DIO7963/7962

Ultra Low Power HDMI Interface Load Switch+ LDOs

Features

- Integrated Solution for Current Limit SW and multiple LDOs
- Current limiting switch at 200mA
- LDO with 5V input to 3.3V, 1.0V and 1.8V (DIO7963 only)
- Built-In fault Protection Circuitry
- -40°C to 85°C Operating Temperature Range
- Green package: EP-SOIC-8

Applications

- Set-top box
- Mobile device

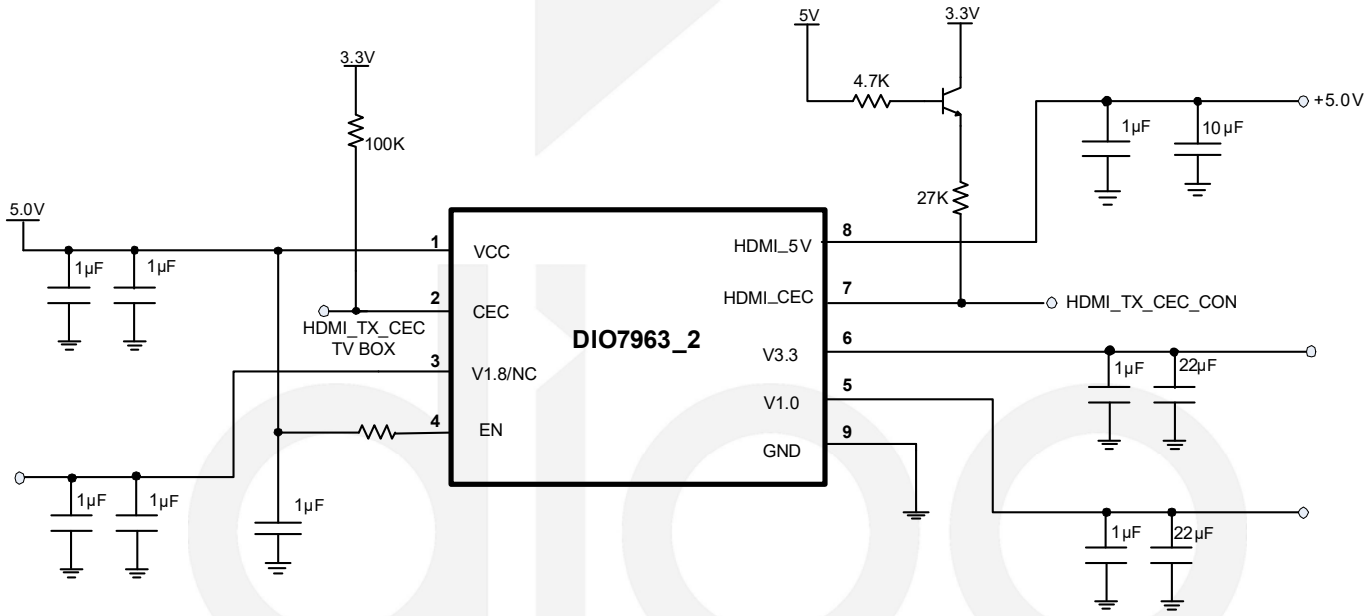
Descriptions

The DIO7963/7962 provides the load switch and mobile consumer HDMI interface. The product is fully compliant with the HDMI interface logic with built-in load switch to protect the hot plug-in. The load switch can support up to 385mA of load current. Internal level translators allow controllers operating with supplies as low as 3.0V.

DIO7962 also features dual LDO output offering maximum flexibility in system design, while the DIO7963 has additional 1.8V LDO output with low operating current of typically 100μA.

The DIO7963/7962 are both available in the Green SOIC-8 package with exposed thermal pad. It operates over an ambient temperature range of -40°C to 85°C.

