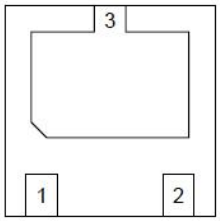
TQTHL211XXV

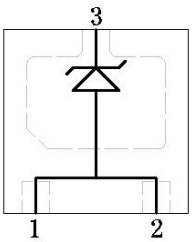
The TQTHL211XXV is a high power TVS, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive lines. TheTQTHL211XXV Series complies with the IEC 610002 (ESD) standard with ±30kV air and ±30kV contact discharge. It is assembled into a 3pin DFN2020-3 package. The leads are finished with NiPdAu. Each device will protect one line. The combination of small size, and high surge capability makes them ideal for use in applications such as cellular phones, LCD displays, USB, and multimedia card interfaces.

Features

- Protects one I/O lines
- Working voltages :12V、14V、17V、24V
- Low leakage current
- Response Time is < 1 ns
- Meets MSL 1 Requirements
- Solid-state silicon avalanche technology
- ROHS compliant
- TECH CHIP technology

DFN2020-3L





Main applications

- Power Management
- Industrial Application
- Power Supply Protection

Protection solution to meet

- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)

Ordering Information

Device	Mark	Qty per Reel	Reel Size
TQTHL21112V	12P	3000	7 Inch
TQTHL21114V	14P	3000	7 Inch
TQTHL21117V	17P	3000	7 Inch
TQTHL21124V	T24	3000	7 Inch

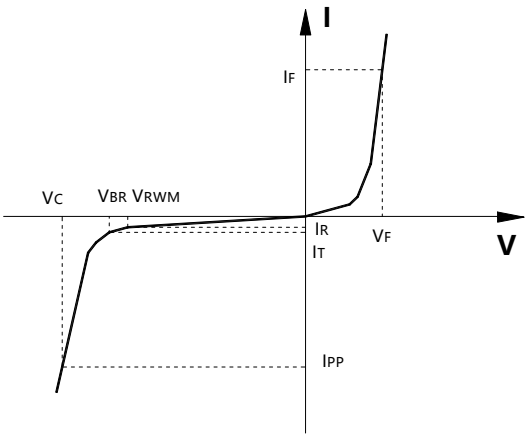
Maximum ratings (Temp=25℃ Unless Otherwise Specified)				
Parameter		**Symbol**	**Value**	**Unit**
ESD Rating per IEC61000-4-2：	Contact Air		30 30	KV
Lead Soldering Temperature		T_L	260 (10 sec.)	℃
Operating Temperature Range		T_J	-55 ~ 150	℃
Storage Temperature Range		T_{STG}	-55 ~ 150	℃

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

**Other voltages may be available upon request.*

1. Non-repetitive current pulse, per Figure 1.

Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
V_{BR}	Breakdown Voltage @ I_T
V_C	Clamping Voltage @ I_{PP}
I_T	Test Current
I_{RM}	Leakage current at V_{RWM}
I_{PP}	Peak pulse current
C_O	Off-state Capacitance
C_J	Junction Capacitance



TQTHL21112V

Electrical characteristics (Temp=25℃ Unless Otherwise Specified)						
Symbol	**Parameter**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
V_{RWM}	Reverse Working Voltage	Pin 3 to pin 1,2			12	V
V_{BR}	Reverse Breakdown Voltage	IT = 1mA, Pin 3 to pin 1,2	13.5			V
I_R	Reverse Leakage Current	V_{RWM} =12V, Pin 3 to pin 1,2			1	μA
V_C	Clamping Voltage	I_{PP} = 50A, tp =8/20μs, Pin 3 to pin 1,2		19		V
		I_{PP} =170A, tp =8/20μs,		24.5	29	V

