

GS75232

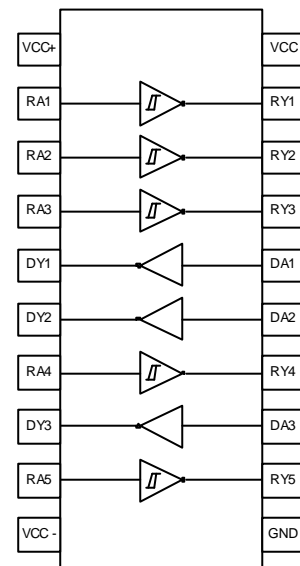
Multiple RS-232 Drivers & Receivers

Product Description

The GS75232 are monolithic device containing 3 independent drives and 5 receivers. These are designed to interface between data terminal equipment and data communication equipment as designed by EIA-232-D.

Features

- Meets standard EIA-232-D (Revision of RS-232-C)
- Drivers
 - Current Limited Output : 10 mA Typical
 - Power-off Output Impedance : 300 Ω Min
 - Slew Rate Control by Load Capacitor
 - Flexible Supply Voltage Range
 - Input Compatible with Most TTL and DTL Circuits
- Receivers
 - Input Resistance : 3 k Ω to 7 k Ω
 - Input Signal Range : ± 30 V
 - Built-in Input Hysteresis (Double Threshold)

