19-2939; Rev 1; 9/03

5V, 1Mbps, Low Supply Current CAN Transceivers

General Description

The MAX3058/MAX3059 interface between the controller area network (CAN) protocol controller and the physical wires of the bus lines in a CAN. They are primarily intended for printer and telecom backplane applications requiring data rates up to 1Mbps. These devices provide differential transmit capability to the bus and differential receive capability to the CAN controller.

The MAX3058 output common-mode range is from -7V to +12V. The MAX3059 output common-mode range is from 0V to V_{CC}. The MAX3059 contains an internal switch termination resistor that makes it ideal for JetLink applications.

The MAX3058 features four different modes of operation: high speed, slope control, standby, and shutdown. The MAX3059 features three different modes of operation: high speed, slope control, and shutdown. High-speed mode allows data rates up to 1Mbps. In slope-control mode, the slew rate may be optimized for data rates up to 500kbps, so the effects of EMI are reduced, and unshielded twisted or parallel cable can be used. In standby mode, the transmitters are shut off and the receivers are put into low-current mode. In shutdown mode, the transmitter and receiver are switched off.

The MAX3058/MAX3059 are available in an 8-pin SO package and are specified over the -40°C to +125°C temperature range.

Applications

Printers JetLink

Industrial Control Networks

Telecom Backplane

Consumer Applications

Features

- **Four Operating Modes**
  - **High-Speed Operation Up to 1Mbps**
  - **Slope-Control Mode to Reduce EMI (40kbps to 500kbps)**
  - **Low-Current Shutdown Mode**
  - **Standby Mode (MAX3058 Only)**
- **Thermal Shutdown**
- **Current Limiting**
- **ESD Protection**
  - **±12kV Human Body Model**

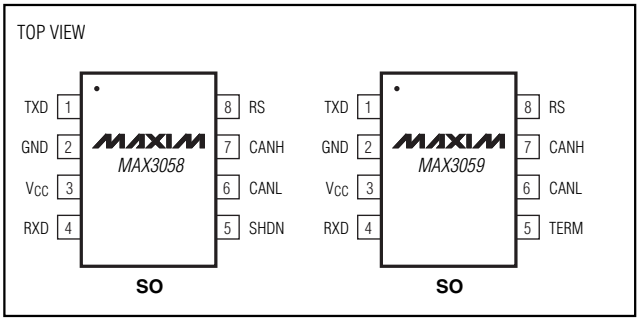
Ordering Information

PART	TEMP RANGE	PIN-PACKAGE
MAX3058ASA	-40°C to +125°C	8 SO
MAX3059ASA	-40°C to +125°C	8 SO

Selector Guide

PART	TERMINATION RESISTOR	STANDBY
MAX3058ASA	No	Yes
MAX3059ASA	Yes	No

Pin Configurations



Typical Operating Circuit appears at end of data sheet.

5V, 1Mbps, Low Supply Current CAN Transceivers

ABSOLUTE MAXIMUM RATINGS

V_{CC} to GND .....-0.3V to +6V
TXD, RS, SHDN, TERM to GND.....-0.3V to +6V
RXD to GND .....-0.3V to +6V
CANH, CANL to GND (MAX3058).....-7.5V to +12.5V
CANH, CANL to GND (MAX3059).....-0.3V to (V_{CC} + 0.3V)

Continuous Power Dissipation (T_A = +70°C)
8-Pin SO (derate 5.9mW/°C above +70°C).....470mW
Operating Temperature Range .....-40°C to +125°C
Maximum Junction Temperature .....+150°C
Storage Temperature Range .....-65°C to +150°C
Lead Temperature (soldering, 10s) .....+300°C

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

DC ELECTRICAL CHARACTERISTICS

(V_{CC} = +5V ±10%, T_A = T_{MIN} to T_{MAX}, R_L = 60Ω, C_L = 100pF. Typical values are at V_{CC} = +5V and T_A = +25°C.) (Note 1)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Supply Current	I_S	Dominant		40	70	mA
		Recessive		2	5	
Quiescent Current Standby Mode	I_Q	Standby, MAX3058		15	80	µA
Shutdown Current	I_{SHDN}	V_{SHDN} = V_{CC}, MAX3058			5	µA
		V_{TERM} = V_{RS} = V_{CC}, MAX3059			10	
		V_{TERM} = 0V, V_{RS} = V_{CC}, MAX3059			150	
Thermal-Shutdown Threshold	V_{TSH}			160		°C
Thermal-Shutdown Hysteresis				25		°C
TXD INPUT LEVELS						
High-Level Input Voltage	V_{IH}		2			V
Low-Level Input Voltage	V_{IL}				0.8	V
Input Capacitance	C_{IN}	(Note 3)		5	20	pF
Pullup Resistor	R_{INTXD}		50		100	kΩ
TERM INPUT LEVELS (MAX3059)						
High-Level Input Voltage	V_{TRH}		2			V
Low-Level Input Voltage	V_{TRL}				0.8	V
TERM Pullup Resistor	R_{PU}		50		100	kΩ
CANH, CANL TRANSMITTER						
Recessive Bus Voltage	V_{CANH}, V_{CANL}	V_{TXD} = V_{CC}, no load	2		3	V
		V_{TXD} = V_{CC}, no load, V_{RS} = V_{CC} (standby mode), MAX3058	-100		+100	mV
CANH Output Voltage	V_{CANH}	V_{TXD} = 0V	2.75		V_{CC} - 0.8V	V
CANL Output Voltage	V_{CANL}	V_{TXD} = 0V	0.5		2.25	V
Differential Output (V_{CANH} - V_{CANL})	ΔV_{CANH}, V_{CANL}	V_{TXD} = 0V, V_{CC} = 5V ±5%	1.5		3	V
		V_{TXD} = 0V, V_{CC} = 5V ±10%	1.5		3.2	
		V_{TXD} = 0V, R_L = 45Ω	1.2		3	
		V_{TXD} = V_{CC}, no load	-500		+50	mV