		Pin 3 to pin 1,2				
C_J	Junction Capacitance	V_R = 0V, f = 1MHz, Pin 3 to pin 1,2		1.3		nF
I_{PP}	Peak Pulse Current	tp=8/20μs waveform			190	A
Ppp	Peak Pulse Power	tp=8/20μs waveform		4500		W

BVSTHL21114V

Electrical characteristics (Temp=25℃ Unless Otherwise Specified)						
Symbol	**Parameter**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
V_{RWM}	Reverse Working Voltage	Pin 3 to pin 1,2			14	V
V_{BR}	Reverse Breakdown Voltage	IT = 1mA, Pin 3 to pin 1,2	15.2			V
I_R	Reverse Leakage Current	V_{RWM} =14V, Pin 3 to pin 1,2			1	μA
V_C	Clamping Voltage	I_{PP} = 50A, tp =8/20μs, Pin 3 to pin 1,2		21		V
		I_{PP} =160A, tp =8/20μs, Pin 3 to pin 1,2		27.5	31	V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz, Pin 3 to pin 1,2		1.1		nF
I_{PP}	Peak Pulse Current	tp=8/20μs waveform			170	A
Ppp	Peak Pulse Power	tp=8/20μs waveform		4500		W

BVSTHL21117V

Electrical characteristics (Temp=25℃ Unless Otherwise Specified)						
Symbol	**Parameter**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
V_{RWM}	Reverse Working Voltage	Pin 3 to pin 1,2			17	V
V_{BR}	Reverse Breakdown Voltage	IT = 1mA, Pin 3 to pin 1,2	18.2			V
I_R	Reverse Leakage Current	V_{RWM} =17V, Pin 3 to pin 1,2			1	μA
V_C	Clamping Voltage	I_{PP} = 50A, tp =8/20μs, Pin 3 to pin 1,2		26		V
		I_{PP} =130A, tp =8/20μs, Pin 3 to pin 1,2		30	36	V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz,		0.95		nF

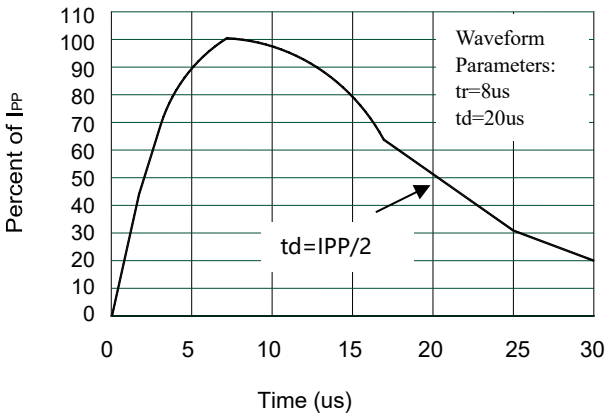
		Pin 3 to pin 1,2				
I_{PP}	Peak Pulse Current	tp=8/20μs waveform			150	A
Ppp	Peak Pulse Power	tp=8/20μs waveform		4500		W

BVSTHL21124V

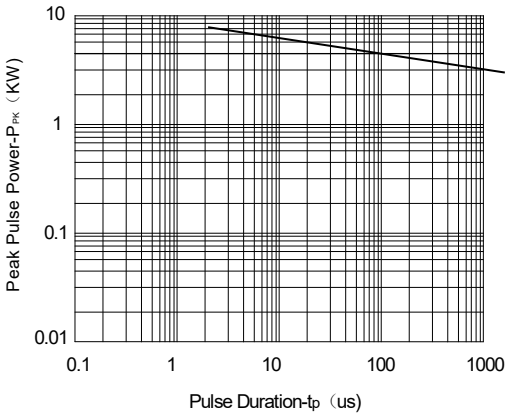
Electrical characteristics (Temp=25℃ Unless Otherwise Specified)						
Symbol	**Parameter**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
V_{RWM}	Reverse Working Voltage	Pin 3 to pin 1,2			24	V
V_{BR}	Reverse Breakdown Voltage	IT = 1mA, Pin 3 to pin 1,2	25			V
I_R	Reverse Leakage Current	V_{RWM} =24V, Pin 3 to pin 1,2			1	μA
V_C	Clamping Voltage	I_{PP} = 50A, tp =8/20μs, Pin 3 to pin 1,2		26		V
		I_{PP} =150A, tp =8/20μs, Pin 3 to pin 1,2		29	35	V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz, Pin 3 to pin 1,2		0.74		nF
I_{PP}	Peak Pulse Current	tp=8/20μs waveform			200	A
Ppp	Peak Pulse Power	tp=8/20μs waveform		5500		W

