

RoHS Compliant Product

A suffix of "-C" specifies halogen and lead-free

## DESCRIPTION

The KS05N2 is designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance and fast response time provide best in class protection on designs that are exposed to ESD. The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as USB3.0 power & data line, Video line, and WAN/LAN equipment. It is designed to replace multilayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

## FEATURES

- Uni-Directional ESD Protection of Two Lines
- Low Capacitance: 0.8pF(Max)
- Low Reverse Stand-off Voltage: 5V
- Low Reverse Clamping Voltage
- Low Leakage Current
- Fast Response Time
- JESD22-A114-B ESD Rating of Class 3B per Human Body Model
- IEC 61000-4-2 Level 4 ESD protection

## APPLICATIONS

- USB3.0 Power & Data Line Protection
- WLAN/LAN Equipment
- Mobile Phone
- Video Line Protection
- Microcontroller Input Protection
- ISDN S/T Interface

## MARKING

.U5N2

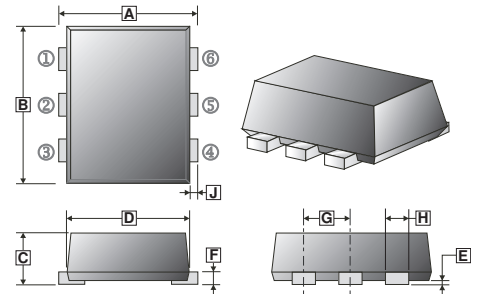
## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-563	3K	7 inch

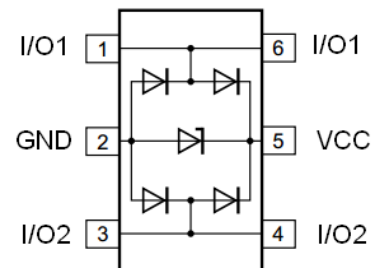
## ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise specified)

Parameter	Symbol	Limit	Unit
IEC 61000-4-2 ESD Voltage	V <sub>ESD</sub> <sup>1</sup>	±25	KV
		±25	
		±16	
		±0.4	
JESD22-A114-B ESD Voltage			
ESD Voltage			
Peak Pulse Power <sup>2</sup>	P <sub>PP</sub>	90	W
Peak Pulse Current <sup>2</sup>	I <sub>PP</sub>	3.5	A
Lead Solder Temperature – Maximum(10Sec. Duration)	T <sub>L</sub>	260	°C
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	150, -55 ~ 150	°C

## SOT-563



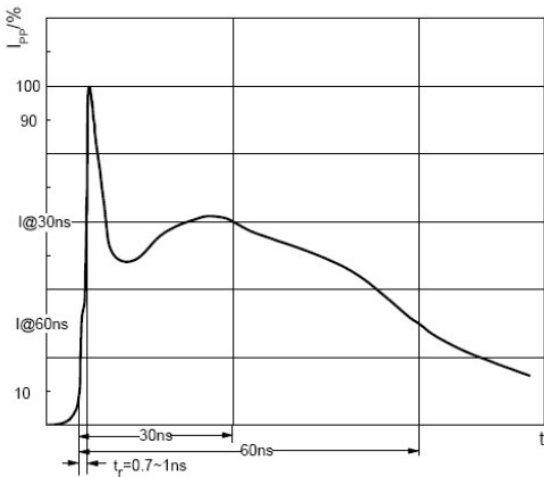
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.50	1.70	F	0.09	0.16
B	1.50	1.70	G	0.45	0.55
C	0.525	0.60	H	0.17	0.27
D	1.10	1.30	J	0.10	0.30
E	-	0.05			



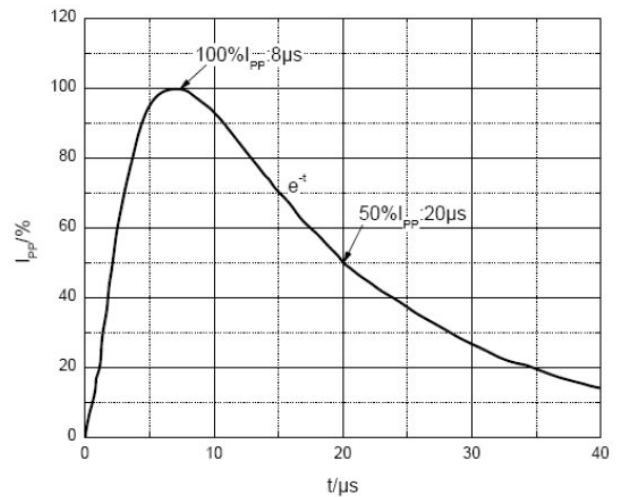
**ESD Standards Compliance**

IEC61000-4-2 Standard			
Contact Discharge		Air Discharge	
Level	Test Voltage kV	Level	Test Voltage kV
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15