Typical Application



Ordering Information

Order Part Number	Top Marking		T_A	Package	
DIO7963XS8	DIO796X	Green	-40 to 85°C	EP-SOIC-8	Tape & Reel, 2500
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Pin Assignments

EP-SOIC-8 (Top View)

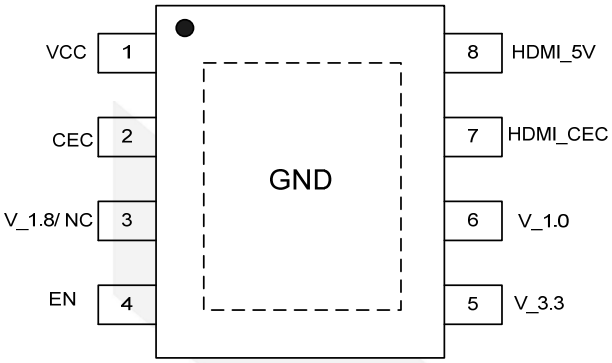


Figure 1 Pin-out Assignment

Pin Description

Pin Name	Pin number	Pin Description
VCC	1	Power supply for current Limit Switch Input. with range between 4.5V to 5.5V.
CEC	2	CEC Pin of CPU Side of 3.3V control logic
V_1.8	3	1.8V LDO Output. Only DIO7963 available.
EN	4	Enable Pin.
V_3.3	5	3.3V LDO Output.
V_1.0	6	1.0V LDO Output.
HDMI_CEC	7	CEC Pin of HDMI Side with 3.3V control logic
HDMI_5V	8	Current Limit Switch Output.
GND	Exposed pad	Ground

Absolute Maximum Ratings

Stresses beyond those listed under “Absolute Maximum Rating” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other condition beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maxim rating conditions for extended periods may affect device reliability.

Parameter		Rating	Unit
VCC		-0.3V to 6V	V
HDMI_5V to GND		-0.3V to VCC+0.3V	V
CEC to GND		-0.3V to VCC	V
HDMI_CEC to GND		-0.3V to 6V	V
Package Thermal Resistance	θ_{JA}, EP-SOIC-8	50	°C/W
Junction Temperature Range		145	°C
Lead Temperature (Soldering, 10 sec.)		260	°C
Storage Temperature Range (T_{STG})		-65 to 150	°C
ESD Susceptibility	HBM (Human Body Mode): HDMI_CEC, HDMI_5V to GND	8	kV
	Other pins	2	
	CDM (Charge Device Mode)	1	

Note: Input and output negative ratings may be exceeded if input and output diode current ratings are observed.

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation to ensure optimal performance to the datasheet specifications. DIOO does not recommend exceeding them or designing to Absolute Maximum Ratings.

Parameter	Rating	Unit
VCC	4.5 to 5.5	V
All other pins	0 to 5.5	V
Junction Temperature Range	-40 to 125	°C
Ambient Temperature Range	-40 to 85	°C

