

ESD by Interface

Selection Guide



Texas Instruments offers system-level ESD protection for all interface connectors with a portfolio that includes diodes, diode arrays and integrated protection. TI ESD protection diodes include flow-through pin mapping which allows for easy routing. Integrated protection devices save board space and increase reliability.

Use the tables below to select the right device for your interface.

Interface	Product Recommendation
Antenna	TPD1E01B04
Audio	TPD1E10B09
CAN/LIN	TPD2E007
Display	TPD6F202
DisplayPort	TPD4E02B04
Ethernet (10/100/1000Mb)	TPD4E1U06
GPIO (3.3V)	TPD1E1B04
HDMI 1.4/1.3	TPD12S521
HDMI 2.0 (6G bps)	TPD1E04U04 x8 + TPD5S116
I2C	TPD2E2U06
IO Link	TVS3300
Keypad	TPD6F002
LED	TPD4E1U06
LVDS	TPD1E1B04
Memory SDIO	TPD6F003
MHL	TPD4E02B04
PCIe Gen 3 (8 Gbps)	TPD4E02B04
Push Button/Side Keys	TPD1E10B06
RS-485/432/422/232	TPD2E007
SATA	ESD122
USB 2.0	TPD1E1B04 x2
USB 2.0 + 0.5A Current Limit	TPD3S014
USB 3.0	TPD6E05U06
USB 3.0 + 1.5A Current Limit	TPD3S044 / TPD4E02B04
USB 3.1 Gen 2 (10 Gbps)	ESD122 x2
USB Type-C (Full featured)	TPD8S300 + ESD122 x4
USB Type-C (Power only)	TPD2S300
USB V _{BUS} Power Rail	TPD1S514
VGA	TPD7S019

Interface	Automotive Recommendation
Antenna	TPD1E01B04
Audio	TPD1E10B09-Q1
CAN	N/A
CAN-FD	N/A
Display	TPD6F002-Q1
DisplayPort	TPD4E05U06-Q1
Ethernet 10/100Mb	TPD2E2U06-Q1
Ethernet 1000Mb	TPD1E05U06-Q1
FlexRay	N/A
FPD-Link	TPD6F002-Q1
HDMI 1.3/1.4/2.0	TPD4E05U06-Q1
Keypad	TPD6F002-Q1
LCD	TPD6F002-Q1
LIN	N/A
LVDS	TPD4E05U06-Q1
MHL	TPD4E05U06-Q1
PCIe Gen 2	TPD4E05U06-Q1
Precision Measurement	TPD4E001-Q1
Push Button/Side Keys	TPD1E10B06-Q1
SD Card	TPD4E001-Q1
SIM Card	TPD4E05U06-Q1
USB 2.0	TPD2E2U06-Q1
USB 2.0 + 0.5A Current Limit	TPD3S014-Q1
USB 3.0	TPD4E05U06-Q1
USB Type C	TPD6S300 + TPD4E05U06-Q1 x2
USB Short to Battery (Vbus, D+, D-)	TPD3S716-Q1
USB Short to Battery (D+, D-)	TPD2S703-Q1

*Q100 in progress

**Q100 not started

For more information visit [TI.com/ESD](https://www.ti.com/ESD)

IMPORTANT NOTICE FOR TI DESIGN INFORMATION AND RESOURCES

Texas Instruments Incorporated ("TI") technical, application or other design advice, services or information, including, but not limited to, reference designs and materials relating to evaluation modules, (collectively, "TI Resources") are intended to assist designers who are developing applications that incorporate TI products; by downloading, accessing or using any particular TI Resource in any way, you (individually or, if you are acting on behalf of a company, your company) agree to use it solely for this purpose and subject to the terms of this Notice.

TI's provision of TI Resources does not expand or otherwise alter TI's applicable published warranties or warranty disclaimers for TI products, and no additional obligations or liabilities arise from TI providing such TI Resources. TI reserves the right to make corrections, enhancements, improvements and other changes to its TI Resources.

You understand and agree that you remain responsible for using your independent analysis, evaluation and judgment in designing your applications and that you have full and exclusive responsibility to assure the safety of your applications and compliance of your applications (and of all TI products used in or for your applications) with all applicable regulations, laws and other applicable requirements. You represent that, with respect to your applications, you have all the necessary expertise to create and implement safeguards that (1) anticipate dangerous consequences of failures, (2) monitor failures and their consequences, and (3) lessen the likelihood of failures that might cause harm and take appropriate actions. You agree that prior to using or distributing any applications that include TI products, you will thoroughly test such applications and the functionality of such TI products as used in such applications. TI has not conducted any testing other than that specifically described in the published documentation for a particular TI Resource.

You are authorized to use, copy and modify any individual TI Resource only in connection with the development of applications that include the TI product(s) identified in such TI Resource. NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER TI INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT OF TI OR ANY THIRD PARTY IS GRANTED HEREIN, including but not limited to any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information regarding or referencing third-party products or services does not constitute a license to use such products or services, or a warranty or endorsement thereof. Use of TI Resources may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

TI RESOURCES ARE PROVIDED "AS IS" AND WITH ALL FAULTS. TI DISCLAIMS ALL OTHER WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, REGARDING TI RESOURCES OR USE THEREOF, INCLUDING BUT NOT LIMITED TO ACCURACY OR COMPLETENESS, TITLE, ANY EPIDEMIC FAILURE WARRANTY AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

TI SHALL NOT BE LIABLE FOR AND SHALL NOT DEFEND OR INDEMNIFY YOU AGAINST ANY CLAIM, INCLUDING BUT NOT LIMITED TO ANY INFRINGEMENT CLAIM THAT RELATES TO OR IS BASED ON ANY COMBINATION OF PRODUCTS EVEN IF DESCRIBED IN TI RESOURCES OR OTHERWISE. IN NO EVENT SHALL TI BE LIABLE FOR ANY ACTUAL, DIRECT, SPECIAL, COLLATERAL, INDIRECT, PUNITIVE, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES IN CONNECTION WITH OR ARISING OUT OF TI RESOURCES OR USE THEREOF, AND REGARDLESS OF WHETHER TI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

You agree to fully indemnify TI and its representatives against any damages, costs, losses, and/or liabilities arising out of your non-compliance with the terms and provisions of this Notice.

This Notice applies to TI Resources. Additional terms apply to the use and purchase of certain types of materials, TI products and services. These include; without limitation, TI's standard terms for semiconductor products (<http://www.ti.com/sc/docs/stdterms.htm>), [evaluation modules](#), and [samples](http://www.ti.com/sc/docs/sampterm.htm) (<http://www.ti.com/sc/docs/sampterm.htm>).

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2017, Texas Instruments Incorporated