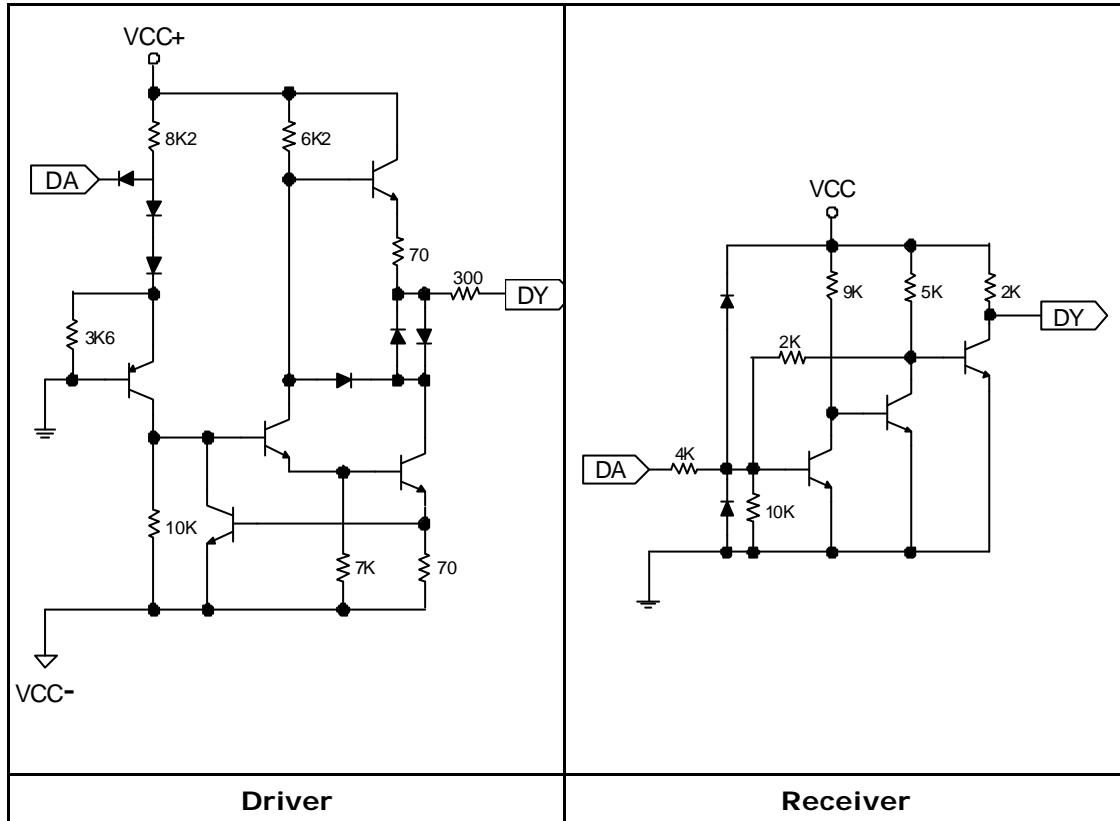


GS75232

Pin Description

Name	Pin No	Function	Name	Pin No	Function
V _{CC+}	1	Driver Section Supply +	V _{CC-}	10	Driver Section Supply -
DA1	16	Driver Input	DY1	5	Driver Output
DA2	15		DY2	6	
DA3	13		DY3	8	
V _{CC}	20		Receiver Section Supply	GND	
RA1	2	Receiver Input	RY1	19	Receiver Output
RA2	3		RY2	18	
RA3	4		RY3	17	
RA4	7		RY4	14	
RA5	9		RY5	12	

Representative Schematic Diagram



Ordering Information

Device	Package
GS75232S	SOIC-20
GS75232SS	SSOP-20
GS75232TS	TSSOP-20

“F” means Lead Free part.

*Request for other voltages, please contact factory directly.

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V _{CC+}	Supply Voltage	15	V
V _{CC-}	Supply Voltage	-15	V
V _{CC}	Supply Voltage	10	V
V _I (Driver)	Input Voltage	-15 to +7	V
V _I (Reciver)	Input Voltage	± 30	V
V _O (Driver)	Output Voltage	-15 to +15	V
PT	Continuous Power Dissipation (Below 25 °C)	1.0	W
T _{STG}	Storage Temperature	-65 to +175	°C
Top	Operating Temperature	0 to +75	°C

Electrical Characteristics

Supply Current ($V_{CC} = 5V$, $T_A = 25^\circ C$)

Symbol	Parameter	Test Condition		Min	Max	Unit
I_{CC+}	Supply Current from V_{CC+}	$V_{CC+} = 9V$	$V_{IN} = 1.9V$	-	15	mA
		No Load	$V_{IN} = 0.8V$		4.5	
		$V_{CC+} = 12V$	$V_{IN} = 1.9V$		19	
		No Load	$V_{IN} = 0.8V$		5.5	
		$V_{CC+} = 15V$	$V_{IN} = 1.9V$	-	25	
		No Load	$V_{IN} = 0.8V$		9	
I_{CC-}	Supply Current from V_{CC-}	$V_{CC-} = -9V$	$V_{IN} = 1.9V$	-	-15	mA
		No Load	$V_{IN} = 0.8V$		-3.2	
		$V_{CC-} = -12V$	$V_{IN} = 1.9V$		-19	
		No Load	$V_{IN} = 0.8V$		-3.2	
		$V_{CC-} = -15V$	$V_{IN} = 1.9V$	-	-25	
		No Load	$V_{IN} = 0.8V$		-3.2	
I_{CC}	Supply Current from V_{CC}	$V_{CC} = 5V$	$V_{IN} = 5.0V$	-	30	mA

Receiver Section

Symbol	Parameter	Test Conditions	Min	Max	Unit
V_{T+}	Positive-Going Threshold Voltage		1.75	2.25	V
V_{T-}	Negative-Going Threshold Voltage		0.75	1.25	V
V_{OH}	High Level Output Voltage	$V_I = 0.75V$, $I_{OL} = -0.5mA$	2.6	5	V
		Input Open, $I_{OL} = -0.5mA$	2.6	5	
V_{OL}	Low Level Output Voltage	$V_I = 3V$, $I_{OL} = 10mA$	-	0.45	V
I_{IH}	High-Level Input Current	$V_I = 25V$	3.6	8.3	mA
		$V_I = 3V$	0.43	-	
I_{IL}	Low-Level Input Current	$V_I = -25V$	-3.6	-8.3	mA
		$V_I = -3V$	-0.43	-	
I_{OS}	Short-Circuit Output Current		-3 (tip)		mA

