ESD5FN24C

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ESD5FN24C

65W Surface Mount TVS Bi-directional For ESD Protection- 24V

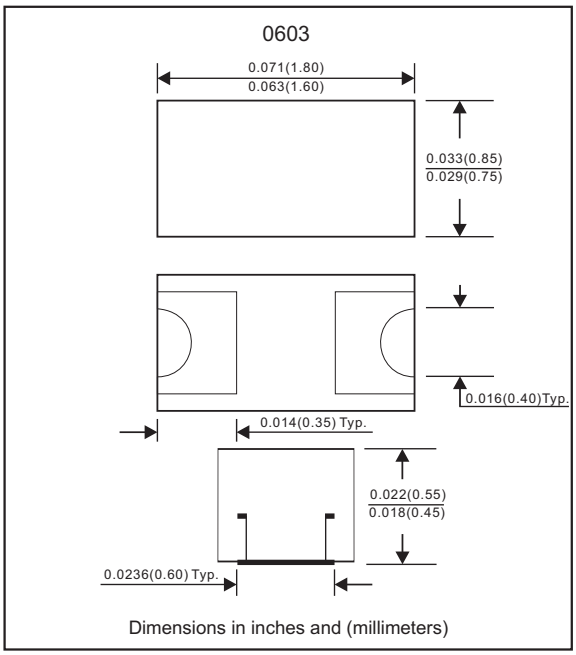
Features

- 65 Watts peak pulse power (tp=8/20us)
- Low clamping voltage
- Working voltages : 24.0V
- Low leakage current
- Provide transient protection:
  IEC 61000-4-2 (ESD) Level 4
  IEC 61000-4-4 (EFT) 80A (5/50ns)
  IEC 61000-4-5 (Surge) (8/20us)
- Suffix "-H" indicates Halogen-free parts, ex. ESD5FN24C-H.

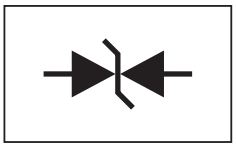
Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case: Molded plastic,0603
- Terminals: Golden Plated terminals, solderable per MIL-STD-750,Method 2026
- Marking Code: X
- Weight: Approximated 0.002gram

Package outline



Schematic & Pin Configuration



Maximum ratings (at T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Peak pulse power	tp = 8/20us	P_{PP}			65	W
Peak pulse current	tp = 8/20us (IEC 61000-4-5)	I_{PP}			1.5	A
ESD per IEC 61000-4-2	Air discharge Contact discharge	ESD			±16 ±8	KV
Operating junction temperature range		T_J	-55		+125	°C
Storage temperature range		T_{STG}	-55		+150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

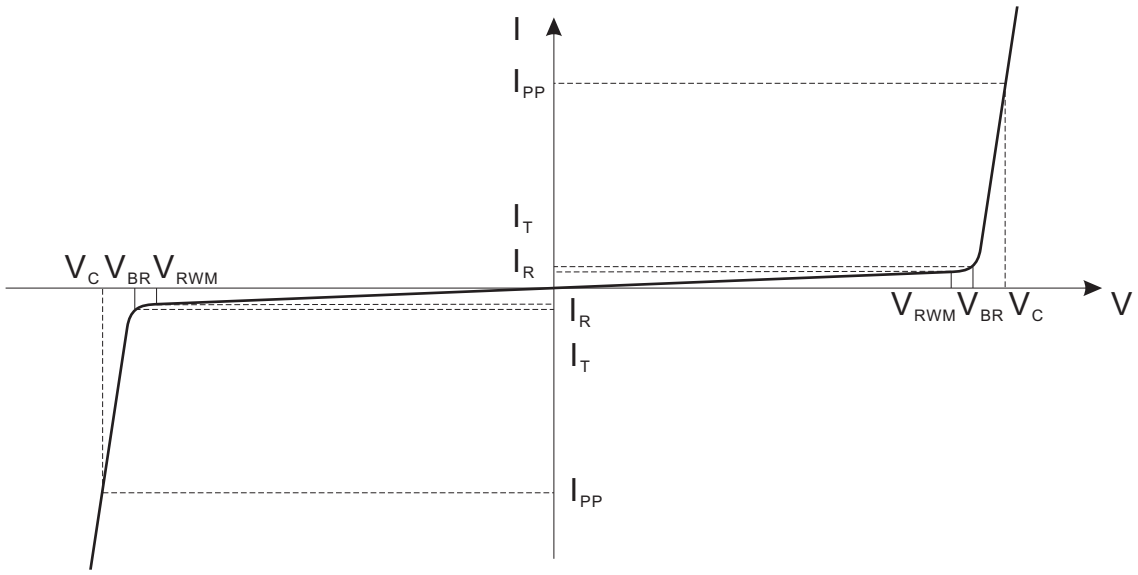
Electrical characteristics (at T_A=25°C unless otherwise noted)