DC ELECTRICAL CHARACTERISTICS (continued)

(V_{CC} = +5V ±10%, T_A = T_{MIN} to T_{MAX}, R_L = 60Ω, C_L = 100pF. Typical values are at V_{CC} = +5V and T_A = +25°C.) (Note 1)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
CANH Short-Circuit Current	I_{CANHSC}	-7V ≤ V_{CANH} ≤ 0V, MAX3058	-200		-30	mA
		V_{CANH} = 0V, MAX3059	-200		-30	
CANL Short-Circuit Current	I_{CANLSC}	V_{CC} ≤ V_{CANL} ≤ 12V, MAX3058	30		200	mA
		V_{CANL} = V_{CC}, MAX3059	30		200	
Termination Resistor	R_{TERM}	V_{TERM} = V_{CC}, MAX3059	108	120	132	Ω
RXD OUTPUT LEVELS						
RXD High-Output Voltage Level	V_{OH}	I = -100µA	0.8 x V_{CC}		V_{CC}	V
RXD Low-Output Voltage Level	V_{OL}	I = 1.6mA			0.4	V
DC BUS RECEIVER (Note 2)						
Differential Input Voltage (Recessive)	V_{DIFF}	MAX3058	-17		+0.5	V
		MAX3058, V_{RS} = V_{CC} (standby mode)	-17		+0.5	
		MAX3059	-V_{CC}		+0.5	
Differential Input Voltage (Dominant)	V_{DIFF}	MAX3058	0.9		17	V
		MAX3058, V_{RS} = V_{CC} (standby mode)	1.1		17	
		MAX3059	0.9		V_{CC}	
Differential Input Hysteresis	$V_{DIFF(HYST)}$			100		mV
CANH and CANL Input Resistance	R_I		5		25	kΩ
Differential Input Resistance	R_{DIFF}		10		100	kΩ
MODE SELECTION (RS)						
Input Voltage for High Speed	V_{SLP}				0.3 x V_{CC}	V
Input Voltage for Standby	V_{STBY}	MAX3058	0.75 x V_{CC}			V
	V_{SHDN}	MAX3059				
Slope-Control Mode Voltage	V_{SLOPE}	R_{RS} = 25kΩ to 200kΩ	0.4 x V_{CC}		0.6 x V_{CC}	V
Slope-Control Mode Current	I_{SLOPE}	R_{RS} = 25kΩ to 200kΩ	-10		-200	µA
High-Speed Mode Current	I_{HS}	V_{RS} = 0V			-500	µA
SHUTDOWN (MAX3058)						
SHDN Input Voltage High	V_{SHDNH}		2			V
SHDN Input Voltage Low	V_{SHDNL}				0.8	V
SHDN Pulldown Resistor	R_{INDHDN}		50		100	kΩ

5V, 1Mbps, Low Supply Current CAN Transceivers

TIMING CHARACTERISTICS

(V_{CC} = +5V ±10%, R_L = 60Ω, C_L = 100pF, T_A = T_{MIN} to T_{MAX}. Typical values are at V_{CC} = +5V and T_A = +25°C.)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Delay TXD to Bus Active, Figure 1	t_{ONTXD}	V_{RS} = 0V (≤ 1Mbps)			50	ns
		R_{RS} = 25kΩ (≤ 500kbps)		125		
		R_{RS} = 100kΩ (≤ 125kbps)		450		
		R_{RS} = 200kΩ (≤ 62.5kbps)		700		
Delay TXD to Bus Inactive, Figure 1	t_{OFFTXD}	V_{RS} = 0V (≤ 1Mbps)			70	ns
		R_{RS} = 25kΩ (≤ 500kbps)		180		
		R_{RS} = 100kΩ (≤ 125kbps)		500		
		R_{RS} = 200kΩ (≤ 62.5kbps)		1000		
Delay Bus to Receiver Active, Figure 1	t_{ONRXD}	V_{RS} = 0V (≤ 1Mbps)			80	ns
		R_{RS} = 25kΩ (≤ 500kbps)		150		
		R_{RS} = 100kΩ (≤ 125kbps)		500		
		R_{RS} = 200kΩ (≤ 62.5kbps)		800		
Delay Bus to Receiver Inactive, Figure 1	t_{OFFRXD}	V_{RS} = 0V (≤ 1Mbps)			100	ns
		R_{RS} = 25kΩ (≤ 500kbps)		210		
		R_{RS} = 100kΩ (≤ 125kbps)		500		
		R_{RS} = 200kΩ (≤ 62.5kbps)		1100		
Differential Output Slew Rate	SR	V_{RS} = 0V (≤ 1Mbps)		100		V/µs
		R_{RS} = 25kΩ (≤ 500kbps)		7		
		R_{RS} = 100kΩ (≤ 125kbps)		1.6		
		R_{RS} = 200kΩ (≤ 62.5kbps)		0.8		
Bus Dominant to RXD Active	t_{DRXDL}	V_{RS} > 0.8 x V_{CC} (standby), MAX3058, Figure 2			1	µs
Standby to Receiver Active	t_{SBRXDL}	BUS dominant, MAX3058, Figure 2			4	µs
SHDN to Bus Inactive	$t_{OFFSHDN}$	TXD = GND, MAX3058, Figure 3 (Note 4)			1	µs
SHDN to Receiver Active	t_{ONSHDN}	BUS dominant, MAX3058, Figure 3 (Note 5)			4	µs
RS to Bus Inactive	$t_{OFFSHDN}$	TXD = GND, MAX3059, Figure 3 (Note 4)			1	µs
RS to Receiver Active	t_{ONSHDN}	BUS dominant, MAX3059, Figure 3 (Note 5)			4	µs
TERM to Resistor Switched On	t_{ONRT}	V_{RS} = V_{CC} (part in shutdown), MAX3059, Figure 4			400	ns
TERM to Resistor Switched Off	t_{OFFRT}	V_{RS} = V_{CC} (part in shutdown), MAX3059, Figure 4			400	ns
ESD Protection		Human Body Model		12		±kV

