

RoHS Compliant Product

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

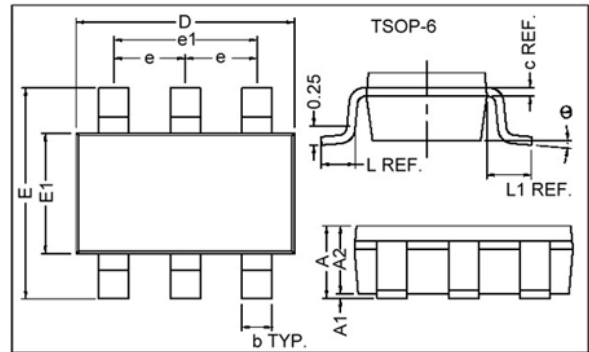
## Description

The KS05V4 is designed to protect I/Os being sensitive concerning capacitive load, such as USB 2.0, Ethernet, DVI etc. from destruction by Electro Static Discharges (ESD).

Therefore, the 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 as high as  $\pm 8$  kV contact discharge.

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.

The 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.



## Features

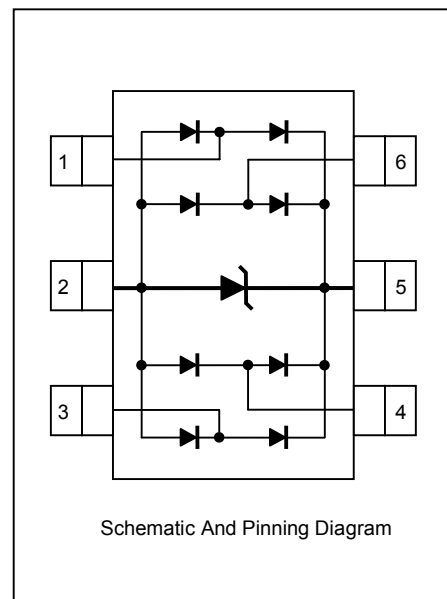
- \* TSOP-6 package
- \* Low Voltage Clamping Due To Integrated Zener Diode
- \* ESD IEC 6100-4-2 Level 4,  $\pm 8$  kV Contact Discharge Compliant Protection
- \* Four Ultra-Low Input Capacitance (1 pF typ.) ESD Rail-to-Rail Protection Diodes

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.10	MAX.	L	0.45	REF.
A1	0	0.10	L1	0.60	REF.
A2	0.70	1.00	$\square$	0°	10°
c	0.12	REF.	b	0.30	0.50
D	2.70	3.10	e	0.95	REF.
E	2.60	3.00	e1	1.90	REF.
E1	1.40	1.80			

## Applications

General-purpose downstream ESD protection high frequency analog signals and high-speed serial data transmission for ports inside :

- \* PDAs
- \* DVI Interfaces
- \* Cordless Telephones
- \* PC-/Notebook USB2.0/IEEE 1394 Ports
- \* Wireless Data (WAN/LAN) Systems
- \* Cellular And PCS Mobile Handsets



### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Test Condition
DC Input Voltage Range	$V_{I/O}$	0	5.5	V	
Electrostatic Discharge, all pins	ESD	-8	8	kV	IEC 6100-4-2, Level 4, Contact
Device Storage Temperature Range	Tstg	-55	125	°C	

### Recommended Operating Conditions

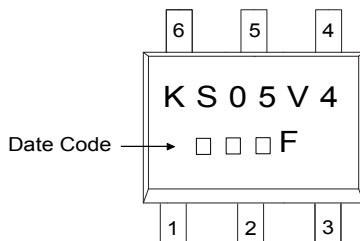
Parameter	Min.	Max.	Unit
Operating Temperature Range	-40	85	°C

### Electrical Characteristics

$T_c=25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Pin Capacitance to Ground, Pins 1,3,4,6	$C_{I/O}$	-	1	-	pF	$V_{dc}=0V, f=1\text{MHz}$ Pin 5=3V
Diode Reverse Leakage Current, Pins 1,3,4,6 to Ground	$I_{lkg}$	-	-	100	nA	$V=3V$
Zener Diode Capacitance to Ground, Pin 5 to 2	$C_{Zener}$	-	40	-	pF	$V_{dc}=0V, f=1\text{MHz}$ Pin 5=3V
Zener Diode Breakdown Voltage, Pin 5 to 2	$V_{BR\ I/O}$	6	-	9	V	$I=1\text{mA}$
Forward Voltage	$V_F$	-	0.7	-	V	

### Marking:



## Applications Information

### Universal Serial Bus 2.0 Protection

The 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 V<sub>BUS</sub> supply. A typical application is shown in the schematic below.

