

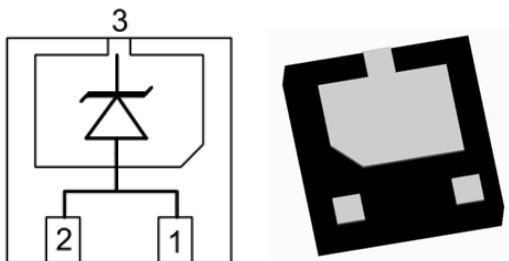
### Features

- ◆ 5040W peak pulse power (8/20 $\mu$ s)
- ◆ Low leakage: nA level
- ◆ Low operating voltage: 4.5V
- ◆ Ultra low clamping voltage
- ◆ One power line protects
- ◆ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm$ 30kV
    - Contact discharge:  $\pm$ 30kV
  - IEC61000-4-5 (Lightning) 280A (8/20 $\mu$ s)
- ◆ RoHS Compliant
- ◆ Package: DFN2020-3,2.0mm\*2.0mm\* 0.55mm

### Description

The ESDK4U5G0D5 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. It is assembled into a 3-pin DFN2020-3 lead-free 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 multi media card interfaces.

### Circuit Diagram



### Applications

- ◆ Power Management
- ◆ Industrial Application
- ◆ Power Supply Protection
- ◆ Many other portable devices

**Limiting Values(TA= 25 °C, unless otherwise specified)**

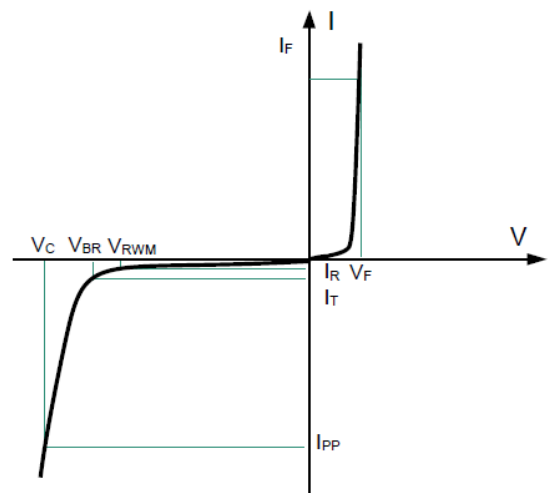
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20µs)	Ppk	5040	W
Peak Pulse Current (8/20µs)	IPP	280	A
ESD per IEC 61000-4-2 (Air)	VESD	±30	kV
ESD per IEC 61000-4-2 (Contact)		±30	
Operating Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	Tstg	-55 to +150	°C

**Electrical Characteristics(TA= 25 °C unless otherwise specified)**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V <sub>RWM</sub>				4.5	V
Breakdown Voltage	V <sub>BR</sub>	I <sub>T</sub> = 1mA	5.2	5.5	7.0	V
Reverse Leakage Current	I <sub>R</sub>	V <sub>RWM</sub> = 4.5V			1.0	µA
Clamping Voltage	V <sub>C</sub>	I <sub>PP</sub> = 1A (8 / 20µs pulse)			8	V
Clamping Voltage	V <sub>C</sub>	I <sub>PP</sub> = 280A (8 / 20µs pulse)			18	V
Junction Capacitance	C <sub>J</sub>	V <sub>R</sub> = 0V, f = 1MHz		1000	1500	pF

