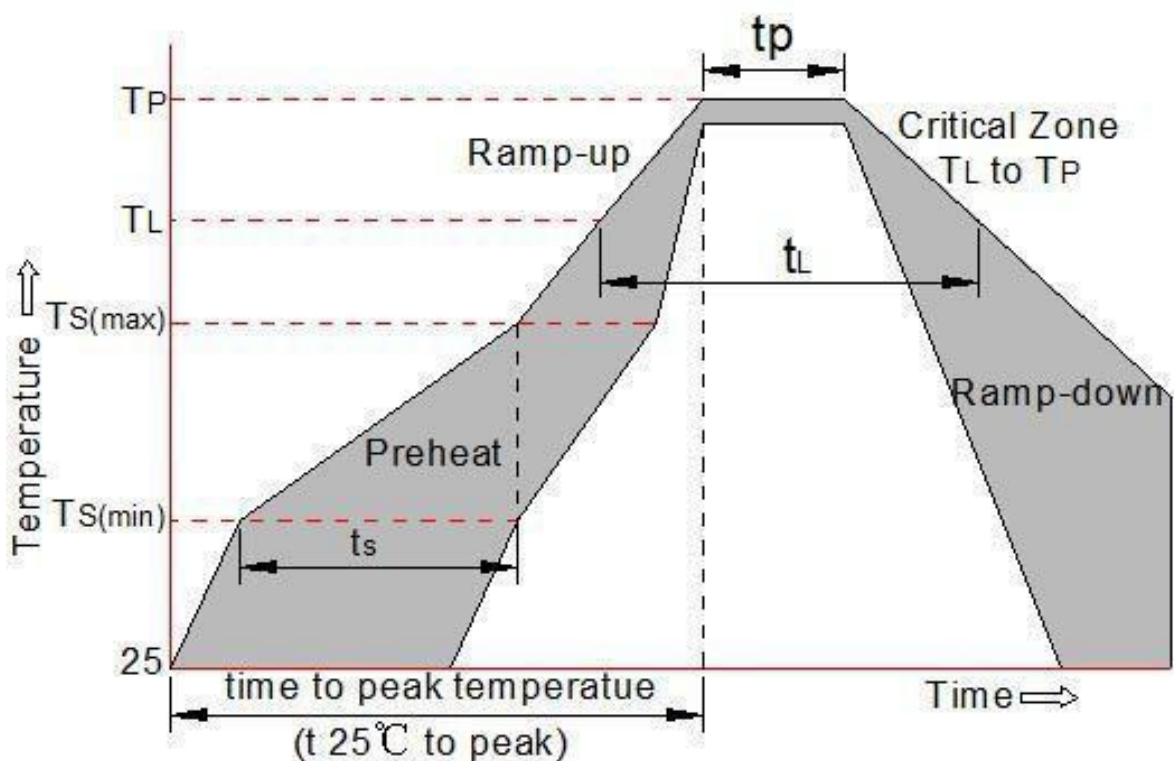


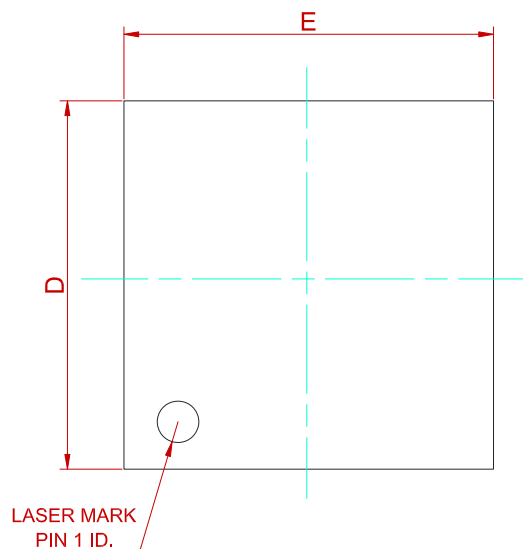
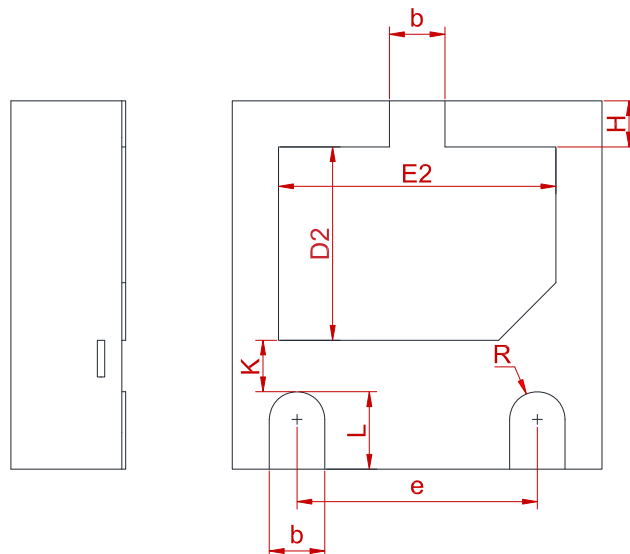
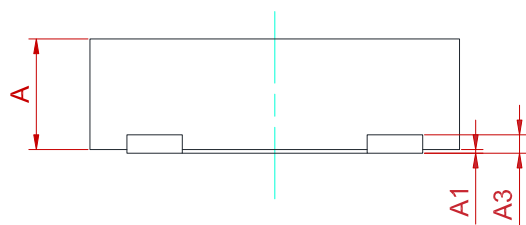
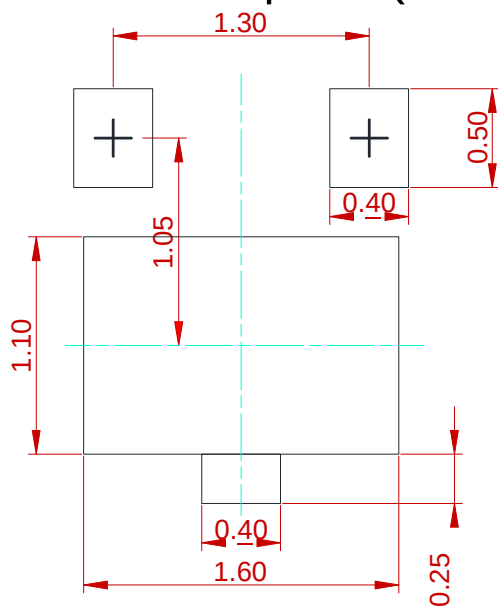
FIG4: Clamping Voltage vs. Peak Pulse Current



Soldering Parameters

Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L) (Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260°C



PACKAGE MECHANICAL DATA

Top View

Bottom View

Side View
Recommended land pattern (Unit: mm)


Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.50	0.58	0.60
A1	0.00	0.02	0.05
A3	0.10 REF.		
b	0.25	0.30	0.35
D	1.90	2.00	2.10
E	1.90	2.00	2.10
D2	0.95	1.05	1.15
E2	1.40	1.50	1.60
e	1.20	1.30	1.40
H	0.20	0.25	0.30
K	0.20	0.30	0.40
L	0.33	0.39	0.45
R	0.13	-	-

Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

REEL SPECIFICATION

P/N	PKG	QTY
MSESD223F24PUA	DFN2020-3L	3000

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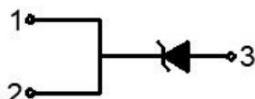
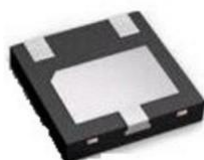
