

RoHS Compliant Product

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

DESCRIPTION

The KS05H3 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

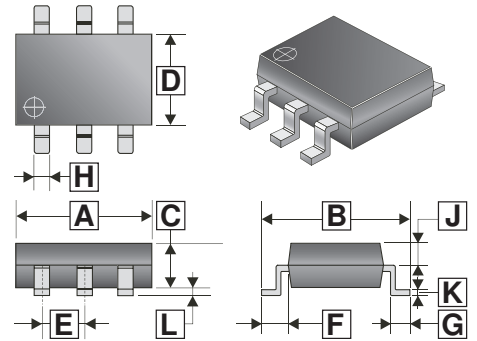
MARKING

.U5H3

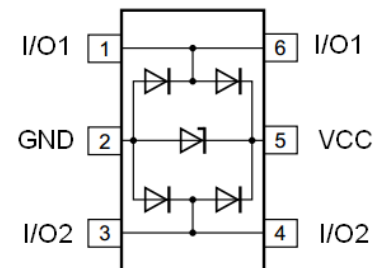
PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---------|-----|-------------|
| SOT-26 | 3K | 7 inch |

SOT-26



| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|------|------------|------|
| | Min. | Max. | | Min. | Max. |
| A | 2.70 | 3.10 | G | 0.37 | REF. |
| B | 2.60 | 3.00 | H | 0.30 | 0.55 |
| C | 1.20 | REF. | J | - | - |
| D | 1.40 | 1.80 | K | 0.12 | REF. |
| E | 0.95 | REF. | L | - | 0.10 |
| F | 0.60 | REF. | | | |



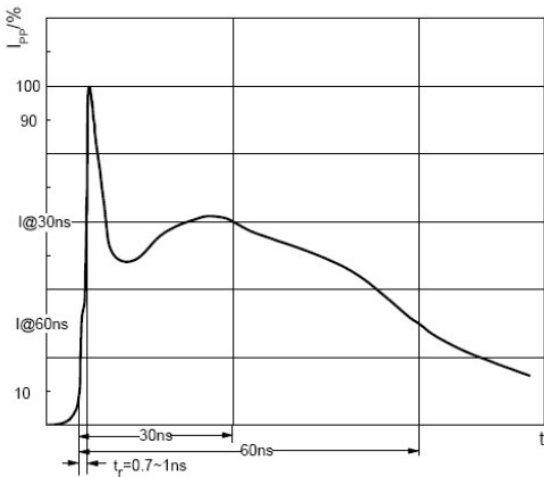
ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

| Parameter | Symbol | Limit | Unit |
|--|-----------------------------------|----------------|------|
| IEC 61000-4-2 ESD Voltage | V _{ESD} ¹ | ±25 | KV |
| | | ±25 | |
| | | ±16 | |
| | | ±0.4 | |
| Peak Pulse Power ² | P _{PP} | 90 | W |
| Peak Pulse Current ² | I _{PP} | 3.5 | A |
| Lead Solder Temperature – Maximum(10Sec. Duration) | T _L | 260 | °C |
| Operating and Storage Temperature Range | T _J , T _{STG} | 150, -55 ~ 150 | °C |

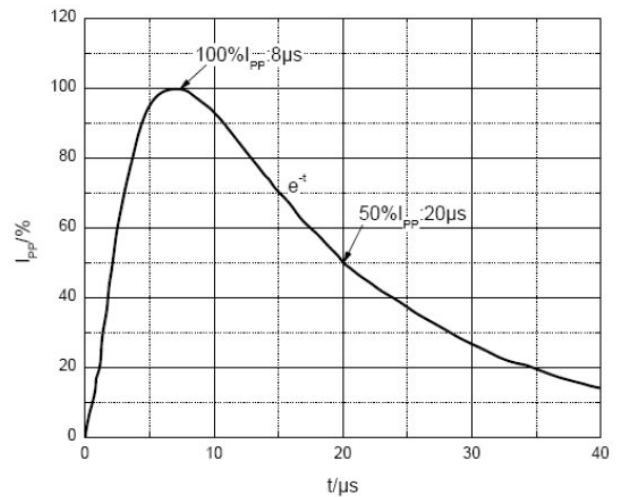
ESD Standards Compliance

| 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 |



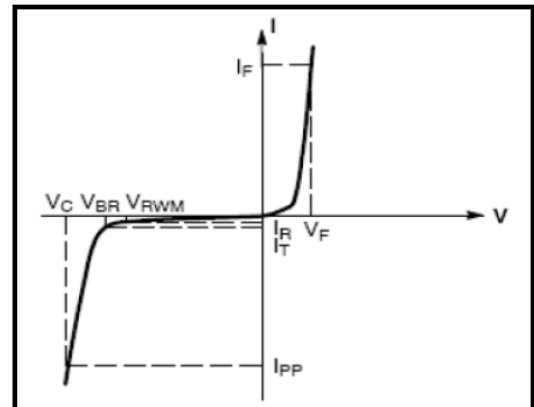
ESD pulse waveform according to IEC61000-4-2



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

ELECTRICAL PARAMETER

| Symbol | Parameter |
|------------------|---|
| V _C | Clamping Voltage @I _{PP} |
| I _{PP} | Peak Pulse Current |
| V _{BR} | Breakdown Voltage @I _T |
| I _T | Test Current |
| I _R | Reverse Leakage Current @V _{RWM} |
| V _{RWM} | Reverse Standoff Voltage |
| V _F | Forward Voltage @I _F |
| I _F | 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)

