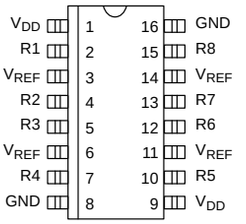
DALLAS SEMICONDUCTOR

DS2113
GTL Terminator

FEATURES

- Complies with Gunning Transceiver Logic (GTL) specifications
- Provides active termination for eight signal lines
- Laser–trimmed 50Ω termination resistors have 2% tolerance from 0°C to 70°C
- Onboard precise 1.2V (±2%) voltage regulator
- Package optimized for minimum parasitic inductance and resistance
- 16–pin (300 mil) plastic SOIC package

PIN ASSIGNMENT



16–PIN SOIC
(300 MIL)

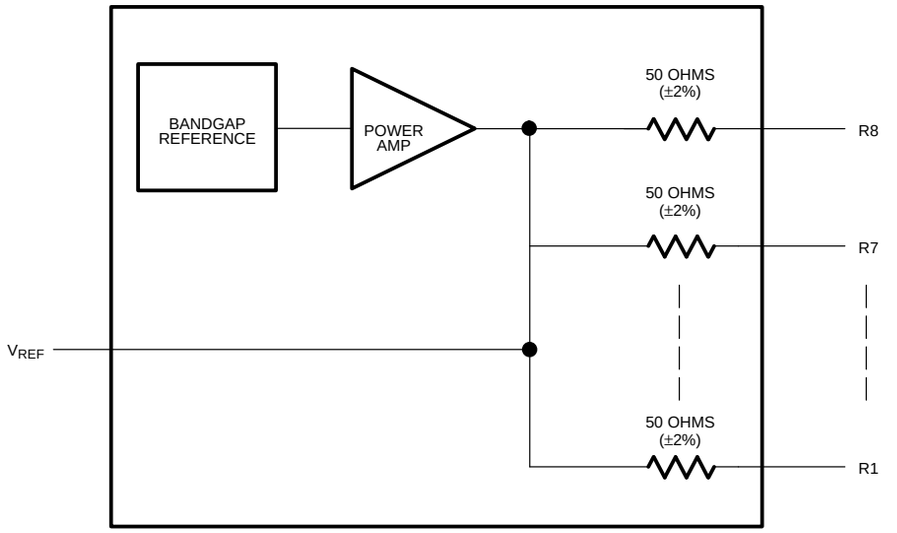
DESCRIPTION

The DS2113 GTL Terminator provides active termination for Gunning Transceiver Logic (GTL) drivers. The DS2113 integrates a low dropout regulator and eight precision resistors into a single monolithic CMOS IC that is optimized for the high switching speeds and current required of GTL systems.