JESD22-A114-B Standard	
ESD Class	Human Body Discharge V
0	0 ~ 249
1A	250 ~ 499
1B	500 ~ 999
1C	1000 ~ 1999
2	2000 ~ 3999
3A	4000 ~ 7999
3B	8000 ~ 15999



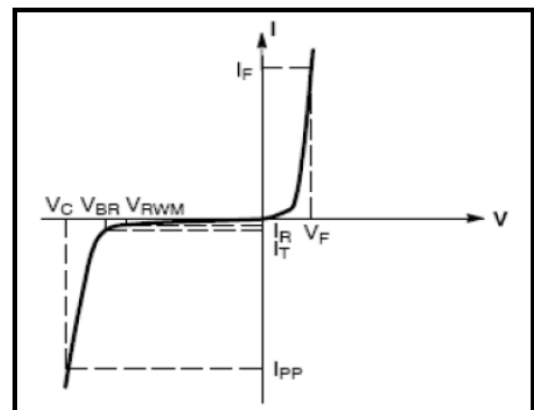
ESD pulse waveform according to IEC61000-4-2



8/20µs pulse waveform according to IEC 61000-4-5

**ELECTRICAL PARAMETER**

Symbol	Parameter
V <sub>C</sub>	Clamping Voltage @I <sub>PP</sub>
I <sub>PP</sub>	Peak Pulse Current
V <sub>BR</sub>	Breakdown Voltage @I <sub>T</sub>
I <sub>T</sub>	Test Current
I <sub>R</sub>	Reverse Leakage Current @V <sub>RWM</sub>
V <sub>RWM</sub>	Reverse Standoff Voltage
V <sub>F</sub>	Forward Voltage @I <sub>F</sub>
I <sub>F</sub>	Forward Current



V-I characteristics for a uni-directional TVS

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$ , I/O to GND unless otherwise specified)

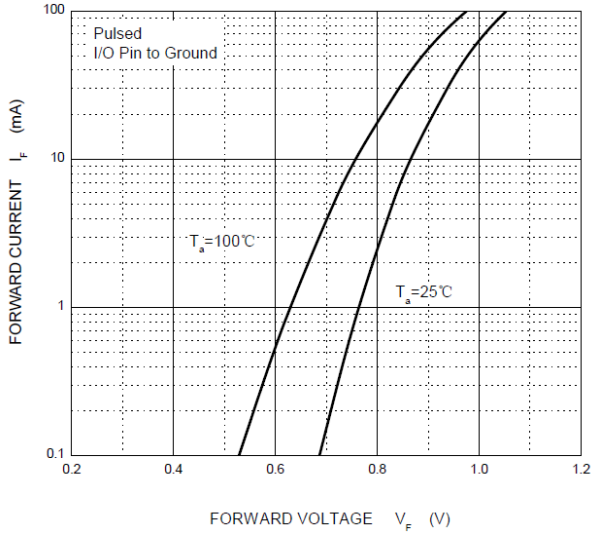
Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage <sup>3</sup>	$V_{RWM}$	-	-	5	V	
Reverse Breakdown Voltage	$V_{BR}$	6	-	10	V	$I_T=1\text{mA}$
		5	-	12	V	$I_T=1\text{mA}$ , $V_{CC}$ to GND
Reverse Leakage Current	$I_R$	-	-	1	$\mu\text{A}$	$V_{RWM}=5\text{V}$ , I/O & $V_{CC}$ to GND
Forward voltage	$V_F$	0.4	-	1.5	V	$I_F=10\text{mA}$ , I/O & $V_{CC}$ to GND
Clamping Voltage <sup>2</sup>	$V_C$	-	-	13	V	$I_{PP}=1\text{A}$ , I/O & $V_{CC}$ to GND
		-	-	25		$I_{PP}=3.5\text{A}$ , I/O & $V_{CC}$ to GND
Junction Capacitance	$C_J$	-	-	0.8	pF	$V_R=0\text{V}$ , $f=1\text{MHz}$
		-	-	0.4		$V_R=0\text{V}$ , $f=1\text{MHz}$ , I/O to I/O

Notes :