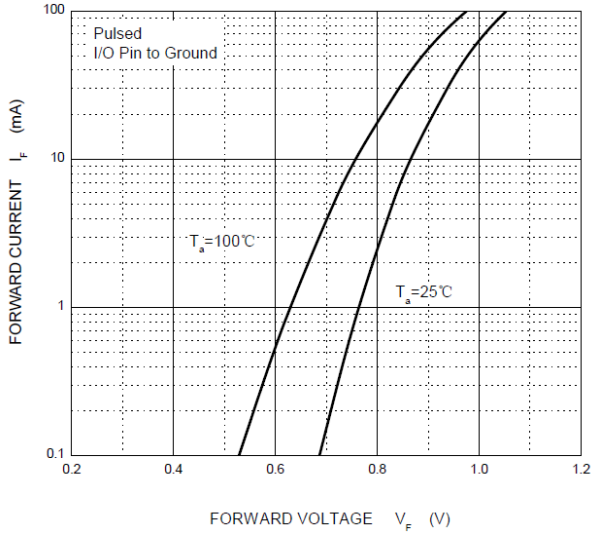
| Parameter | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--------------------------------------|-----------|-----|-----|-----|---------------|--|
| Reverse Working Voltage ³ | V_{RWM} | - | - | 5 | V | |
| Reverse Breakdown Voltage | V_{BR} | 6 | - | 10 | V | $I_T=1\text{mA}$ |
| | | 5 | -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

Notes :

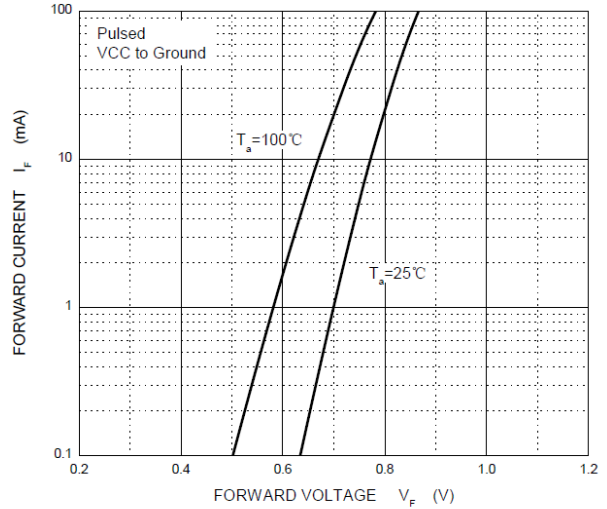
1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.
3. Other voltages available upon request.

RATINGS AND CHARACTERISTICS CURVES

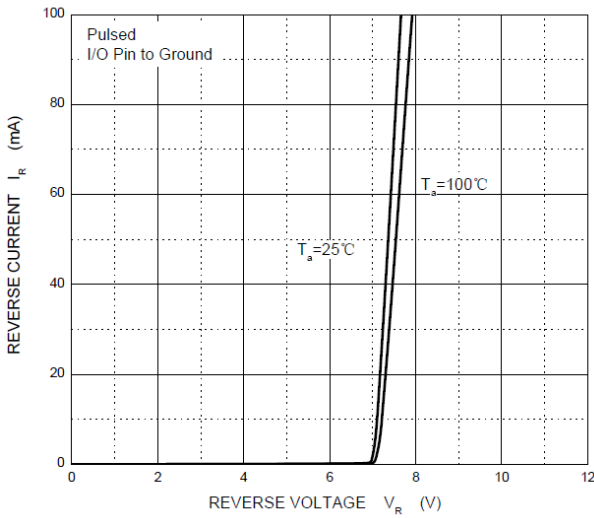
Forward Characteristics



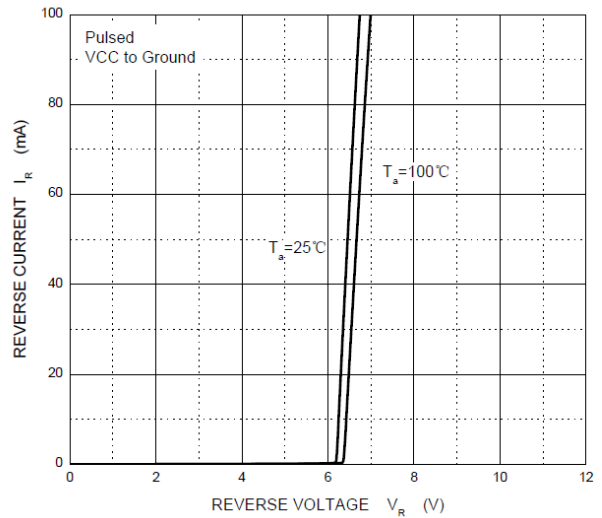
Forward Characteristics



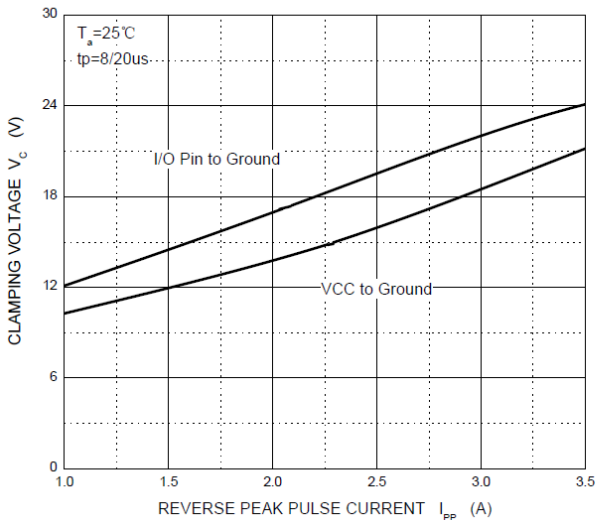
Reverse Characteristics



Reverse Characteristics



V_C — I_{PP}



Capacitance Characteristics