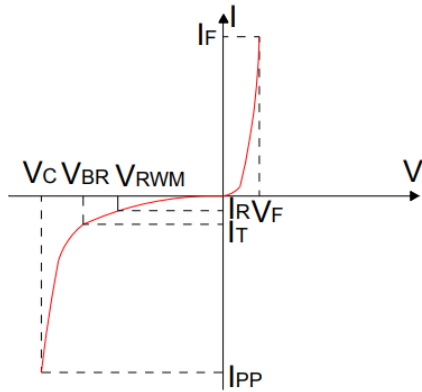
**Portion Electronics Parameter**

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

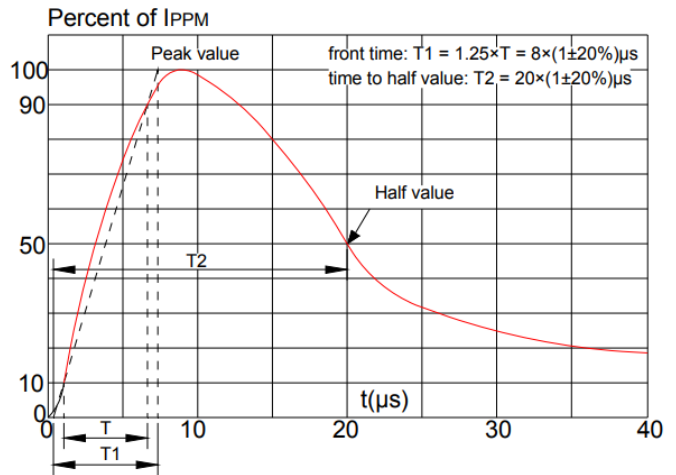


## Typical Characteristics

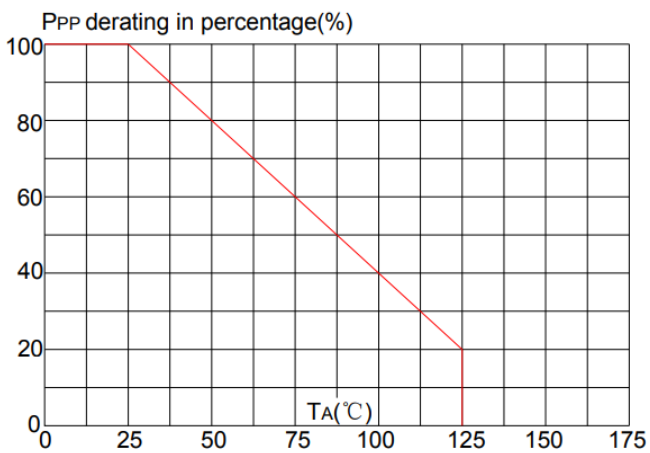
**FIG.1: V- I curve characteristics (Uni-directional)**



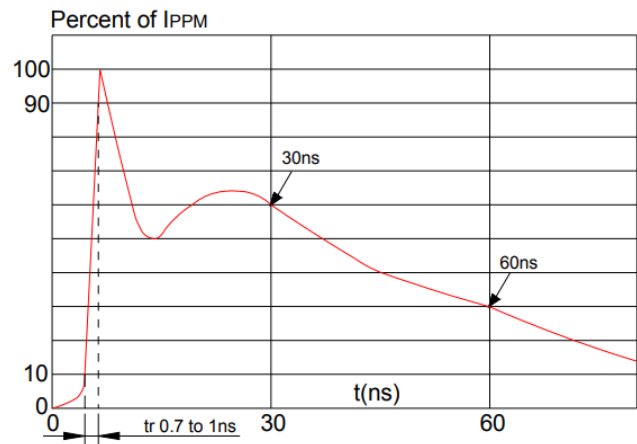
**FIG.2: Pulse waveform (8/20 $\mu$ s)**