Note 1: All currents into device are positive; all currents out of the device are negative. All voltages are referenced to device ground, unless otherwise noted.

Note 2: (V_{TXD} = V_{CC}; CANH and CANL externally driven; -7V < V_{CANH}, V_{CANL} < 12V for MAX3058; 0V < V_{CANH}, V_{CANL} < V_{CC} for MAX3059, unless otherwise specified).

Note 3: Specification guaranteed by design, not production tested.

Note 4: No other devices on the BUS.

Note 5: BUS externally driven.

Timing Diagrams

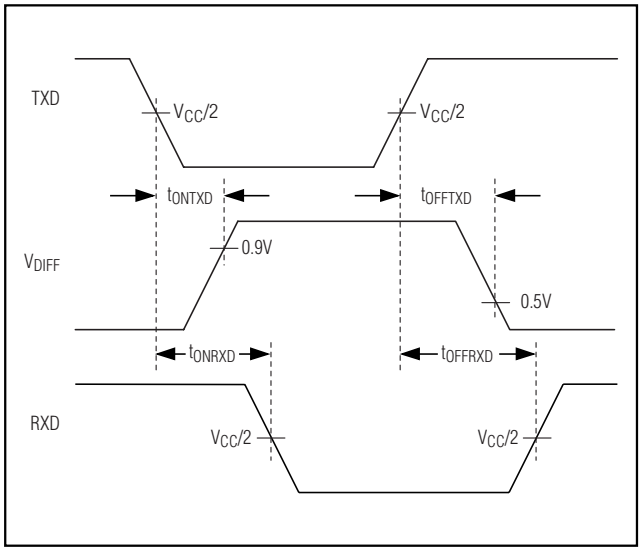


Figure 1. Timing Diagram

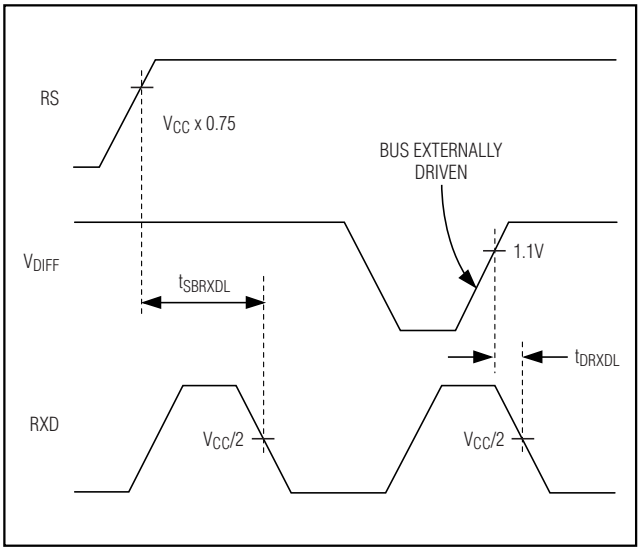


Figure 2. Timing Diagram for Standby Signal (MAX3058)

