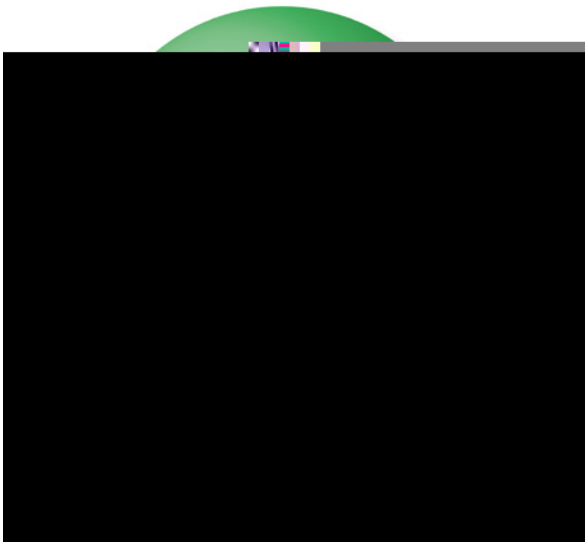
Is Now Part of



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www.onsemi.com

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

Truth Table

LED	Output
Off	HIGH
On	LOW

Pin Configuration

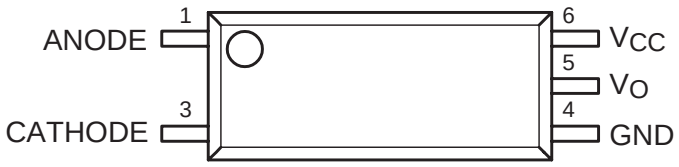


Figure 2. Pin Configuration

Pin Definitions

Pin #	Name	Description
1	Anode	Anode
3	Cathode	Cathode
4	GND	Output Ground
5	V_O	Output Voltage
6	V_{CC}	Output Supply Voltage

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. T_A = 25°C unless otherwise specified.

Symbol	Parameter	Value	Units
T_{STG}	Storage Temperature	-40 to +125	°C
T_{OPR}	Operating Temperature	-40 to +100	°C
T_J	Junction Temperature	-40 to +125	°C
T_{SOL}			

Note:

1. No derating required up to 100°C.

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. Fairchild does not recommend exceeding them or designing to absolute maximum ratings.

Note:

2. 0.1 µF bypass capacitor must be connected between pins 4 and 6.

Isolation Characteristics

Apply over all recommended conditions, typical value is measured at T_A = 25°C.

Notes:

3. Device is considered a two-terminal device: pins 1 and 3 are shorted together and pins 4, 5, and 6 are shorted together.
4. 5,000 VAC_{RMS} for 1-minute duration is equivalent to 6,000 VAC_{RMS} for 1-second duration.

Electrical Characteristics

Apply over all recommended conditions; T_A = -40°C to +100°C, 3.0 V ≤ V_{CC} ≤ 5.5 V; unless otherwise specified. Typical value is measured at T_A = 25°C and V_{CC} = 3.3 V or V_{CC} = 5 V.

Switching Characteristics

Apply over all recommended conditions; T_A = -40°C to +100°C, V_{CC} = 3.3 V, I_F = 6.0 mA; unless otherwise specified. Typical value is measured at T_A = 25°C and V_{CC} = 3.3 V.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units	Figure
Data Rate		R_L = 350 Ω			10	Mbit/sec	
t_{PHL}	Propagation Delay to Logic Low Output	R_L = 350 Ω, C_L = 15 pF		40	80	ns	10, 11, 15
t_{PLH}	Propagation Delay to Logic High Output	R_L = 350 Ω, C_L = 15 pF		50	90	ns	10, 11, 15
PWD	Pulse Width Distortion, $\lvert t_{PHL} - t_{PLH} \rvert$	R_L = 350 Ω, C_L = 15 pF		10	35	ns	12, 13, 15
t_{PSK}	Propagation Delay Skew	R_L = 350 Ω, C_L = 15 pF (5)			40	ns	
t_R	Output Rise Time (10% to 90%)	R_L = 350 Ω, C_L = 15 pF		20		ns	14, 15
t_F	Output Fall Time (90% to 10%)	R_L = 350 Ω, C_L = 15 pF		10		ns	14, 15
$\lvert CM_H \rvert$	Common-Mode Transient Immunity at Output High	I_F = 0 mA, V_O > 2 V, V_{CM} = 1,000 V (6)	20	40		kV/µs	16
$\lvert CM_L \rvert$	Common-Mode Transient Immunity at Output Low	I_F = 6.0 mA, V_O < 0.8 V, V_{CM} = 1,000 V (6)	20	40		kV/µs	16

