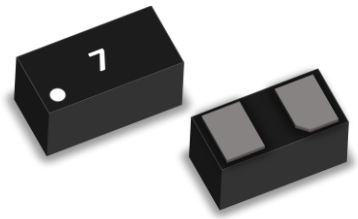


UT8005B

BIDIRECTIONAL ▲ TVS DIODE

TVS DIODE ▲ SMD type
ESD Protection for line
Bidirectional protection
Junction capacitance ▲ 15pF
0.6mm x 0.3mm x 0.3mm ▲ DFN0603-2L package
AEC-Q101 qualified

SPECIFICATION

Item		Characteristics
Operating Junction Temperature Range	T_J	-55°C to +125°C
Storage Temperature Range	T_S	-55°C to +150°C
Peak Pulse Current (8/20μs)	I_{PP}	12.5A
ESD Rating (Per IEC 61000-4-2 ▲ Contact)	V_{ESD}	±30kV
ESD Rating (Per IEC 61000-4-2 ▲ Air)	V_{ESD}	±30kV

DESCRIPTION

The UT8005B is a bidirectional Transient Voltage Suppressor (TVS) designed to protect 5.0V circuits from transient events such as high Electrostatic Discharge (ESD) and Cable Discharge Event (CDE).

This device uses a proprietary clamping cell technology. During transient events, these cells clamp transient over-voltages on power, control data signals and protect sensitive circuitry.

EMC STANDARDS

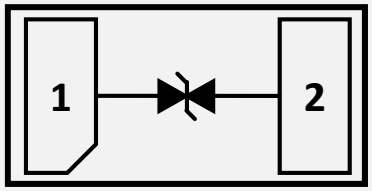
- ▲ **IEC 61000-4-2 (ESD): ±30kV (Contact)**
- ▲ **IEC 61000-4-2 (ESD): ±30kV (Air)**
- ▲ **IEC 61000-4-4 (EFT): 50A (5/50ns)**
- ▲ **IEC 61000-4-5 (Lightning): 12.5A (8/20μs)**

APPLICATIONS

Automotive	Battery Contacts	Computer Equipment	Digital Cameras	5V Systems

PIN DESCRIPTION

Circuit Diagram ▪ Bottom View



ELECTRICAL CHARACTERISTICS ▲ T_J = 25°C, unless otherwise noted

Item	Condition	Symbol	Min.	Typ.	Max.	Unit
Reverse Working Voltage	Pin 1 to Pin 2	V_{RWM}	-5		5	V
Breakdown Voltage	I_{BR} = 1mA, Pin 1 to Pin 2	V_{BR}	6		9	V
Reverse Leakage Current	V_{RWM} = 5V, Pin 1 to Pin 2	I_R			1	μA
TLP Clamping Voltage Note1	I_{TLP} = 16A, Pin 1 to Pin 2	V_C		7.2		V
TLP Dynamic Resistance Note2	Pin 1 to Pin 2	R_{DYN}		0.1		Ω
Junction Capacitance	V_R = 0V, f = 1MHz, Pin 1 to Pin 2	C_J		15		pF

Note

1: t_{period} = 100ns, t_r = 1ns

2: t_{period} = 100ns, t_r = 1ns

TYPICAL OPERATING CHARACTERISTICS

Fig. 1 ▪ Junction Capacitance (Pin 1 to Pin 2)