Part No.	V_{RWM}(V) Max.	I_R(uA) @V_{RWM} Max.	I_T(mA)	V_{BR}(V) @I_T Min.	V_C(V) @I_{PP}=1.5A Max.	C_J(pF) @V_R=0V,f=1MHz Max.
ESD5FN24C	24.0	1.0	1.0	25.5	43.0	18.0

Over voltage available upon request.
1. V_{BR} is measured with a pulse test current I_T at anambient temperature of 25°C.
2.Surge current waveform per Figure 1.

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Typical characteristics (at T_A=25°C unless otherwise noted)



Bi-Directional TVS

V_C : Clamping Voltage @ I_{PP}

I_{PP} : Maximum Reverse Peak Pulse Current

V_{RWM} : Maximum Reverse Working voltage

I_R : Maximum Reverse Leakage Current @V_{RWM}

V_{BR} : Breakdown voltage @I_T

I_T : Test Current

P_{PP} : Peak Pulse Power

C_J : Max. Capacitance @V_R = 0V and f = 1MHz

Rating and characteristic curves (ESD5FN24C)

FIG.1- 8 X 20us PULSE WAVEFORM

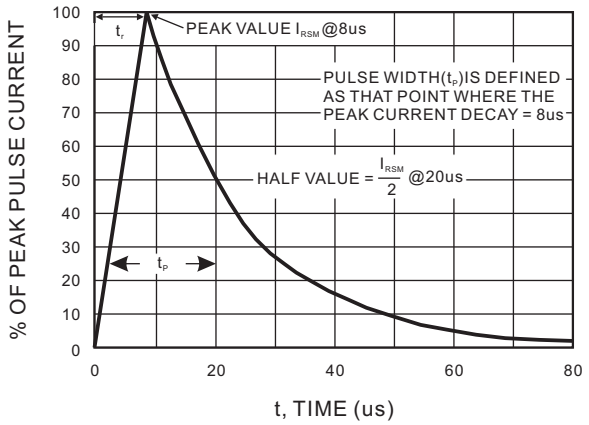


FIG.2- CLAMPING VOLTAGE VS. PEAK PULSE CURRENT

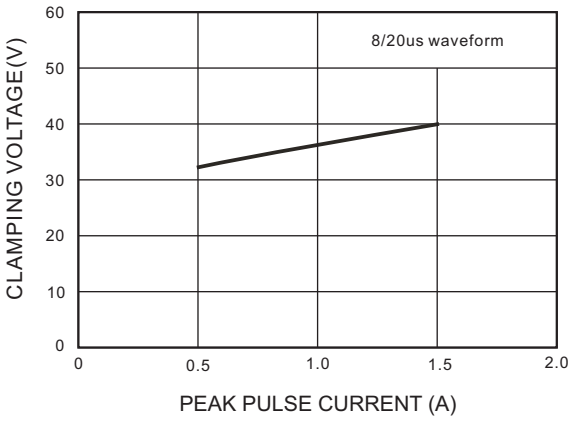


FIG.3- TERMINALS CHARACTERISTICS

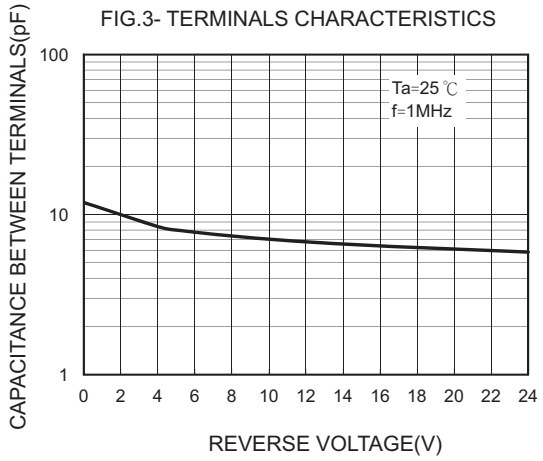
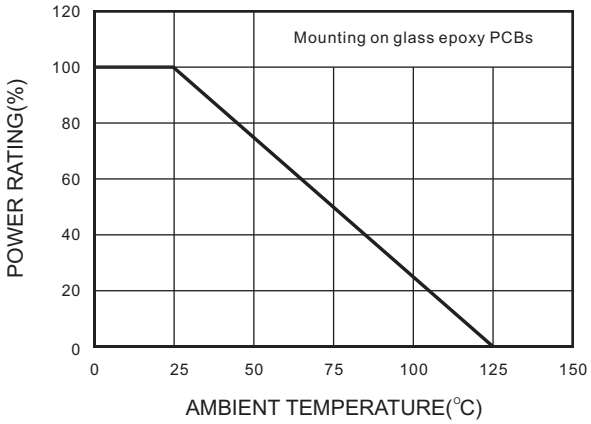


FIG.4- POWER RATING DERATING CURVE

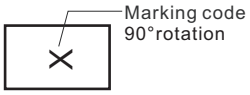


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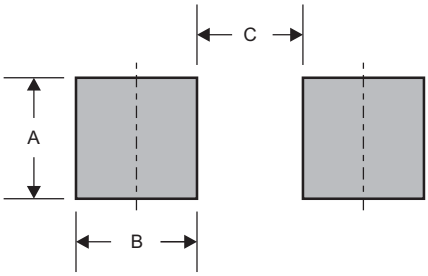
Pinning information

