

Circuit Protection Design for Smart Phone

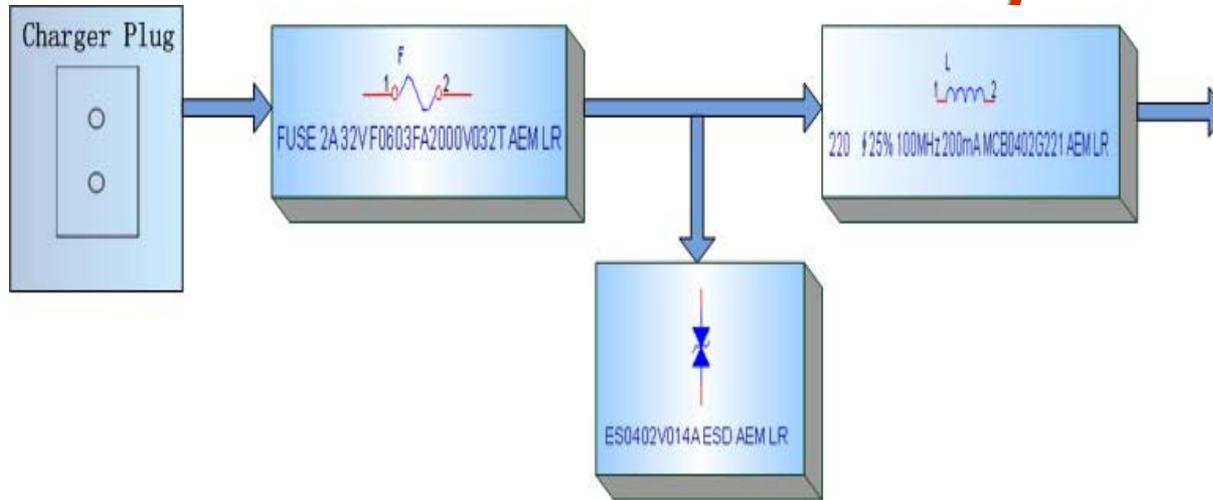


AEM Circuit Protection Products for Smart Phone

Circuits	Fuses (Over Current Protection)	MLVs (Over Voltage Protection)	GcDiodes (ESD Suppression)	Ferrite Beads (EMC/EMI)	Inductors (Signal Processing)	MVF (EMI Filter)
DC Power input	✓	✓	✓	✓		
Battery input	✓	✓	✓	✓		
Speaker/Headphone /Mic		✓	✓	✓		
I/O CNN & DOCK		✓	✓	✓		
MINI_USB/ Receiver		✓	✓	✓		
Camera/LCM	✓	✓	✓	✓		✓
Micro SD/ T_FLASH		✓	✓	✓		
Touch/ SIM/KEY		✓	✓			✓
Baseband Power	✓			✓	✓	
RF/BT/GPS					✓	
USB Data/Charger cable	✓					