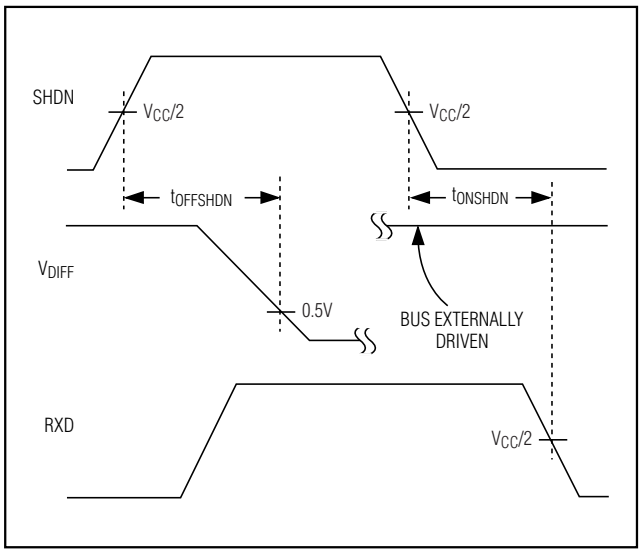


Figure 3. Timing Diagram for Shutdown Signal

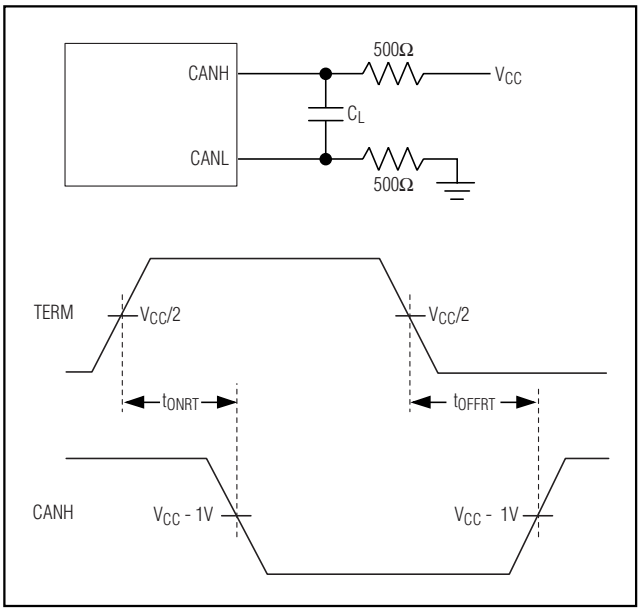


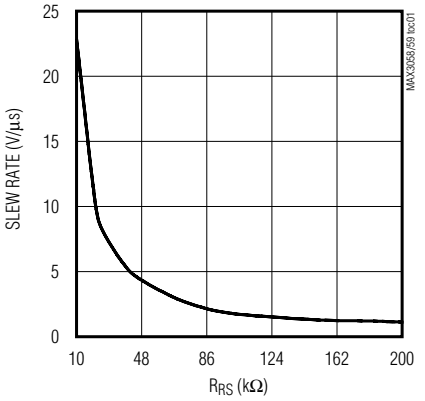
Figure 4. Test Circuit and Diagram for TERM Timing (MAX3059)

5V, 1Mbps, Low Supply Current CAN Transceivers

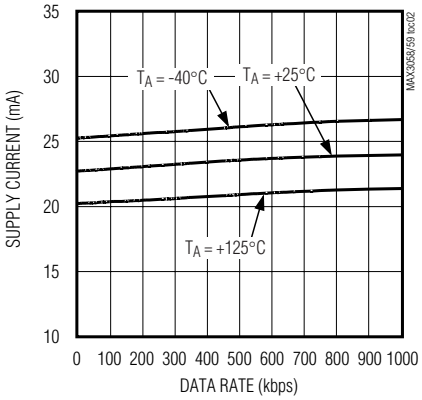
Typical Operating Characteristics

(V_{CC} = +5V, R_L = 60Ω, C_L = 100pF, T_A = +25°C, unless otherwise specified.)

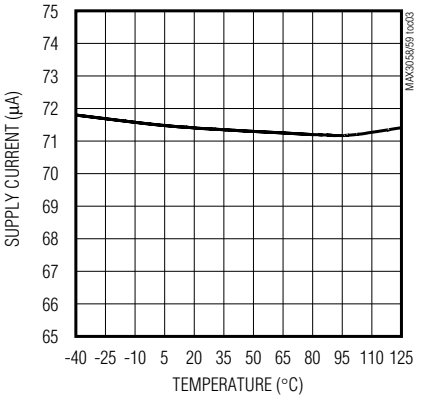
SLEW RATE vs. R_{RS} AT 100kbps



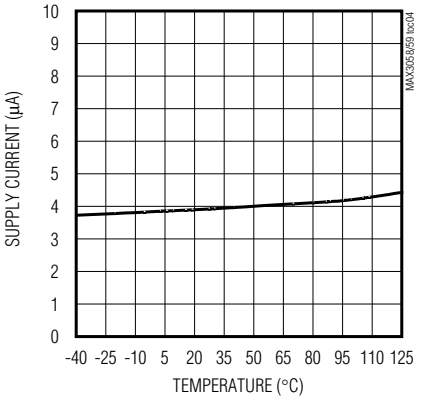
SUPPLY CURRENT vs. DATA RATE



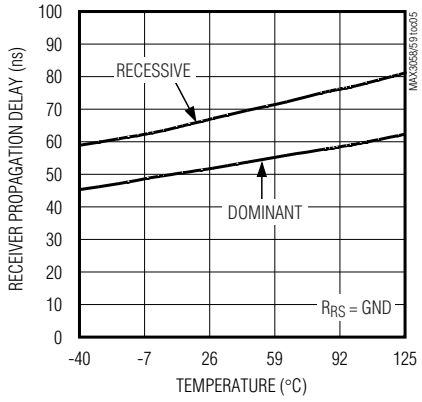
MAX3059 SUPPLY CURRENT vs. TEMPERATURE IN SHUTDOWN MODE (TERM = GND)



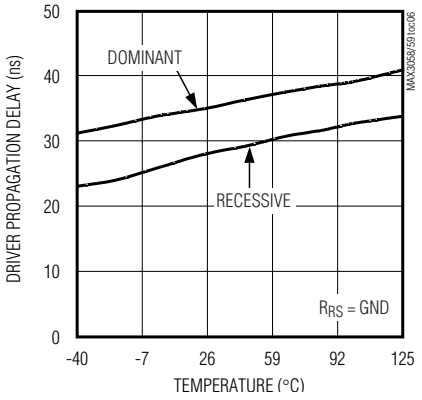
MAX3059 SUPPLY CURRENT vs. TEMPERATURE IN SHUTDOWN MODE (TERM = V_{CC})



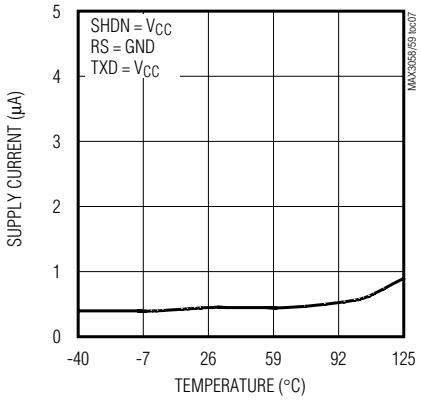
RECEIVER PROPAGATION DELAY vs. TEMPERATURE



