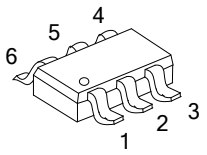
IR FILTER SWITCH DRIVER



SOT-26

■ DESCRIPTION

UTC **UMD8511** is an IR filter switch driver IC designed for switching IR filter in IR-Cut (ICR). With appropriate input controls, UTC **UMD8511** is made up of a one-channel, low saturation, bi-directional H-bridge driver. The protection diode circuit built in UTC **UMD8511** can minimize the disturbance caused by the feedback current when ESD impulse occurs, or when the ICR is shut down.

The typical impedance of the current switches in UTC **UMD8511** is less than 3Ohm. The current driven through the actuator is then determined by the impedance of the ICR. For example, with 5.0V power supply, the current through the actuator is around 300mA with 0.73V output voltage drop.

Two types of UTC **UMD8511A** or **UMD8511B** are offered to support single-wire control, dual-wire control and single-wire one-shot control modes.

■ FEATURES

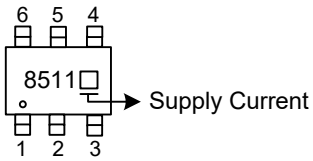
* 1.8V input driving pulse
* Low standby Current: IQSC<10uA
* 2.5V~5.5V operating voltage range
* Only one control input and Built-in non-overlap circuit to avoid the MOSFET damage caused by the fast output voltage transient

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UMD8511XL-AG6-R	UMD8511XG-AG6-R	SOT-26	Tape Reel

UMD8511XG-AG6-R (1)Packing Type (2)Package Type (3)Green Package (4)Supply Current	(1) R: Tape Reel (2) AG6: SOT-26 (3) G: Halogen Free and Lead Free, L: Lead Free (4) A: 20μA, B: 10μA

■ MARKING



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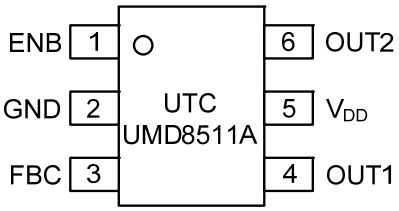
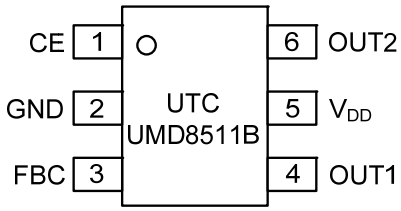
■ PIN CONFIGURATION

