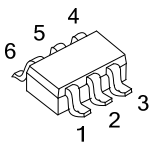
FIXED CURRENT LIMIT POWER DISTRIBUTION SWITCH



SOT-26

■ DESCRIPTION

UTC **US2005** is a low voltage cost-effective high-side power switch with current limiting function. It is particularly suitable for general purpose power distribution and control in digital televisions (DTV), printers, set top boxes (STB), PCs, PDAs, and other peripheral devices.

UTC **US2005** contains a charge pump circuitry to drive the internal MOSFET switch and also incorporate such protection circuits: soft-start circuit protect these devices from being damaged by limiting inrush current during plug-in; thermal shutdown circuit is used to prevent catastrophic switch failure from high-current loads. UVLO is used to ensure that the device remains off unless there is a valid input voltage present. A flag output is designed to indicate fault conditions to the local USB controller. Lower quiescent current as 80μA making this device ideal for portable battery-operated equipment.

UTC **US2005** allows momentary high current surges to pass unrestricted without sacrificing overall system safety. It also allows output slew rate limiting by an external capacitor.

■ FEATURES

* Built-in 80mΩ N-MOSFET
* Open-drain fault flag output to Indicate fault conditions
* Input voltage varies from 2.5V to 5.5V
* 80μA low quiescent current
* Current limit values of 0.5A, 0.8A, and 1.2A
* Automatic-on output after fault
* Thermal protection
* Under voltage lock-out (UVLO)

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
US2005L-AG6-R	US2005G-AG6-R	SOT-26	Tape Reel

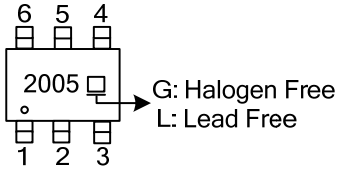
Note: xx: Output Voltage, refer to Marking Information.

US2005L-xx-AG6-R

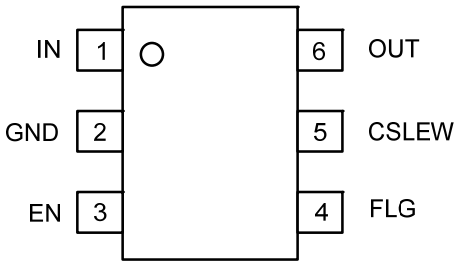
(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) AG6: SOT-26
(3)Output Voltage Code	(3) xx: Refer to Marking Information
(4)Halogen Free	(4) L: Lead Free, G: Halogen Free

■ MARKING INFORMATION

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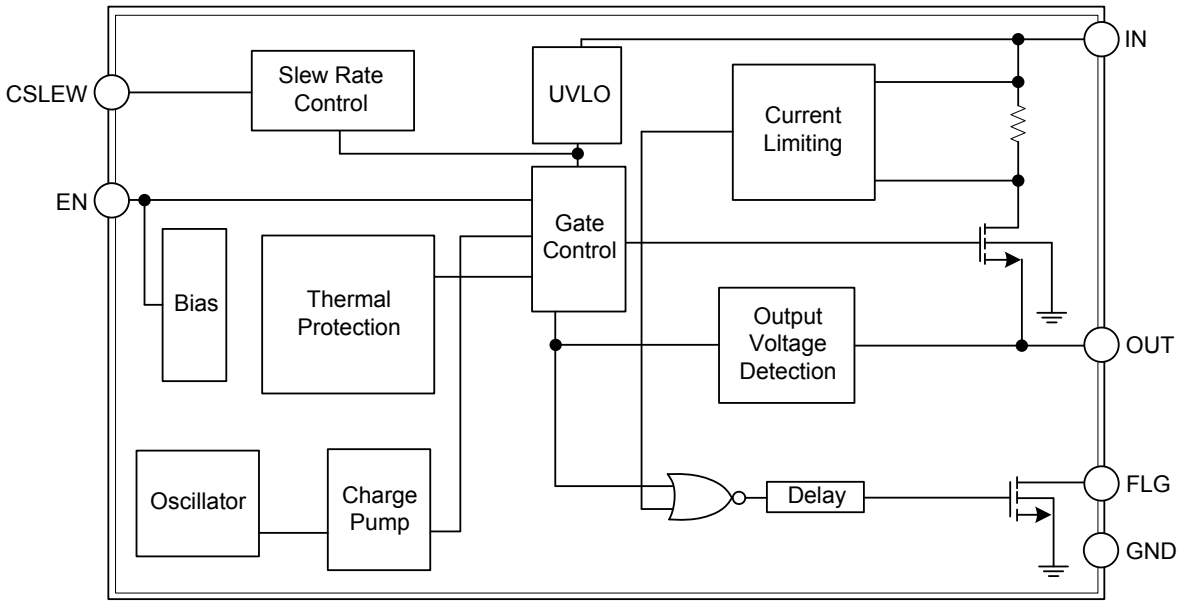
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	IN	Supply input. This pin provides power to both the output switch and the UTC US2005's internal control circuitry.
2	GND	Ground.
3	EN	Switch Enable (Input): Active-high (-1) or active-low (-2)
4	FLG	Fault status. A logic LOW on this pin indicates the UTC US2005 is in current limiting, or has been shut down by the thermal protection circuit. This is an 'Open Drain' output allowing logical OR' ing of multiple UTC US2005s.
5	CSLEW	Slew rate control. Adding a small value capacitor between this pin and VIN slows turn-ON of the power FET.
6	OUT	Switch output. The load being driven by UTC US2005 is connected to this pin.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified) (Note 1)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{IN}	6	V
Enable Input Voltage	V_{EN}	5.5	V
Flag Voltage	V_{FLG}	5.5	V
Power Dissipation (T_A=25°C)	P_D	0.4	W
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
Package Thermal Resistance	θ_{JA}	230	°C/W