Pin	Simplified outline	Symbol
Bi-Directional		

Marking

Type number	Marking code	Example
ESD5FN24C	X	

Suggested solder pad layout

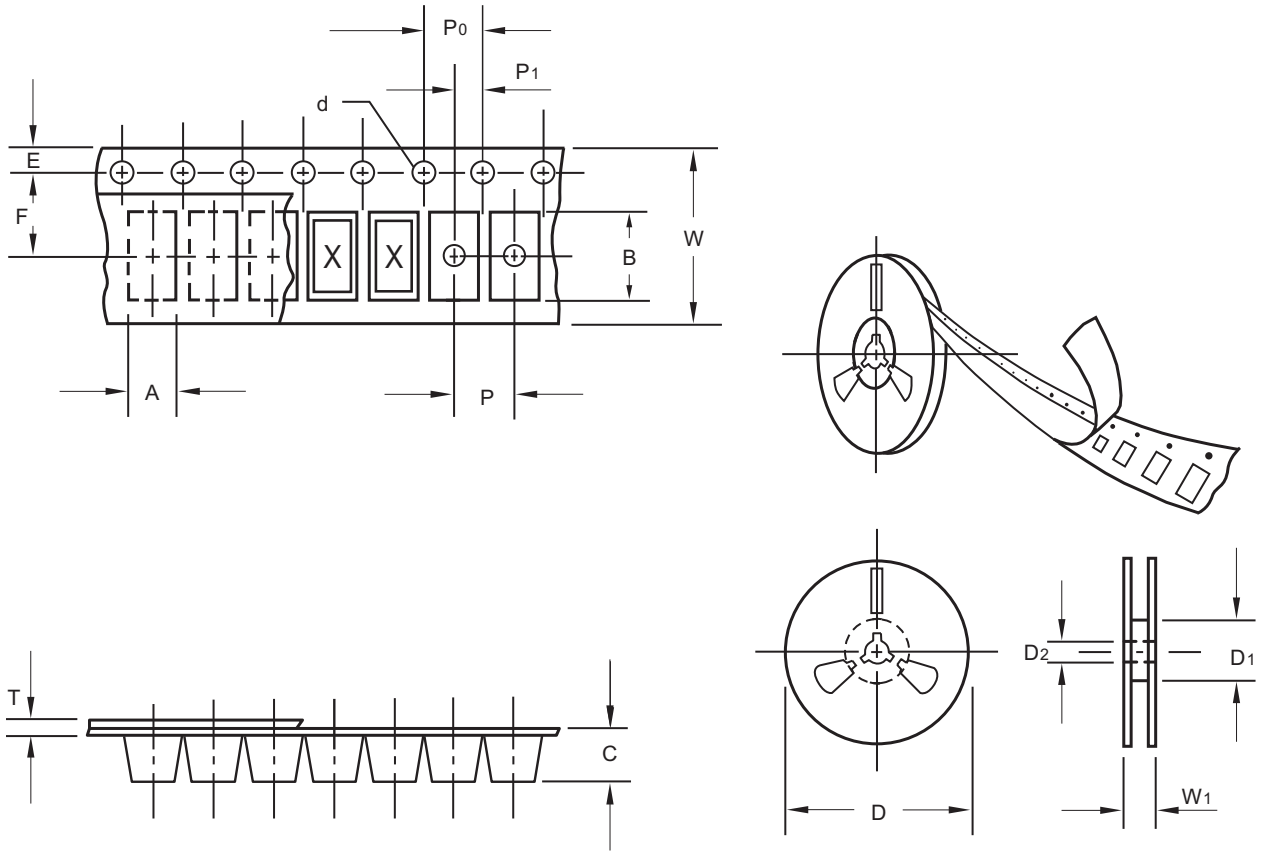


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
0603	0.032 (0.80)	0.028 (0.70)	0.036 (0.90)

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Packing information



unit:mm

Item	Symbol	Tolerance	0603
Carrier width	A	0.1	1.00
Carrier length	B	0.1	1.80
Carrier depth	C	0.1	0.65
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	62.00