Receiver Switching Characteristic ($V_{CC} = 5V$)

Symbol	Parameter	Test Conditions	Min	Max	Unit
t_{PLH}	Propagation Delay Time, Low-To-High-Level Output	$C_L = 15pF$ $R_L = 3.9k\Omega$	-	150	ns
t_{PHL}	Propagation Delay Time, High -To- Low -Level Output	$C_L = 15pF$ $R_L = 390k\Omega$	-	50	ns
t_{TLH}	Transition Time, Low-To-High-Level Output	$C_L = 15pF$ $R_L = 3.9k\Omega$	-	175	ns
t_{THL}	Transition Time, High -To- Low -Level Output	$C_L = 15pF$ $R_L = 390k\Omega$	-	20	ns

Driver Section

Symbol	Parameter	Test Conditions	Min	Max	Unit	
V_{IH}	High Level Input Voltage	$V_{CC+} = 9\text{ V}$ $V_{CC-} = -9\text{ V}$	1.9	-	V	
V_{IL}	Low Level Input Voltage		-	0.8	V	
V_{OH}	High Level Output Voltage	$V_{IL} = 0.8\text{ V}$ $R_L = 3\text{ k}\Omega$	$V_{CC+} = 9\text{ V}$ $V_{CC-} = -9\text{ V}$	6	-	V
			$V_{CC+} = 13.2\text{ V}$ $V_{CC-} = -13.2\text{ V}$	9	-	
V_{OL}	Low Level Output Voltage	$V_{IH} = 1.9\text{ V}$ $R_L = 3\text{ k}\Omega$	$V_{CC+} = 9\text{ V}$ $V_{CC-} = -9\text{ V}$	-	-6	V
			$V_{CC+} = 13.2\text{ V}$ $V_{CC-} = -13.2\text{ V}$	-	-9	
I_{IH}	High Level Input Current	$V_I = 5\text{ V}$	-	10	μA	
I_{IL}	Low Level Input Current	$V_I = 0$	-	-1.6	mA	
$I_{OS(H)}$	Short Circuit Output Current at High Level	$V_I = 0.8\text{ V}$ $V_O = 0$	-6	-12	mA	
$I_{OS(L)}$	Short Circuit Output Current at Low Level	$V_I = 1.9\text{ V}$ $V_O = 0$	6	12	mA	
R_O	Output Resistance, Power Off	$V_{CC+} = 0, V_{CC-} = 0$ $V_O = -2\text{ V to } 2\text{ V}$	300	-	Ω	

Driver Switching Characteristic ($V_{CC+} = 9\text{ V}, V_{CC-} = -9\text{ V}, T_A = 25\text{ }^\circ\text{C}$)

Symbol	Parameter	Test Conditions	Min	Max	Unit
t_{PLH}	Propagation Delay Time, Low-To-High-Level Output	$R_L = 3\text{ k}\Omega$ $CL = 15\text{ }\mu\text{F}$ See Figure 1	-	500	ns
t_{PHL}	Propagation Delay Time, High -To- Low -Level Output		-	175	ns
t_{TLH}	Transition Time, Low-To-High-Level Output *		-	100	ns
t_{THL}	Transition Time, High -To- Low -Level Output*		-	75	ns
t_{TLH}	Transition Time, Low-To-High-Level Output**	$R_L = 3\text{ k}\Omega\text{ to } 7\text{ k}\Omega$ $CL = 2500\text{ pF}$ See Figure 1	2.5 (tip)		μs
t_{THL}	Transition Time, High-To-Low -Level Output**		3.0 (tip)		μs

