

### INTRODUCTION

This application note applies to the following products.

T1 FRAMERS	E1 FRAMERS	T1/E1/J1 FRAMERS	T1 SCTs	E1 SCTs	T1/E1 SCTs
DS21Q41 DS21Q42 DS21FF42 DS21FT42	DS21Q43 DS21Q44 DS21FF44 DS21FT44	DS26401	DS2151 DS2152 DS21352 DS21552 DS21Q352 DS21Q552	DS2153 DS2154 DS21354 DS21554 DS21Q354 DS21Q554 DS2150 DS21Q50	DS2155 DS21Q55 DS2156 DS21455 DS21458

The Dallas Semiconductor framers can operate in a transparent mode in both the receive and transmit directions. The transmitter will not insert framing, signaling, or other information such as CRC or FDL. Generally, the receive side of the framers is always transparent. Data received at RTIP and RRING is passed through intact to RSER. All configurations are with the elastic stores disabled. The elastic stores will not alter data except during slip conditions or if configured for 1.544MHz/2.048MHz conversion or signaling reinsertion.

### TRANSPARENT OPERATION ON DS21Q42, DS21FF42, DS21FT42, DS21352, DS21552, DS21Q352, DS21Q552

Register Configurations:

TCR1.2, TCR1.5, TCR1.6 = 1  
 TCR1.0, TCR1.1, TCR1.4 = 0  
 TCR2.0 = 0  
 TIR1, TIR2, TIR3 = 00h  
 TCC1, TCC2, TCC3 = 00h  
 RCC1, RCC2, RCC3 = 00h  
 TDC1.7 = 0  
 CCR1.5 = 0  
 RMR1, RMR2, RMR3 = 00h

## TRANSPARENT OPERATION ON DS21Q44, DS21FF44, DS21FT44, DS21354, DS21554, DS21Q354, DS21Q554

Register Configurations:

- TCR1.6 = 1
- TCR1.2, TCR1.3, TCR1.4, TCR1.5 = 0
- TCR2.1, TCR2.2, TCR2.3, TCR2.4, TCR2.5, TCR2.6, TCR2.7 = 0
- CCR1.4 = 0
- CCR2.3, CCR2.4, CCR2.5 = 0
- TIR1, TIR2, TIR3, TIR4 = 00h
- TCC1, TCC2, TCC3, TCC4 = 00h
- RCC1, RCC2, RCC3, RCC4 = 00h
- TSaCR = 00h
- TDC1.7 = 0

## TRANSPARENT OPERATION ON DS2152

Register Configurations:

- TCR1.2, TCR1.5, TCR1.6 = 1
- TCR1.0, TCR1.1, TCR1.4 = 0
- TCR2.0 = 0
- TIR1, TIR2, TIR3 = 00h
- TCC1, TCC2, TCC3 = 00h
- RCC1, RCC2, RCC3 = 00h
- CCR1.5 = 0
- RMR1, RMR2, RMR3 = 00h

## TRANSPARENT OPERATION ON DS2154

Register Configurations:

- TCR1.6 = 1
- TCR1.2, TCR1.3, TCR1.4, TCR1.5 = 0
- TCR2.1, TCR2.2, TCR2.3, TCR2.4, TCR2.5, TCR2.6, TCR2.7 = 0
- CCR1.4 = 0
- CCR2.3, CCR2.4, CCR2.5 = 0
- CCR4.5 = 0
- TIR1, TIR2, TIR3, TIR4 = 00h
- TCC1, TCC2, TCC3, TCC4 = 00h
- RCC1, RCC2, RCC3, RCC4 = 00h

## TRANSPARENT OPERATION ON DS2155, DS2156, DS21455, DS21458 AND DS21Q55 FOR E1 MODE

Register Configurations:

MSTRREG = 02h  
 T1RCR1= 00h, T1RCR2= 00h  
 T1TCR1= 00h, T1TCR2= 00h  
 T1CCR1 = 00h  
 E1RCR1 = 00h, E1RCR2 = 00h  
 E1TCR1= 80h, E1TCR2= 00h  
 CCR1 = 00h, CCR2 = 00h, CCR3 = 00h, CCR4 = 00h  
 H1TC = 00h, H2TC = 00h

## TRANSPARENT OPERATION ON DS2155, DS2156, DS21455, DS21458 AND DS21Q55 FOR T1 MODE

Register Configurations:

MSTRREG = 00h  
 T1RCR1= 1Eh, T1RCR2= 60h  
 T1TCR1= 60h, T1TCR2= 80h  
 T1CCR1 = 04h  
 E1RCR1 = 00h, E1RCR2 = 00h  
 E1TCR1= 00h, E1TCR2= 00h  
 CCR1 = 00h, CCR2 = 00h, CCR3 = 00h, CCR4 = 00h  
 H1TC = 00h, H2TC = 00h

## TRANSPARENT OPERATION ON DS21Q50 FOR E1 MODE

Register Configurations:

RCR1 = 00h  
 CCR1 = 00h, CCR2 = 00h, CCR3 = 00h, CCR4 = 00h  
 CCR5 = 00h  
 TIR1 = 00h, TIR2 = 00h, TIR3 = 00h, TIR4 = 00h

## TRANSPARENT OPERATION ON DS2151, DS21Q41

Hardware Considerations: TSER and TLINK must be tied together either logically or physically.

Register Configurations:

TCR1.2, TCR1.5, TCR1.6 = 1  
 TCR1.0, TCR1.1, TCR1.4 = 0  
 TCR2.0 = 0  
 TIR1, TIR2, TIR3 = 00h  
 CCR1.5 = 0  
 RMR1, RMR2, RMR3 = 00h

## TRANSPARENT OPERATION ON DS2153, DS21Q43

Hardware Considerations: Need rev A5 or better for complete receive transparency with elastic store enabled (DS2153 only).

TCR1.6 = 1

TCR1.2, TCR1.3, TCR1.4, TCR1.5 = 0

CCR1.4 = 0

Register Configurations: CCR2.3, CCR2.4, CCR2.5 = 0

TIR1, TIR2, TIR3, TIR4 = 00h

TCR2.1, TCR2.2, TCR2.3, TCR2.4, TCR2.5, TCR2.6, TCR2.7 = 0

RCR2.1 = 0 (required on rev A2 devices only)

## TRANSPARENT OPERATION ON DS26401 FOR E1 MODE

RMMR = C1h

RCR1 = 00h, RCR2 = 00h

Register Configurations: TMMR = C1h

TCR1 = 80h, TCR2 = 00h

## TRANSPARENT OPERATION ON DS26401 FOR T1 MODE

RMMR = C0h

RCR1 = CAh, RCR2 = 08h

Register Configurations: TMMR = C0h

TCR1 = 64h, TCR2 = 00h, TCR3 = 00h

## CONCLUSION

If you have further questions about transparent operation on Dallas Semiconductor framers or SCTs, contact the Telecommunications Applications Support Team via email at [telecom.support@dalsemi.com](mailto:telecom.support@dalsemi.com), or call 972-371-6555.