



POWER DISTRIBUTION SWITCH

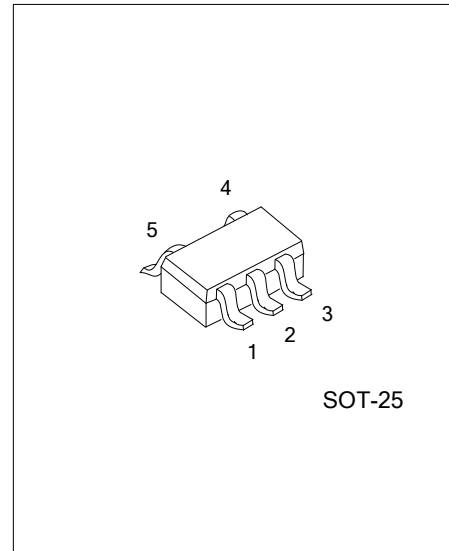
DESCRIPTION

The UTC **US206** is a power distribution switch. It particularly designed for self-powered and bus-powered Universal Serial Bus (USB) applications.

The $R_{DS(ON)}$ of the MOSFET switch is as low as $85m\Omega$. \overline{OC} is open-drain output report over-current or over-temperature event which has deglitch typical 9ms timeout period typically 9ms.

The UTC **US206** incorporates protection circuits including current limiting circuit with foldback function, thermal shutdown circuit designed to prevent catastrophic switch failure due to increasing power dissipation when continuous heavy loads or short circuit occurs. Besides, a built-in charge pump is used to drive the N-channel MOSFET that is free of parasitic body diode to eliminate any reversed current flow across the switch when it is powered off.

The UTC **US206** is applied in high-side power protection switch, USB power management, USB host and self-powered hubs, USB bus-powered hubs, hot plug-in power supplies, battery-charger circuits.



FEATURES

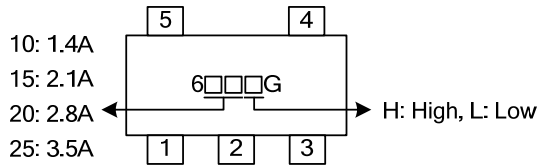
- * Operating on The Range of 3.0V to 5.5V
- * High-Side MOSFET with $85m\Omega R_{DS(ON)}$
- * Quiescent Supply Current: $65\mu A$
- * Available With 4 Versions of Current Limits with Foldback
- * Rise Time: $400\mu S$ (TYP.)
- * UVLO (Under Voltage Lockout)
- * Output Shutdown Pull-low Resister
- * Shutdown Supply Current: $1\mu A$ (MAX.)
- * Logic Level Enable Pin, Available with Active-High or Active-Low Version
- * Reverse Current is Not Generated when in Power Off State
- * Deglitched Open-Drain Over-Current Flag Output (\overline{OC})

ORDERING INFORMATION

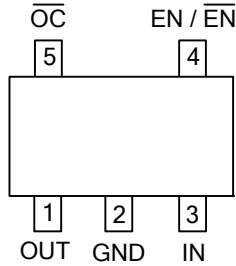
Ordering Number	Package	Packing
US206xG-xx-AF5-R	SOT-25	Tape Reel

<p>US206xG-xx-AF5-R</p> <ul style="list-style-type: none"> (1)Packing Type (2)Package Type (3)Current Limit Threshold (4)Green Package (5)Logic Level Enable Pin 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) AF5: SOT-25 (3) 10: 1.4A, 15: 2.1A, 20: 2.8A, 25: 3.5A (4) G: Halogen Free and Lead Free (5) H: Active High, L: Active Low
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MARKING