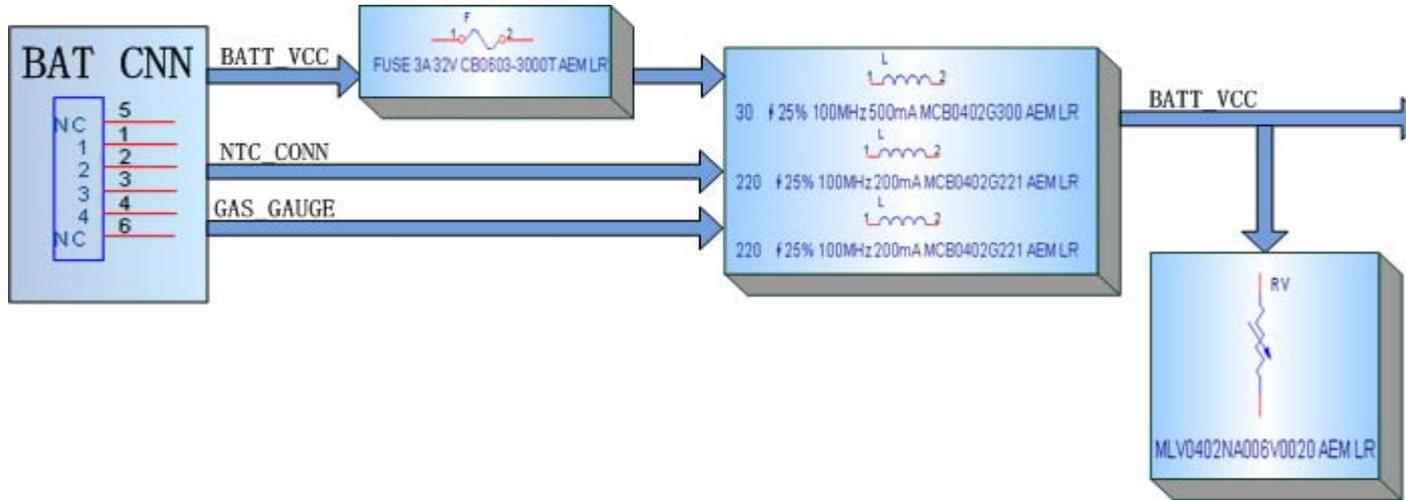


DC Power Input



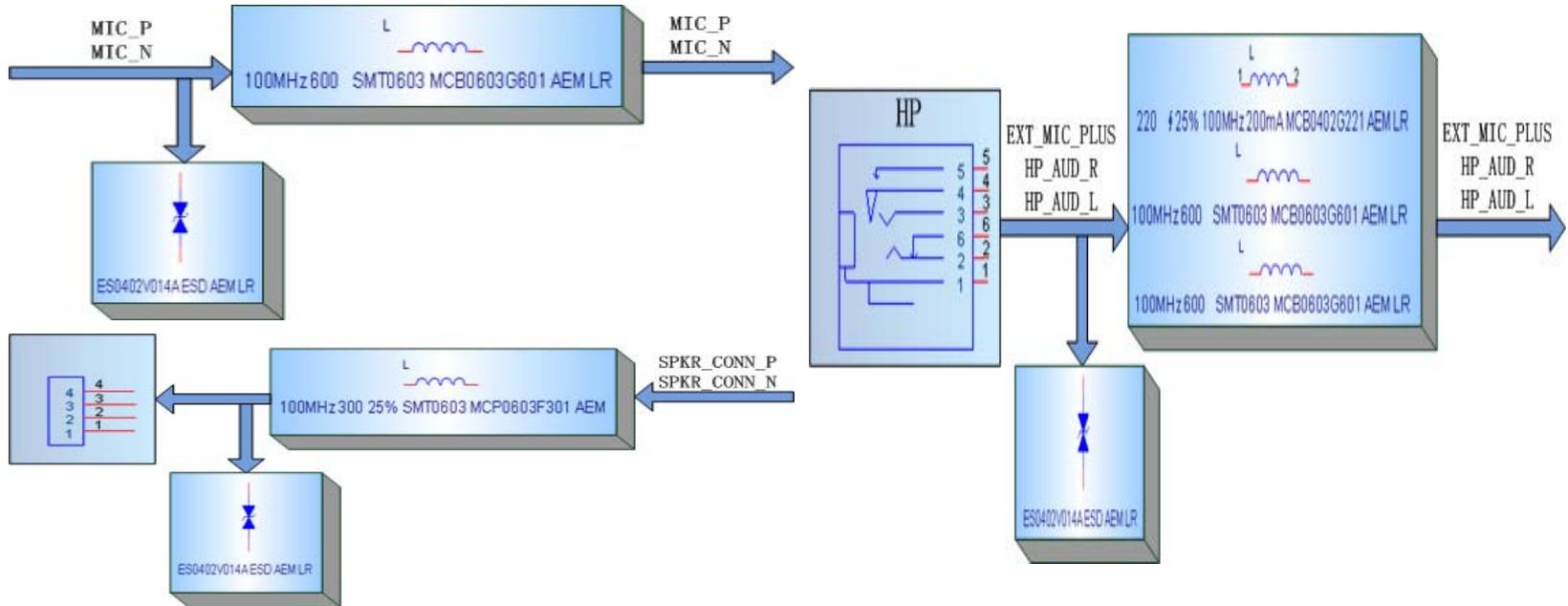
<i>Problems/Threats</i>	<i>Protection Solutions</i>	<i>Recommended Products</i>
Overcurrent due to short circuit or overload. High In-rush Current when plug in the adaptor.	Surface Mounted Fuses are used to provide over current protection. FA/FF series are designed to withstand high in-rush current.	F0603/0402 FA/FF series
Damage due to ESD events; High speed data rate requires low capacitance device to minimize distortion	GcDiodes are designed for protect high speed data ports from ESD events, sustain over 8kV by IEC61000-4-2 standard.	ES0402 or MLV 0402 ES series
EMI due to high frequency noise in the signal line	Ferrite Beads are widely used as low cost EMC solution.	MCB series

