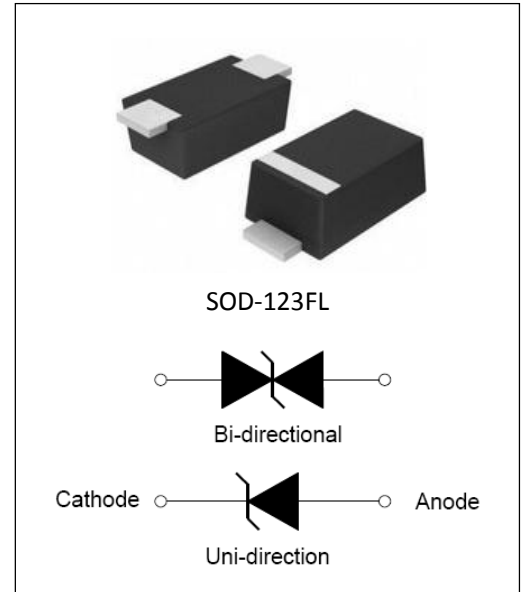


## Features

- Peak power dissipation 200W @10 x 1000 us Pulse
- Low profile package.
- Excellent clamping capability.
- Glass passivated junction.
- Fast response time: typically less than 1ns from 0 Volts to BV min
- Typical  $I_R$  less than 1uA when  $V_{BR}$  min above 15V.
- IEC 61000-4-2 ESD 30KV(Air), 30KV(Contact)
- ESD protection of data lines in accordance with IEC 61000-4-2
- EFT protection of data lines in accordance with IEC 61000-4-4
- Halogen free and RoHS compliant
- Lead-free finish



## Mechanical Characteristics

- CASE: SOD-123FL Molded Plastic over glass passivated junction.
- Mounting Position: Any
- Polarity: by cathode band denotes uni-directional device, none cathode band denotes bi-directional device.
- Terminal: Solder plated

## Maximum Ratings and Characteristics @ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000 us Waveform (Note 1, 2, FIG.1)	$P_{PPM}$	Min 200	W
Peak Pulse Current of on 10/1000us Waveform (Note 1, FIG.3)	$I_{PPM}$	See Table 1	A
Operating Junction Temperature Range	$T_J$	-55 to 150	°C
Storage Temperature Range	$T_{STG}$	-55 to 150	°C

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ\text{C}$  per Fig.2.