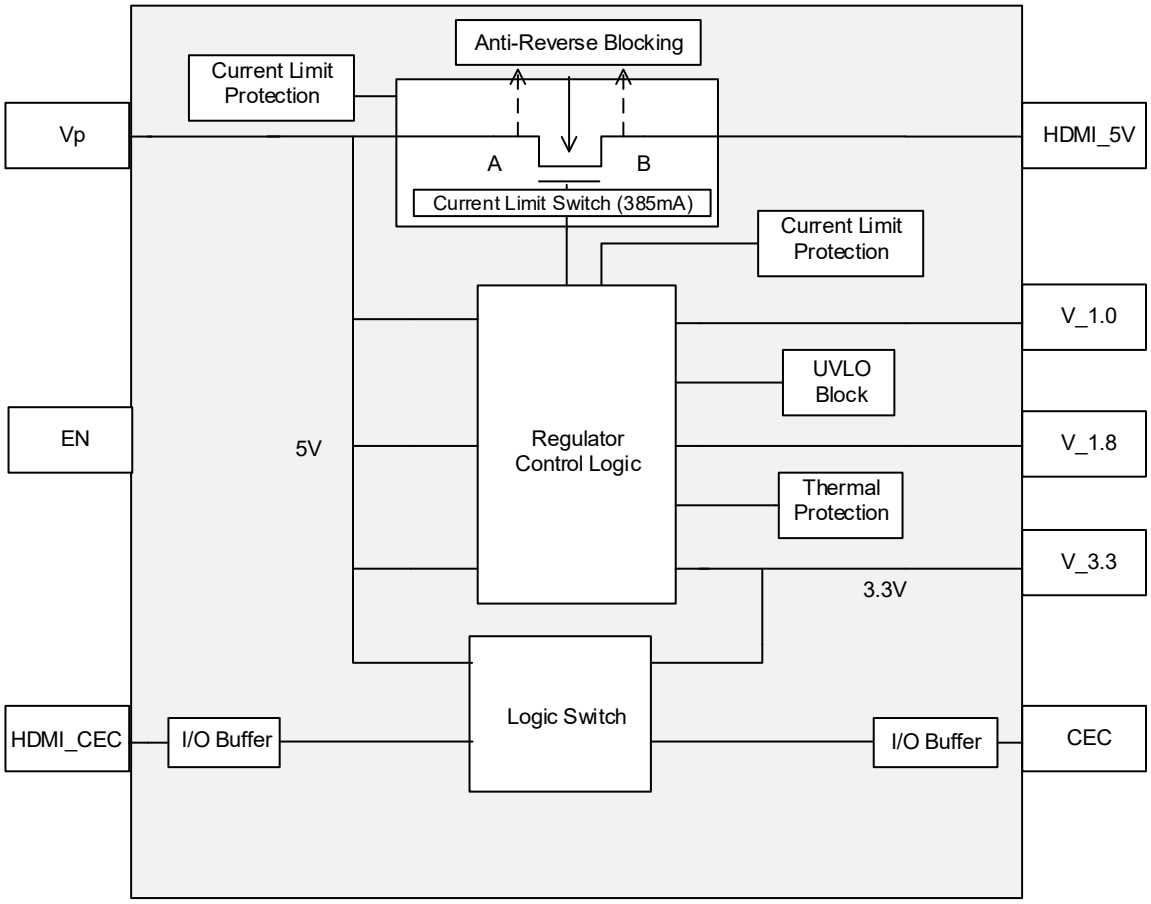
Electrical Characteristics

(VCC= 5.0V, T_A= 25℃, unless otherwise specified.)

Parameters	Conditions	Min	Typ.	Max	Units
Input Power Supply					
VCC Operating Voltage		4.5		5.5	V
VCC Operating Current	VCC = 5.0V		137		μA
EN Logic High Threshold		1.5			V
EN Logic Low Threshold				0.4	V
HDMI/CPU Logical DC Parameters					
CEC voltage of HDMI side	HDMI_CEC		3.3		V
CEC voltage of CPU side	CEC		3.3		V
HDMI/CPU Logical Timing Parameters					
HDMI_CEC Rise Time	Loaded with 30pF (10% to 90%)		296		ns
HDMI_CEC Fall Time	Loaded with 30pF (10% to 90%)		2.8		ns
HDMI_CEC Rise delay Time	Loaded with 30pF (50% to 50%)		1.8		ns
HDMI_CEC Fall delay Time	Loaded with 30pF (50% to 50%)		2.1		ns
CEC Rise Time	Loaded with 30pF (10% to 90%)		303		ns
CEC Fall Time	Loaded with 30pF (10% to 90%)		2.96		ns
CEC Rise delay Time	Loaded with 30pF (50% to 50%)		34		ns
CEC Fall delay Time	Loaded with 30pF (50% to 50%)		2.3		ns
LDO Output Characteristics					
Current Limit			170		mA
Load Regulation	Iout: 1mA to 50mA			2	%
Line Regulation	Iout = 1mA, VCC :4.75 to 5.25V			0.2	%
Thermal Shutdown Temperature			140		℃
Thermal Shutdown Hysteresis			17		℃
Output accuracy		-2		2	%
Load Switch Characteristics					
HDMI_5V Output Voltage	IHDMI_5V = 200mA	4.88			V
$R_{DS(ON)}$	VCC =5V		400		mΩ
Over Current Trigger Point	VCC=5V	0.32	0.385	0.45	A
t_{IOS} Response Time to Short Circuit	VCC =5V, C_{OUT}=1μF		2		μs
Tr Rise time, output	VCC =5V, C_L=1μF, R_L=100Ω		170		μs
Tf Fall time, output			220		

Specifications subject to change without notice.

Block Diagram



CONTACT US

Dioo is a professional design and sales corporation for high-quality and performance analog semiconductors. The company focuses on industry markets, such as, cell phone, handheld products, laptop, and medical equipment and so on. Dioo's product families include analog signal processing and amplifying, LED drivers and charger IC. Go to http://www.dioo.com for a complete list of Dioo product families.

For additional product information, or full datasheet, please contact with our Sales Department or Representatives.