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Features

- 3-pin lead-less package
- Junction capacitance (Max value: 1400pF)
- Peak Pulse Current (8/20 μ s) MAX: 200A
- IEC61000-4-2 (ESD) $\pm$ 30kV (air), $\pm$ 30kV (contact)
- Low clamping voltage
- Low leakage current
- Working voltages: 24V
- RoHS Compliant

Appearance & Symbol



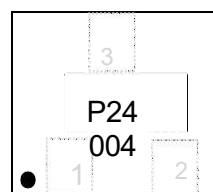
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- Package: DFN2020-3L
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Tape Reel :3000pcs

Applications

- Power Management
- Industrial Application
- Power Supply Protection

Marking Information



P24 004=Marking Code

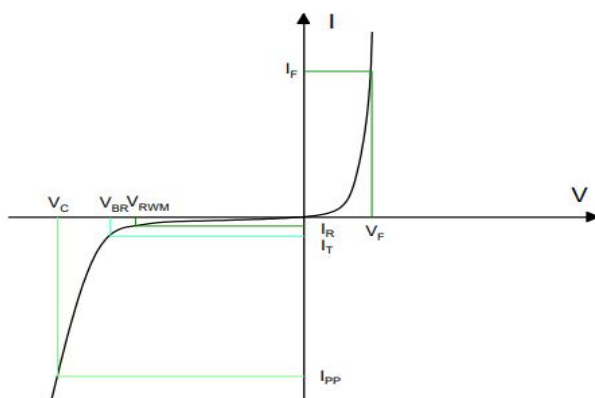
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Symbol	Parameter
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I _R	Reverse Leakage Current @ V _{RWM}
V _{BR}	Breakdown Voltage @ I _T
I _T	Test Current
I _{PP}	Maximum Reverse Peak Pulse Current
V _C	Clamping Voltage @ I _{PP}
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V _F	Forward Voltage @ I _F