Battery Input



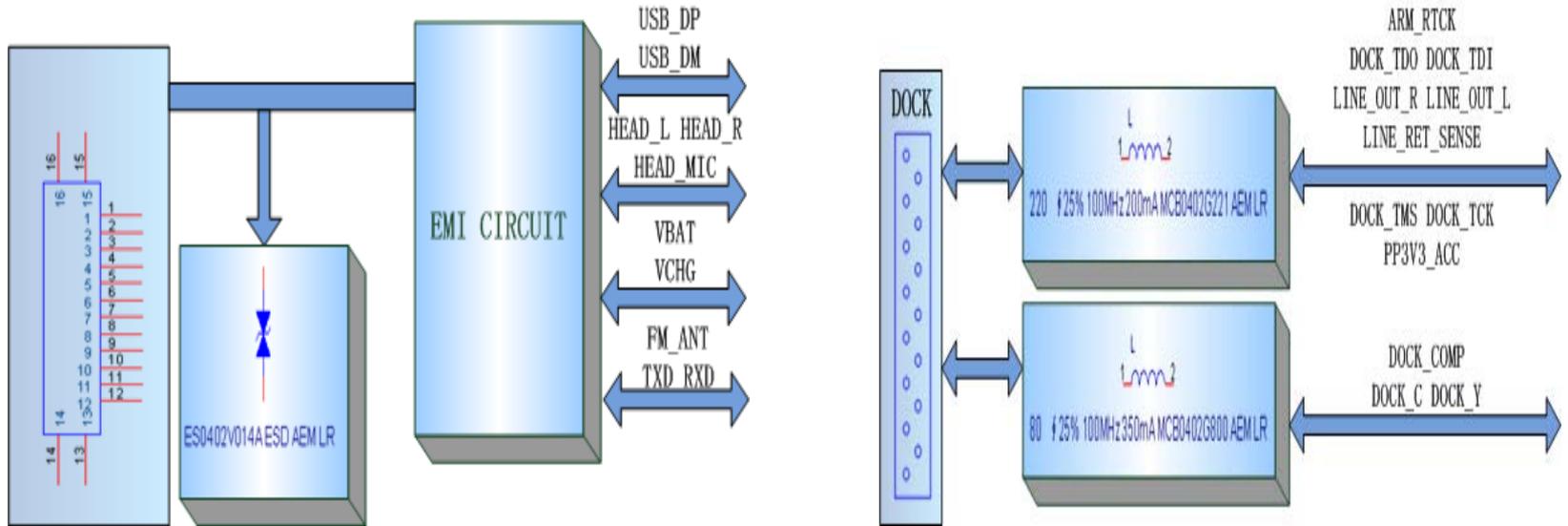
<i>Problems/Threats</i>	<i>Protection Solutions</i>	<i>Recommended Products</i>
Overcurrent due to short circuit or overload.	Surface Mounted Fuses are used to provide over current protection. CB series are designed to withstand high in-rush current.	F0603 CB series
Overvoltage due to power surge; Prevent damage due to ESD events	MLV Product provides protection against power surge or ESD events.	MLV 0402 NA series
EMI due to high frequency noise in the signal line	Ferrite Beads are widely used as low cost EMC solution.	MCB series