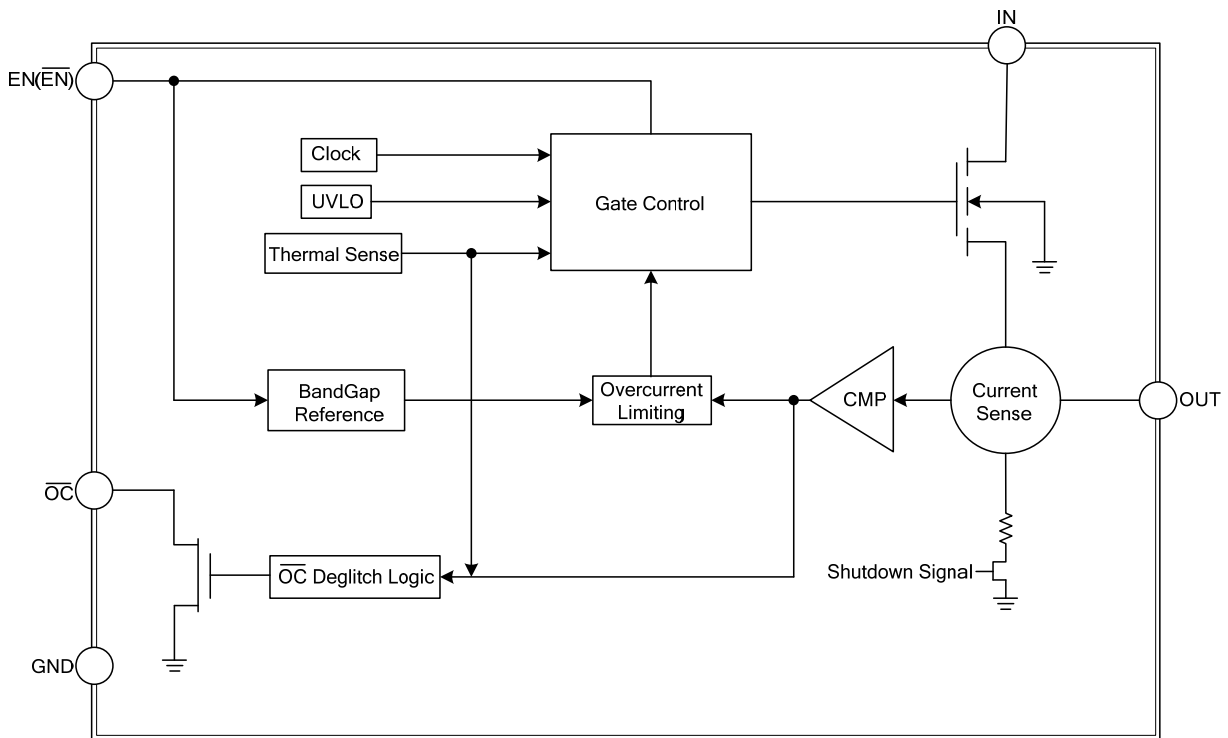
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	OUT	Switch Output: Output MOSFET Source. Typically connect to switched side of load.
2	GND	Ground
3	IN	Input Supply: Output MOSFET Drain, which also supplies IC's internal circuitry. Connect to positive supply.
4	EN(EN-bar)	Enable: Logic level enable input. Make sure EN pin never floating.
5	OC-bar	Overcurrent open-drain OC-bar output

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{IN}	6	V
Output Voltage	V_{OUT}	6	V
Output Current	I_{OUT}	Internally Limited	
Power Dissipation ($T_A = 25^\circ\text{C}$)	P_D	0.4	W
Enable Input	V_{EN}	-0.3 ~ 6	V
Storage Temperature	T_S	-65 ~ +150	$^\circ\text{C}$
Reflow Temperature (soldering, 10sec)		260	$^\circ\text{C}$

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.

■ OPERATING RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{IN}	+3 ~ +5.5	V
Operating Temperature	T_A	-40 ~ +85	$^\circ\text{C}$