Typical Characteristics

FIG1: Power rating derating curve

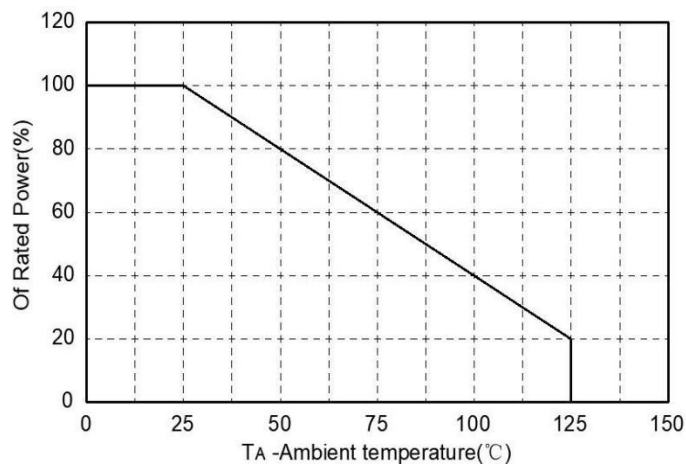


FIG2: pulse Waveform

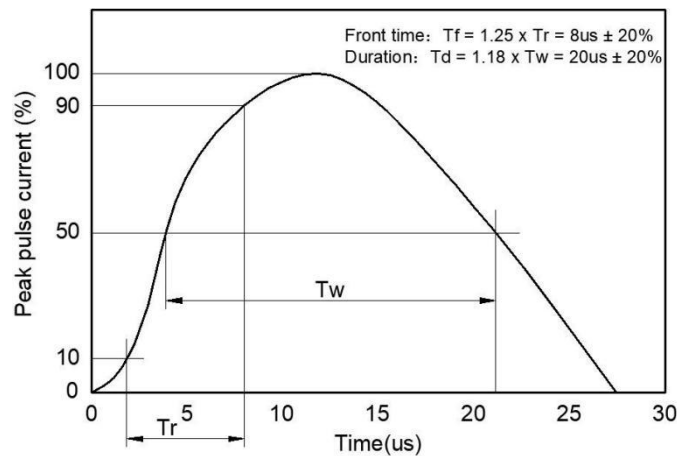