MIC, Headphone & Speaker Port



<i>Problems/Threats</i>	<i>Protection Solutions</i>	<i>Recommended Products</i>
Damage due to ESD events; High speed data rate requires low capacitance device to minimize distortion	GcDiodes are designed for protect high speed data ports from ESD events, sustain over 8kV by IEC61000-4-2 standard.	ES0402 or MLV 0402 ES series
EMI due to high frequency noise in the signal line	Ferrite Beads are widely used as low cost EMC solution.	MCB series

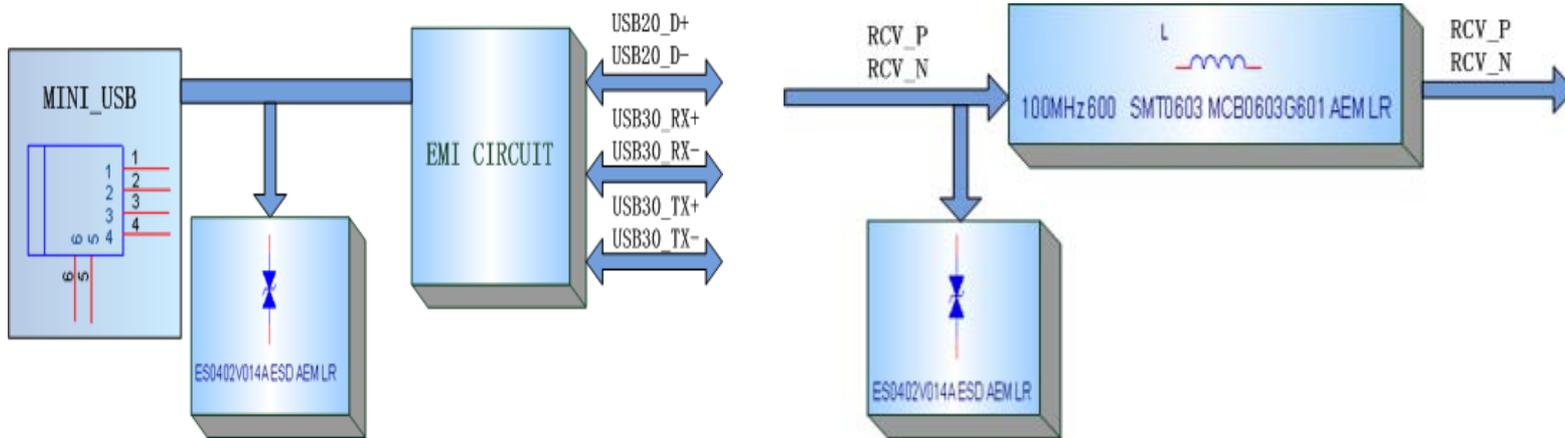
I/O CNN & DOCK



<i>Problems/Threats</i>	<i>Protection Solutions</i>	<i>Recommended Products</i>
Damage due to ESD events; Ultra high data rate requires ultra low capacitance to minimize the signal distortion	GcDiodes are designed for protect high speed data ports from ESD events, sustain over 8kV by IEC61000-4-2 standard.	ES0402 or MLV 0402 ES series
EMI due to high frequency noise in the signal line	Ferrite Beads are widely used as low cost EMC solution.	MCB series



