



US210AD

Preliminary

CMOS IC

PRECISION ADJUSTABLE CURRENT-LIMITED POWER-DISTRIBUTION SWITCHES

DESCRIPTION

The UTC **US210AD** is a cost-effective, low voltage, single P-MOSFET load switch. It is intended for applications where precision current limiting is required or heavy capacitive loads and short-circuits are likely to be encountered. This device offers a programmable current-limit threshold by an external resistor from SET to ground.

The UTC **US210AD** device limits the output current to a safe level by switching into a constant-current mode when the output load exceeds the current-limit threshold. It also provides for a reverse-voltage protection which can disable the power-switch in the event that the output voltage is driven higher than the input to protect devices on the input side of the switch.

The $R_{DS(ON)}$ of the MOSFET switch is as low as 160mΩ.

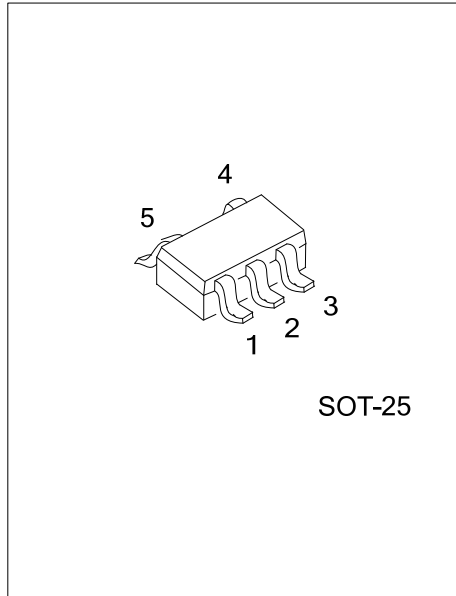
FEATURES

- * Operating range: 2.7V~5.5V
- * High-side MOSFET: 160mΩ (TYP.)
- * Quiescent supply current: 25μA(TYP.)
- * Standby supply current: 1μA (Max.)
- * 1A Continuous Output Current* Programmable current limit, 1A(TYP.)
- * Reverse input-output voltage protection
- * Built-in soft-start
- * Under-voltage Lockout

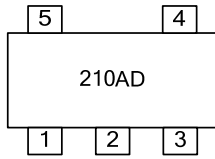
ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
US210ADG-AF5-R	US210ADG-AF5-R	SOT-25	Tape Reel

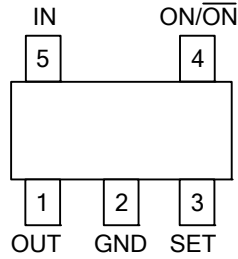
<p>US210ADG-AF5-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



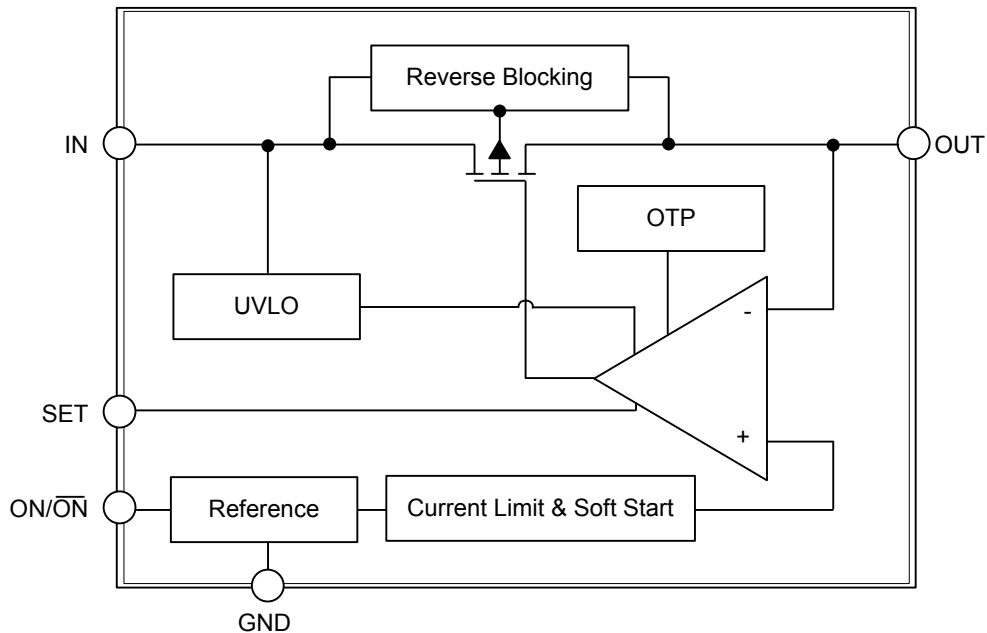
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	OUT	Power-switch output.
2	GND	Ground connection; connect externally to Power PAD
3	SET	External resistor used to set current-limit threshold; recommended 6.8kΩ
4	ON/ON	Enable input, logic high turns on power switch
5	IN	Power Input.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

