



# Keyboard, Mouse, and USB Filter and Protection Module

## Features

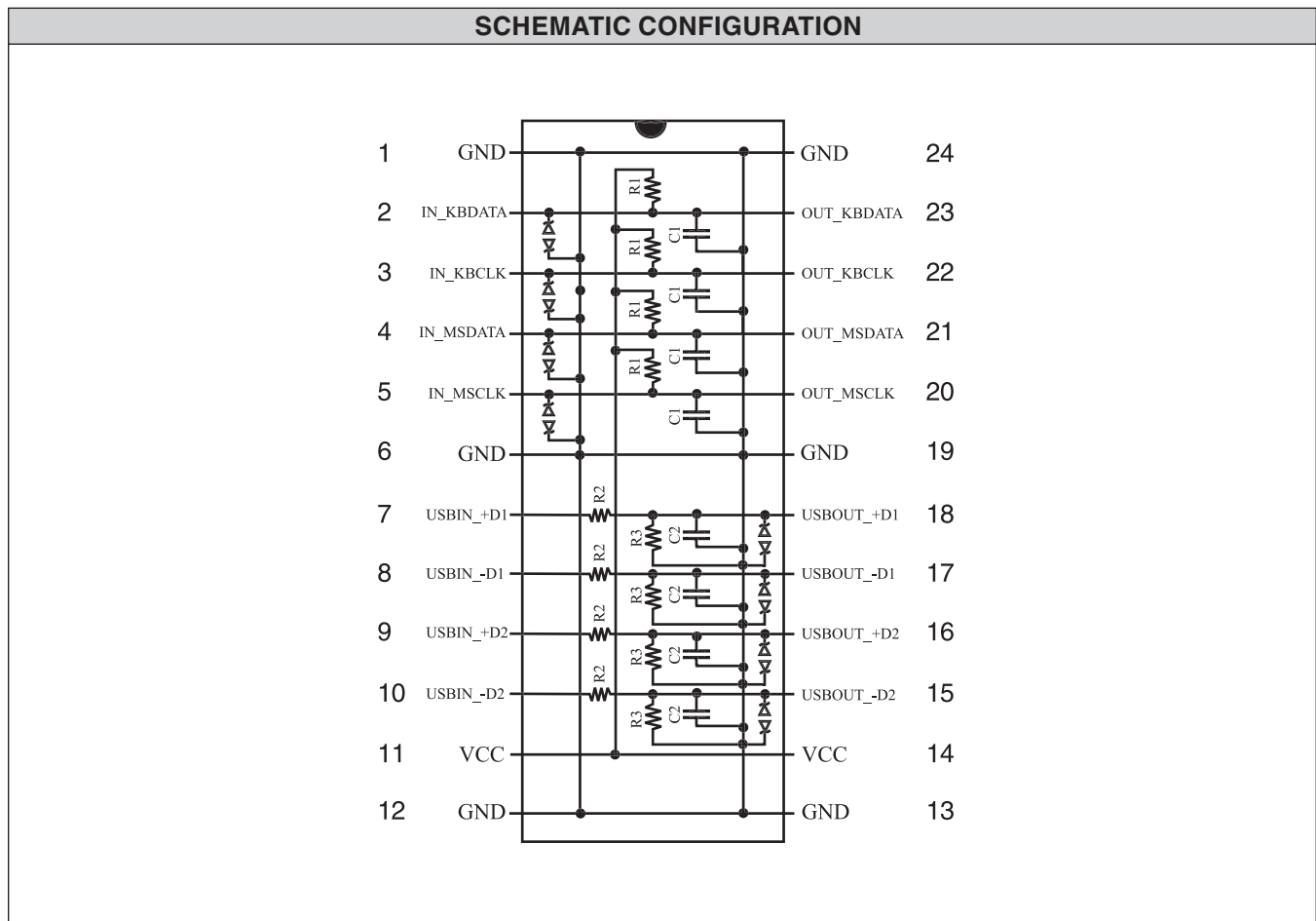
- Filter and ESD protection for keyboard/mouse and dual USB ports

## Applications

- High speed I/O port filter

## Product Description

The signals from the USB controller contain high frequency EMI signals that must be reduced before the output connector. Likewise, the signals from the keyboard, mouse, and USB controller must be protected from any possible charges such as static electricity.



STANDARD PART ORDERING INFORMATION				
Package		Ordering Part Number		
Pins	Style	Tubes	Tape & Reel	Part Marking
24	QSOP	PACKBMU	PACKBMU/R	PACKBMUQ



ESD SPECIFICATIONS		
ESD Protection*	MIN	MAX
Peak Discharge Voltage a any I/O, Human Body Model, Method 3015 (Note 1)	-4KV	4KV
In System Protection, HBM (Note 2)	-8KV	8KV
In System Protection, IEC 1000-4-2, Level 3 (Note 2,3)	-4KV	4KV
Channel Clamp Voltage @ 8KV ESD Pulses, HBM (Note 1,2)	-30KV	30KV

\*Guaranteed by design.