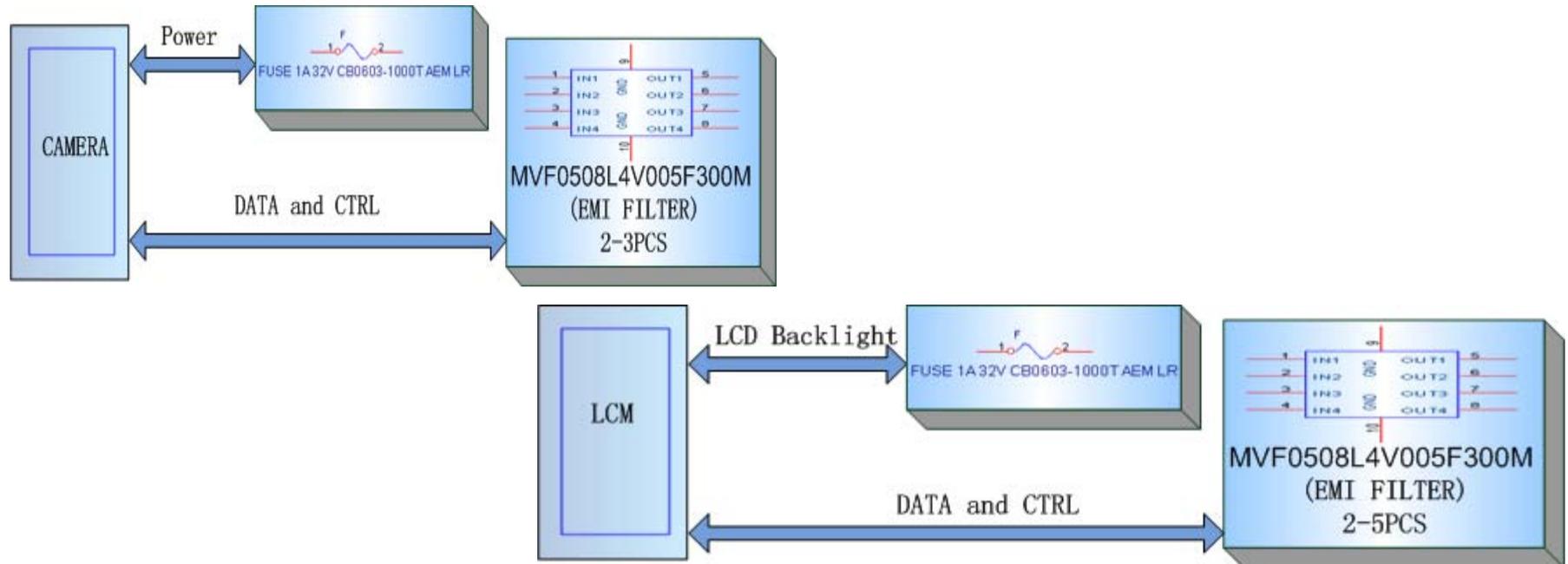
MINI_USB Port/RCV



<i>Problems/Threats</i>	<i>Protection Solutions</i>	<i>Recommended Products</i>
Damage due to ESD events; Ultra high data rate requires ultra low capacitance to minimize the signal distortion, especially the new USB 3.0 standard	GcDiodes are designed for protect high speed data ports from ESD events, sustain over 8kV by IEC61000-4-2 standard.	ES0402 or MLV 0402 ES series
EMI due to high frequency noise in the signal & power line	Ferrite Beads are widely used as low cost EMC solution.	MCB series