over operating free-air temperature range unless otherwise noted (Note)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{IN}	-0.3 ~ 6	V
Enable Input Voltage	V_{ON}	-0.3 ~ 6	V
SET Voltage	V_{SET}	-0.3 ~ 6	V
Output Voltage	V_{OUT}	-0.3 ~ 6	V
Output Current	I_{OUT}	Internally Limited	A
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-65 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}		°C/W

■ RECOMMENDED OPERATING CONDITIONS

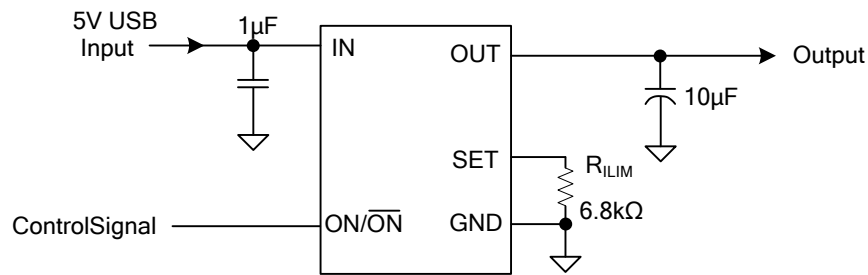
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	V_{IN}	2.7		5.5	V
Enable Voltage	$V_{/EN}$			5.5	V
Continuous Output Current, OUT	I_{OUT}			1.0	A
Operating Virtual Junction Temperature	T_J	-40		+125	°C

■ ELECTRICAL CHARACTERISTICS

($V_{IN}=5V$, $T_A=25^{\circ}C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
POWER SUPPLY						
Supply Voltage	V_{IN}		2.7		5.5	V
Quiescent Current	I_{ON}	IN = 5 V, ON/ON = Active, $I_{OUT} = 0$ A		25	45	μA
Shutdown Current	I_{OFF}	IN = 5 V, ON/ON = Inactive			1	μA
Switch Off Current	I_{O_LEAK}	IN = 5 V, ON/ON = Inactive, $V_{OUT} = 0V$			1	μA
POWER SWITCH						
Static Drain-Source On-State Resistance	$R_{DS(on)}$	IN=5V		160		m Ω
		IN=3V		190		m Ω
ENABLE INPUT ON OR \overline{ON}						
Enable Pin Turn On/Off Threshold	V_{ON}	IN=2.7V to 5.5V	0.8		2.0	V
Input Current	I_{ON}	$V_{ON}=0V$ or 5.5V		± 1		μA
Turn On Time	T_{ON}	IN=5V, $R_L=10\Omega$		65	200	μs
Turn Off Time	T_{OFF}			11	21	μs
CURRENT LIMIT						
Current-Limit Threshold	I_{OS}	$R_{SET}=6.8k\Omega$	0.85	1.1	1.35	A
UNDERVOLTAGE LOCKOUT						
Low-Level Input Voltage, IN	UVLO	V_{IN} Rising		2.3	2.65	V
Hysteresis, IN				200		mV

■ TYPICAL APPLICATION CIRCUIT



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