* - Measured between 10 % and 90 % Points of Output Waveform

** - Measured between +3V and -3V Points on the Output Waveform (EIA-232-D Condition)

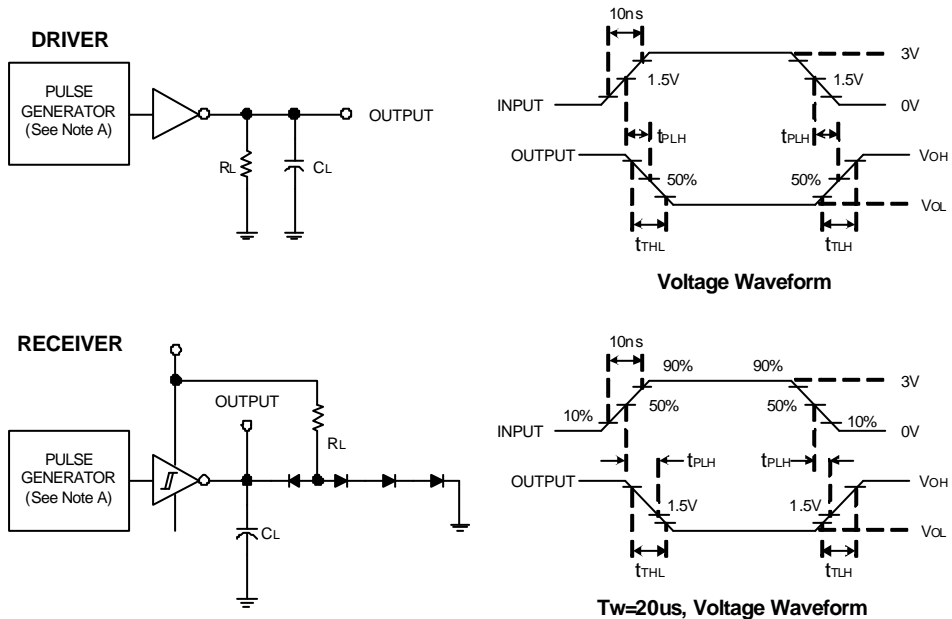
Receiver Section

Symbol	Parameter	Test Conditions	Min	Max	Unit
V_{T+}	Positive-Going Threshold Voltage		1.75	2.25	V
V_{T-}	Negative-Going Threshold Voltage		0.75	1.25	V
V_{OH}	High Level Output Voltage	$V_I = 0.75V, I_{OL} = -0.5mA$	2.6	5	V
		Input Open, $I_{OL} = -0.5 mA$	2.6	5	
V_{OL}	Low Level Output Voltage	$V_I = 3V, I_{OL} = 10 mA$	-	0.45	V
I_{IH}	High-Level Input Current	$V_I = 25V$	3.6	8.3	mA
		$V_I = 3V$	0.43	-	
I_{IL}	Low-Level Input Current	$V_I = -25V$	-3.6	-8.3	mA
		$V_I = -3V$	-0.43	-	
I_{OS}	Short-Circuit Output Current		-3 (tip)		mA

Receiver Switching Characteristic ($V_{CC} = 5V$)

Symbol	Parameter	Test Conditions	Min	Max	Unit
t_{PLH}	Propagation Delay Time, Low-To-High-Level Output	$C_L = 15 \mu F, R_L = 3.9 k\Omega$	-	150	ns
t_{PHL}	Propagation Delay Time, High -To- Low -Level Output	$C_L = 15 \mu F, R_L = 390 k\Omega$	-	50	ns
t_{TLH}	Transition Time, Low-To-High-Level Output	$C_L = 15 \mu F, R_L = 3.9 k\Omega$	-	175	ns
t_{THL}	Transition Time, High -To- Low -Level Output	$C_L = 15 \mu F, R_L = 390 k\Omega$	-	20	ns

