

LL05BT0603I

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LL05BT0603I

60W Ultra Low Capacitance Bi-Directional TVS For ESD Protection 5.0V

Features

- Reverse working voltage: 5V.
- Standard capacitance: 0.35 pF.
- Low clamping voltage: $V_C = 15V @ I_{PP} = 4A$.
- Low leakage current.
- Response time < 1ns (typ.).
- Provide transient protection :
IEC 61000-4-2 (ESD) $\pm 20kV$ (Air), $\pm 20kV$ (Contact).
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates halogen-free part, ex. LL05BT0603I-H.

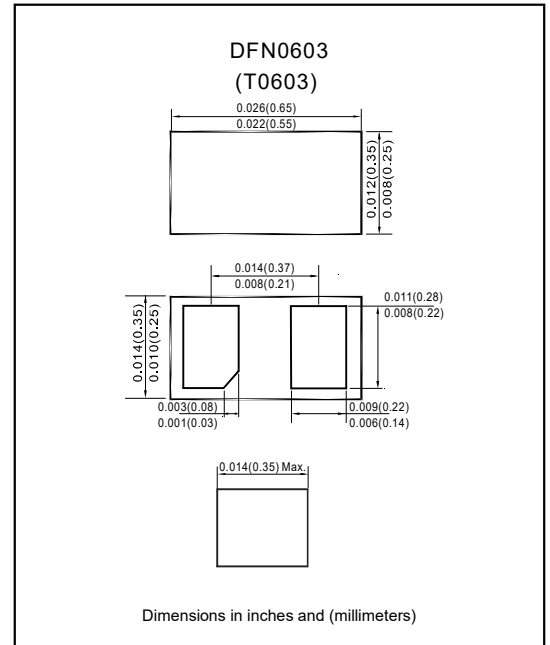
Applications

- Smartphones, table computersn
- Blu-ray and DVD recorders and players.
- Video equipment and accessories.

Mechanical data

- Epoxy : UL94-V0 rated flame retardant.
- Case : Molded plastic, DFN0603 (T0603) .

Package outline



Maximum ratings (at $T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Units
Peak pulse power (8/20 μs)	P_{PK}	60	W
ESD per IEC61000-4-2 (Air)	V_{ESD}	± 20	kV
ESD per IEC61000-4-2 (Contact)		± 20	
Operating temperature	T_J	+85	$^\circ C$
Storage temperature range	T_{STG}	-55 to +150	$^\circ C$

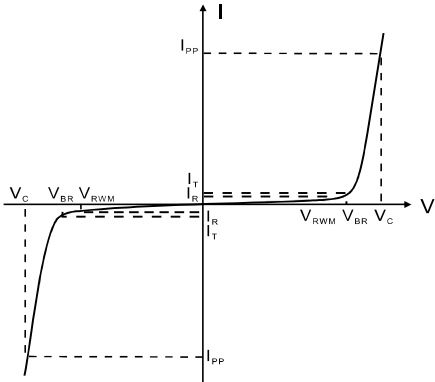
Electrical Characteristics (At $T_A = 25^\circ C$ unless otherwise noted)

Parameter	Test condition	Symbol	Min.	Typ.	Max.	Units
Reverse working voltage		V_{RWM}			5	V
Breakdown voltage	$I_T = 1mA$	V_{BR}	6		9	V
Reverse leakage current	$V_{RWM} = \pm 5V$	I_R			100	nA
Clamping voltage	$I_{PP} = 1.0A, t_p = 8/20\mu s$	V_C			10	V
Clamping voltage	$I_{PP} = 4.0A, t_p = 8/20\mu s$				15	
Junction capacitance	$V_R = 0V, f = 1.0MHz$	C_J		0.35		pF

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Rating and characteristic curves

Symbol	Parameter
V_{RWM}	Nominal reverse working voltage
I_R	Reverse leakage current@ V_{RWM}
V_{BR}	Reverse breakdown voltage@ I_T
I_T	Test current for reverse breakdown
V_C	Clamping voltage @ I_{PP}
I_{PP}	Maximum peak pulse current
P_{PK}	Peak power dissipation
C	Maximum capacitance @ $V_R=0$, $f=1\text{MHz}$