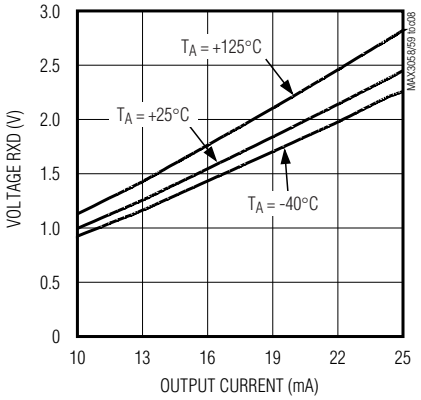
DRIVER PROPAGATION DELAY vs. TEMPERATURE



MAX3058 SUPPLY CURRENT vs. TEMPERATURE IN SHUTDOWN



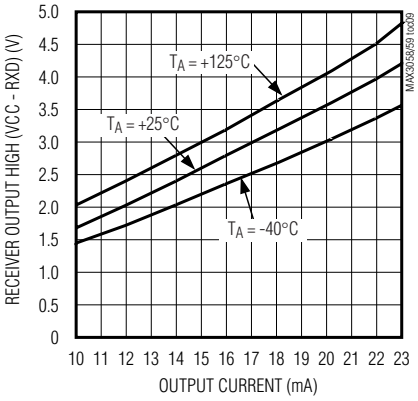
RECEIVER OUTPUT LOW vs. OUTPUT CURRENT



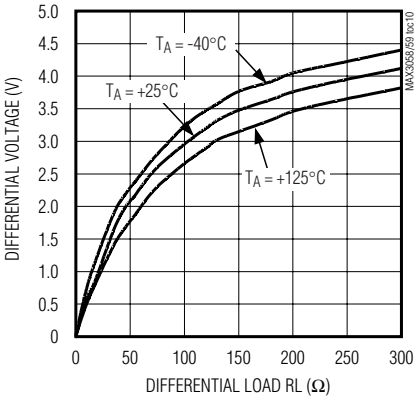
Typical Operating Characteristics (continued)

(V_{CC} = +5V, R_L = 60Ω, C_L = 100pF, T_A = +25°C, unless otherwise specified.)

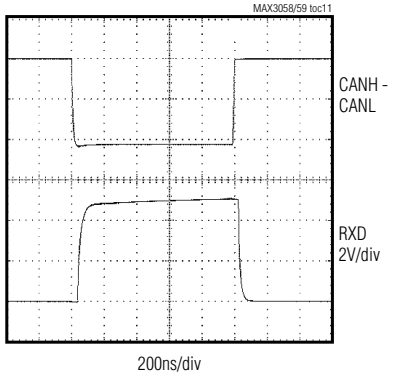
RECEIVER OUTPUT HIGH vs. OUTPUT CURRENT



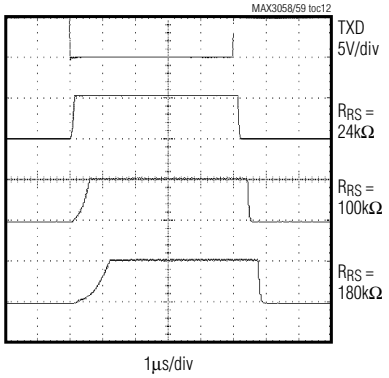
DIFFERENTIAL VOLTAGE vs. DIFFERENTIAL LOAD RL



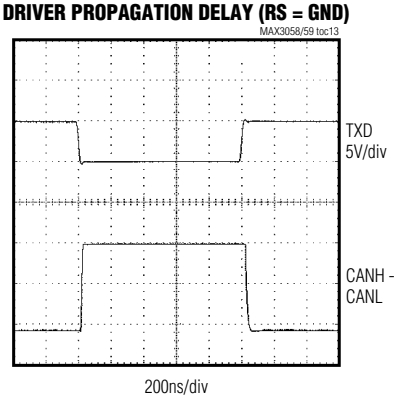
RECEIVER PROPAGATION DELAY



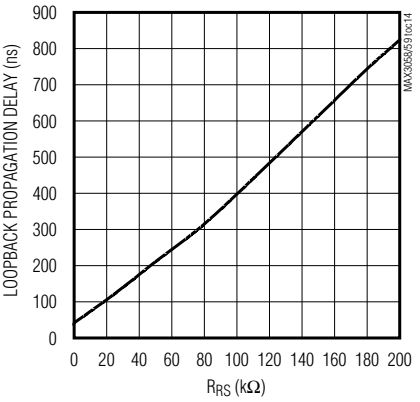
DRIVER PROPAGATION DELAY



DRIVER PROPAGATION DELAY (RS = GND)