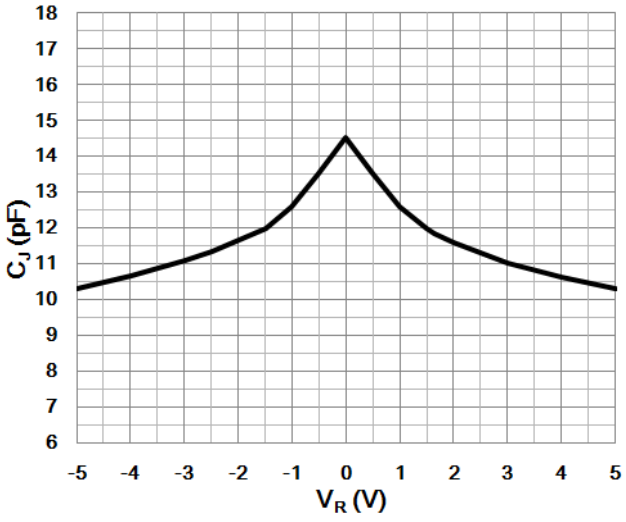
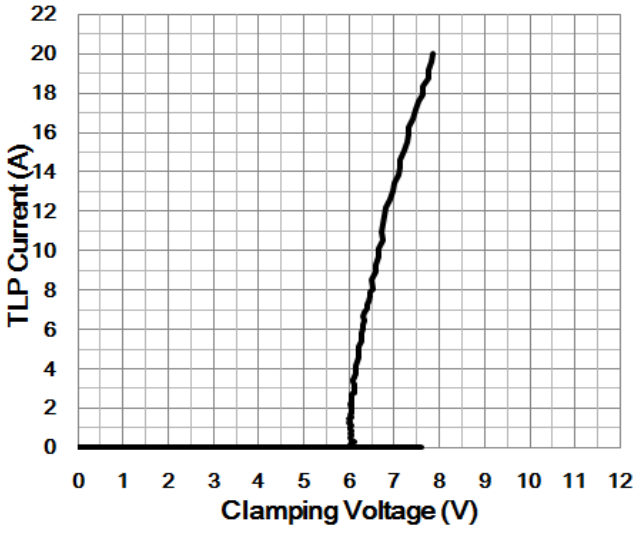
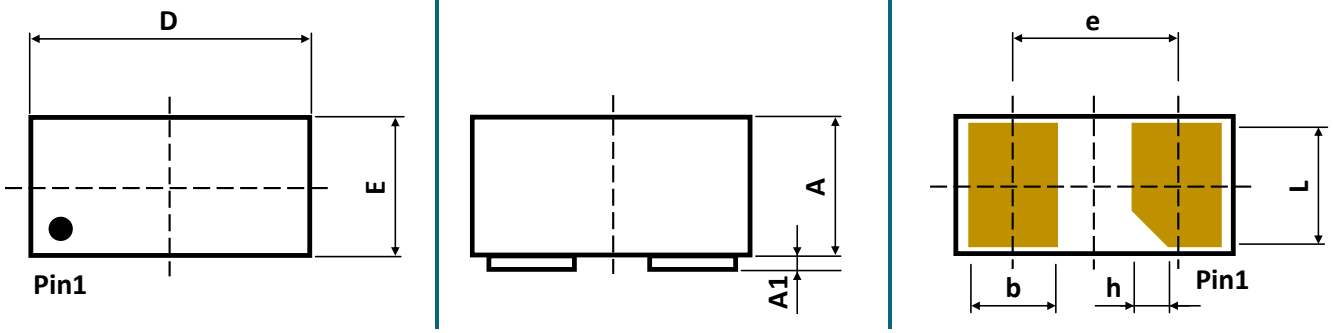


Fig. 2 ▪ TLP Clamping Voltage (t_{period} = 100ns, t_r = 1ns)

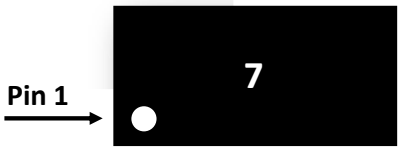


PACKAGE OUTLINE AND PART MARKING

Top View	Side View	Bottom View



Sym	Millimeters (Min.)	Millimeters (Typ.)	Millimeters (Max.)
A	0.25	0.30	0.35
A1	0.00	0.02	0.05
b	0.13	0.18	0.24
D	0.55	0.60	0.65
E	0.25	0.30	0.35
e		0.35 BSC	
L	0.20	0.25	0.30
h	0.00	0.05	0.10



Marking:

7: Product code
UT8005B

Note

1: Package Outline Unit Description:
BSC: Basic. Represents theoretical exact dimension or dimension target.
MIN: Minimum dimension specified
MAX: Maximum dimension specified
REF: Reference. Represents dimension for reference use only. This value is not a device specification.
TYP: Typical. Provided as a general value. This value is not a device specification.