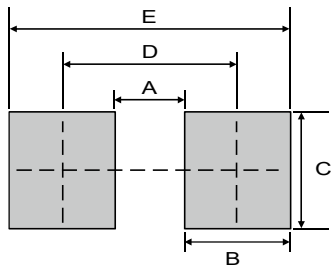
Pinning information

Pin	Simplified outline	Symbol
Bi-Directional		

Marking

Type number	Marking code
LL05BT0603I	U5

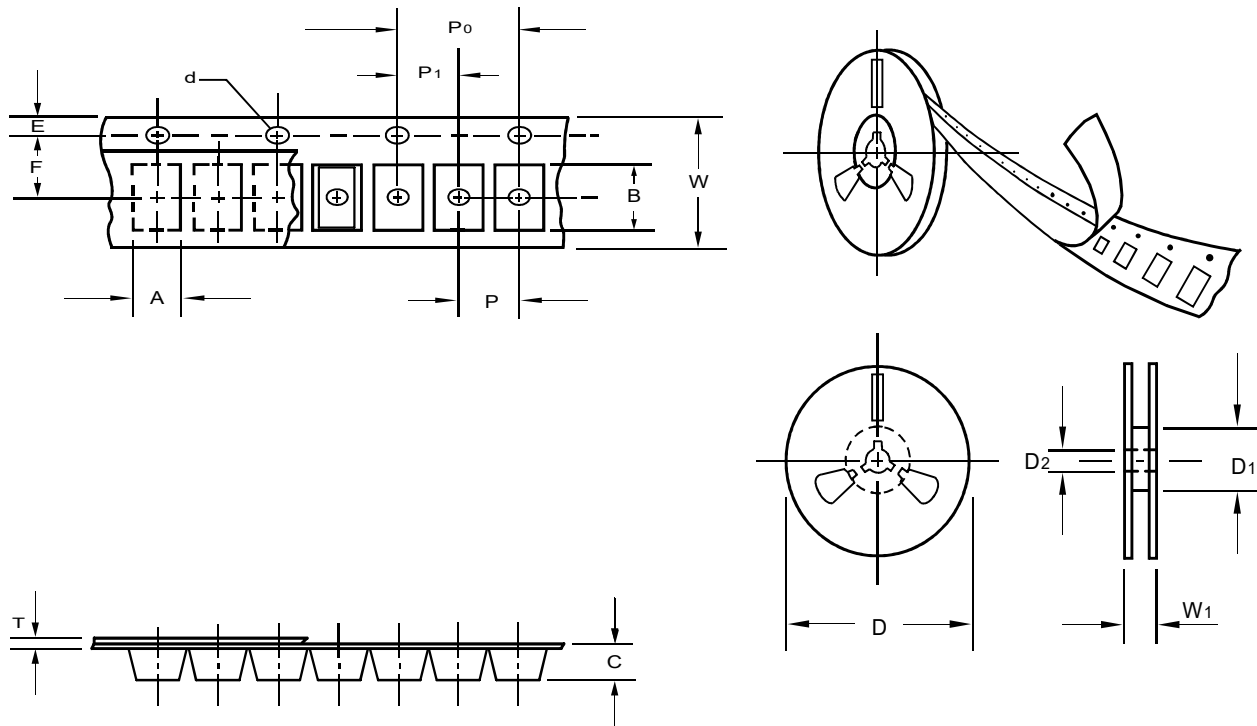
Suggested solder pad layout



Size	T0603	
	(mm)	(inch)
A	0.15	0.006
B	0.23	0.009
C	0.30	0.012
D	0.38	0.015
E	0.61	0.024

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Packing information



unit:mm

Item	Symbol	Tolerance	DFN0603 (T0603)
Carrier width	A	0.1	0.37
Carrier length	B	0.1	0.67
Carrier depth	C	0.1	0.32
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.0
7" Reel inner diameter	D1	min	60.0
Feed hole diameter	D2	0.5	13.5
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.5
Punch hole pitch	P	0.1	2.0
Sprocket hole pitch	P0	0.1	4.0
Embossment center	P1	0.1	2.0
Overall tape thickness	T	0.1	0.2
Tape width	W	0.3	8.0

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

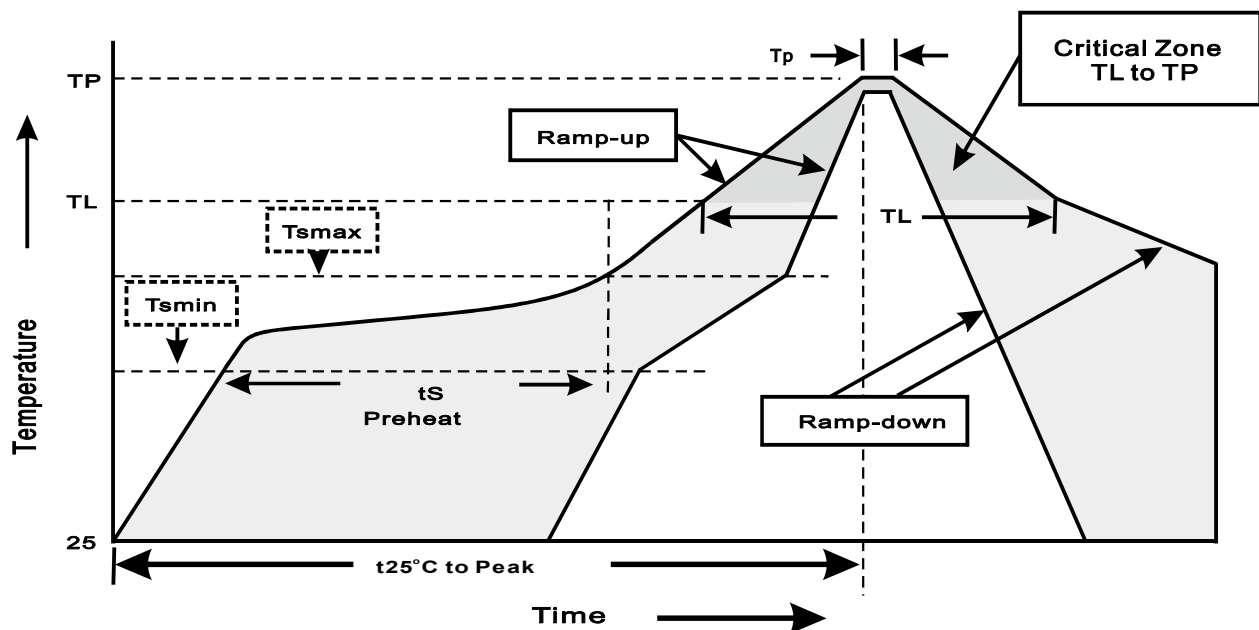
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Reel packing

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)
DFN0603 (T0603)	7"	10,000	4.0	100,000	183*123*183	178	382*257*387	800,000

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(T _{smin}) -Temperature Max(T _{smax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smax} 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