LOOPBACK PROPAGATION DELAY vs. R_{RS}

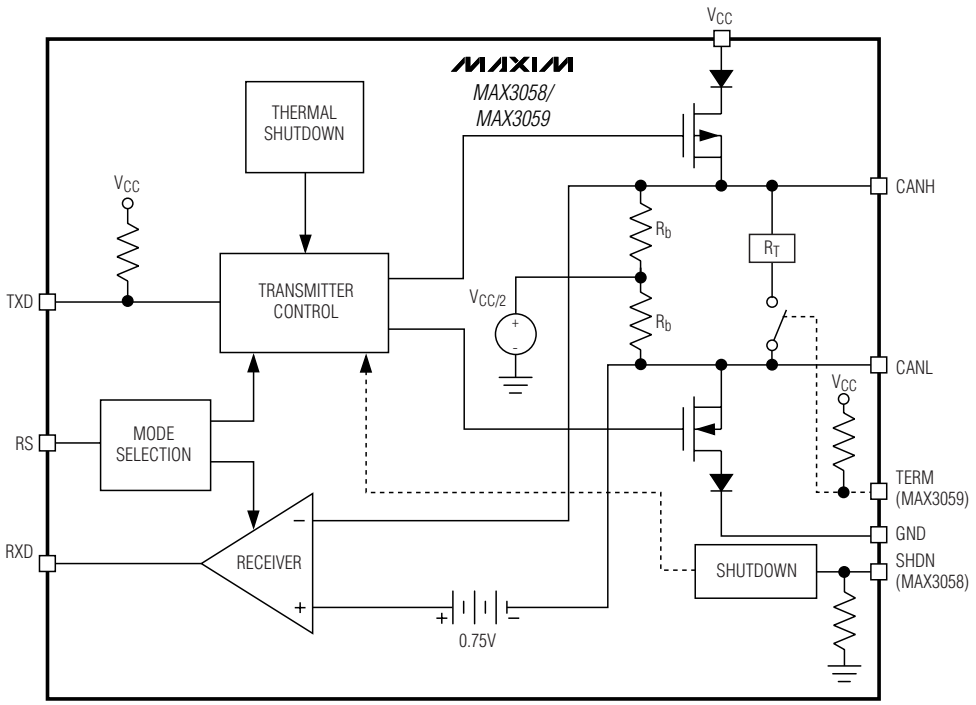


5V, 1Mbps, Low Supply Current CAN Transceivers

Pin Description

PIN		NAME	FUNCTION
MAX3058	MAX3059		
1	1	TXD	Transmit Data Input. TXD is a CMOS/TTL-compatible input from a CAN controller. TXD has an internal 75kΩ pullup resistor.
2	2	GND	Ground
3	3	V_{CC}	Supply Voltage. Bypass V_{CC} to GND with a 0.1µF capacitor.
4	4	RXD	Receive Data Output. RXD is a CMOS/TTL-compatible output.
5	—	SHDN	Shutdown Input, CMOS/TTL-Compatible Input. Drive SHDN high to put the IC into shutdown mode. SHDN has an internal 75kΩ pulldown resistor to GND.
6	6	CANL	CAN Bus Line Low
7	7	CANH	CAN Bus Line High
8	8	RS	Mode Select Input. Drive RS low or connect to GND for high-speed operation. Connect a resistor between RS and GND to control output slope. For the MAX3058, drive RS high to put into standby mode. (see *Mode Selection* section). For the MAX3059, drive RS above 0.75 x V_{CC} to select shutdown mode.
—	5	TERM	Terminate Input, CMOS/TTL Compatible. Drive TERM high or leave floating to terminate the device with a 120Ω across the CANH and CANL. Drive TERM low to disconnect this resistor. TERM has an internal 75kΩ pullup resistor to V_{CC}.

Functional Diagram



Detailed Description

The MAX3058/MAX3059 interface between the protocol controller and the physical wires of the bus lines in a CAN. They are primarily intended for printer and telecom backplane applications requiring data rates up to 1Mbps. These devices provide differential transmit capability to the bus and differential receive capability to the CAN controller.

The MAX3058 output common-mode range is from -7V to +12V. The MAX3059 output common-mode range is from 0V to V_{CC}. The MAX3059 contains an internal switch termination resistor that makes it ideal for JetLink applications.

The MAX3058 features four different modes of operation: high-speed, slope control, standby, and shutdown. The MAX3059 features three different modes of operation: high speed, slope control, and shutdown. High-speed mode allows data rates up to 1Mbps. In slope-control mode, the slew rate may be optimized for data rates up to 500kbps, so the effects of EMI are reduced, and unshielded twisted or parallel cable can be used. In standby mode, the transmitters are shut off and the receivers are put into low-current mode. In shutdown mode, the transmitter and receiver are switched off.

The transceivers operate from a single +5V supply and draw 40mA of supply current in dominant state and 2mA in recessive state. In standby mode, supply current is reduced to 15µA. In shutdown mode, supply current is 1µA for the MAX3058 and 5µA for the MAX3059.

CANH and CANL are output short-circuit current limited and are protected against excessive power dissipation by thermal-shutdown circuitry that places the driver outputs into a high-impedance state.

Transmitter

The transmitter converts a single-ended input (TXD) from the CAN controller to differential outputs for the bus lines (CANH, CANL). The truth table for the transmitter and receiver is given in Tables 1 and 2.

Table 1. Transmitter and Receiver Truth Table for MAX3058 When Not Connected to the Bus

TXD	RS	SHDN	CANH	CANL	BUS STATE	RXD
Low	V_{RS} < 0.75 x V_{CC}	Low	High	Low	Dominant	Low
High or float	V_{RS} < 0.75 x V_{CC}	Low	5kΩ to 25kΩ to V_{CC}/2	5kΩ to 25kΩ to V_{CC}/2	Recessive	High
X	V_{RS} > 0.75 x V_{CC}	Low	5kΩ to 25kΩ to GND	5kΩ to 25kΩ to GND	Recessive	High
X	X	High	Floating	Floating	Floating	High

Table 2. Transmitter and Receiver Truth Table for MAX3059 When Not Connected to the Bus

TXD	RS	TERM	CANH	CANL	BUS STATE	RXD
Low	V_{RS} < 0.75 x V_{CC}	Low	High	Low	Dominant	Low
Low	V_{RS} < 0.75 x V_{CC}	High	High	Low	Dominant	Low
			120Ω terminating resistor across			
High or float	V_{RS} < 0.75 x V_{CC}	Low	5kΩ to 25kΩ to V_{CC}/2	5kΩ to 25kΩ to V_{CC}/2	Recessive	High
High or float	V_{RS} < 0.75 x V_{CC}	High	5kΩ to 25kΩ to V_{CC}/2	5kΩ to 25kΩ to V_{CC}/2	Recessive	High
			120Ω terminating resistor across			
X	V_{RS} > 0.75 x V_{CC}	Low	Floating	Floating	Floating	High
X	V_{RS} > 0.75 x V_{CC}	High	Floating	Floating	Floating	High
			120Ω terminating resistor across			