Junction capacitance is measured in VR=0V,F=1MHz

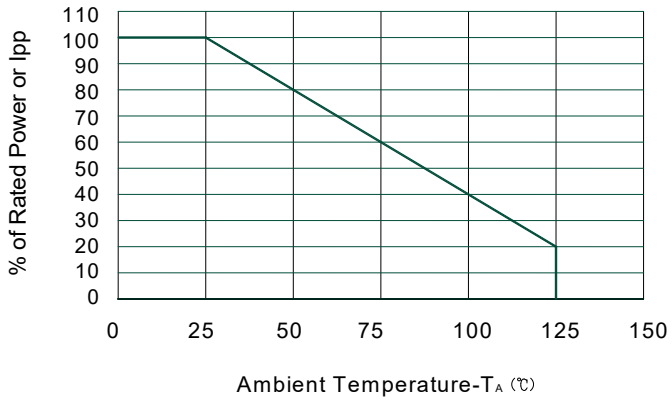
Typical electrical characterist applications



Pulse Waveform



Non-Repetitive Peak Pulse Power vs. Pulse Time



Power Derating Curve

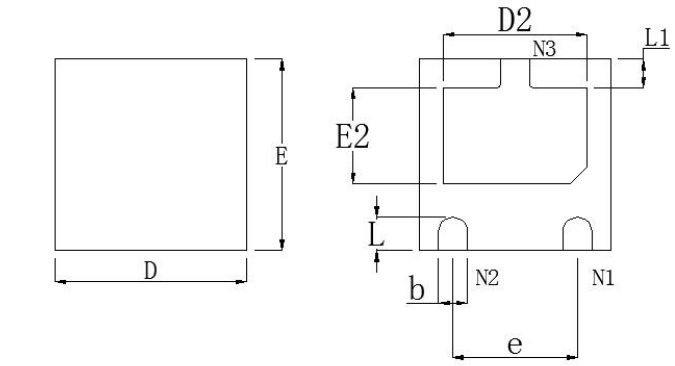
Package Information

DFN2020

Mechanical Data

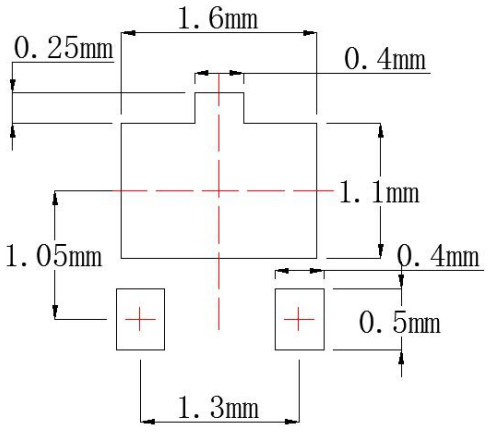
Case:DFN2020

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters		
	Min	Nom	Max
A	0.50	0.55	0.60
A1	0.00	-	0.05
A3	0.15 REF.		
D	1.95	2.00	2.05
E	1.95	2.00	2.05
b	0.25	0.30	0.35
L	0.30	0.35	0.40
L1	0.25	0.30	0.35
D2	1.35	1.50	1.60
E2	0.85	1.00	1.10
e	1.30 BSC		

Recommended Pad outline



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