■ THERMAL DATA

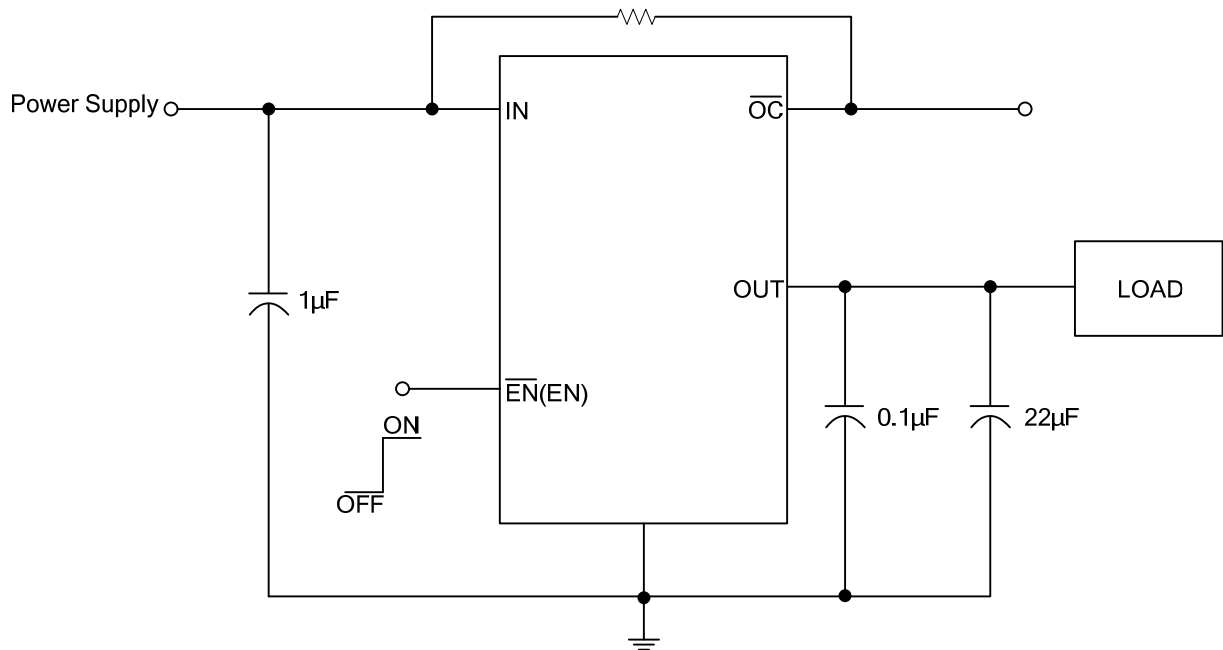
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	250	$^\circ\text{C/W}$

■ ELECTRICAL CHARACTERISTICS

($V_{IN}=5\text{V}$, $C_{IN}=1\mu\text{F}$, $C_{OUT}=1\mu\text{F}$, $R_L=10\Omega$, $T_A=25^\circ\text{C}$, unless otherwise noted.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Input Voltage Range	V_{IN}				5.5	V	
Output MOS $R_{DS(ON)}$	$R_{DS(ON)}$	$I_{OUT}=2\text{A}$	US206-25	85	95	m Ω	
		$I_{OUT}=1.5\text{A}$	US206-20				
		$I_{OUT}=1\text{A}$	US206-15				
		$I_{OUT}=0.5\text{A}$	US206-10				
Supply Current	I_{ON}			65		μA	
Output Turn-on Rising Time	T_{ON}	$R_L=10\Omega$, 90% Settling		400		μs	
Current Limit Threshold	I_{OC}	$V_{OUT}=4\text{V}$	US206-25	2.0	2.5	3.5	A
			US206-20	1.5	2.0	2.8	
			US206-15	1.1	1.5	2.1	
			US206-10	0.7	1.0	1.4	
Short-circuit Current	I_{SC}	$V_{OUT}=0\text{V}$	US206-25	0.2	1.6	2.3	A
			US206-20	0.2	1.3	1.9	
			US206-15	0.2	1.0	1.4	
			US206-10	0.2	0.67	1.0	
EN Input Threshold	V_{EN}		1.4	1.6	1.8	V	
Shutdown Supply Current	I_{OFF}			0.1	1	μA	
Output Leakage Current	I_{LEAK}	EN="0", $V_{OUT}=0\text{V}$		0.5	1	μA	
V_{IN} Under Voltage Lockout	V_{UVLO}		2.0	2.5	3.0	V	
V_{IN} Under Voltage Hysteresis	ΔV_{UVLO}			200		mV	
Thermal Limit	T_{OT}			135		$^\circ\text{C}$	
Thermal Limit Hysteresis	ΔT_{OT}			20		$^\circ\text{C}$	
$\overline{\text{OC}}$ Deglitch	T_{OC}	UTC US206, $\overline{\text{OC}}$ assertion or deassertion	4	9	15	ms	
$\overline{\text{OC}}$ Output Low Voltage	V_{OC}	UTC US206, $I_{\overline{\text{OC}}} = 5\text{mA}$			0.4	V	
$\overline{\text{OC}}$ Off-State Current	I_{OC-OFF}	UTC US206, $V_{\overline{\text{OC}}} = 5\text{V}$			1	μA	

■ TYPICAL APPLICATION CIRCUIT



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