

## CTZ

Count Trailing Zeros counts the number of consecutive binary zero bits, starting from the least significant bit in the source register, and places the count in the destination register.

### Integer (FEAT\_CSSC)

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		
sf	1	0	1	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	Rn						Rd					

### 32-bit (sf == 0)

CTZ <Wd>, <Wn>

### 64-bit (sf == 1)

CTZ <Xd>, <Xn>

```
if !IsFeatureImplemented(FEAT_CSSC) then UNDEFINED;
constant integer datasize = 32 << UInt(sf);
integer n = UInt(Rn);
integer d = UInt(Rd);
```

## Assembler Symbols

- <Wd> Is the 32-bit name of the general-purpose destination register, encoded in the "Rd" field.
- <Wn> Is the 32-bit name of the general-purpose source register, encoded in the "Rn" field.
- <Xd> Is the 64-bit name of the general-purpose destination register, encoded in the "Rd" field.
- <Xn> Is the 64-bit name of the general-purpose source register, encoded in the "Rn" field.

## Operation

```
bits(datasize) operand1 = X[n, datasize];
integer result = CountLeadingZeroBits(BitReverse(operand1));
X[d, datasize] = result<datasize-1:0>;
```

**Operational information**

If PSTATE.DIT is 1:

- The execution time of this instruction is independent of:
  - The values of the data supplied in any of its registers.
  - The values of the NZCV flags.
- The response of this instruction to asynchronous exceptions does not vary based on:
  - The values of the data supplied in any of its registers.
  - The values of the NZCV flags.

---

<a href="#">Base Instructions</a>	<a href="#">SIMD&amp;FP Instructions</a>	<a href="#">SVE Instructions</a>	<a href="#">SME Instructions</a>	<a href="#">Index by Encoding</a>
-----------------------------------	--	----------------------------------	----------------------------------	-----------------------------------

[Sh](#)  
[Pseu](#)

Internal version only: isa v33.64, AdvSIMD v29.12, pseudocode no\_diffs\_2023\_09\_RC2, sve v2023-06\_rel ; Build timestamp: 2023-09-18T17:56

Copyright Â© 2010-2023 Arm Limited or its affiliates. All rights reserved. This document is Non-Confidential.