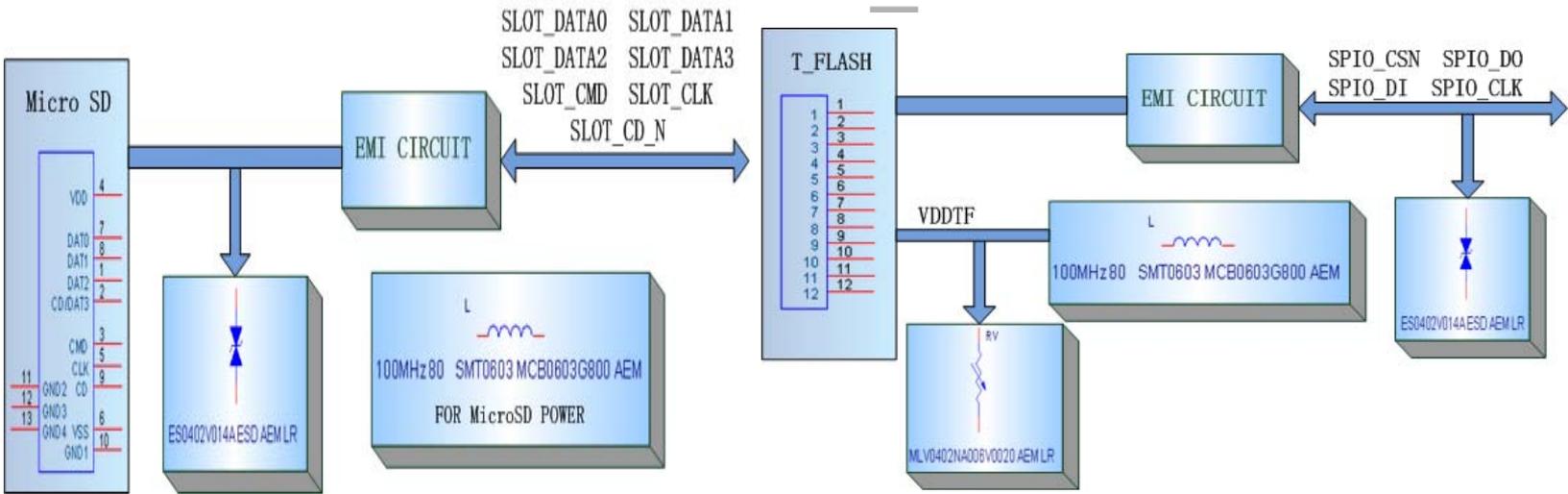
Camera / LCM



<i>Problems/Threats</i>	<i>Protection Solutions</i>	<i>Recommended Products</i>
Overcurrent due to short circuit or overload. High In-rush Current when Flash.	Surface Mounted Fuses are used to provide over current protection CB series are designed to withstand high in-rush current.	F0603 CB series
Damage due to ESD events; EMI due to high frequency noise in the signal line	EMI Filter is designed for protect high speed data from ESD events and for EMC solution.	MVF0508 series