5V, 1Mbps, Low Supply Current CAN Transceivers

Receiver

The receiver reads differential input from the bus lines (CANH, CANL) and transfers this data as a single-ended output (RXD) to the CAN controller. It consists of a comparator that senses the difference ΔV = (CANH - CANL) with respect to an internal threshold of 0.7V. If this difference is positive (i.e., ΔV > 0.7), a logic low is present at RXD. If negative (i.e., ΔV < 0.7V), a logic high is present. The receiver always echoes the CAN BUS data.

The CANH and CANL common-mode range is -7V to +12V for the MAX3058, and 0V to V_{CC} for the MAX3059. RXD is logic high when CANH and CANL are either shorted, or terminated and undriven.

Mode Selection

High-Speed Mode

Connect RS to ground to set the MAX3058/MAX3059 to high-speed mode. When operating in high-speed mode, the MAX3058/MAX3059 can achieve transmission rates of up to 1Mbps. In high-speed mode, use shielded twisted-pair cable to avoid EMI problems.

Slope-Control Mode

Connect a resistor from RS to ground to select slope-control mode (Table 3). In slope-control mode, CANH and CANL slew rates are controlled by the resistor connected to the RS pin. Maximum transmission speeds are controlled by R_{RS}, and range from 40kbps to 500kbps. Controlling the rise and fall slopes reduces EMI and allows the use of an unshielded twisted pair or a parallel pair of wires as bus lines. The transfer function for selecting the resistor value is given by:

$$R_{RS}\ (k\Omega) \approx 12{,}500/(\text{maximum speed in kbps})$$

See the Slew Rate vs. R_{RS} graph in the *Typical Operating Characteristics*.

Standby Mode

If a logic-high level is applied to RS, the MAX3058 enters a low-current standby mode. In this mode, the transmitter is switched off and the receiver is switched to a low-current/low-speed state. If dominant bits are detected, RXD switches to low level. The microcontroller should react to this condition by switching the transceiver back to normal operation.

When the MAX3058 enters standby mode, RXD goes high for 4µs (max) regardless of the BUS state. However, after 4µs, RXD goes low only when the BUS is dominant; otherwise, RXD remains high (when the BUS is recessive). For proper measurement of standby to receiver active time (t_{SBRXDL}), the BUS should be in a dominant state (see Figure 2).

Shutdown Mode

Drive SHDN high to enter shutdown mode on the MAX3058. Connect SHDN to ground or leave it floating for normal operation. On the MAX3059, drive RS high to enter shutdown.

TERM

Drive TERM high (to V_{CC}) or leave it floating to terminate the MAX3059 with 120Ω resistor connected across the CANH and CANL. Connect TERM to ground to disconnect this resistor.

Thermal Shutdown

If the junction temperature exceeds +160°C, the device is switched off. The hysteresis is approximately 25°C, disabling thermal shutdown once the temperature drops to +135°C. In thermal shutdown, CANH and CANL go recessive and all IC functions are disabled.

Table 3. Mode Selection Truth Table

CONDITION FORCED AT PIN RS	MODE	RESULTING CURRENT AT RS (µA)
$V_{RS} < 0.3 \times V_{CC}$	High speed	$\lvert I_{RS}\rvert < 500$
$0.4 \times V_{CC} < V_{RS} < 0.6 \times V_{CC}$	Slope control	$10\mu A < \lvert I_{RS}\rvert < 200$
$V_{RS} > 0.75 \times V_{CC}$	Standby (MAX3058)	$\lvert I_{RS}\rvert < 10$
$V_{RS} > 0.75 \times V_{CC}$	Shutdown (MAX3059)	$\lvert I_{RS}\rvert < 10$

Applications Information

Reduced EMI and Reflections

In slope-control mode, the CANH and CANL outputs are slew-rate limited, minimizing EMI and reducing reflections caused by improperly terminated cables.

In multidrop CAN applications, it is important to maintain a direct point-to-point wiring scheme. A single pair of wires should connect each element of the CAN bus, and the two ends of the bus should be terminated with 120Ω resistors. A star configuration should never be used.

Any deviation from the point-to-point wiring scheme creates a stub. The high-speed edge of the CAN data on a stub can create reflections back down the bus. These reflections can cause data errors by eroding the noise margin of the system.

Although stubs are unavoidable in a multidrop system, care should be taken to keep these stubs as small as possible, especially in high-speed mode. In slope-control mode, the requirements are not as rigorous, but stub length should still be minimized.