2: Dimensions in Millimeters

3: Drawing not to scale

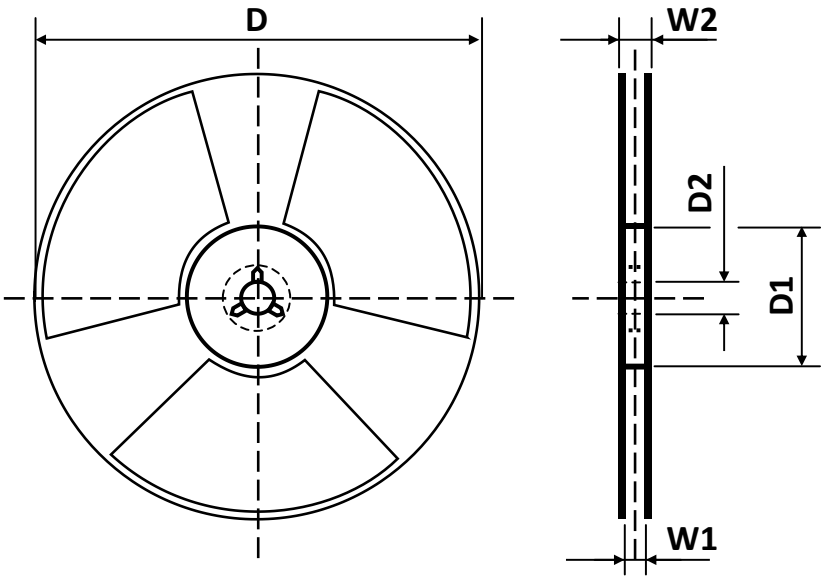
4: These dimensions do not include mold flash or protrusions. Mold flash or protrusions shall not exceed 0.15mm.

ORDERING INFORMATION

Part Number	Package Type	Package Code	Part Marking	Parameter
UT8005BD42	DFN0603-2L	D42	7	7 = Product Code

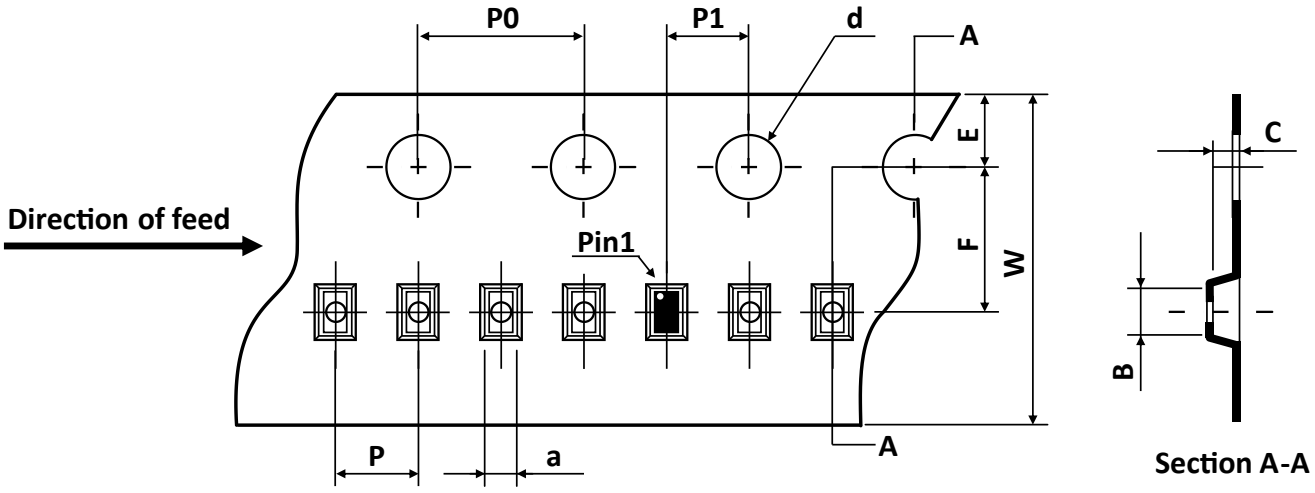
Package Type	Vacuum Package			
DFN0603-2L	Packing	Reel 180mm (7”)	Inner Box (3 Reels)	Carton (12 Boxes)
	Tape and Reel	12 000pcs	36 000pcs	432 000pcs