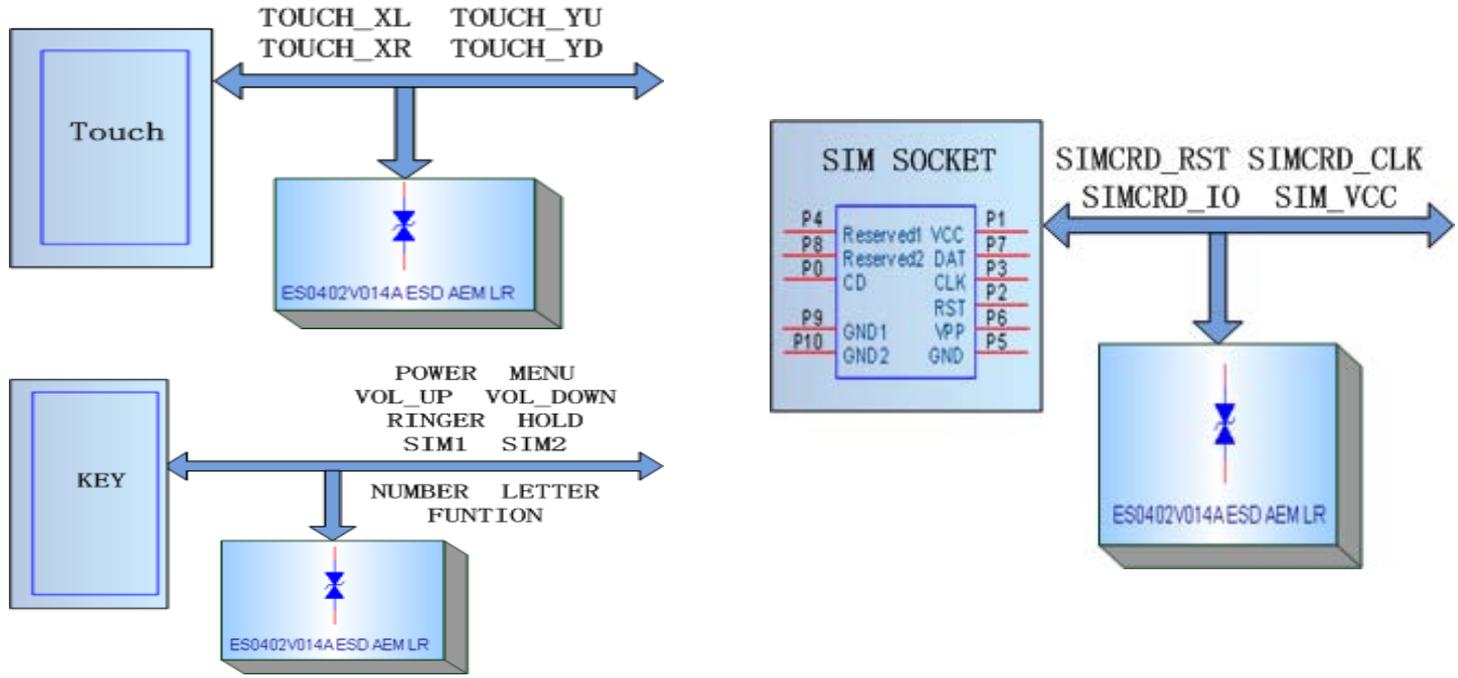


Micro SD / T_FLASH



<i>Problems/Threats</i>	<i>Protection Solutions</i>	<i>Recommended Products</i>
Damage due to ESD events; High speed data rate requires low capacitance device to minimize distortion	GcDiodes are designed for protect high speed data ports from ESD events, sustain over 8kV by IEC61000-4-2 standard.	ES0402 or MLV 0402 ES series
Overvoltage due to power surge; Prevent damage due to ESD events	MLV Product provides protection against power surge or ESD events.	MLV 0402 NA series
EMI due to high frequency noise in the signal & power line	Ferrite Beads are widely used as low cost EMC solution.	MCB series

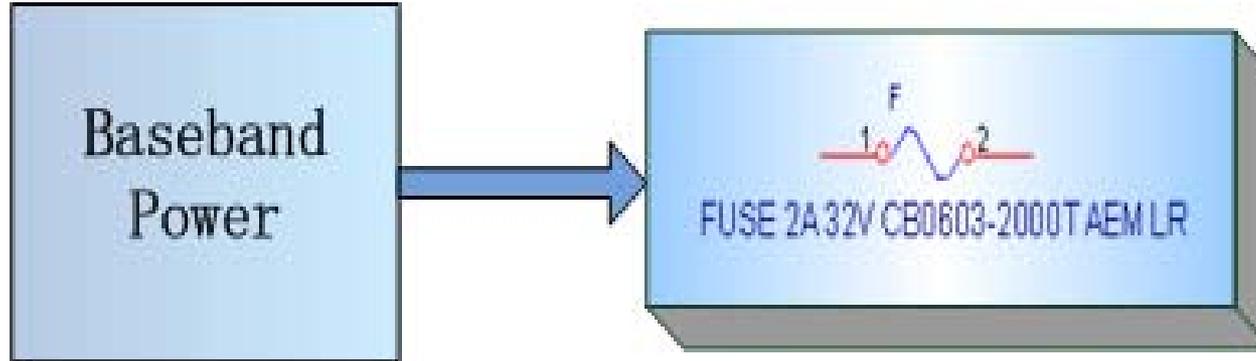
Touch / SIM / KEY



<i>Problems/Threats</i>	<i>Protection Solutions</i>	<i>Recommended Products</i>
Damage due to ESD events; Ultra high data rate requires ultra low capacitance to minimize the signal distortion	GcDiodes are designed for protect high speed data ports from ESD events, sustain over 8kV by IEC61000-4-2 standard.	ES0402 or MLV 0402 ES series