**Electrical Specification @ Tamb 25°C**

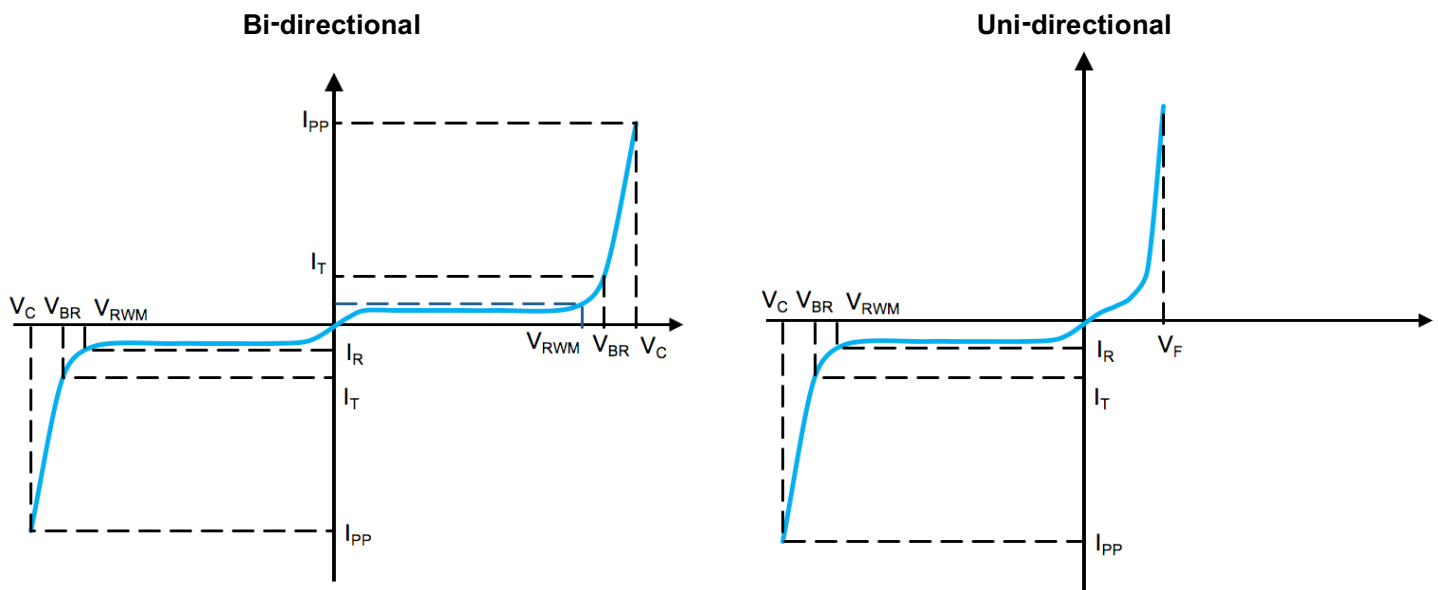
Type Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage Min. @ I <sub>T</sub>	Breakdown Voltage Max. @ I <sub>T</sub>	Test Current	Maximum Clamping Voltage @ I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @ V <sub>RMW</sub>
Uni	Bi	Uni	Bi	V <sub>RMW</sub> (V)	V <sub>BR MIN</sub> (V)	V <sub>BR MAX</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (uA)
SMFJ5.0A	SMFJ5.0CA	5.0A	5.0CA	5.0	6.40	7.00	10	9.2	21.7	400.0
SMFJ6.0A	SMFJ6.0CA	6.0A	6.0CA	6.0	6.67	7.37	10	10.3	19.4	400.0
SMFJ6.5A	SMFJ6.5CA	6.5A	6.5CA	6.5	7.22	7.98	10	11.2	17.9	250.0
SMFJ7.0A	SMFJ7.0CA	7.0A	7.0CA	7.0	7.78	8.60	10	12.0	16.7	100.0
SMFJ7.5A	SMFJ7.5CA	7.5A	7.5CA	7.5	8.33	9.21	1	12.9	15.5	50.0
SMFJ8.0A	SMFJ8.0CA	8.0A	8.0CA	8.0	8.89	9.83	1	13.6	14.7	25.0
SMFJ8.5A	SMFJ8.5CA	8.5A	8.5CA	8.5	9.44	10.40	1	14.4	13.9	10.0
SMFJ9.0A	SMFJ9.0CA	9.0A	9.0CA	9.0	10.00	11.10	1	15.4	13.0	5.0
SMFJ10A	SMFJ10CA	10A	10CA	10.0	11.10	12.30	1	17.0	11.8	2.5
SMFJ11A	SMFJ11CA	11A	11CA	11.0	12.20	13.50	1	18.2	11.0	2.5
SMFJ12A	SMFJ12CA	12A	12CA	12.0	13.30	14.70	1	19.9	10.1	2.5
SMFJ13A	SMFJ13CA	13A	13CA	13.0	14.40	15.90	1	21.5	9.3	1
SMFJ14A	SMFJ14CA	14A	14CA	14.0	15.60	17.20	1	23.2	8.6	1
SMFJ15A	SMFJ15CA	15A	15CA	15.0	16.70	18.50	1	24.4	8.2	1
SMFJ16A	SMFJ16CA	16A	16CA	16.0	17.80	19.70	1	26.0	7.7	1
SMFJ17A	SMFJ17CA	17A	17CA	17.0	18.90	20.90	1	27.6	7.2	1
SMFJ18A	SMFJ18CA	18A	18CA	18.0	20.00	22.10	1	29.2	6.8	1
SMFJ20A	SMFJ20CA	20A	20CA	20.0	22.20	24.50	1	32.4	6.2	1
SMFJ22A	SMFJ22CA	22A	22CA	22.0	24.40	26.90	1	35.5	5.6	1
SMFJ24A	SMFJ24CA	24A	24CA	24.0	26.70	29.50	1	38.9	5.1	1
SMFJ26A	SMFJ26CA	26A	26CA	26.0	28.90	31.90	1	42.1	4.8	1
SMFJ28A	SMFJ28CA	28A	28CA	28.0	31.10	34.40	1	45.4	4.4	1
SMFJ30A	SMFJ30CA	30A	30CA	30.0	33.30	36.80	1	48.4	4.1	1
SMFJ33A	SMFJ33CA	33A	33CA	33.0	36.70	40.60	1	53.3	3.8	1
SMFJ36A	SMFJ36CA	36A	36CA	36.0	40.00	44.20	1	58.1	3.4	1
SMFJ40A	SMFJ40CA	40A	40CA	40.0	44.40	49.10	1	64.5	3.1	1
SMFJ43A	SMFJ43CA	43A	43CA	43.0	47.80	52.80	1	69.4	2.9	1
SMFJ45A	SMFJ45CA	45A	45CA	45.0	50.00	55.30	1	72.7	2.8	1
SMFJ48A	SMFJ48CA	48A	48CA	48.0	53.30	58.90	1	77.4	2.6	1
SMFJ51A	SMFJ51CA	51A	51CA	51.0	56.70	62.70	1	82.4	2.4	1
SMFJ54A	SMFJ54CA	54A	54CA	54.0	60.00	66.30	1	87.1	2.3	1
SMFJ58A	SMFJ58CA	58A	58CA	58.0	64.40	71.20	1	93.6	2.1	1
SMFJ60A	SMFJ60CA	60A	60CA	60.0	66.70	73.70	1	96.8	1.8	1
SMFJ64A	SMFJ64CA	64A	64CA	64.0	71.10	78.60	1	103.0	1.7	1
SMFJ70A	SMFJ70CA	70A	70CA	70.0	77.80	86.00	1	113.0	1.5	1
SMFJ75A	SMFJ75CA	75A	75CA	75.0	83.30	92.10	1	121.0	1.4	1