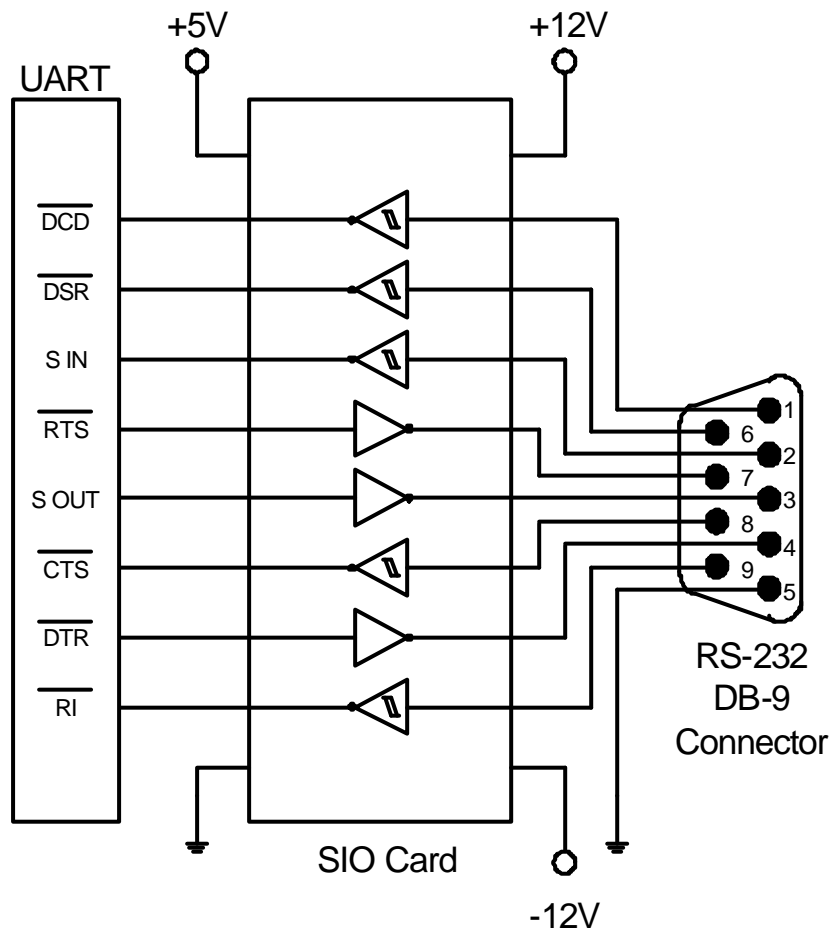
Typical Performance Characteristics



Note A. The pulse generator has the following characteristics. $f = 200 KHz, Z_0 = 50 \Omega$
 B. C included probe and jig capacitance.
 C. All diodes are 1N3064 or equivalent.