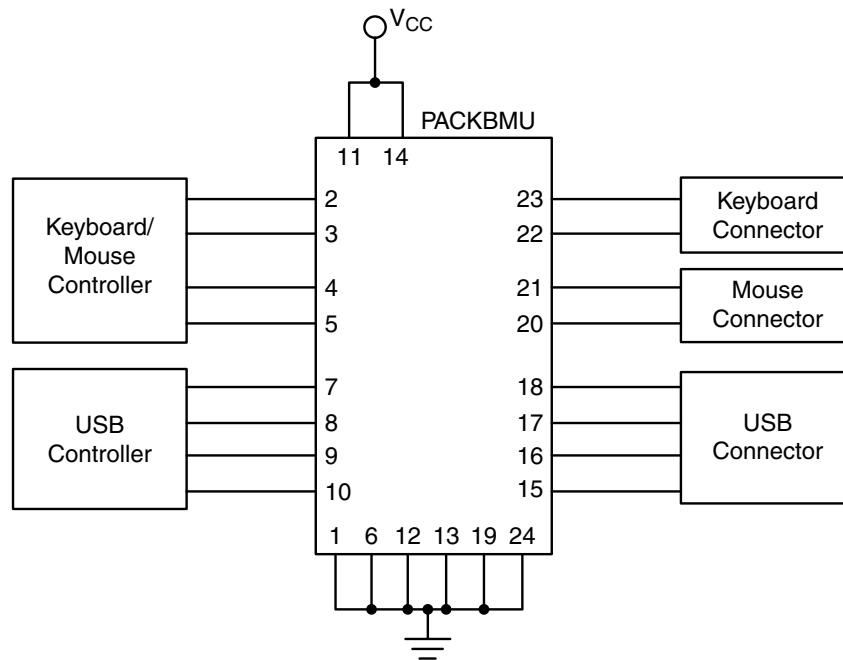
Note 1: Human Body Model per MIL-STD-883, Method 3015

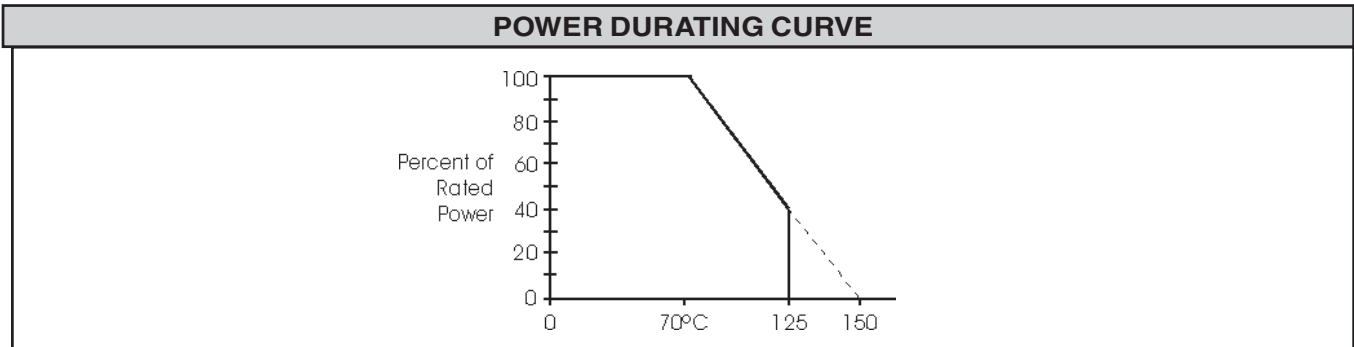
$C_{Discharge} = 100pF$ ,  $R_{Discharge} = 1.5 KW$ , pins 11 and 14 @ 5V and pins 1, 6, 12, 13, 19, 24 @ ground.

Note 2: Pins 1, 6, 12, 13, 19, 24 grounded, pins 11 and 14 to  $V_{CC}$ , all other pins are open. ESD contact discharge between ground and pins 2, 3, 4, 5, 15, 16, 17, 18, 20, 21, 22, 23, one at a time.

Note 3: Standard IEC 1000-4-2 with  $C_{Discharge} = 150pF$ ,  $R_{Discharge} = 330W$ , pins 11 and 14 @ 5V and pins 1, 6, 12, 13, 19, 24 @ ground.

### Block Diagram





STANDARD SPECIFICATIONS	
Absolute Tolerance	±10%
Absolute Tolerance	±20%
Operating Temperature Range	0°C to 70°C
ESD Protection (Human Body Model) MIL-STD-883, Method 3015 (Note 1) In System Protection (Note 2)	>4kV* >8KV*
Package	24-pin QSOP

MECHANICAL SPECIFICATIONS	
Lead Plating	Tin-Lead
Lead Material	Copper Allowy
Lead Coplanarity	0.004" (0/102mm)
Substrate Material	Silicon
Body Material	Molded Epoxy
Flammability	UL94V-0

PACKAGE DIMENSIONS, POWER DISSIPATION, & INFORMATION				
<b>Package</b>	<b>QSOP</b>			
<b>Pins</b>	<b>24</b>			
<b>JEDEC</b>	<b>MO137</b>			
	<b>mm</b>		<b>inches</b>	
	<b>min</b>	<b>max</b>	<b>min</b>	<b>max</b>
<b>A</b>	1.35	1.75	0.053	0.069
<b>A<sub>1</sub></b>	0.10	0.25	0.004	0.010
<b>B</b>	0.20	0.30	0.008	0.012
<b>C</b>	0.18	0.25	0.007	0.010
<b>D</b>	8.56	8.73	0.337	0.344
<b>E</b>	3.81	3.98	0.150	0.157
<b>e</b>	0.64 BSC		0.025 BSC	
<b>H</b>	5.79	6.19	0.228	0.244
<b>L</b>	0.40	1.27	0.016	0.050
<b>P<sub>D</sub> @ 70°C</b>	<b>1.00W</b>			
<b>#/tube</b>	<b>58 pcs</b>			
<b>#/tape &amp; reel</b>	<b>2,500 pcs</b>			