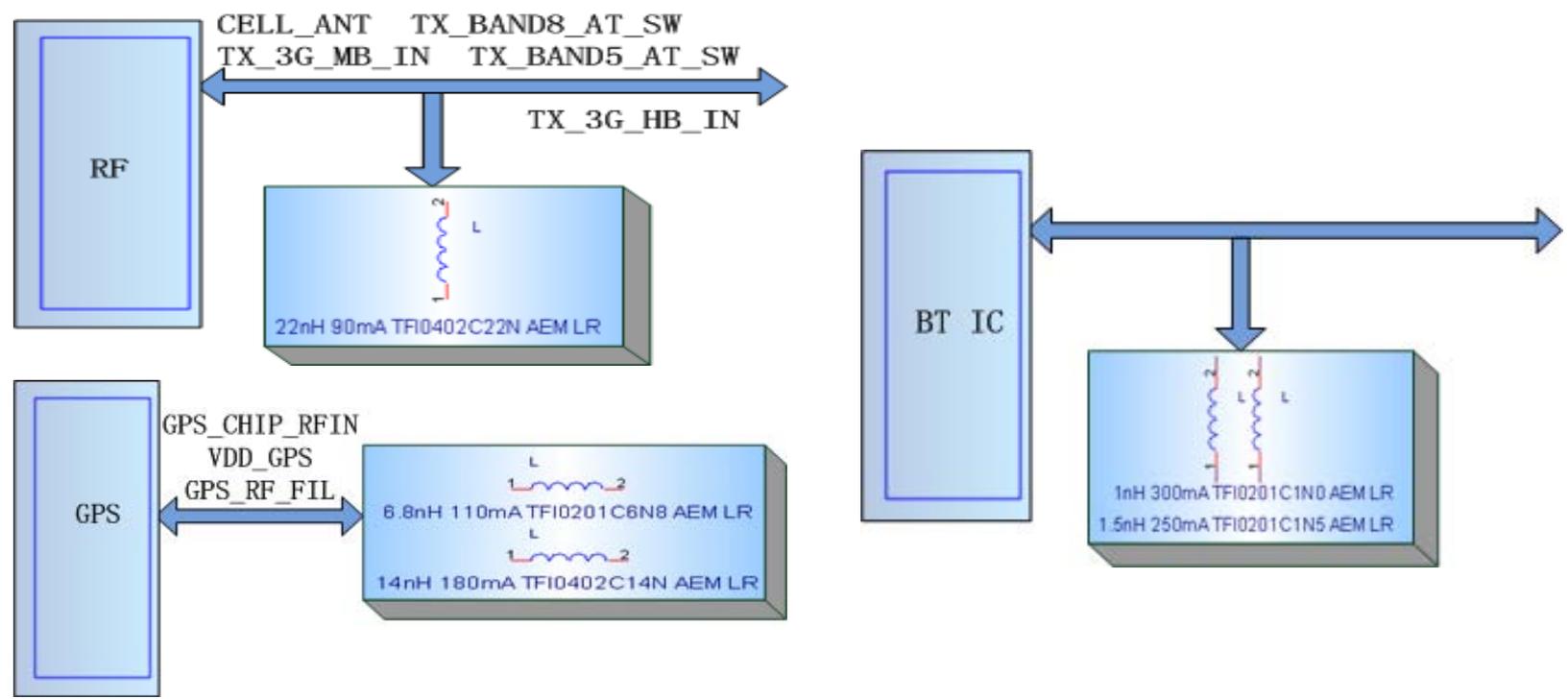
Baseband Power



<i>Problems/Threats</i>	<i>Protection Solutions</i>	<i>Recommended Products</i>
Overcurrent due to short circuit or overload.	Surface Mounted Fuses are used to provide over current protection CB series are designed to withstand high in-rush current.	F0603 CB series



RF / BT / GPS



<i>Problems/Threats</i>	<i>Protection Solutions</i>	<i>Recommended Products</i>
EMI due to high frequency noise in the signal & power line	Thin film chip inductors are used for EMC solution for high precision.	TFI0402/0201 series



Other EMI/EMC application

PA		MHI series	MCB series
PMIC		MCI series	MCP series
MOTOR			MCB series
AVDD	MLV NA series		MCP series
UART	MLV NA series	MCI series	MCP series
Ringer	MLV ES series	MCI series	
Slide detector	MLV ES series		

