

RoHS Compliant Product  
A suffix of "-C" specifies halogen and lead-free

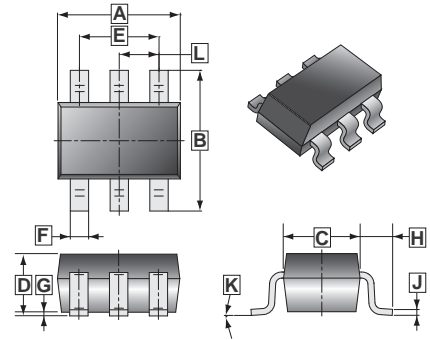
### DESCRIPTION

KS05V4 is designed to protect I/Os being sensitive concerning capacitive load, such as USB2.0, Ethernet, DVI etc. from destruction by ElectroStatic Discharges (ESD).

Therefore, KS05V4 incorporates four pairs of ultra-low capacity rail-to-rail diodes plus an additional Zener diode to provide protection to downstream signal and supply components from Electrostatic Discharge (ESD) voltages. Due to the rail-to-rail diodes being connected to the Zener diode, the protection is working independent from the availability of a supply voltage.

KS05V4 is fabricated using thin film-on-silicon technology and integrates 4 ultra-low capacity rail-to-rail ESD protection diodes in a miniature TSOP-6 package

### TSOP-6



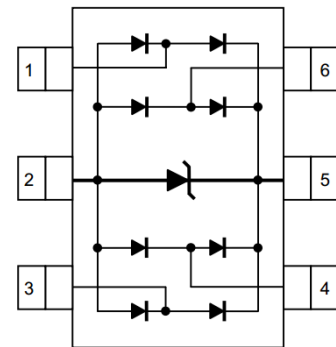
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0	0.10
B	2.60	3.00	H	0.60	REF.
C	1.40	1.80	J	0.12	REF.
D	1.10	MAX.	K	0°	10°
E	1.90	REF.	L	0.95	REF.
F	0.30	0.50			

### APPLICATIONS

- Digital Cameras
- Portable Instrumentation
- Notebooks, Desktops, and Servers
- Personal Digital Assistants (PDAs)
- Cell phone handsets and accessories

### FEATURES

- Low clamping voltage
- Low leakage current
- Small package
- TSOP-6 package
- ESD IEC 6100-4-2 Level 4, ±8 kV Contact Discharge Compliant Protection
- Low Voltage Clamping Due To Integrated Zener Diode
- Four Ultra-Low Input Capacitance (1 pF typ.) ESD Rail-to-Rail Protection Diodes



Schematic And Pinning Diagram

### PACKAGE INFORMATION

Package	MPQ	Leader Size
TSOP-6	3K	7 inch

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

Rating		Symbol	Value	Unit
IEC 61000-4-2 (ESD)	Air	V <sub>ESD</sub>	±14	kV
	Contact		±8	
Peak pulse current (tp=8/20us)@ IEC 61000-4-5	V <sub>DD</sub> -GND	I <sub>PP</sub>	6	A
Peak pulse power (tp=8/20us)@ IEC 61000-4-5		P <sub>PK</sub>	100	W
Lead temperature		T <sub>L</sub>	260	°C
Operating Junction and Storage temperature range		T <sub>J</sub> , T <sub>STG</sub>	85, -55 ~ 125	°C

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
DC Input Voltage Range	$V_{I/O}$		-	-	5.5	V
Zener Diode Breakdown Voltage@ Pin 5 to 2	$V_{BR/I/O}$	$I=1\text{mA}$	6	-	9	V
Forward Voltage	$V_F$		-	0.7	-	V
Diode Reverse Leakage Current@ Pins 1,3,4,6 to Ground	$I_{lkg}$	$V_{RWM}=3\text{V}$	-	-	100	nA
Pin Capacitance to Ground@ Pins 1,3,4,6	$C_{I/O}$	$V_{dc}=0\text{V}$ , $f=1\text{MHz}$ Pin 5=3V	-	1	-	pF
Zener Diode Capacitance to Ground@ Pin 5 to 2	$C_{ZENER}$	$V_{dc}=0\text{V}$ , $f=1\text{MHz}$ Pin 5=3V	-	40	-	pF
Clamping Voltage	$V_C$	$I_{PP}=1\text{A}$ , $t_p=8/20\mu\text{s}$	-	-	6.8	V
		$I_{PP}=4\text{A}$ , $t_p=8/20\mu\text{s}$	-	-	8.1	V
		$I_{PP}=9\text{A}$ , $t_p=8/20\mu\text{s}$	-	-	11.5	V

**Applications Information**

Universal Serial Bus 2.0 Protection

KS05V4 is optimized to protect e.g. two USB 2.0 ports of Electro-Static-Discharge (ESD).

Each device is capable of protection both USB data lines and the VBUS supply. A typical application is shown in the schematic below.

