



US 20220353970A1

(19) **United States**(12) **Patent Application Publication**  
**SMITH et al.**(10) **Pub. No.: US 2022/0353970 A1**(43) **Pub. Date: Nov. 3, 2022**(54) **CURRENT CONTROL CIRCUITRY****Publication Classification**(71) Applicant: **Cirrus Logic International Semiconductor Ltd.**, Edinburgh (GB)(51) **Int. Cl.**  
**H05B 45/345** (2006.01)  
**H03F 3/04** (2006.01)(72) Inventors: **Dave SMITH**, Edinburgh (GB);  
**Saurabh SINGH**, Edinburgh (GB);  
**Andrew BUIST**, Edinburgh (GB);  
**Paulius CEREBIEJUS**, Edinburgh (GB);  
**Mark J. MCCLOY-STEVENSON**,  
Edinburgh (GB); **Terence A. ORR**,  
Edinburgh (GB)(52) **U.S. Cl.**  
CPC ..... **H05B 45/345** (2020.01); **H03F 3/04**  
(2013.01); **H03F 2200/129** (2013.01)(73) Assignee: **Cirrus Logic International Semiconductor Ltd.**, Edinburgh (GB)(57) **ABSTRACT**(21) Appl. No.: **17/860,918**(22) Filed: **Jul. 8, 2022****Related U.S. Application Data**

(63) Continuation of application No. 17/123,429, filed on Dec. 16, 2020.

(60) Provisional application No. 62/982,788, filed on Feb. 28, 2020, provisional application No. 62/959,350, filed on Jan. 10, 2020.

The present disclosure relates to current control circuitry for controlling a current through a load, the current control circuitry comprising: amplifier circuitry; reference voltage generator circuitry configured to supply a fixed reference voltage to a first input of the amplifier circuitry; an output stage comprising: a control terminal coupled to an output of the amplifier circuitry; a current input terminal configured to be coupled to the load; a current output terminal; a clock-controlled variable resistance coupled to the current output terminal of the output stage, wherein a resistance of the variable resistance is based on a digital code input to the variable resistance; and a feedback path between the current output terminal of the output stage and a second terminal of the amplifier circuitry for providing a feedback voltage to a second input of the amplifier circuitry.