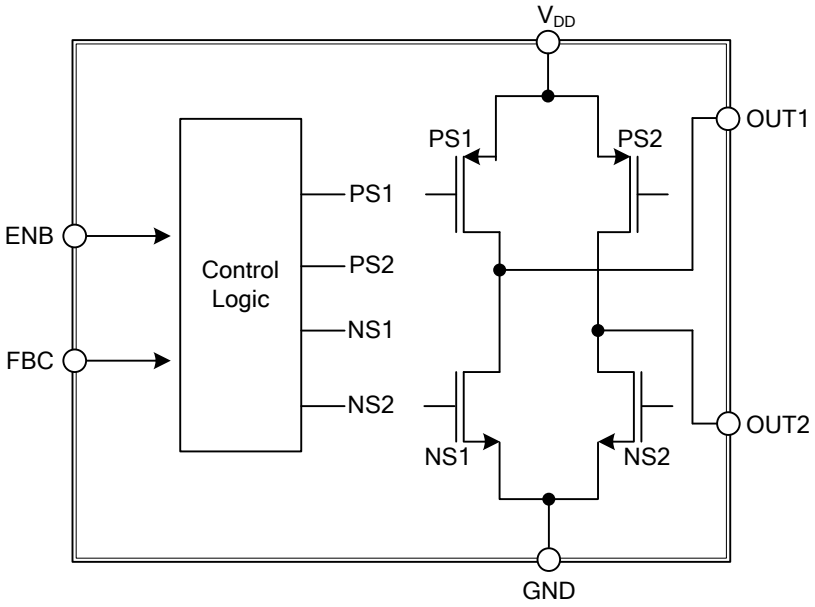




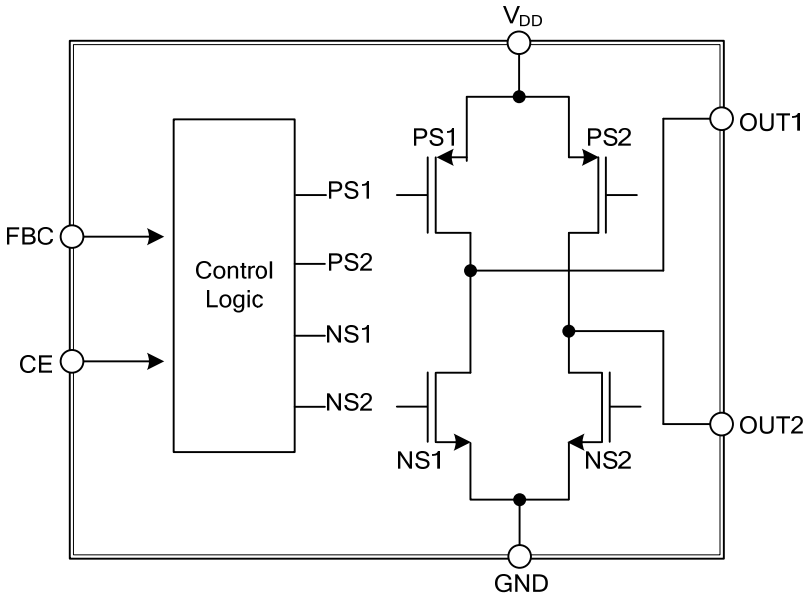
■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	ENB (For UMD8511A)	Low-active enable
	CE (For UMD8511B)	External capacitor
2	GND	Ground
3	FBC	Forward/Backward control
4	OUT1	Driver output 1
5	V_{DD}	Power supply
6	OUT2	Driver output 2

■ BLOCK DIAGRAM



UTC UMD8511A



UTC UMD8511B

■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	5.5	V
Input Voltage	V_{IN}	V_{DD}+0.4	V
Output Current (100% duty)	I_{OUT}	500	mA
Output Current (50% duty)		600	mA
Operating Temperature Range	T_{OPR}	-40 ~ +125	°C
Storage Temperature Range	T_{STO}	-65 ~ +150	°C

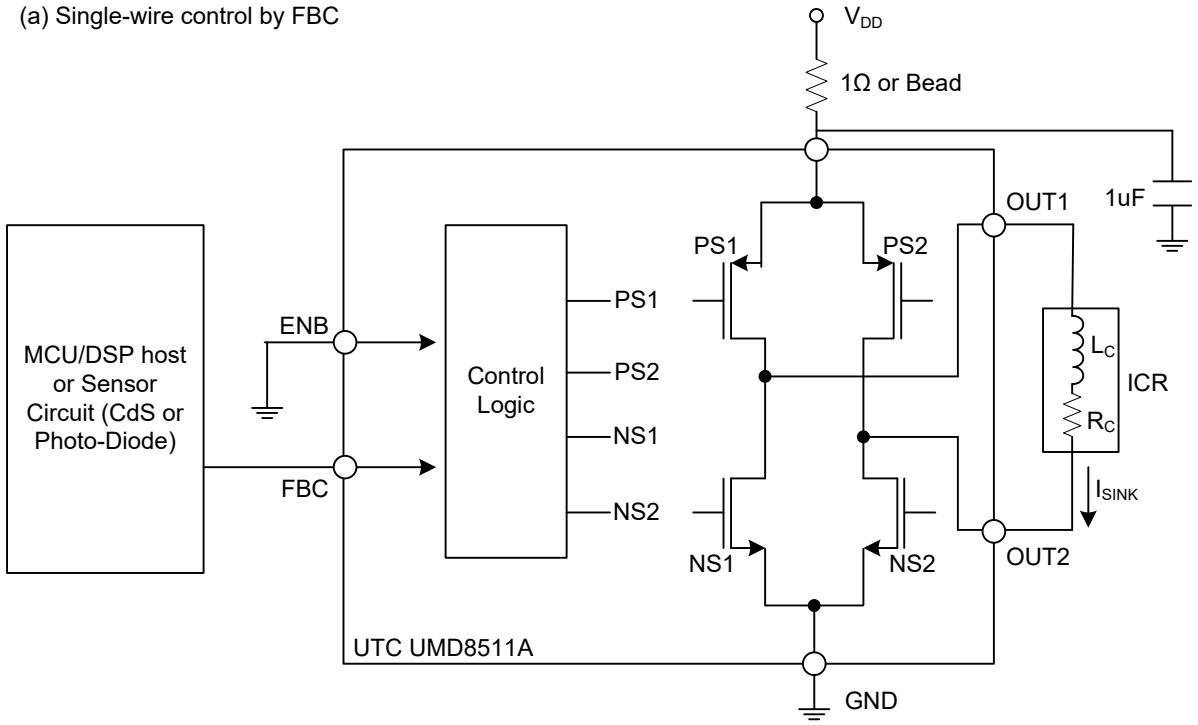
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS (V_{IN}=5V, T_A=25°C, unless otherwise specified.)

