

RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-RA*-A0102B/E	Rev.	2.00
Title	RA6M5 Group, correction of CANFD		Information Category	Technical Notification		
Applicable Product	RA6M5 Group	Lot No.	Reference Document	RA6M5 Group User's Manual Hardware Rev.1.30		
		All				

The descriptions of CANFD are corrected.

1. Precaution of CAN-FD module specifications is added as follows.

32.1.1 CAN-FD Module

[Before]

Table 32.1 CAN-FD module specifications (1 of 2)

Parameter	Specifications
Communication	CAN functionality conforms to CAN-FD ISO 11898-1 (2015)
Gateway function	CAN 2.0 ↔ CAN 2.0 CAN 2.0 ↔ CAN-FD gateway (only 8-byte payload)*1 CAN-FD ↔ CAN-FD*1
Data transfer rate	Up to 1 Mbps for arbitration phase and up to 8 Mbps for data phase, individually for each CAN channel
TrustZone Filter	One security attribution can be set, and the attribution of the two channels are the same

Note 1. This feature is not available in the classical CAN function.

[After]

Table 32.1 CAN-FD module specifications (1 of 2)

Parameter	Specifications
Communication	CAN functionality conforms to CAN-FD ISO 11898-1 (2015)
Gateway function	CAN 2.0 ↔ CAN 2.0 CAN 2.0 ↔ CAN-FD gateway (only 8-byte payload)*1 CAN-FD ↔ CAN-FD*1
Data transfer rate *2	Up to 1 Mbps for arbitration phase and up to 8 Mbps for data phase, individually for each CAN channel
TrustZone Filter	One security attribution can be set, and the attribution of the two channels are the same

Note 1. This feature is not available in the classical CAN function.

Note 2. The bit rate for communications depends on the board design and external environment. Determine it following sufficient evaluation.

2. Precaution of Baud rate calculation example is added as follows.

32.4.1.3 Baud Rate

[Before]

Table 32.16 Baud rate calculation example for nominal and data bit rate CAN communication configurations

Baud rate calculation formula	(DLL clock) (baud rate prescaler divide-by-N value*1) × (number of TQs in one bit)	
	40 MHz	20 MHz
Nominal 1 Mbps Data 8 Mbps	40TQ (1)	20TQ (1)
	5TQ (1)	Not possible
Nominal 1 Mbps Data 5 Mbps	40TQ (1)	20TQ (1)
	8TQ (1)	Not possible
Nominal 500 Kbps Data 2 Mbps	80TQ (1)	40TQ (1)
	20TQ (1)	10TQ (1)

Note: Shown in () are the baud rate prescaler divide-by-N values and this table is not available in the classical CAN function.
 Note 1. Baud rate prescaler divide-by-N value = P + 1 (P = 0 - 1023) P: value selected by the BRP bits in the Channel Configuration Registers.

[After]

Table 32.16 Baud rate calculation example for nominal and data bit rate CAN communication configurations

Baud rate calculation formula	(DLL clock) (baud rate prescaler divide-by-N value*1) × (number of TQs in one bit)	
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Note: Shown in () are the baud rate prescaler divide-by-N values and this table is not available in the classical CAN function.
 Note 1. Baud rate prescaler divide-by-N value = P + 1 (P = 0 - 1023) P: value selected by the BRP bits in the Channel Configuration Registers.
 Note 2. The bit rate for communications depends on the board design and external environment. Determine it following sufficient evaluation.

3. The note in Table 32.14 Bit timing examples is removed.

32.4.1.1 Bit Timing Conditions

[Before]

Table 32.14 Bit timing examples

1 bit	Set value (TQ)				Sample point*1(%)
	SS	TSEG1	TSEG2	SJW	
5TQ	1	2	2	1	60.00
8TQ	1	4	3	1	62.50
	1	5	2	1	75.00
10TQ	1	6	3	1	70.00
	1	7	2	1	80.00
12TQ	1	8	3	1	75.00
	1	9	2	1	83.33
15TQ	1	10	4	1	73.33
	1	11	3	1	80.00
16TQ	1	10	5	1	68.75
	1	11	4	1	75.00
20TQ	1	12	7	1	65.00
	1	13	6	1	70.00
24TQ	1	15	8	1	66.66
	1	16	7	1	70.83
50TQ	1	39	10	4	80.00

Note 1. Sample point (in case of 75%)

[After]

Table 32.14 Bit timing examples

1 bit	Set value (TQ)				Sample point*1(%)
	SS	TSEG1	TSEG2	SJW	
5TQ	1	2	2	1	60.00
8TQ	1	4	3	1	62.50
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	1	9	2	1	83.33
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Note 1. Sample point (in case of 75%)