KSRV05-4MR6T1G

Ultra Low Capacitance ESD Protection Array

Datasheet

DESCRIPTION

KSRV05-4MR6T1G is an ultra-low capacitance Transient Voltage Suppressor (TVS) designed to protection for high-speed data interfaces. With typical capacitance of 0.20pF (I/O to I/O) only, KSRV05-4MR6T1G is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4(±15KV air, ±8KV contact discharge), IEC61000-4-4 (electrical fast transient-EFT) (40A, 5/50ns),very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

KSRV05-4MR6T1G uses small SOT-163 package. Each KSRV05-4MR6T1G device can protect four high-speed data lines one Vcc line. The combined features of ultra-low capacitance, small size and high ESD robustness make KSRV05-4MR6T1G ideal for high-speed data ports and high-frequency lines (e.g., HDMI &DVI) applications. The low clamping voltage of the KSRV05-4MR6T1G guarantees a minimum stress on the protected IC.

FEATURES

✧Transient protection for high-speed data lines

IEC 61000-4-2(ESD) ±20KV(Contact)

±25KV(Air)

IEC 61000-4-4(EFT) 40A(5/50ns)

✧Package optimized for high-speed lines

✧Small package(2.9mm*2.8mm*1.1mm)

✧Protects four data lines and one Vcc line

✧Low capacitance: 0.20pF (I/O to I/O)

✧Low leakage current

✧Low clamping voltage

✧Each I/O pin can withstand over 1000 ESD strikes for ±8KV contact discharge

MACHANICAL DATA

✧SOT-163 package

✧Flammability Rating: UL 94V-0

✧Terminal: Matte tin plated.

✧High temperature soldering guaranteed:

✧260℃/10s

✧Packaging: Tape and Reel

✧Reel size: 7 inch

ORDERING INFORMATION

✧Device: KSRV05-4MR6T1G

✧Package: SOT-163

✧Marking: V05

✧Material: Halogen free

✧Packing: Tape & Reel

✧Quantity per reel: 3,000pcs

APPLICATIONS

✧Serial ATA

✧MDDI Ports

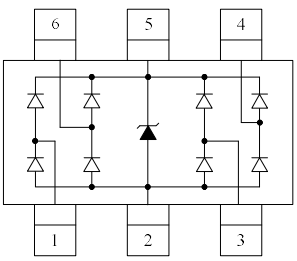
✧USB 2.0/3.0 Power and Data Line Protection

✧Display Ports

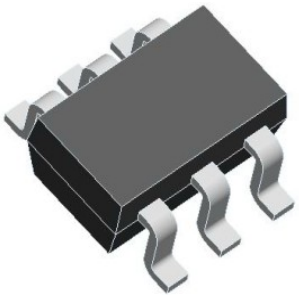
✧High Definition Multi-Media Interface (HDMI)

✧Digital Visual Interface (DVI)

PIN CONFIGURATION



PACKAGE OUTLINE



ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20μs)	60	W
V_{ESD}	ESD per IEC 61000-4-2 (Contact) ESD per IEC 61000-4-2 (Air)	±20 ±25	kV
T_{OPT}	Operating Temperature	-55/+125	°C
T_{STG}	Storage Temperature	-55/+150	°C

ELECTRICAL CHARACTERISTICS (Tamb=25°C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	Any I/O pin to GND			5.0	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA Any I/O pin to GND	6.0		9.0	V
I_R	Reverse Leakage Current	V_{RWM} = 5V Any I/O pin to GND			1.0	μA
V_C	Clamping Voltage	I_{PP} = 1A, t_p = 8/20μs Any I/O pin to GND			10	V
		I_{PP} = 4A, t_p = 8/20μs Any I/O pin to GND			15	V
		I_{PP} = 8A, t_p = 8/20μs Vcc pin to GND			15	V
C_{ESD}	Parasitic Capacitance	V_R = 0V, f = 1MHz Between I/O and I/O		0.20	0.30	pF
		V_R = 0V, f = 1MHz Between I/O and GND		0.45	0.50	pF
		V_R = 0V, f = 1MHz Between Vcc and GND		0.80		pF

Note: I/O Pins are pin 1,3,4,6. Pin 5 is Vcc. Pin 2 is GND.

