

Application Notes

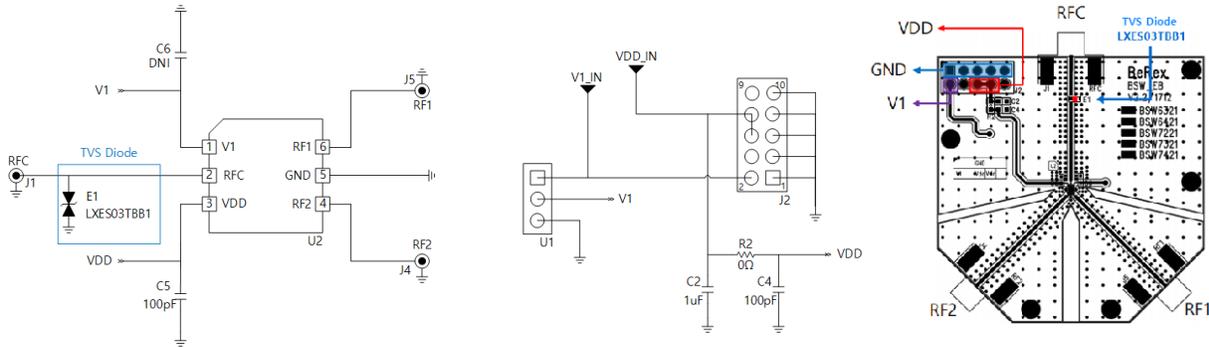
BeRex offers ESD protection device circuit on the BSW6321, BSW7221, BSW7321 and BSW7421.

This application note explains how additional device circuit deliver protection levels of $\pm 8\text{KV}$ ESD HBM (Human Body Model).

It will help in the long-term reliability of the final product.

For more detailed product specifications, please check the datasheet.

Application Schematic & Layout



Additional devices

The protection devices added in the circuit are:

- RF Port (RFC): LXES03TBB1 TVS Diode (Murata)

The level of protection provided has little effect due to part placement and orientation. Depending on the user's needs, it can be placed near the connector port or any device that needs protection.

Results & Recommendation

The additional device circuit was tested normally on the $\pm 8\text{KV}$ ESD HBM(Human Body Model), after which it was confirmed that the parts continued to operate without any problems.

For long-term reliability of the final product, it is recommended to use the mentioned device (or the same specification). It will be able to achieve the required effect with minimal space.

TVS Diode Electrical characteristics

Parameter	Reverse Working Voltage	Channel Leakage Current	Break down voltage	ESD per IEC 61000-4-2 (air)	ESD per IEC 61000-4-2 (contact)	ESD per IEC 61000-4-2(surge) (8/20us)	Capacitance
Symbol	V_{RWM}	I_{leak}	V_{tr}	V_{esd}	V_{esd}	I_{pp}	C
Unit	V	nA	V	kV	kV	A	pF
Condition		$V_{P_{in1}}=5V$, $V_{P_{in2}}=0V$	$I_{br}=1mA$, P_{in1} to P_{in1}	$T_a = 25^\circ C$	$T_a = 25^\circ C$		$V_{P_{in1,2}} = 0V$, $f = 1MHz$, Between Channel pins
LXES03TBB1	+/- 5.5	50 (max)	7 (min)	+/- 25	+/- 8	1.5	0.45

See the LXES03TBB1 website for complete product information.

[LXES03TBB1-141](http://www.murata.com/Products/ESD-Protection-Devices/LXES03TBB1-141) | B/T Series | ESD Protection Devices | Noise Suppression Products/EMI Suppression Filters | Murata Manufacturing Co., Ltd.