

## General Description

The **GS24VH20UAQ** is designed to protect voltage sensitive components from damage or latch-up due to surge current. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to surge current protection for board level. Because of its small size and bi-directional design, it is ideal for use in cellular phones and portable applications that require audio line protection.

## Features

Small Body Outline Dimensions: nom 0.078" x 0.078"  
(2.0x2.0 mm)

Low Clamping Voltage:  $V_C=46V@I_{PP}=140A$

Reverse Working (Stand-off) Voltage: 24 V

Low Leakage

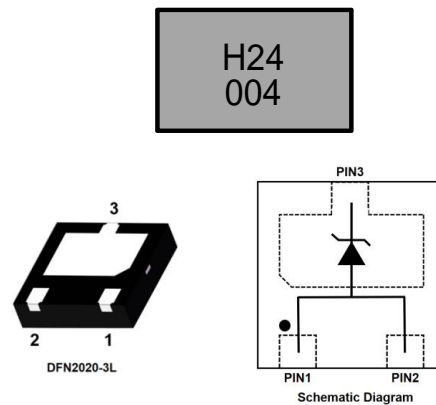
Response Time is Typically < 1 ns

## Applications

Mobile Internet Devices (MID) and portable devices

Personal digital assistants (PDA's)

Cellular handsets and accessories



## Absolute Maximum Rating

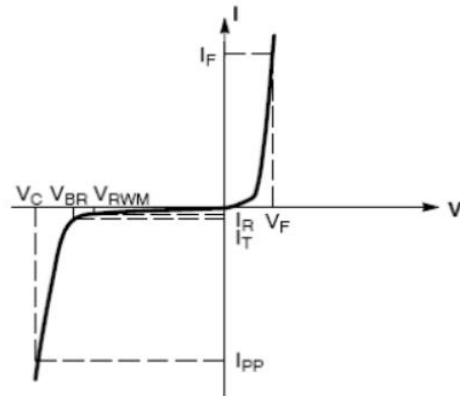
Rating	Symbol	Value	Unit
IEC 61000-4-2 (ESD) Contact		±30	kV
Peak Power Per 8 x 20µs Waveform	$P_{PK}$	6440	W
Junction Temperature Range	$T_J$	-55 to +125	°C
Storage Temperature Range	$T_{stg}$	-55 to +150	
Lead Solder Temperature – Maximum (10 Second Duration)	$T_L$	260	°C

## Electrical Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	$V_{RWM}$				24	V
Diode Forward Voltage	$V_F$	$I_F=10mA$			1.2	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	24.8			V
Reverse Leakage Current	$I_R$	$V_{RWM}=24V$			1.0	$\mu A$
Clamping Voltage	$V_C$	$I_{PP}=50A$ $t_p=8/20\mu s$			35	V
		$I_{PP}=140A$ $t_p=8/20\mu s$			46	
Junction Capacitance	$C_J$	$V_R=0V, f = 1MHz$		380		pF

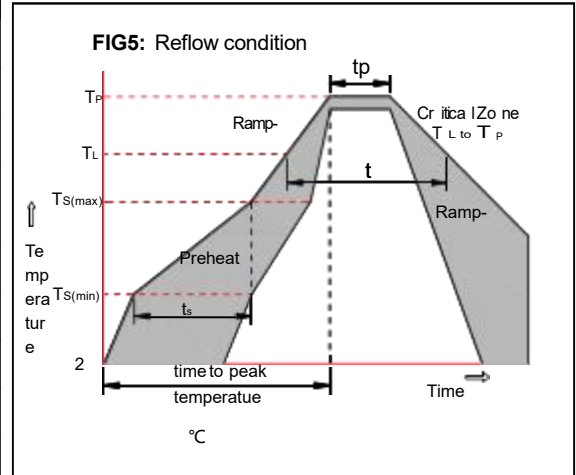
## Electronics Parameter

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 @ $V_{RWM}$
$I_T$	Test Current
$V_{BR}$	Breakdown Voltage @ $I_T$
$P_{PK}$	Peak Power Dissipation
$C$	Max. Capacitance @ $V_R = 0$ and freq.=1 MHz

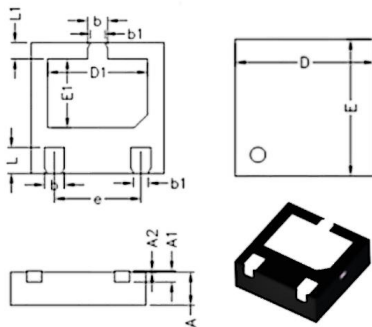


Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ )(Liquid us)	+217°C
	-Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_P$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_P$ )		8 min. Max
Do not exceed		+260°C

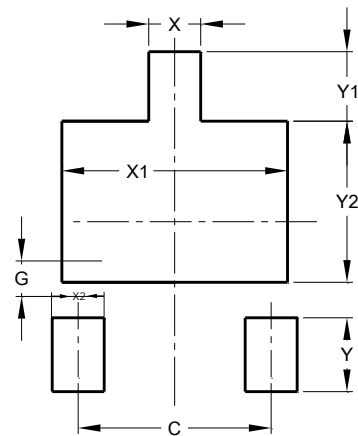


Package Dimensions & Suggested Pad Layout



DFN2020-3L

	Millimeters			Inches		
	Min. (mm)	Typ. (mm)	Max. (mm)	Min. (mm)	Typ. (mm)	Max. (mm)
D	1.95	2.00	2.05	0.076	0.078	0.080
E	1.95	2.00	2.05	0.076	0.078	0.080
D1	1.45	1.50	1.55	0.057	0.059	0.061
E1	1.00	1.05	1.10	0.039	0.041	0.043
L1	0.20	0.25	0.30	0.007	0.009	0.011
L	0.35	0.40	0.45	0.013	0.015	0.017
b1	0.22REF			0.025bsc		
b	0.25	0.30	0.35	0.009	0.011	0.013
e	1.30REF					
A1	0.150REF			0.005REF		
A2	0.00	0.02	0.05	0.000	-	0.001
A	0.45	0.50	0.55	0.017	0.019	0.021



Dimensions	Value (in mm)
C	1.30
G	0.26
X	0.40
X1	1.60
X2	0.40
Y	0.50
Y1	0.35
Y2	1.15

Tape & reel specification

Tape		Symbol	Dimension (mm)		
		P0	4.00±0.20		
		P1	4.00±0.20		
		P2	1.55±0.20		
		D0	1.55±0.20		
		D1	1.05±0.20		
		E	1.55±0.25		
		F	3.60±0.20		
		W	8.00±0.20		
		A0	2.60±0.20		
		B0	2.50±0.20		
		K0	1.00±0.20		
		T	0.20±0.20		
		7" Reel		D2	177.0±5.0
				D3	55Min.
D4	R24.6±2.0				
G	R82.0±2.0				
I	13.0±2.0				
W1	10.20±3.0				
Quantity: 3000PCS					