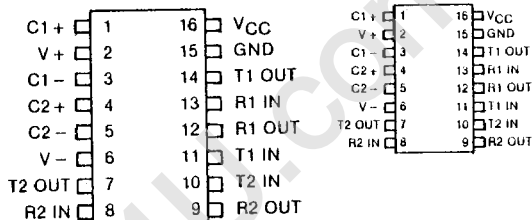# Dallas Semiconductor
+5V Powered Dual RS-232 Transmitter/Receiver

DS232
DS1228—16-Pin DIP
DS1228S—16-Pin SOIC

FEATURES

- Operates from a single 5V power supply
- 2 drivers and 2 receivers
- Meets all EIA RS-232-C specifications
- On-board voltage doubler
- On-board voltage inverter
- ± 30 V input levels
- ± 9 V output levels with + 5 V supply
- Low power CMOS
- Pin compatible with the MAX 232
- − 40 °C to + 85 °C temperature range available
- Optional 16-pin SOIC surface mount package

PIN CONNECTIONS

C1 +	1	16	V_{CC}
V +	2	15	GND
C1 −	3	14	T1 OUT
C2 +	4	13	R1 IN
C2 −	5	12	R1 OUT
V −	6	11	T1 IN
T2 OUT	7	10	T2 IN
R2 IN	8	9	R2 OUT

C1 +	1	16	V_{CC}
V +	2	15	GND
C1 −	3	14	T1 OUT
C2 +	4	13	R1 IN
C2 −	5	12	R1 OUT
V −	6	11	T1 IN
T2 OUT	7	10	T2 IN
R2 IN	8	9	R2 OUT

## PIN NAMES

|	
C1 +, C1	- Capacitor 1 Connections
C2 +, C2	- Capacitor 2 Connections
V +, V −	- ± 10 Volts
T1 IN, T2 IN	- Transmitter In
T1 OUT, T2 OUT	- Transmitter Out
R1 IN, R2 IN	- Receiver In
R1 OUT, R2 OUT	- Receiver Out
V_{CC}	- + 5 Volts
GND	- Ground

DESCRIPTION

The DS232 is a dual RS-232-C Receiver/Transmitter that meets all EIA specifications while operating from a single + 5 volt supply. The DS232 has two internal charge pumps. One of the charge pumps is used to generate + 10 volts. The other is used to generate − 10 volts. The DS232 also contains four level translators. Two of the level translators are RS-232 transmitters which convert TTL/CMOS inputs into ± 9V RS-232 outputs. The other two level translators are RS-232 receivers which convert RS-232 inputs to 5V TTL/CMOS outputs. These receivers are capable of operating with up to ± 30V inputs. The DS232 is suitable for all RS-232-C communications and is particularly valuable where higher voltage power supplies for RS-232 drivers are not available. The power supply section of the DS232 supplies ± 10 volts from the V_{CC} input.

See the data sheet for the DS1229 for electrical specifications and operation.
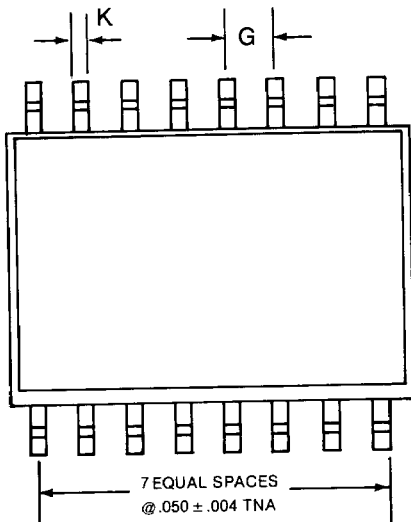
Dual RS-232 Transmitter/Receiver
DS1228
16-Pin DIP
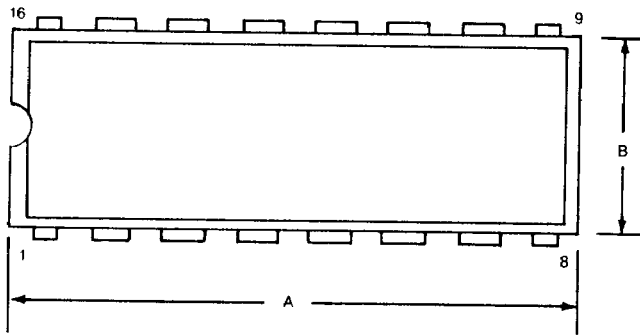
DIM.	INCHES	
	MIN.	MAX.
A	.740	.780
B	.240	.260
C	.120	.140
D	.290	.310
E	.020	.030
F	.110	.130
G	.090	.110
H	.320	.370
J	.008	.012
K	.015	.021

7 Equal Spaces at
.100 ± .010 (TNA)

11
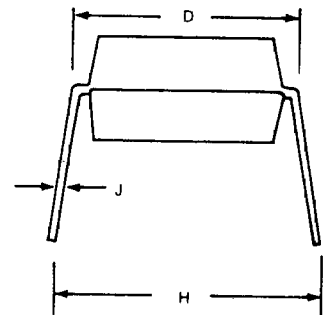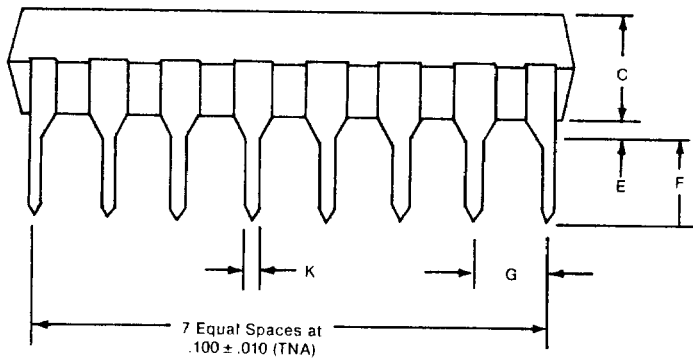
Dual RS-232 Transmitter/Receiver
DS1228S
16-Pin SOIC

DIM.	INCHES	
	MIN.	MAX.
A	.403	.411
B	.290	.296
C	.089	.095
D	.325	.330
E	.008	.012
F	.097	.105
G	.046	.054
H	.402	.410
J	.006	.011
K	.013	.019

7 EQUAL SPACES
@ .050 ± .004 TNA

6° TYP