 ※ For Bi-directional type having V<sub>RMW</sub> of 10 Volts and less, the I<sub>R</sub> limit is double

Type Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage Min. @ $I_T$	Breakdown Voltage Max. @ $I_T$	Test Current	Maximum Clamping Voltage @ $I_{PP}$	Peak Pulse Current	Reverse Leakage @ $V_{RWM}$
Uni	Bi	Uni	Bi	$V_{RWM}(V)$	$V_{BR MIN}(V)$	$V_{BR MAX}(V)$	$I_T (mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
SMFJ78A	SMFJ78CA	78A	78CA	78.0	86.70	95.80	1	126.0	1.4	1
SMFJ85A	SMFJ85CA	85A	85CA	85.0	94.40	104.00	1	137.0	1.3	1
SMFJ90A	SMFJ90CA	90A	90CA	90.0	100.00	111.00	1	146.0	1.2	1
SMFJ100A	SMFJ100CA	100	100C	100.0	111.00	123.00	1	162.0	1.1	1
SMFJ110A	SMFJ110CA	110	110C	110.0	122.00	135.00	1	177.0	1.0	1
SMFJ120A	SMFJ120CA	120	120C	120.0	133.00	147.00	1	193.0	0.9	1
SMFJ130A	SMFJ130CA	130	130C	130.0	144.00	159.00	1	209.0	0.8	1
SMFJ150A	SMFJ150CA	150	150C	150.0	167.00	185.00	1	243.0	0.7	1
SMFJ160A	SMFJ160CA	160	160C	160.0	178.00	197.00	1	259.0	0.7	1
SMFJ170A	SMFJ170CA	170	170C	170.0	189.00	209.00	1	275.0	0.6	1
SMFJ180A	SMFJ180CA	180	180C	180.0	198.00	222.00	1	292.0	0.6	1
SMFJ190A	SMFJ190CA	190	190C	190.0	209.00	233.00	1	308.0	0.5	1

※ For Bi-directional type having  $V_{RWM}$  of 10 Volts and less, the  $I_R$  limit is double