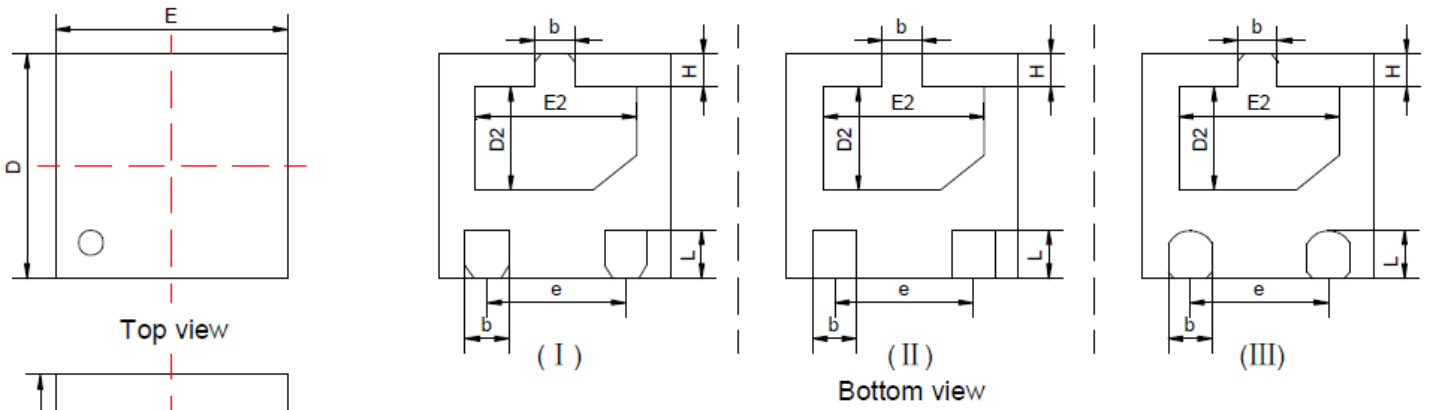
**FIG.3: Pulse derating curve**



**FIG.4: ESD clamping**

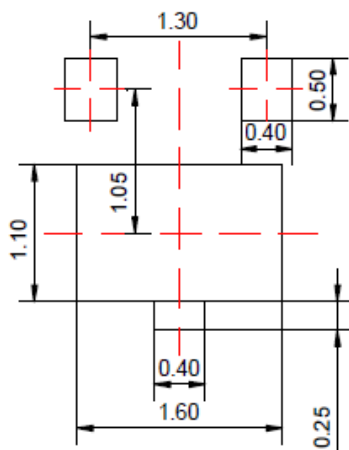


### DFN2020-3 Package Outline Drawing

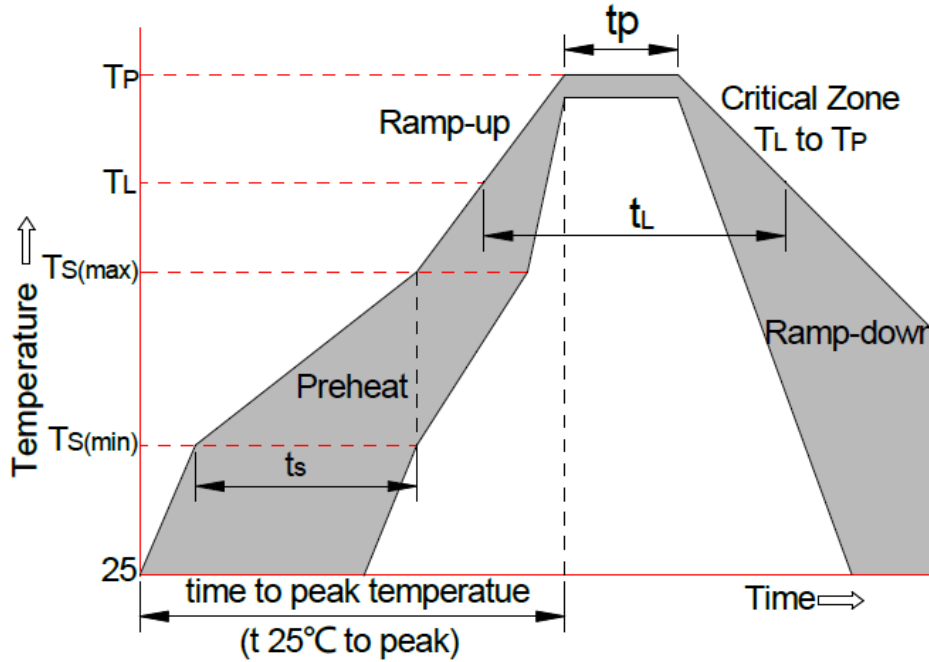


Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.45	0.50	0.60	0.018	0.020	0.024
A1	0.00	0.02	0.05	0.000	0.001	0.002
A3	0.15REF			0.006REF		
b	0.25	0.30	0.35	0.010	0.012	0.014
D	1.90	2.00	2.10	0.075	0.079	0.083
E	1.90	2.00	2.10	0.075	0.079	0.083
D2	0.85	1.05	1.15	0.033	0.041	0.045
E2	1.40	1.50	1.60	0.055	0.059	0.063
e	1.30BSC			0.051BSC		
H	0.20	0.25	0.30	0.008	0.010	0.012
L	0.35	0.40	0.45	0.014	0.016	0.018

### Suggested Land Pattern



### Soldering Parameters



Reflow Condition		Pb-Free Assembly
Pre-heat	-Temperature Min (Ts (min))	+150°C
	-Temperature Max (Ts (max))	+200°C
	-Time (Min to Max) (ts)	60-180 secs
Average ramp up rate( Liquid us Temp (TL) to peak)		3°C/sec. Max
Ts (max) to TL-Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature (TL) (Liquid us)	+217°C
	-Temperature (tL)	60-150 secs
Peak Temp (Tp)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (tp)		30 secs. Max
Ramp-down Rate		6 °C/secs. Max
xTime 25°C to Peak Temp (TP)		8 min. Max
Do not exceed		+260°C