ELECTRICAL CHARACTERISTICS CURVE

Fig 1 Power Derating Curve

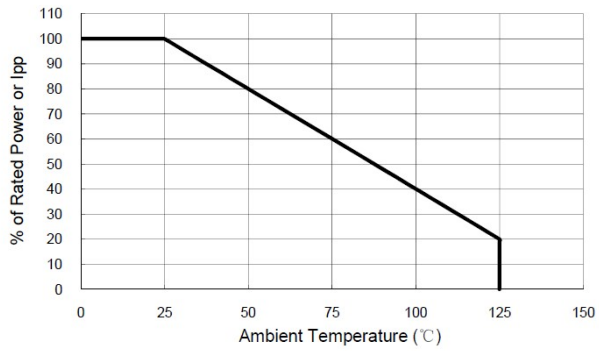


Fig 2 Clamping Voltage vs Peak Pulse Current

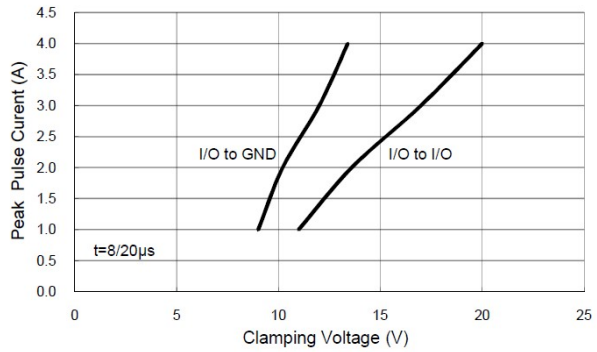


Fig 3 Voltage Sweeping of I/O to I/O

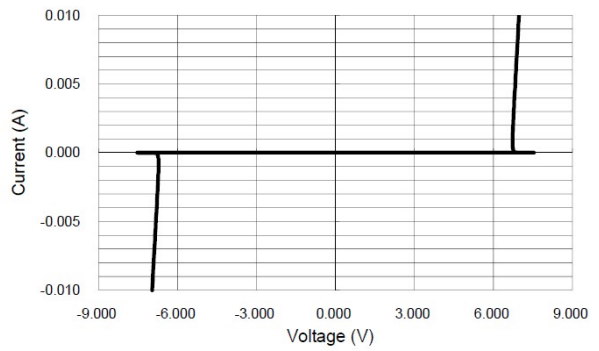


Fig 4 Voltage vs Capacitance

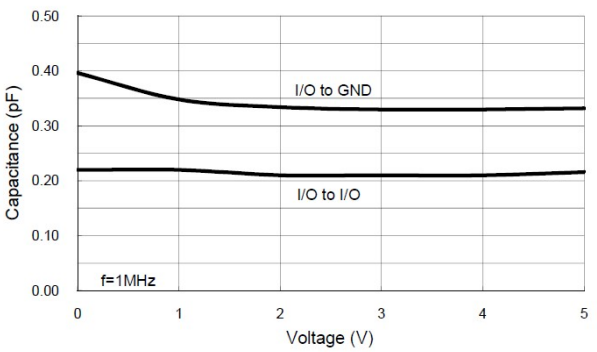


Fig 5 ESD Clamping of I/O to GND
(+8kV Contact per IEC 61000-4-2)

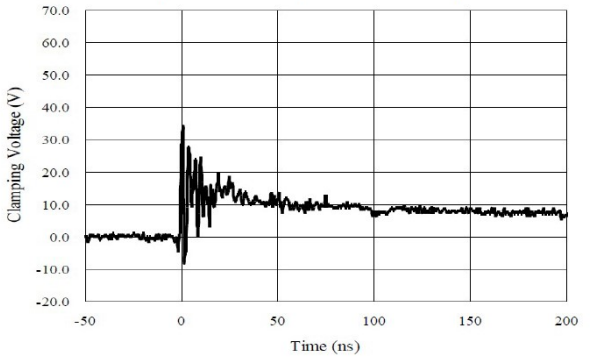
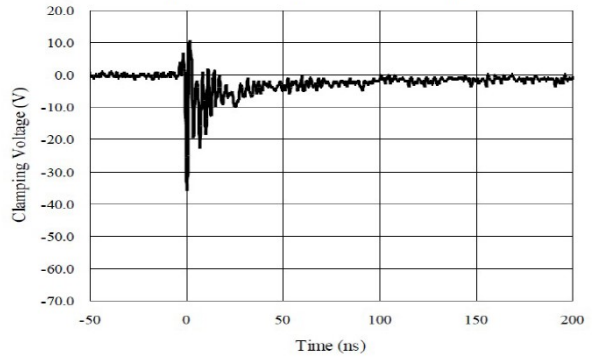
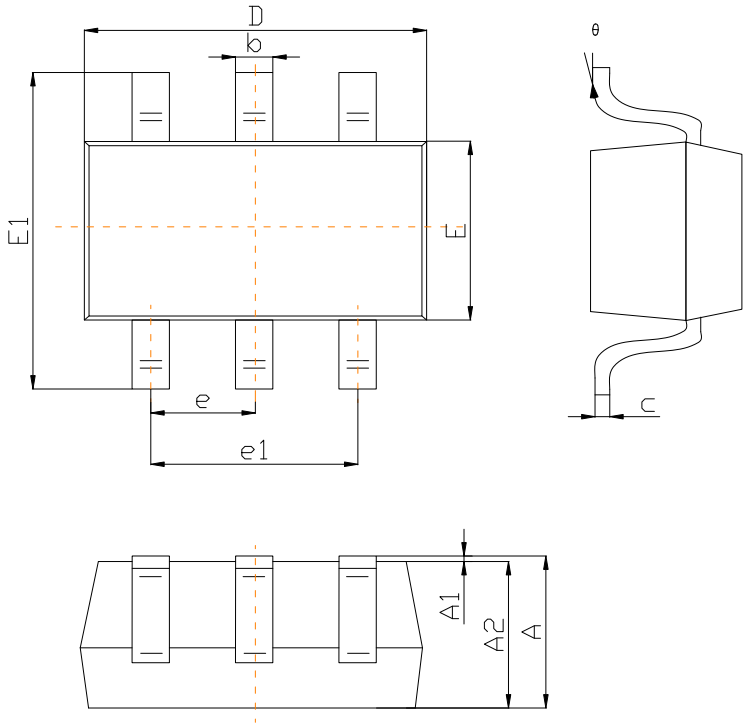


Fig 6 ESD Clamping of I/O to GND
(-8kV Contact per IEC 61000-4-2)



SOT-163 **PACKAGE OUTLINE DIMENSIONS**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100		0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0,950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
	0°	8°	0°	8°