FIG3: Capacitance between teminals charateristics

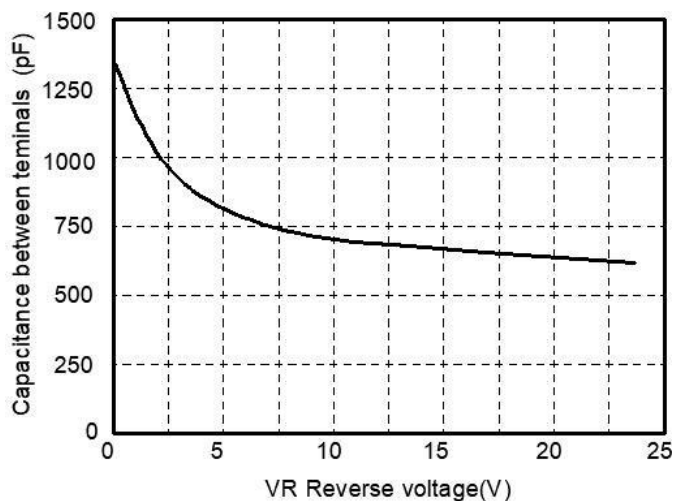
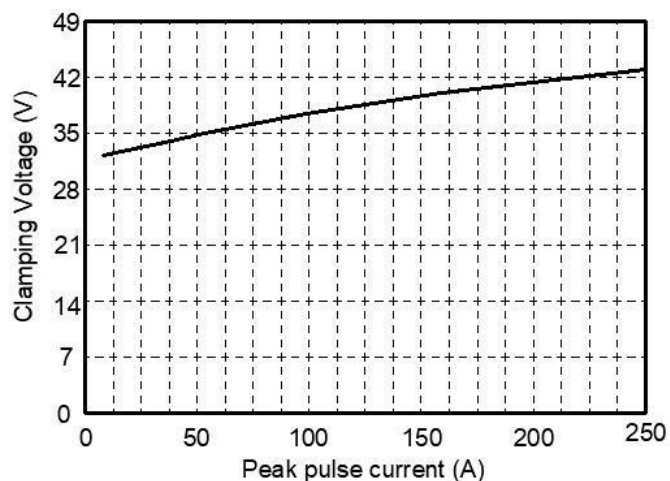
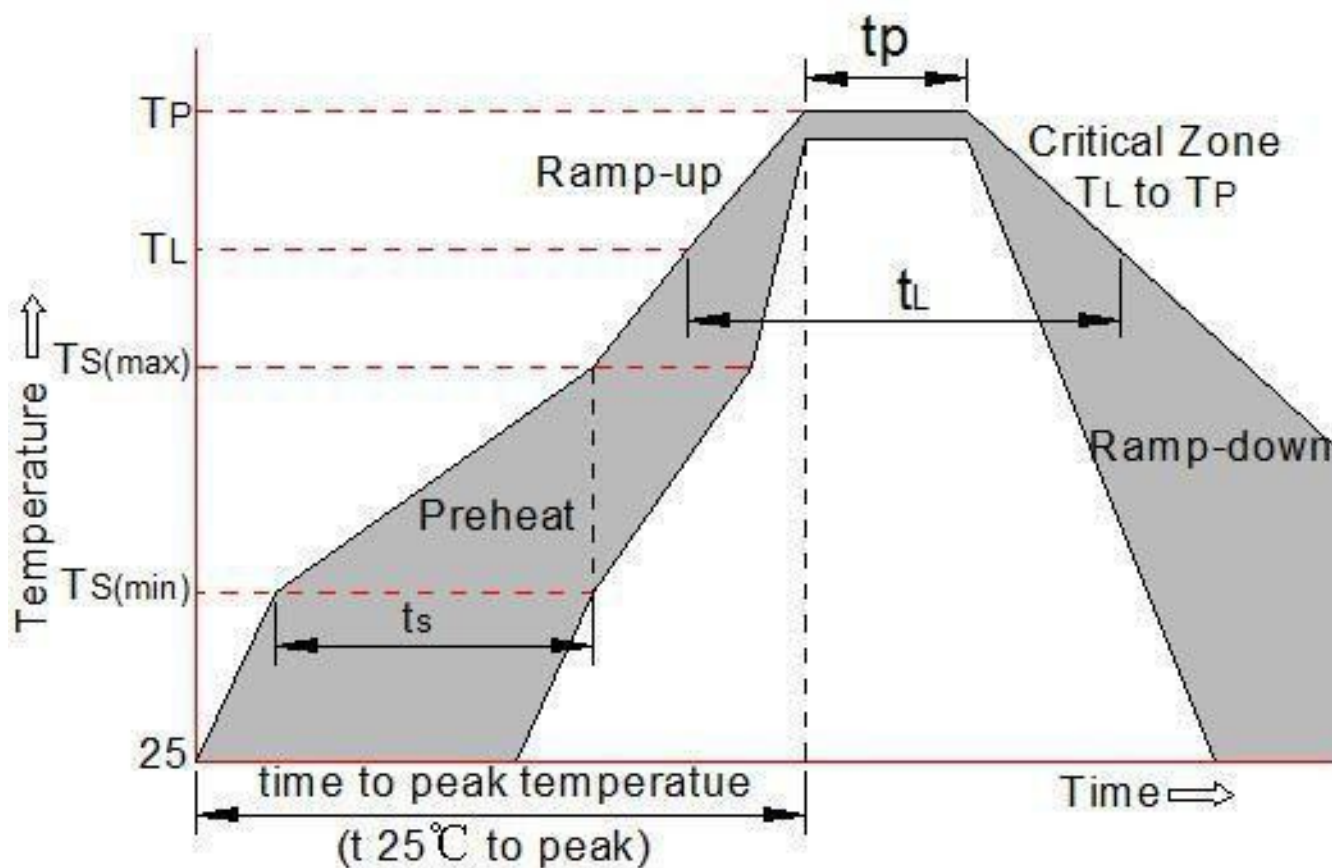