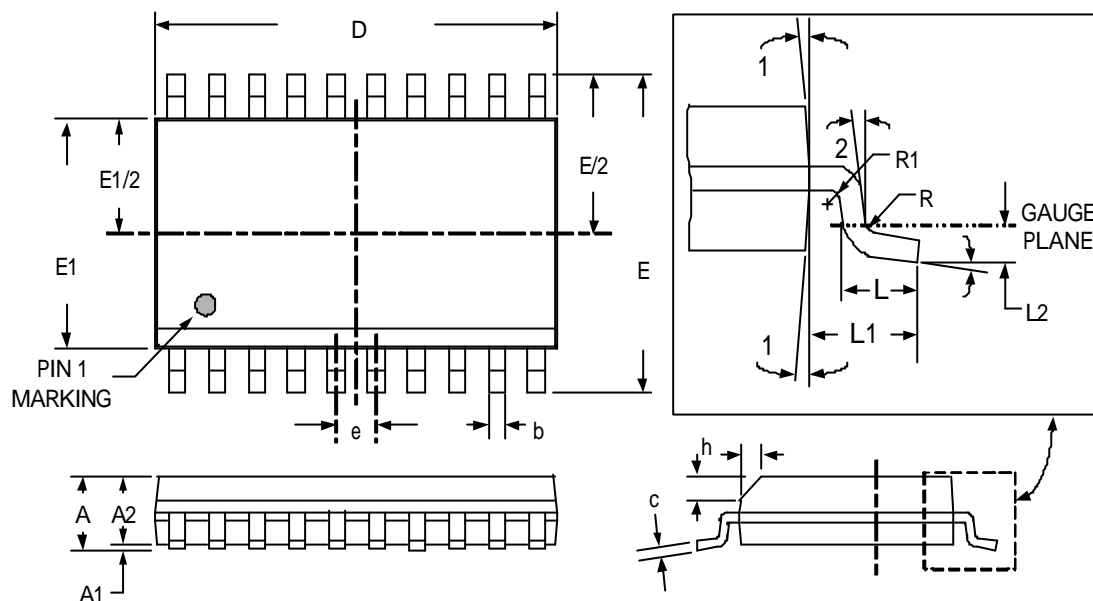
Fig1. Propagation and Transition Times

Applications Information



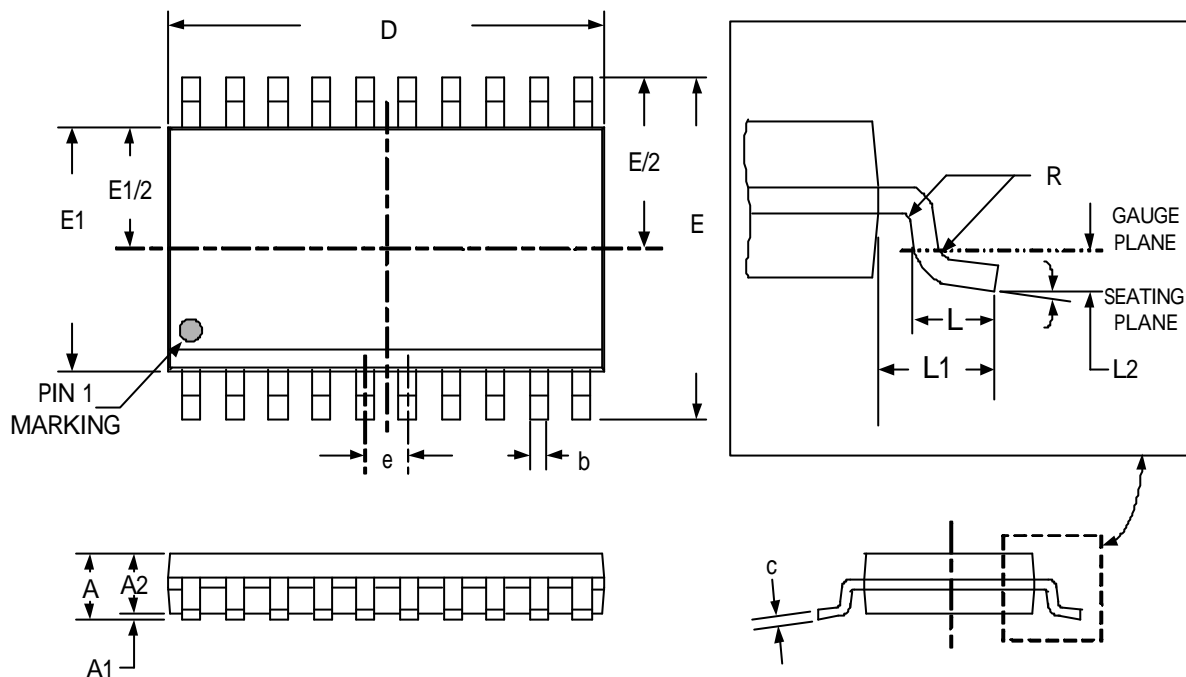
Package Dimensions

SOIC-20L



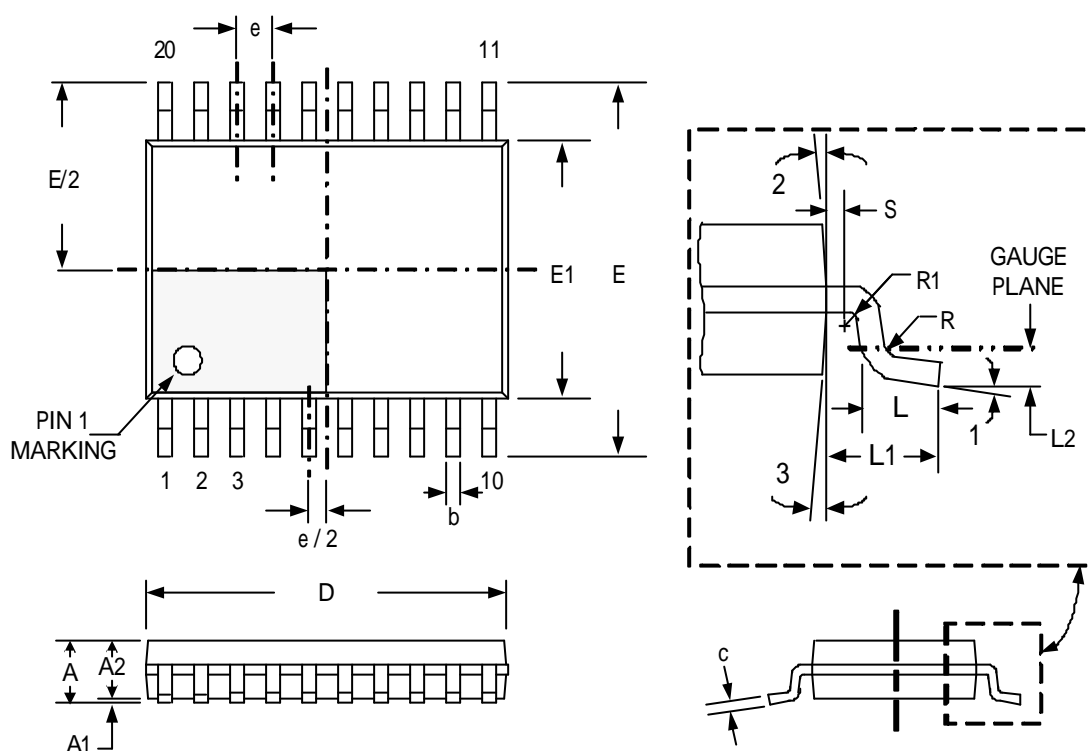
Dimensions			
SYMBOL	Millimeters		
	MIN	TYP	MAX
A	2.35	-	2.65
A1	0.10	-	0.30
A2	2.05	-	2.55
b	0.31	-	0.51
b1	0.27	-	0.48
c	0.20	-	0.33
D	-	12.80	-
E	-	10.30	-
E1	-	7.50	-
e	-	1.27	-
L	0.40	-	1.27
L1	-	1.40	-
L2	-	0.25	-
R	0.07	-	-
R1	0.07	-	-
h	0.25	-	0.75
θ	0°	-	8°
$\theta 1$	5°	-	15°
$\theta 2$	0°	-	-

SSOP-20L



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	-	2.0	-	.078
A1	0.05	-	.002	-
A2	1.65	1.85	.065	.073
b	0.22	0.38	.008	.015
c	0.09	0.25	.003	.010
D	6.90	7.50	.271	.295
E	7.40	8.20	.290	.323
E1	5.00	5.60	.197	.220
e	0.65 (TYP)		.026 (TYP)	
L	0.55	0.95	.021	.037
L1	1.25 (TYP)		.050 (TYP)	
L2	0.25 (TYP)		.010 (TYP)	
R	0.09	-	.003	-
θ	0°	8°	0°	8°

TSSOP-20L



Dimensions

SYMBOL	Millimeters		
	MIN	TYP	MAX
A	-	-	1.20
A1	0.05	-	0.15
A2	0.80	1.00	1.05
b	0.19	-	0.30
b1	0.19	0.22	0.25
c	0.09	-	0.20
D	6.40	6.50	6.60
E	-	6.40	-
E1	4.30	4.40	4.50
e	-	0.65	-
L	0.45	0.60	0.75
L1	-	1.00	-
R	0.09	-	-
R1	0.09	-	-
S	0.20	-	-
$\theta 1$	0°	-	8°
$\theta 2$	-	12°	-
$\theta 3$	-	12°	-

Notice

Information furnished is believed to be accurate and reliable. However Globaltech Semiconductor assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Globaltech Semiconductor. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information without express written approval of Globaltech Semiconductor.

(Revise Date:2005/10/26 Version_A1)