REEL DIMENSIONS ▲ All dimensions in mm



Tape Size	Reel Size	D	D1	D2	W1	W2
8mm	7 inch	Ø178.00	54.40	13.00	9.50	12.30

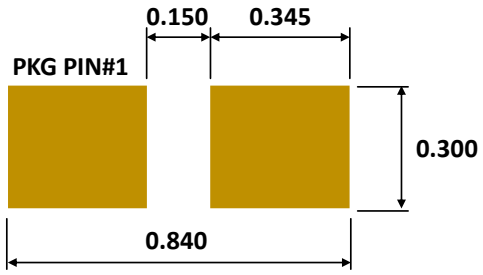
TAPE DIMENSIONS ▲ All dimensions in mm



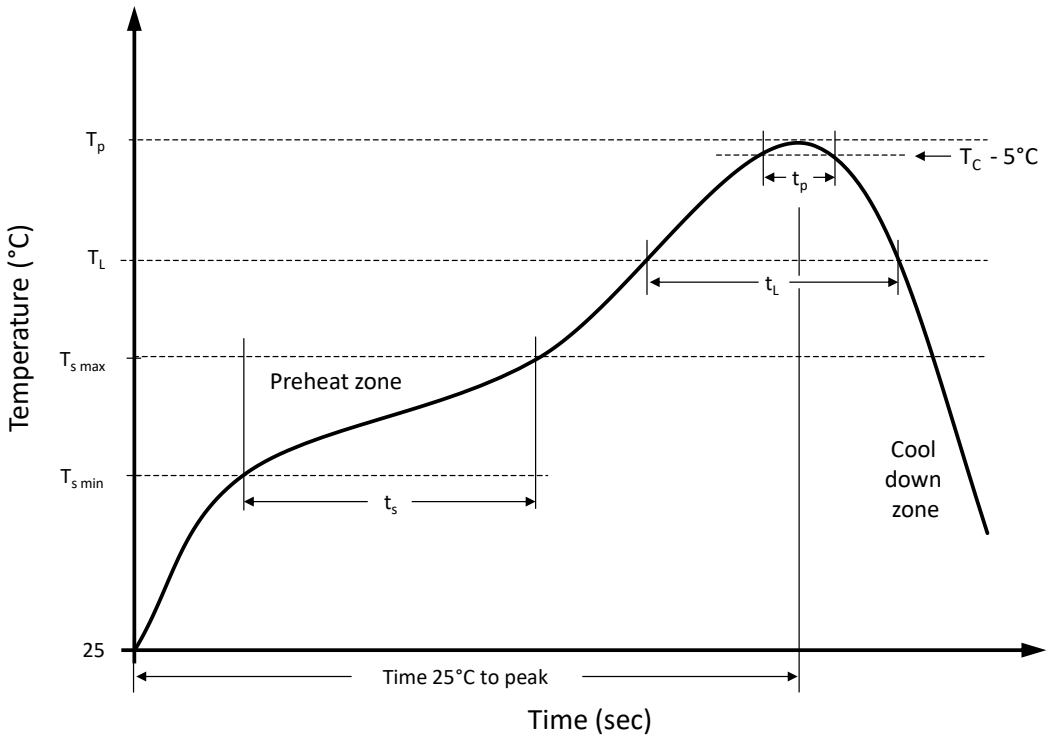
Package	a	B	C	d	E	F	P0	P	P1	W
DFN0603-2L	0.41	0.70	0.38	1.50	1.75	3.50	4.00	2.00	2.00	8.00

Note: **All dimensions meet EIA-481-D requirements.**

RECOMMENDED PAD LAYOUT FOR DFN0603-2L ▲ All dimensions in mm



RECOMMENDED REFLOW SOLDERING PROFILE



Recommended reflow soldering conditions ▲ Refer to JEDEC J-STD-020E

Profile Features		Sn-Pb Eutetic Assembly	Pb-Free Assembly
Preheat temperature min.	$T_{s\,min}$	100 °C	150 °C
Preheat temperature max.	$T_{s\,max}$	150 °C	200 °C
Preheat time t_s from $T_{s\,min}$ to $T_{s\,max}$	t_s	120 seconds	120 seconds
Ramp-up rate (T_L to T_p)		max. 3 °C/second	max. 3 °C/second
Liquidous temperature	T_L	183 °C	217 °C
Time t_L maintained above T_L	t_L	150 seconds max.	150 seconds max.
Peak package body temperature	T_p	235°C	260°C
Timeframe of within 5°C below and up to max actual peak body temperature	t_p	20 seconds max.	30 seconds max.
Ramp-down rate (T_L to T_p)		max. 6 °C/second	max. 6 °C/second
Time 25°C to peak temperature		max. 6 minutes	max. 8 minutes

REVISION TABLE

Revision	Date	Status	Notes
001	01/10/2021	Initial release	Initial publication

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