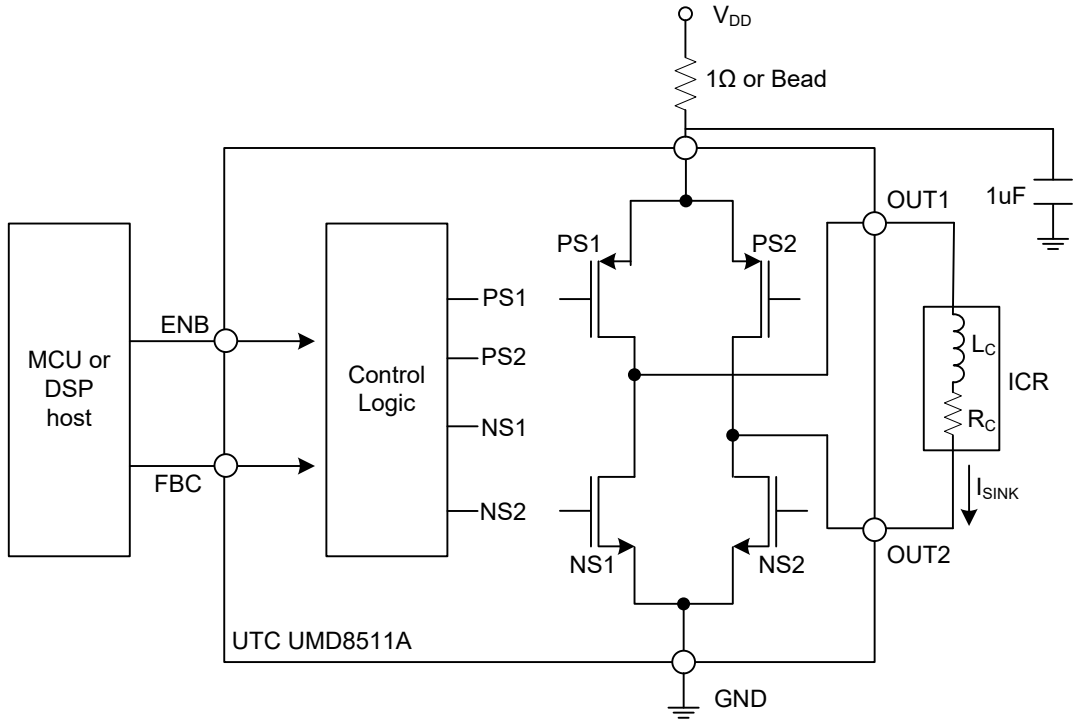
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{DD}		2.5	5.0	5.5	V
Supply Current	$I_{STB\ (A)}$	Version A			20	μA
	$I_{STB\ (B)}$	Version B			10	μA
	I_{DD}	Transit State	0.7	1	1.3	mA
Driver Input Control ENB/FBC						
Input Logic “H”	V_{IH}				1.6	V
Input Logic “L”	V_{IL}		0.4			V
Driver Output OUT1/OUT2						
Output Voltage (upper+lower)	V_{OUT1}	I_{OUT}=200mA		0.42		V
	V_{OUT2}	I_{OUT}=300mA		0.73		V
	V_{OUT3}	I_{OUT}=400mA		1.03		V
Output Rise Time	T_R			3.5	10	ns
Output Fall Time	T_F			3.5	10	ns
Propagation Delay						
ENB->OUT1/2 (ENB Rising)	T_{PLH}	V_{DD}=5V, Load=18Ω		13	16	ns

■ TYPICAL APPLICATION CIRCUIT OF UTC UMD8511A

(a) Single-wire control by FBC



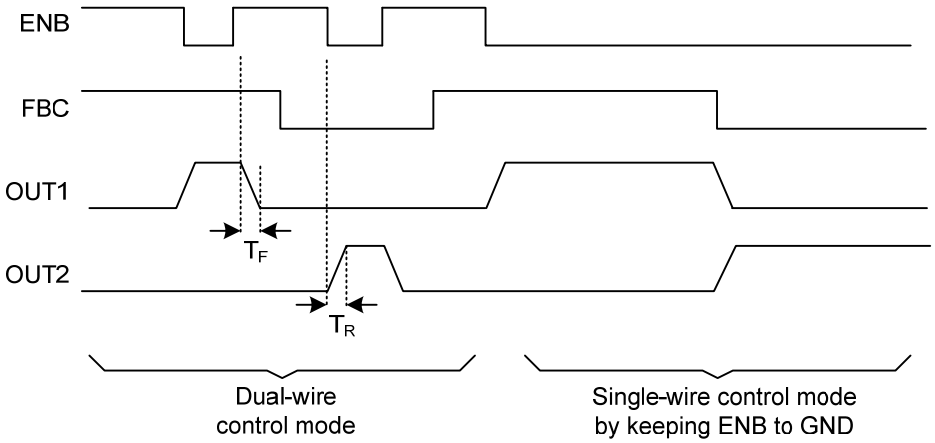
(b) Dual-wire control



■ TYPICAL APPLICATION CIRCUIT OF UTC UMD8511A (Cont.)