■ RECOMMENDED OPERATING CONDITIONS (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Input Voltage	V_{IN}	2.5~5.5	V
Enable Input Voltage	$V_{I(EN)}$	0~5.5	V
Continuous Output Current Range		0~2.1	A
Ambient Operating Temperature	T_A	-40~+85	°C

■ ELECTRICAL CHARACTERISTICS

(V_{IN}=5V, $T_{AMBIENT}$=25°C unless specified otherwise. Bold indicates -40°C~+85°C limits.)

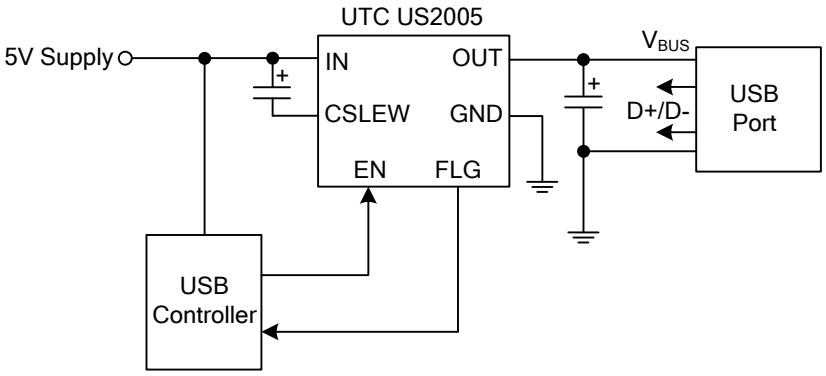
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Switch Input Voltage	V_{IN}		2.5		5.5	V
Internal Supply Current	I_{IN}	Switch=OFF, ENABLE=0V		1	5	μA
Internal Supply Current	I_{IN}	Switch=ON, I_{OUT}=0, ENABLE=1.5V		80	300	μA
Output Leakage Current	I_{LEAK}	V_{IN}=5V, V_{OUT}=0V, ENABLE=0		12	100	μA
Power Switch Resistance	$R_{DS(ON)}$	V_{IN}=5V, I_{OUT}=100mA		70	100	mΩ
					125	mΩ
Current Limit: –0.5	I_{LIMIT}	V_{OUT}=0.8V_{IN} to V_{OUT}=1V	0.5	0.7	0.9	A
Current Limit: –0.8	I_{LIMIT}	V_{OUT}=0.8V_{IN} to V_{OUT}=1V	0.8	1.1	1.5	A
Current Limit: –1.2	I_{LIMIT}	V_{OUT}=0.8V_{IN} to V_{OUT}=1V	1.2	1.6	2.1	A
Secondary Current Limit (Kickstart)	I_{LIMIT_2nd}	V_{IN}=2.7V	2.2	4	6	A
Under Voltage Lock Out Threshold	$UVLO_{THRESHOLD}$	V_{IN} Rising	2.0	2.25	25	V
		V_{IN} Falling	1.9	2.15	2.4	V
ENABLE Input Voltage	V_{EN}	V_{IL}(max.)			0.5	V
		V_{IH}(min)	1.5			V
ENABLE Input Current	I_{EN}	V_{EN}=0V~5.0V		1	5	μA
Fault Status Output Voltage	V_{FAULT}	I_{OL}=10mA		0.25	0.4	V
Over-Temperature Threshold	$OT_{THRESHOLD}$	T_J Increasing		145		°C
		T_J Decreasing		135		

■ AC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Turn-ON Rise Time	t_{RISE}	R_L=10Ω, C_{LOAD}=1μF, V_{OUT}=10%~90%	500	1000	1500	μs
Delay Before Asserting Or Releasing FLG	t_{D_FAULT}	Time from Current Limiting to FLG State Change. UTC US2005	20	32	49	ms
Output Turn-ON Delay	t_{ON_DLY}	R_L=43Ω, C_L=120μF, V_{EN}=50%~V_{OUT}=90%		1000	1500	μs
Output Turn-OFF Delay	t_{OFF_DLY}	R_L=43Ω, C_L=120μF, V_{EN}=50%~V_{OUT}=90%			700	μs

Notes: 1. Exceeding the absolute maximum rating may damage the device.
2. The device is not guaranteed to function outside its operating rating.

■ TYPICAL APPLICATION CIRCUIT



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