### I-V Curve Characteristics



**$P_{PPM}$  Peak Pulse Power Dissipation** - Max power dissipation

**$V_{RWM}$  Reverse Stand-off Voltage** - Maximum voltage that can be applied to TVS without operation

**$V_{BR}$  Breakdown Voltage** – Maximum voltage that flows through the TVS at a specified current ( $I_T$ )

**$V_C$  Clamping Voltage** – Peak voltage measured across the TVS at a specified  $I_{PPM}$  (peak impulse current)

**$I_R$  Reverse Leakage Current** – Current measured at  $V_R$

**$V_F$  Forward Voltage Drop for Uni-directional**

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

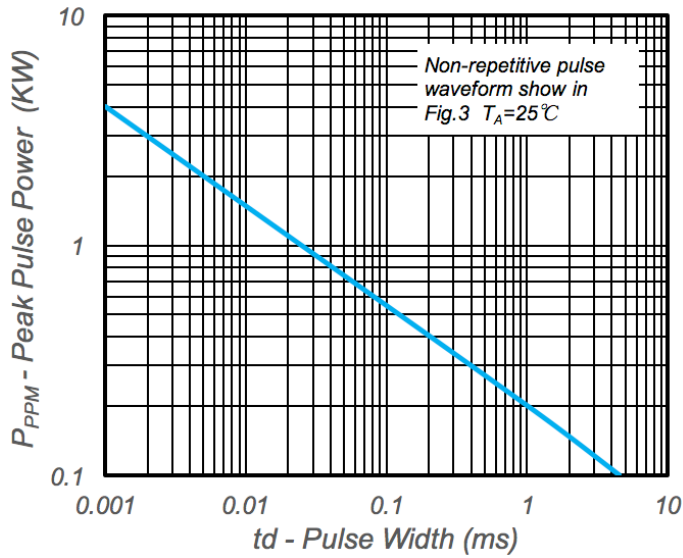


Fig.1 Peak Pulse Power Rating

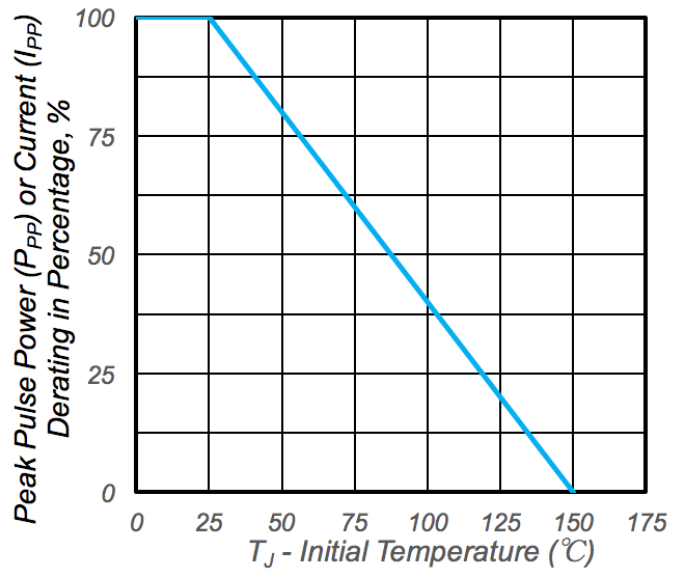


Fig.2 Pulse Derating Curve

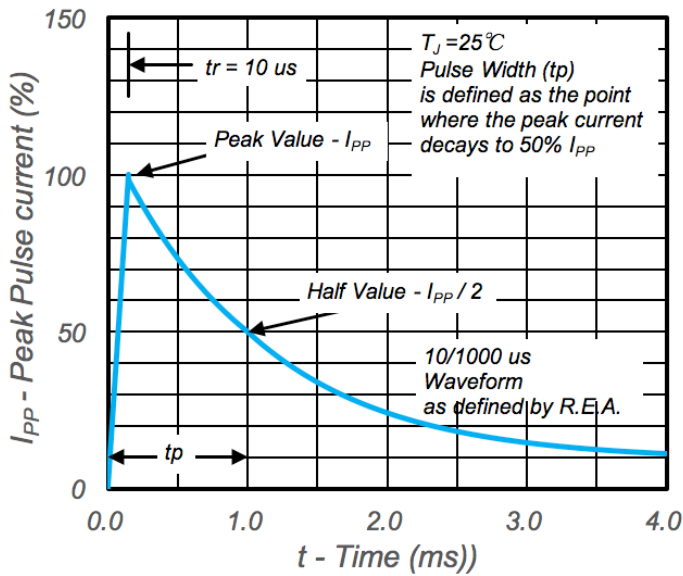


Fig.3 Pulse Waveform

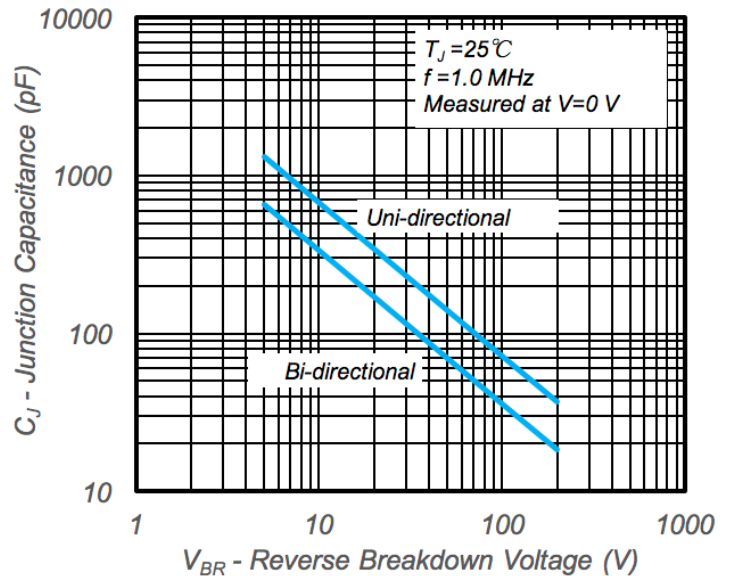
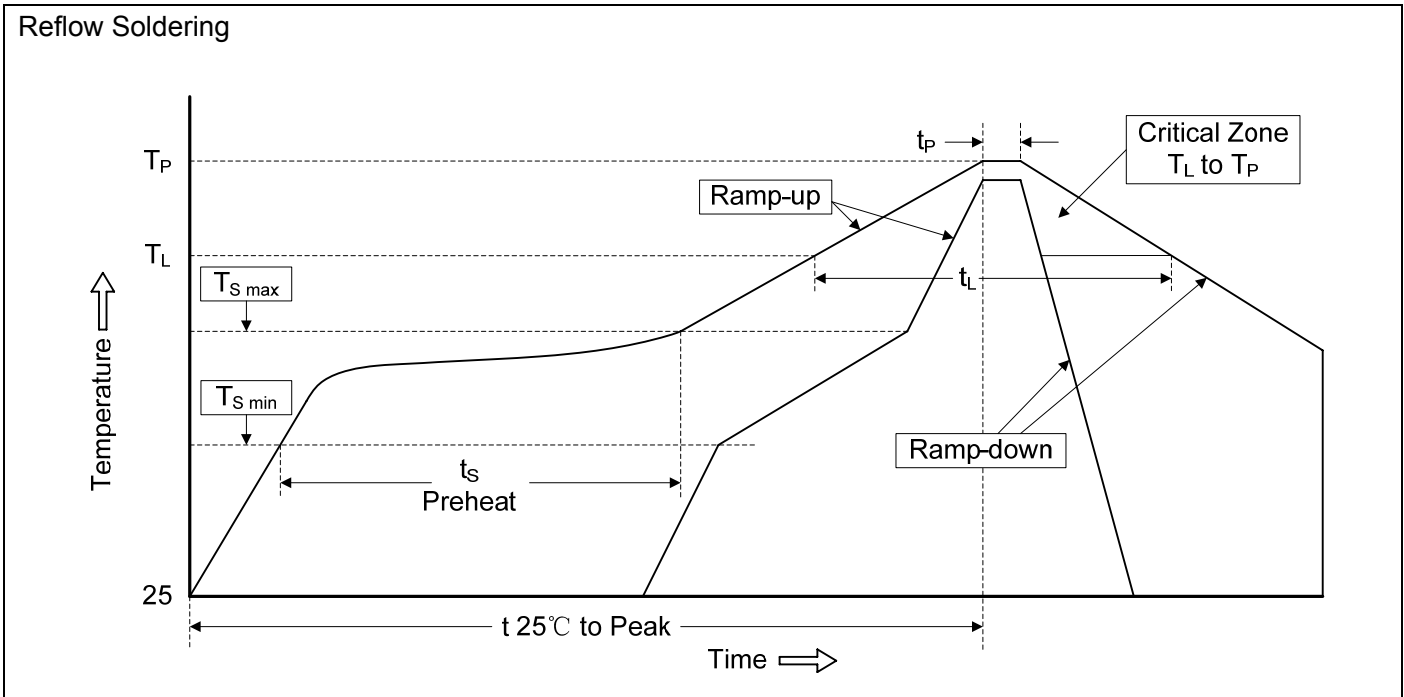