Table 1. Truth Table and Diagram of Controls

Input		OutInput	
ENB	FBC	OUT1	OUT2
H	X	L	L
L	H	H	L
L	L	L	H



■ TYPICAL APPLICATION CIRCUIT OF UTC UMD8511B

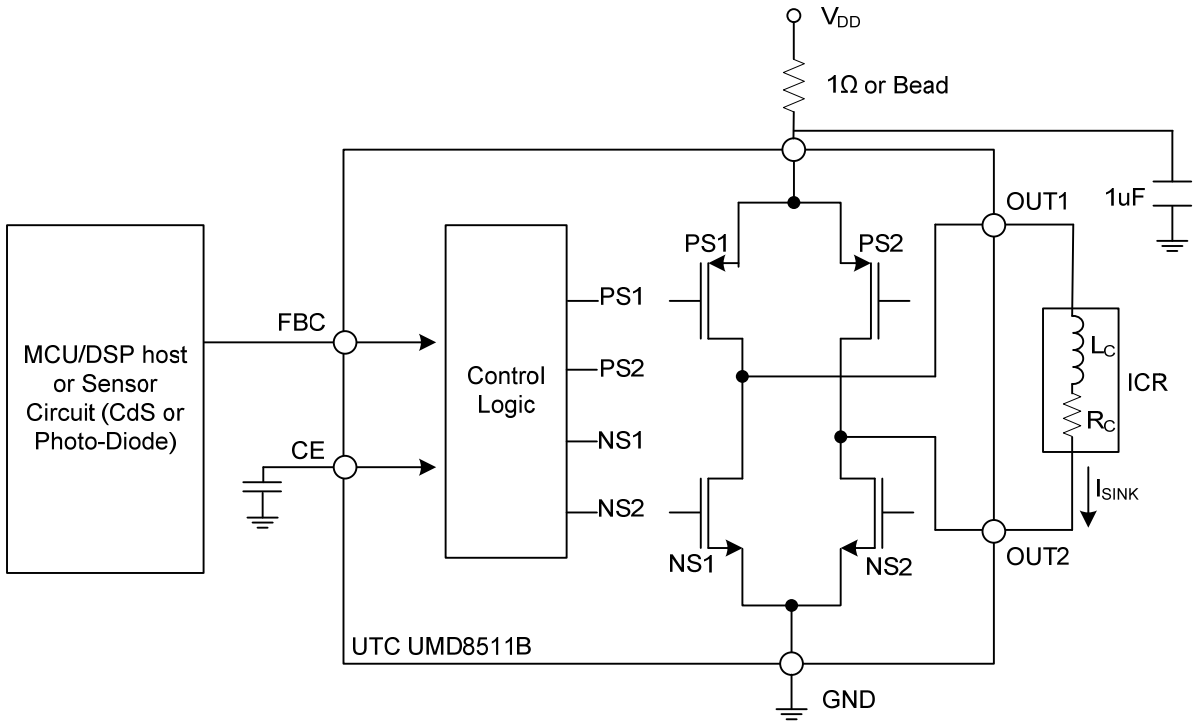
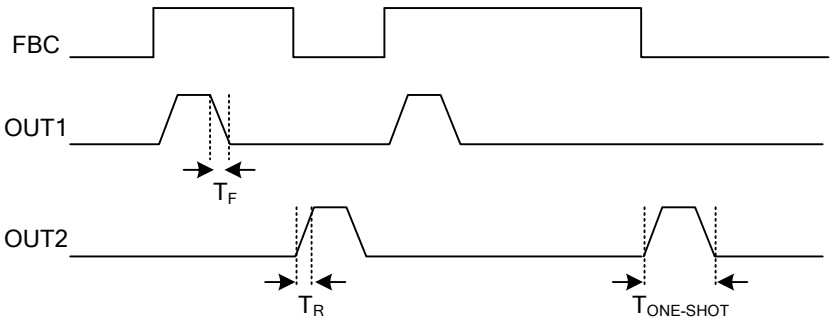


Table 2. Truth Table and Diagram of Controls

Input	Output	
FBC	OUT1	OUT2



The period of T for One-Shot is determines by the external capacitor connected on C_E pin. It can be estimated from the equation.

$$T=2.5\times C_{CE\ (\mu F)}\ \text{second}$$

The time of one-shot would decrease 0.2%/°C by temperature increase with the constant capacitance of C_{CE}. In fact, the capacitance of a real capacitor is affected by temperature changed and has its maximum values at 25°C. It is suggested to set the time of one-shot more than twice time that the ICR-module needs.

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