FIG4: Clamping Voltage vs. Peak Pulse Current

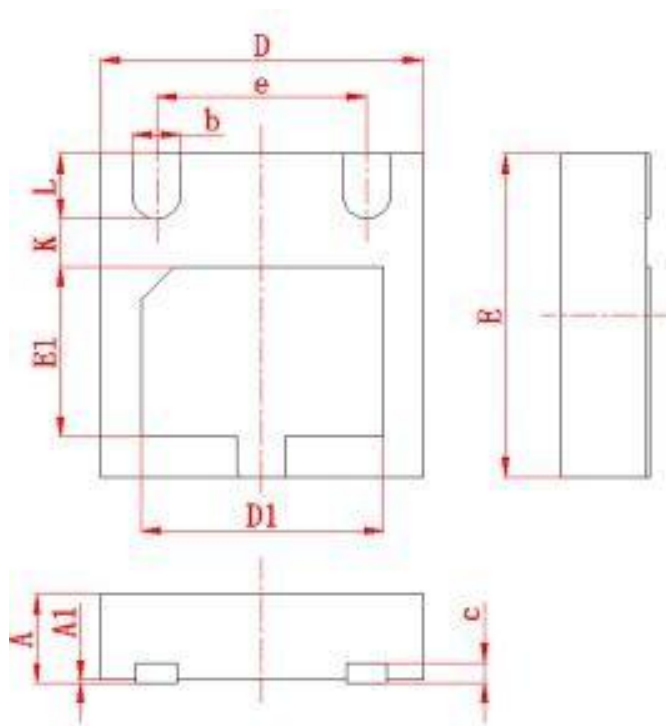


Soldering parameters

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Reflow	-Temperature(T_L) (Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260°C

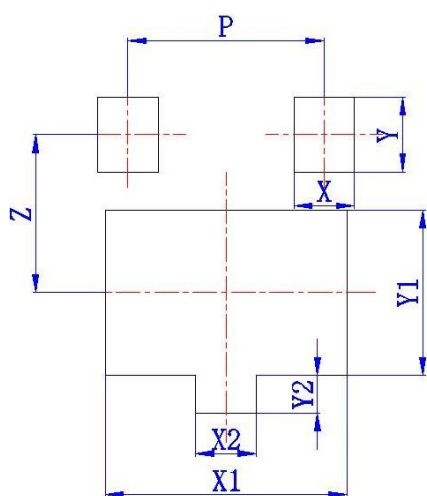


Package mechanical data

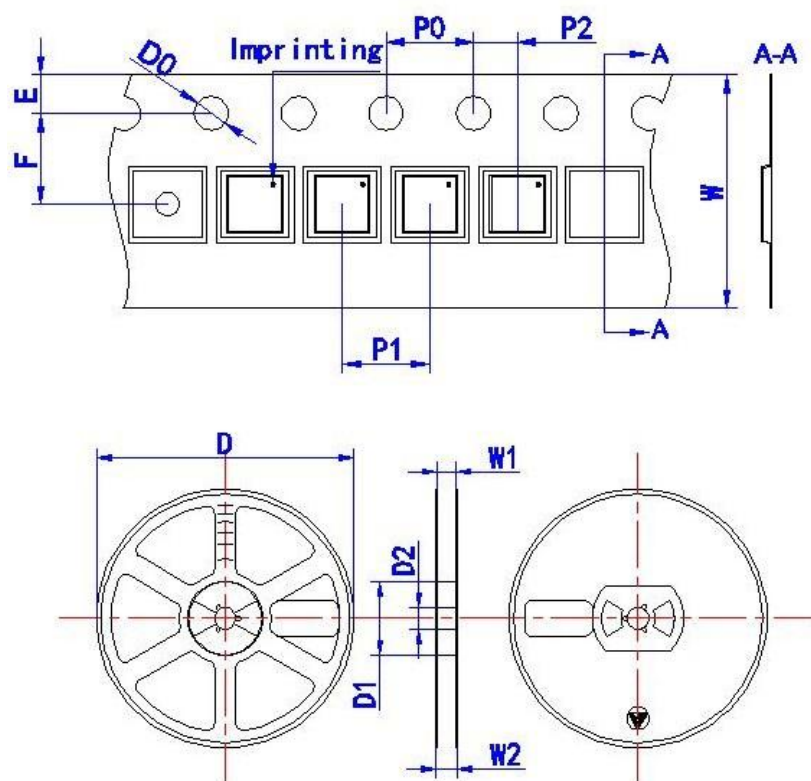


Symbol	Millimeters	
	min	max
A	0.50	0.60
A1	0	0.05
D	1.9	2.1
D1	1.4	1.6
E	1.9	2.1
E1	0.95	1.15
K	(0.3)	
e	(1.3)	
c	(0.127)	
b	0.25	0.35
L	0.35	0.45

Suggested Land Pattern



Symbol	Dimension in Millimeters
	Typ
X	0.4
X1	1.6
X2	0.4
Y	0.5
Y1	1.1
Y2	0.25
P	1.3
Z	1.1

Tape & reel specification - DFN2020-3L


Symbol	Dimension in Millimeters
Tape	
D0	1.50+0.10/-0.00
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
W	8.00+0.3/-0.1
Reel	
D	178.0±2.00
D1	54.40±1.00
D2	13.00±1.00
W1	9.50±1.00
W2	12.30±1.00