

Bi-directional ESD protection devices

Features

- Capacitance 12pF typ.
- Low clamping voltage
- Small body outline dimensions: 0.60mmx0.30mm
- Low body height: 0.28 mm
- Stand-off voltage: 5.0V
- Low leakage current
- Response time is typically < 1 ns
- Protection high speed data line to:
 - IEC61000-4-2 $\pm 25\text{kV}$ contact $\pm 25\text{kV}$ air
 - IEC61000-4-4 (EFT) 40A (5/50ns)
 - IEC61000-4-5 (lightning) 6A (8/20 μs)
- Solid-state silicon-avalanche technology
- These are Pb-free devices

Product Description

LT4C051V is a Bi-directional ESD protection devices. It has been specifically designed to protect sensitive

electronic components which are connected to low speed data lines and control lines from over-stress caused by ESD (electrostatic discharge), EFT (electrical fast transients) and lightning.

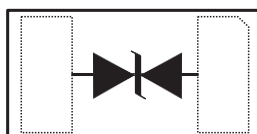
Applications

- Cellular handsets and accessories
- Personal digital assistants (PDA's)
- Tablets
- Other portable devices
- Computer and peripherals
- Network communication devices

Mechanical Characteristics

- DFN0603-2L package
- Marking: marking code
- Packaging: tape and reel per EIA 481
- RoHS compliant

Circuit Diagram



DFN0603 (Top View)



Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power ($t_p = 8/20\mu s$)	P_{PP}	65	Watts
Peak Pulse Current ($t_p = 8/20\mu s$) (note1)	I_{PP}	6.0	A
ESD per IEC 61000-4-2 (Air)	V_{ESD}	25	kV
ESD per IEC 61000-4-2 (Contact)		25	
Lead Soldering Temperature	T_L	260(10 sec)	$^{\circ}C$
Junction Temperature	T_J	- 55 to +125	$^{\circ}C$
Storage Temperature	T_{STG}	- 55 to +125	$^{\circ}C$

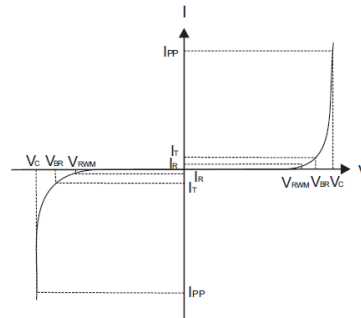
Note1: 8/20 μs pulse waveform.

Electrical Characteristics

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse working Voltage	V_{RWM}				5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1mA$	5.5			V
Reverse leakage current	I_R	$V_{RWM} = 5V, T_A = 25^{\circ}C$		0.1	0.5	μA
Peak Pulse Current	I_{PP}	$t_p = 8/20\mu s$			6.0	A
Clamping Voltage	V_C	$I_{PP} = 6A, t_p = 8/20\mu s$			11	V
Junction capacitance	C_J	$V_R = 0V, f = 1MHz$		12		pF

Electrical Parameters ($T_A = 25^{\circ}C$ unless otherwise noted)

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current



Typical Characteristics

Figure.1 Non-Repetitive Peak Pulse Power vs. Pulse Time

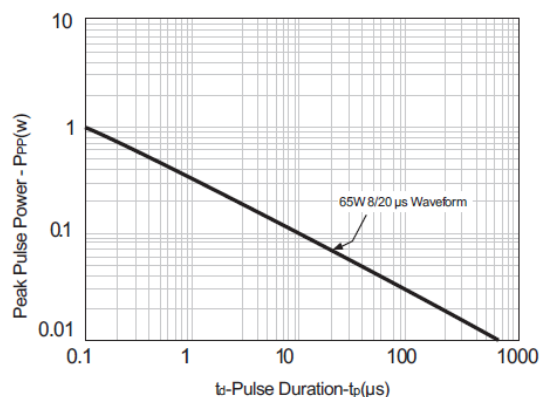


Figure.2 Power Derating Curve

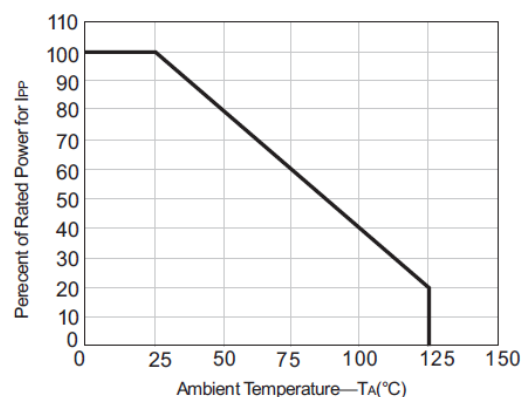


Figure.3 Pulse Waveform

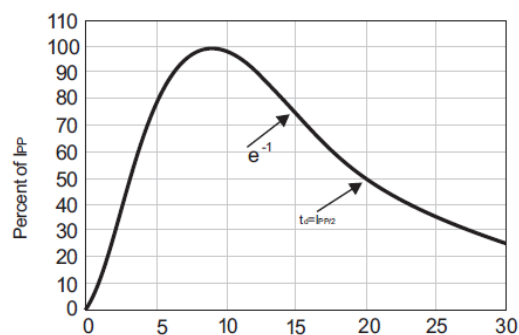
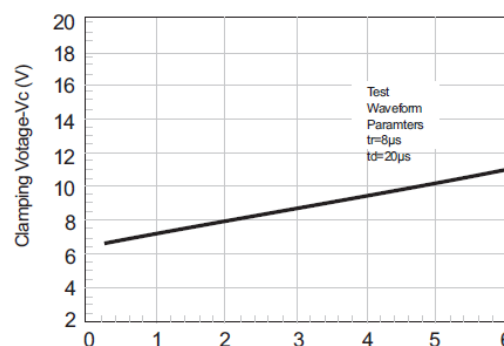
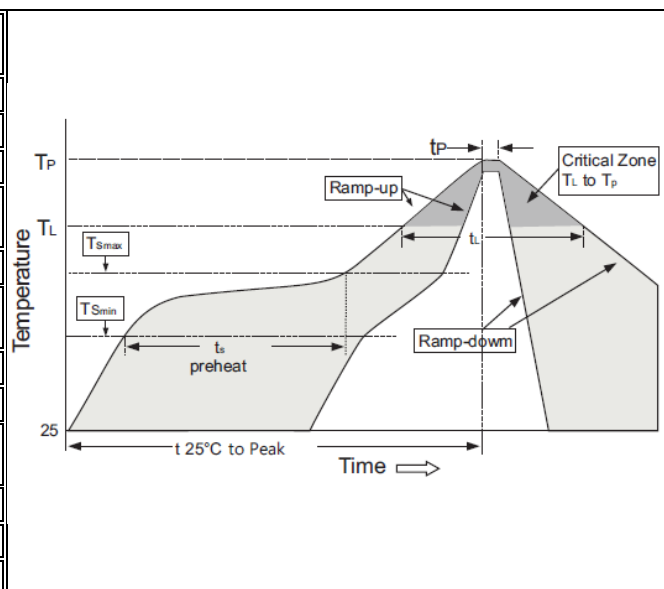


Figure.4 Clamping Voltage vs. Ipp

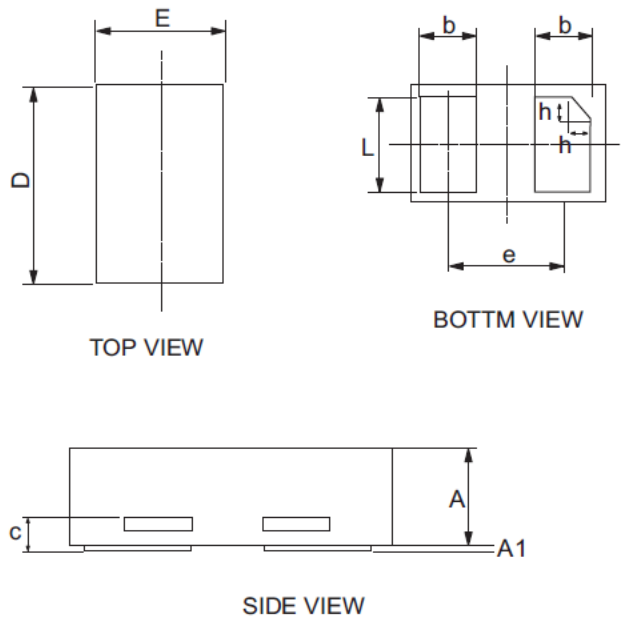


Soldering Parameters

Reflow Condition		Fb-Free assembly
Pre Heat	Temperature Min ($T_{S(\text{Min})}$)	150°C
	Temperature Max ($T_{S(\text{Max})}$)	200°C
	Temperature Max (T_S)	60-180 secs
Average ramp up rate (Liquidus)Temp (T_L) To peak		3°C/second Max
$T_{S(\text{Max})}$ to T_L -Ramp-up Rate		3°C/second Max
Reflow	Temperature (T_L)(Liquidus)	217°C
	Temperature (t_L)	60-150 seconds
Peak Temperature (T_P)		260 ^{+0/-5} °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 (T_P)		8 minutes Max
Do not exceed		260°C

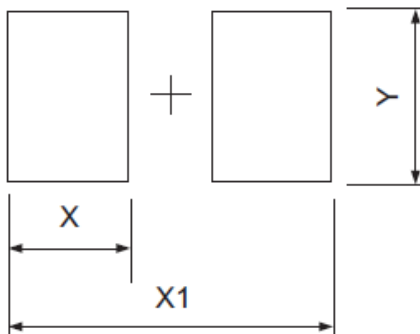


Outline Drawing - DFN0603



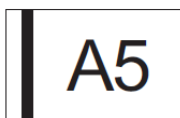
SYMBOL	DIMENSIONS		
	MIN	TYP	MAX
A	0.28	0.30	0.34
A1	0.00	0.02	0.05
C	0.05	0.10	0.15
D	0.55	0.60	0.65
E	0.25	0.30	0.30
e	0.40		
b	0.13	0.19	0.24
L	0.20	0.25	0.30
h	0	0.05	0.10

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).



DIMENSIONS	
DIM	MM
X	0.23
X1	0.61
Y	0.30

Marking Codes



Ordering Information

Part number	Package	MPQ (PCS)	Packaging Option
LT4C051V	DFN0603	10,000	Tape and reel