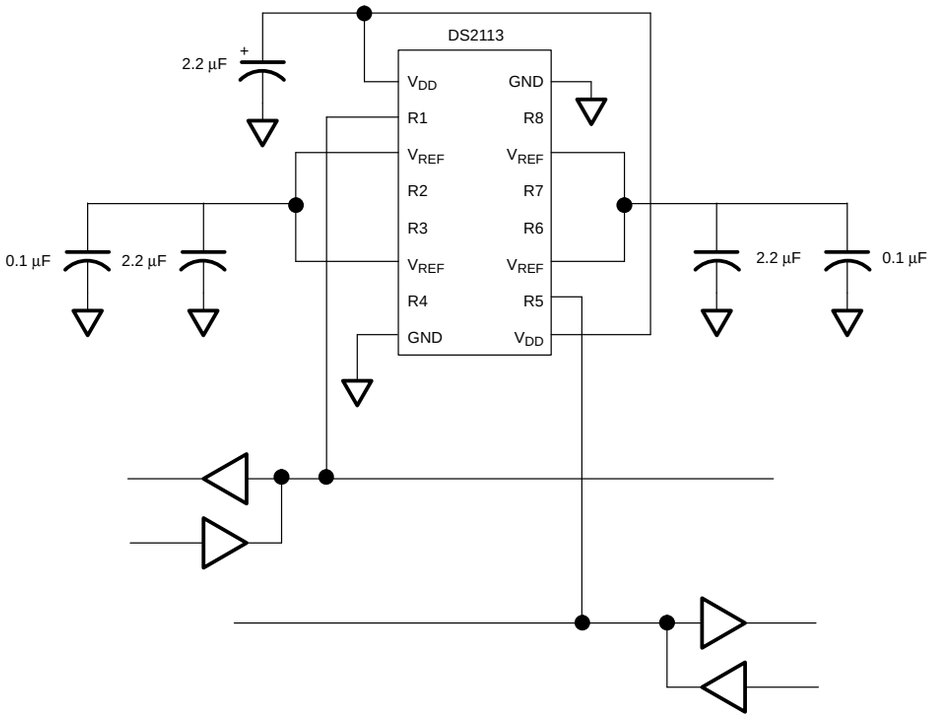
FUNCTIONAL DESCRIPTION

The DS2113 consists of a bandgap reference, a power amplifier, and eight precise 50Ω terminating resistors (see Figure 1). The bandgap reference produces a laser–trimmed 1.20 volt source which is fed to the unity gain power amp. The power amp is capable of sourcing 16 mA into each of the eight terminating resistors when the signal line is driven low (0.4V). When the driver releases the line, the terminator will pull it back to 1.2 volts. When all lines are in the quiescent state, the DS2113 consumes about 10 mA (V_{DD}=5.0 volts). The DS2113 can operate with supply voltages as low as 4.0 volts and meet all GTL specifications.

FUNCTIONAL BLOCK DIAGRAM Figure 1



TYPICAL CONFIGURATION Figure 2



PIN DESCRIPTION Table 1

PIN	SYMBOL	DESCRIPTION
1, 9	V_{DD}	**Power Supply**. Decouple with 2.2 µF capacitor, see Figure 2.
8, 16	GND	**Ground**. Signal ground; 0.0 volt.
3, 6, 11, 14	V_{REF}	**Reference Voltage**. Tie together and connect to 2.2 µF and 0.1 µF caps; see Figure 2.
2, 4, 5, 7, 10, 12, 13, 15	R	**Termination Resistor**. 50 ohm termination.

ABSOLUTE MAXIMUM RATINGS*

Voltage on Any Pin Relative to Ground	–1.0V to +7.0V
Operating Temperature	0°C to 70°C
Storage Temperature	–55°C to +125°C
Soldering Temperature	260°C for 10 seconds

* This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operation sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

RECOMMENDED OPERATING CONDITIONS (0°C to 70°C)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Supply Voltage	V_{DD}	4.0		5.5	V	

DC CHARACTERISTICS (0°C to 70°C)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Supply Current	I_{TP} I_{TP}			250 15	mA mA	1, 3 1, 4
Termination Resistance	R_{TERM}	49	50	51	Ω	1, 2

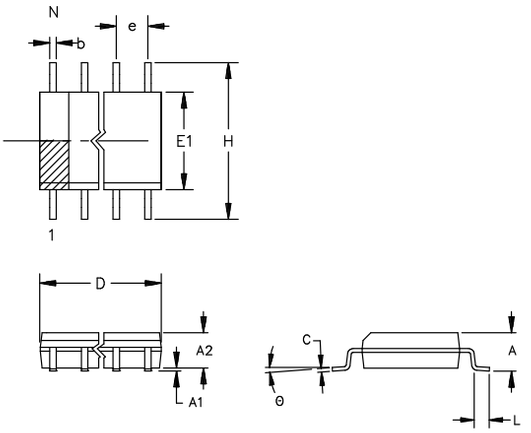
REGULATOR CHARACTERISTICS (0°C to 70°C)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Output Voltage	V_R	1.176	1.200	1.224	V	1, 2
Load Regulation	LO_{REG}			2	%	1, 2, 5, 8
AC Ripple Voltage	V_{RIPPLE}	–50		+50	mV	1, 2, 5, 7
Regulation Time	T_{REG}			100	µs	6, 7
Input Capacitance	C_{IN}			5	pF	7

NOTES:

1. $4.0V < V_{DD} < 5.5V$
2. 0.4V < signal lines < 1.2V
3. All signal lines = 0.4V.
4. All signal lines open.
5. R1 to R8 switching simultaneously between 0.4V and 1.2V with 2 ns rise/fall time.
6. Measured from the time V_{DD} reaches 4.0V until V_{REF} reaches regulation.
7. Guaranteed by design and characterization, not tested in production.
8. Production test for this device is at DC conditions.

16–PIN SOIC (300 MIL)



The chamfer on the body is optional. If it is not present, a terminal 1 identifier must be positioned so that 1/2 or more of its area is contained in the hatched zone.

PKG	16-PIN	
DIM	MIN	MAX
A IN. MM	0.094 2.38	0.105 2.68
A1 IN. MM	0.004 0.102	0.012 0.30
A2 IN. MM	0.089 2.26	0.095 2.41
b IN. MM	0.013 0.33	0.020 0.51
C IN MM	0.009 0.229	0.013 0.33
D IN. MM	0.398 10.11	0.412 10.46
e IN. MM	.050 BSC 1.27 BSC	
E1 IN. MM	0.290 7.37	0.300 7.62
H IN MM	0.398 10.11	0.416 10.57
L IN MM	0.016 0.40	0.040 1.02
Θ	0°	8°