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.05	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.05	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.1	8.00
Reel width	W_1	1.0	11.40

Note:Devices are packed in accor dance with EIA standar 481-D and specifications listed above.

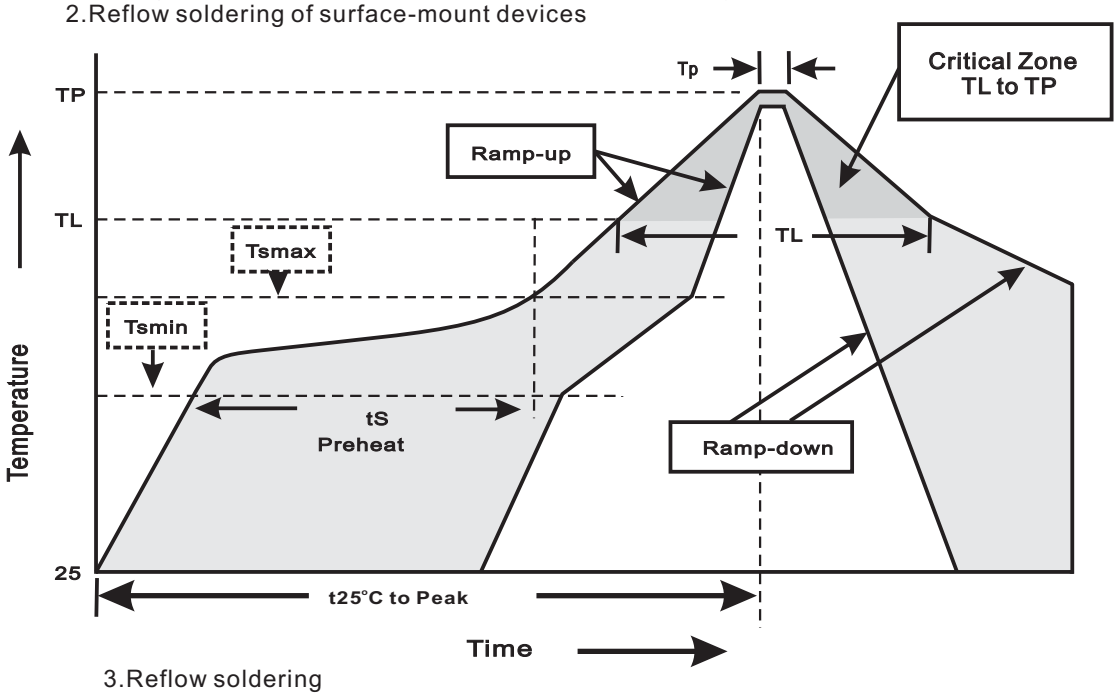
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
0603	7"	5,000	4.0	50,000	183*123*183	178	382*257*387	400,000	9.0

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	 <3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes