L2V54BT3020

List

L2V54BT3020

Two Line Pairs TVS Diode For ESD Protection : 2.5V

Features

- Array of surge rated diode with internal TVS diode.
- Provides protection for two differential data pairs (4 channels).
- Provide transient protection :
  IEC 61000-4-2 (ESD) ±30kV(Contact), ±30kV(Air).
  IEC 61000-4-4 (EFT) 40A (5/50ns).
  IEC 61000-4-5 (Lightning) 40A (8/20us).
- Solid-state silicon-avalanche technology.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex.L2V54BT3020-H.

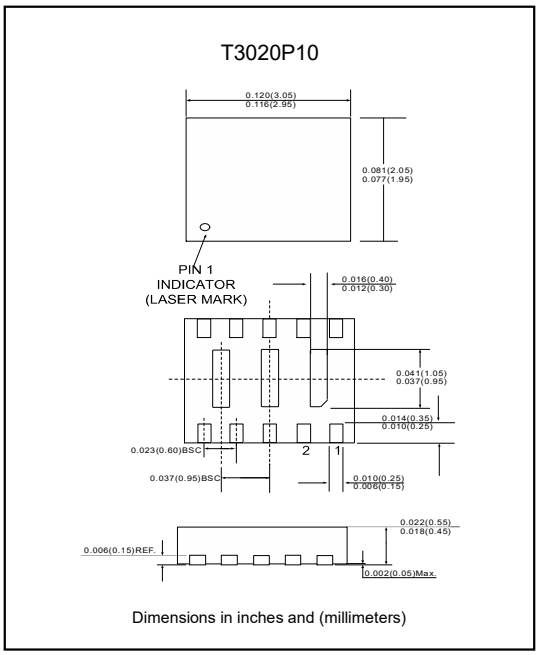
Applications

- 10/100/1000 Ethernet
- Digital visual interface (DVI)
- Analog video

Mechanical data

- Epoxy: UL94V-0 rated flame retardant.
- Case: Molded plastic, T3020P10 .
- Packaging : Tape and reel per EIA 481.

Package outline



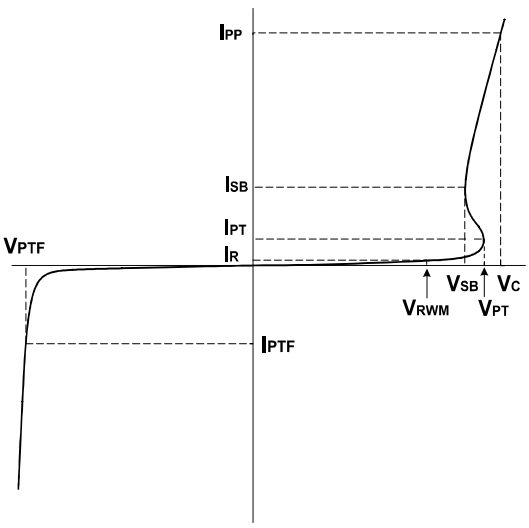
Dimensions in inches and (millimeters)

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

Parameter	Symbol	Value	Unit
Peak pulse power (tp=8/20μs)	P_{PP}	860	W
Peak pulse current (tp=8/20μs)	I_{PP}	40	A
Operating Temperature	T_j	+125	℃
Storage temperature	T_{STG}	-55 to +150	℃

Electrical parameters

Symbol	Parameter
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Reverse Stand-Off Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{PT}	Punch-through Breakdown Voltage @ I_T
V_{SB}	Snap-Back Voltage @ I_{SB}
I_{SB}	Snap-Back Current
I_{PT}	Test Current
V_{PTF}	Forward Punch-through Breakdown Voltage @ I_F
I_{PTF}	Forward Test Current



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

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Reverse stand-off voltage		V_{RWM}			2.5	V
Reverse breakdown voltage	I_{PT} = 2μA	V_{PT}	3			V
Snap-back voltage	I_{SB} = 50mA	V_{SB}	2.7			V
Reverse leakage current	V_{RWM} =2.5V, T=25°C	I_R			0.5	μA
Clamping voltage	I_{PP}=25A, t_P=8/20μs, Any I/O pin to ground	V_C			11.5	V
Clamping voltage[1]	I_{PP}=40A, t_P=8/20μs, Line to line,two I/O pins connected together on each line	V_C			21.5	V
ESD clamping voltage[2]	I_{PP}=4A, t_P=0.2/100ns	V_C		6.5		V
ESD calmping voltage[2]	I_{PP}=16A, t_P=0.2/100ns	V_C		8.9		V
Dynamic resistance[2,3]	TLP=0.2/100ns	R_{DYN}		0.2		Ω
Junction capacitance	V_R=0V, f=1MHZ, I/O pin to GND	C_j		3.6	5	pF
	V_R=0V, f=1MHZ, Between I/O pins			1.5	2.5	

Notes : 1.Ratings with 2 pins connected together per the recommended configuration (ie pin1 connected to pin 10, pin2 connected to pin9, pin4connected to pin 7, and pin 5 connected to pin 6).
2.TLP Setting : t_P=100ns, t_r=0.2ns, I_{TLP} and V_{TLP} sample window : t_1=70ns to t_2=900ns.
3.Dynamic resistance calculated from I_{PP}=4A to I_{PP}=16A using "Best Fit".

Rating and characteristic curves

Figure 1: Peak Pulse Power vs. Pulse Time

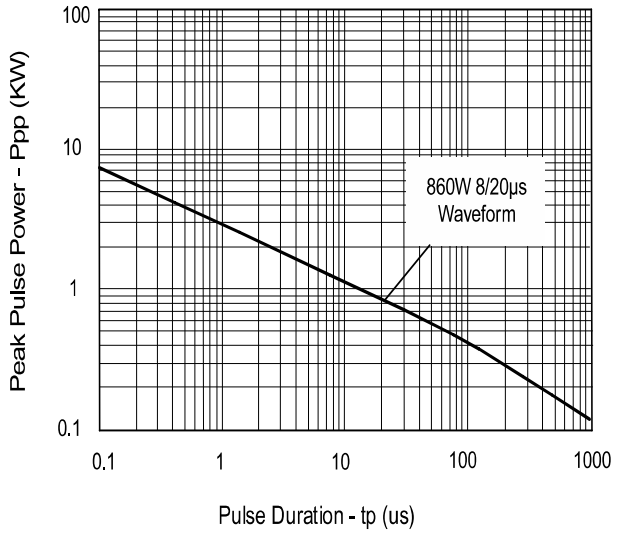
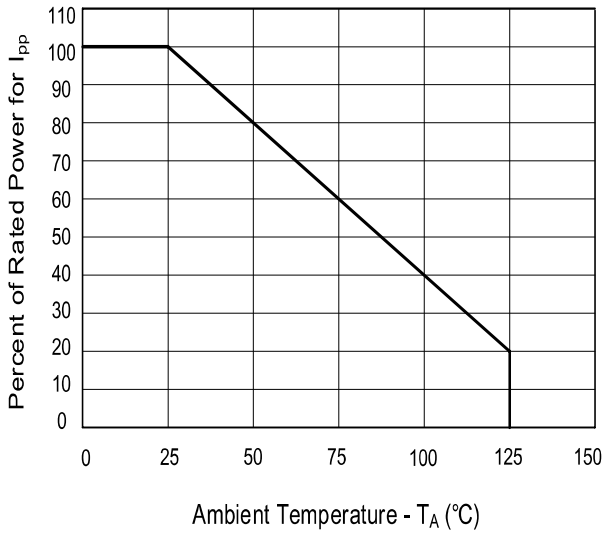


Figure 2: Power Derating Curve



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Rating and characteristic curves

Figure 3: Clamping Voltage vs. Peak Pulse Current

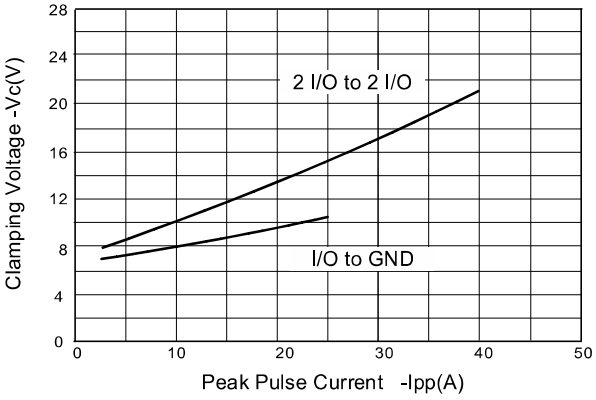


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage (I/O to GND)

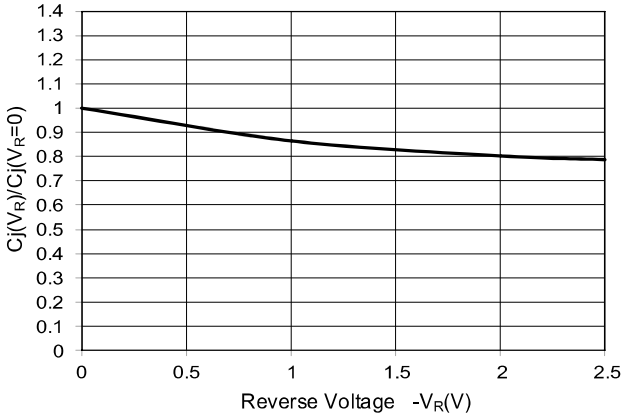


Figure 5: 8/20μs Pulse Waveform

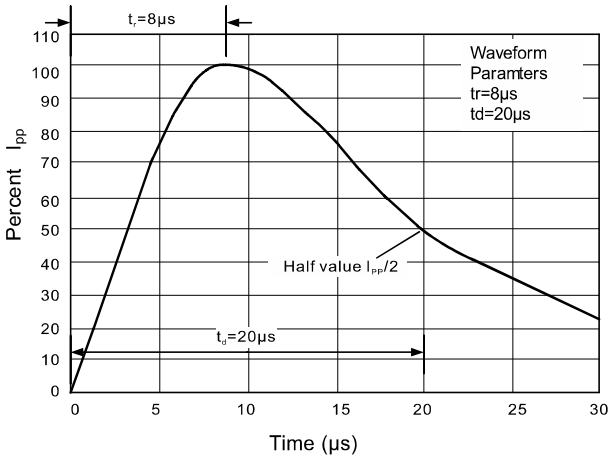
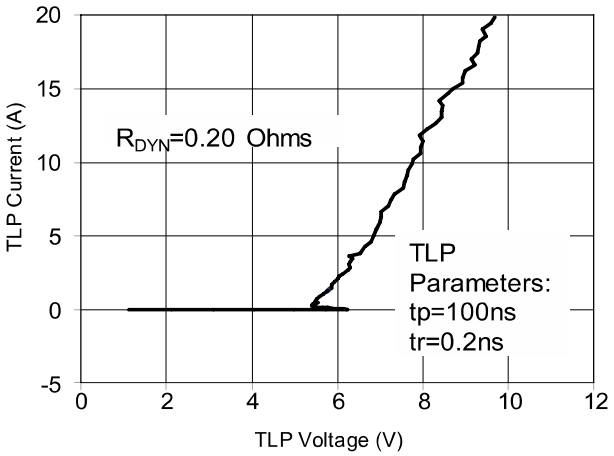
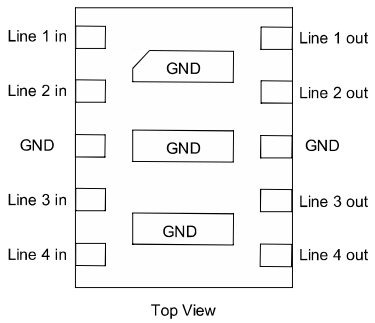
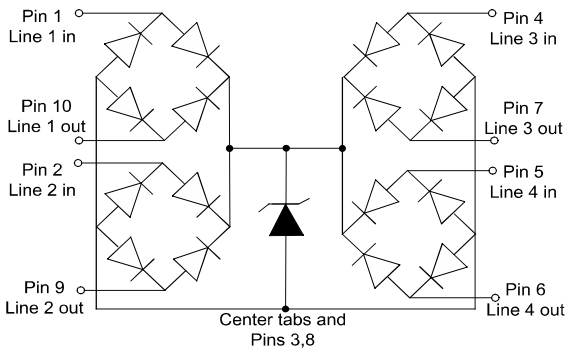


Figure 6: TLP I-V Curve



Pinning information

Simplified outline	Symbol
	

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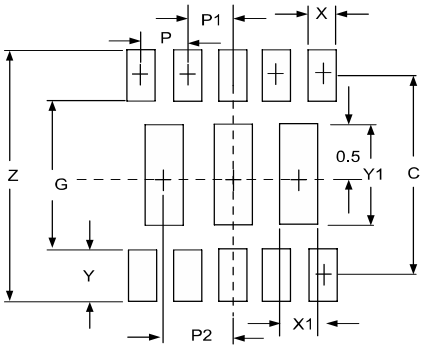
Marking

Type number	Marking code
L2V54BT3020	220425 YYWW YYWWW=Date Code

Suggested solder pad layout



DIMENSIONS	
DIM	MILLIMETERS
C	1.80
G	1.40
P	0.60
P1	0.65
P2	0.95
X	0.25
X1	0.40
Y	0.40
Y1	1.00
Z	2.20

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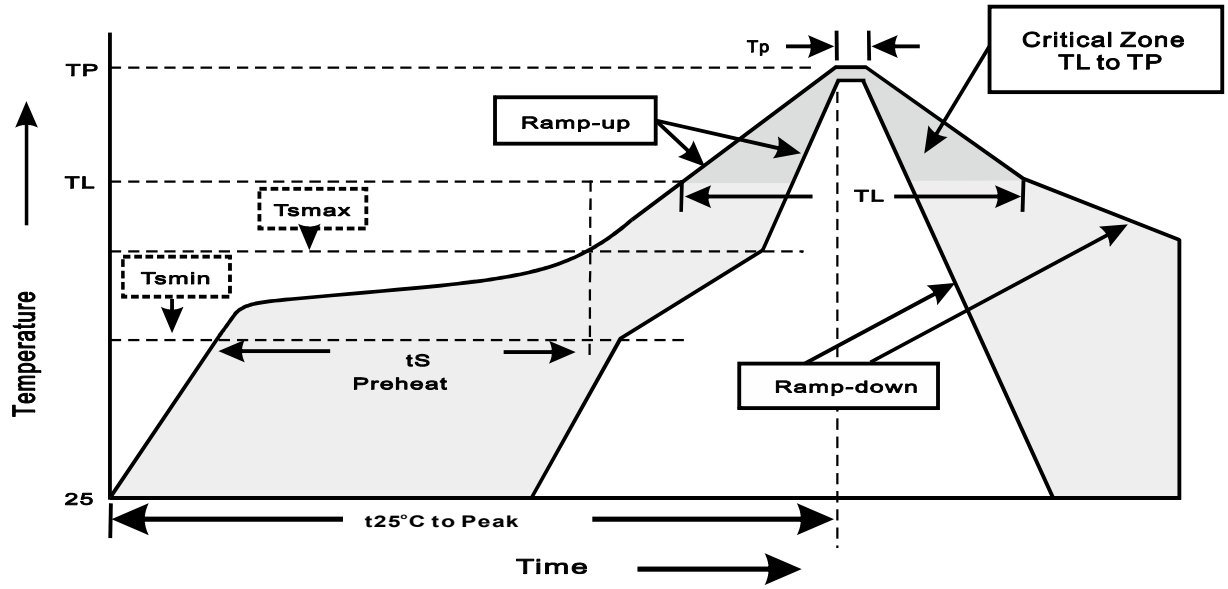
Suggested thermal profiles for soldering processes

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