Power Supply and Bypassing

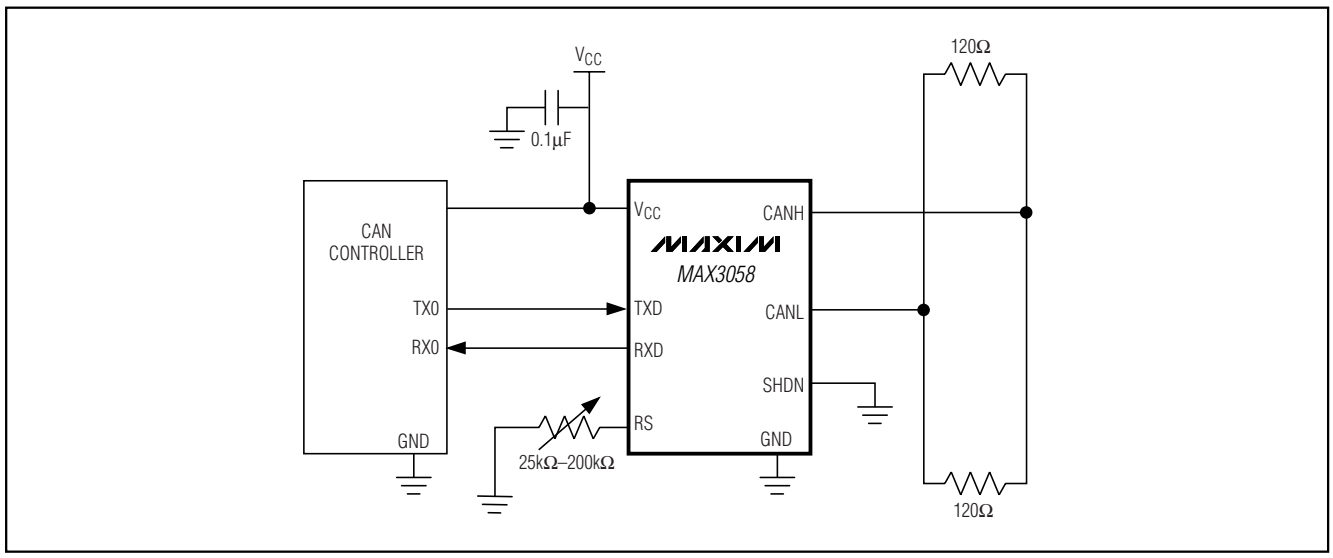
The MAX3058/MAX3059 require no special layout considerations beyond common practices. Bypass V_{CC} to GND with a 0.1µF ceramic capacitor mounted close to the IC with short lead lengths and wide trace widths.

Chip Information

TRANSISTOR COUNT: 1024

PROCESS: BiCMOS

Typical Operating Circuit

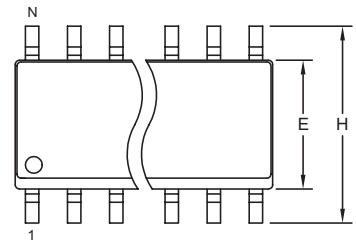


5V, 1Mbps, Low Supply Current CAN Transceivers

Package Information

(The package drawing(s) in this data sheet may not reflect the most current specifications. For the latest package outline information, go to **www.maxim-ic.com/packages**.)

SOICN .EPS

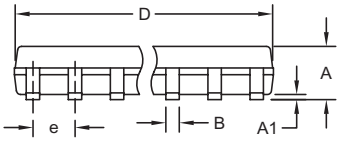


TOP VIEW

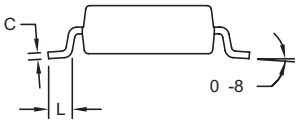
	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.053	0.069	1.35	1.75
A1	0.004	0.010	0.10	0.25
B	0.014	0.019	0.35	0.49
C	0.007	0.010	0.19	0.25
e	0.050 BSC		1.27 BSC	
E	0.150	0.157	3.80	4.00
H	0.228	0.244	5.80	6.20
L	0.016	0.050	0.40	1.27

VARIATIONS:

	INCHES		MILLIMETERS			
DIM	MIN	MAX	MIN	MAX	N	MS012
D	0.189	0.197	4.80	5.00	8	AA
D	0.337	0.344	8.55	8.75	14	AB
D	0.386	0.394	9.80	10.00	16	AC



FRONT VIEW



SIDE VIEW

NOTES:
1. D&E DO NOT INCLUDE MOLD FLASH.
2. MOLD FLASH OR PROTRUSIONS NOT TO EXCEED 0.15mm (.006").
3. LEADS TO BE COPLANAR WITHIN 0.10mm (.004").
4. CONTROLLING DIMENSION: MILLIMETERS.
5. MEETS JEDEC MS012.
6. N = NUMBER OF PINS.

DALLAS SEMICONDUCTOR MAXIM

PROPRIETARY INFORMATION

TITLE: PACKAGE OUTLINE, .150" SOIC

APPROVAL	DOCUMENT CONTROL NO.	REV.	
	21-0041	B	1/1

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for CAN Interface IC ***category:***

Click to view products by Maxim ***manufacturer:***

Other Similar products are found below :

416694H IL41050TA-1E TJA1042T1J TJA1042T31J SN65LBC031DG4 TJA1050T/CM,118 MAX13051ESA+T SJA1000T/N1.118 MCP2561FD-EP LTM2889IY-5#PBF IA82527PQF44AR2 ADM3053BRWZ-REEL7 ADM3051CRZ-REEL7 IA82527PLC44AR2 LT3960JMSE#TRPBF LT3960JMSE#PBF TJA1040TCM,118 SIT1050TK SIT1040TK MCP25625-ESS MAX3053ESA+T MAX3057ASA+T MCP2515T-I/ST NCV7341D21R2G MC33897CTEFR2 MAX3056ASD+ MAX3054ASD+ MAX3055ASD+ MAX3051ESA+T MAX13054ESA+ MCP2510-E/SO MCP2510-I/P MCP2510-I/SO MCP2515-I/P MCP2515-I/SO MCP2515-I/ST MCP2515T-I/SO MCP2551-E/P MCP2551-E/SN MCP2551-I/P MCP2551-I/SN MCP2561-E/P MCP2561-H/SN MCP2561T-ESN MCP2562FD-E/SN MCP2562T-ESN MCP2515-E/ML PCA82C250T/YM,118 PCA82C251T/YM,118 SJA1000T/N1,118