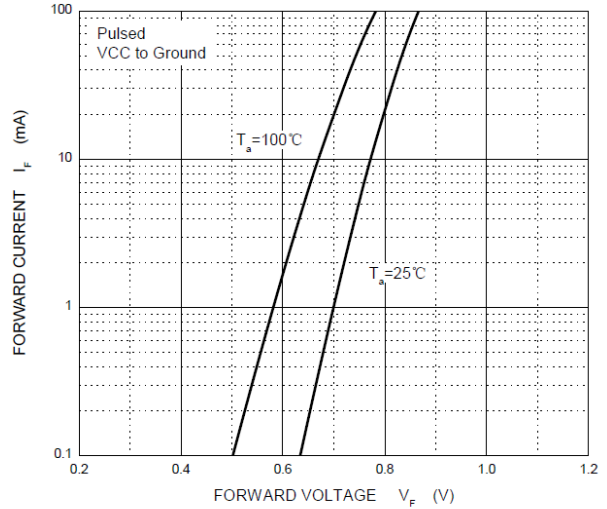
1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20 $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.
3. Other voltages available upon request.

**RATINGS AND CHARACTERISTICS CURVES**

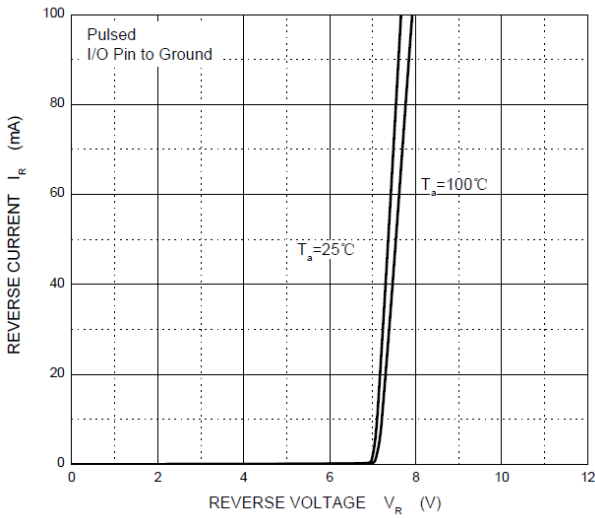
**Forward Characteristics**



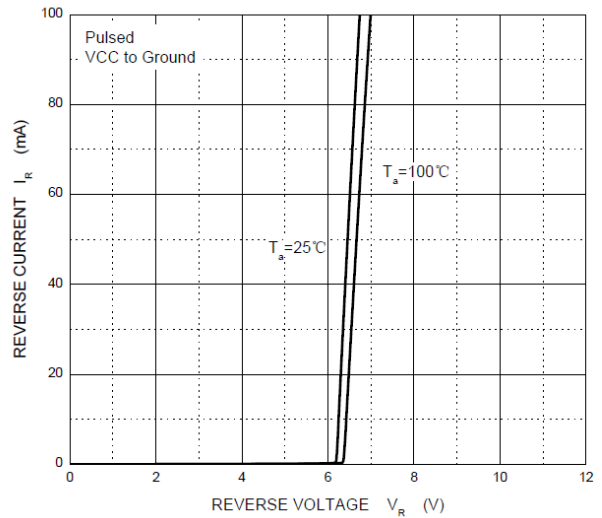
**Forward Characteristics**



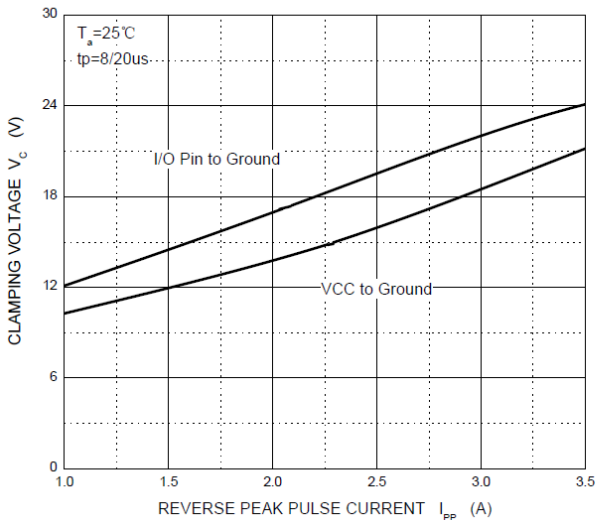
**Reverse Characteristics**



**Reverse Characteristics**



$V_C$  —  $I_{PP}$



**Capacitance Characteristics**