Fig.4 Typical Junction Capacitance

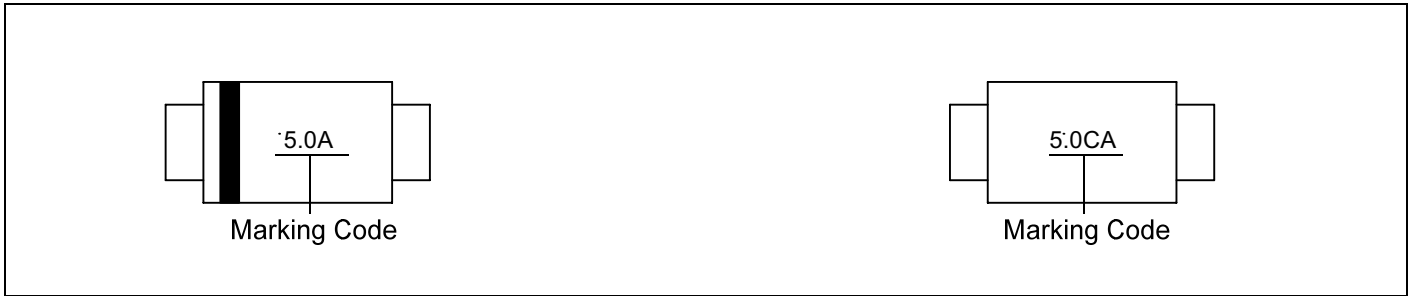
### Recommended Soldering Conditions



#### Recommended Conditions

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

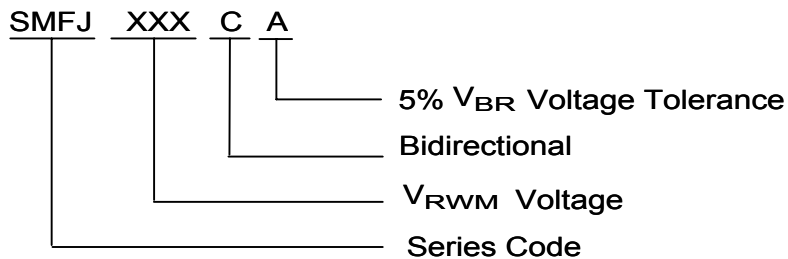
### Marking Code



### Package Outline Dimensions and Pad Layouts (SOD123FL)

Symbol	Dimension			
	millimeters		Inches	
	Min	Max	Min	Max
A	3.50	3.90	0.138	0.154
B	2.60	3.00	0.102	0.118
C	0.75	1.10	0.030	0.043
D	1.60	2.00	0.063	0.079
E	0.80Typ.		0.031Typ.	
F	0.90	1.40	0.035	0.055
G	0.12	0.22	0.005	0.009

### Ordering Information



Packaging

Tape	Symbol	Dimension(mm)	
	W	8.00±0.30	
	P0	4.00±0.10	
	P1	4.00±0.10	
	P2	2.00±0.10	
	D0	Φ1.50±0.10	
	D1	Φ1.00±0.05	
	E	1.75±0.10	
	F	3.50±0.10	
	A	2.00±0.10	
	B	3.95±0.10	
	K	1.40±0.12	
	t	0.23±0.10	
	<p data-bbox="97 1043 175 1077">Reel</p>	D	Φ178.0±2.0
		D2	Φ13.0
		W1	9.5
Quantity: 3000PCS			

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