Apply over all recommended conditions; T_A = -40°C to +100°C, V_{CC} = 5 V, I_F = 6.0 mA; unless otherwise specified. Typical value is measured at T_A = 25°C and V_{CC} = 5 V.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units	Figure
Data Rate		R_L = 350 Ω			10	Mbit/sec	
t_{PHL}	Propagation Delay to Logic Low Output	R_L = 350 Ω, C_L = 15 pF		37	80	ns	10, 11, 15
t_{PLH}	Propagation Delay to Logic High Output	R_L = 350 Ω, C_L = 15 pF		41	90	ns	10, 11, 15
PWD	Pulse Width Distortion, $\lvert t_{PHL} - t_{PLH} \rvert$	R_L = 350 Ω, C_L = 15 pF		4	25	ns	12, 13, 15
t_{PSK}	Propagation Delay Skew	R_L = 350 Ω, C_L = 15 pF (5)			40	ns	
t_R	Output Rise Time (10% to 90%)	R_L = 350 Ω, C_L = 15 pF		22		ns	14, 15
t_F	Output Fall Time (90% to 10%)	R_L = 350 Ω, C_L = 15 pF		9		ns	14, 15
$\lvert CM_H \rvert$	Common-Mode Transient Immunity at Output High	I_F = 0 mA, V_O > 2 V, V_{CM} = 1,000 V (6)	20	40		kV/µs	16
$\lvert CM_L \rvert$	Common-Mode Transient Immunity at Output Low	I_F = 6.0 mA, V_O < 0.8 V, V_{CM} = 1,000 V (6)	20	40		kV/µs	16

Notes:

5. t_{PSK} is equal to the magnitude of the worst-case difference in t_{PHL} and/or t_{PLH} between any two units from the same manufacturing date code that are operated at same case temperature (±5°C), at same operating conditions, with equal loads (R_L = 350 Ω, C_L = 15 pF), and with an input rise time less than 5 ns.
6. Common-mode transient immunity at output HIGH is the maximum tolerable positive dVcm/dt on the leading edge of the common-mode impulse signal, V_{CM}, to assure that the output remains HIGH. Common-mode transient immunity at output LOW is the maximum tolerable negative dVcm/dt on the trailing edge of the common pulse signal, V_{CM}, to assure that the output remains LOW.

Typical Performance Characteristics

Typical Performance Characteristics (Continued)

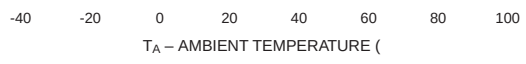


Figure 14. Rise Time (t_R) and Fall Time (t_F) vs. Ambient Temperature

Test Circuit

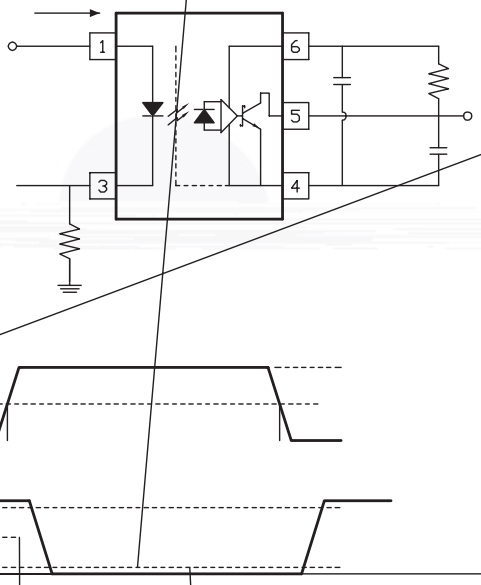


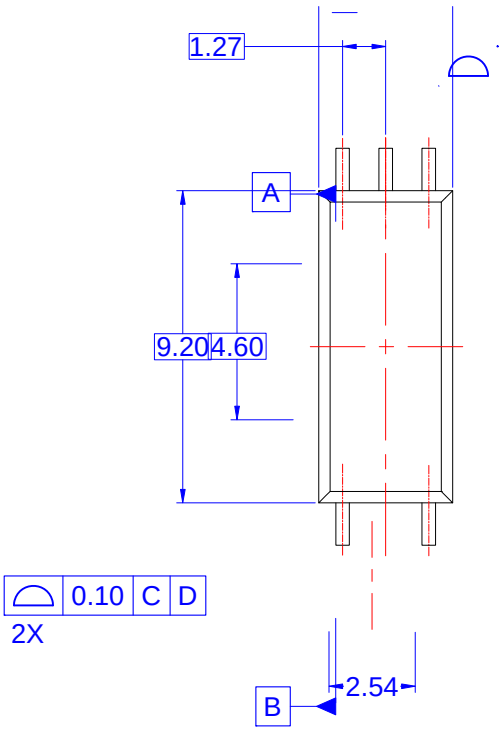
Figure 15. Test Circuit for Propagation Delay, Rise Time, and Fall Time

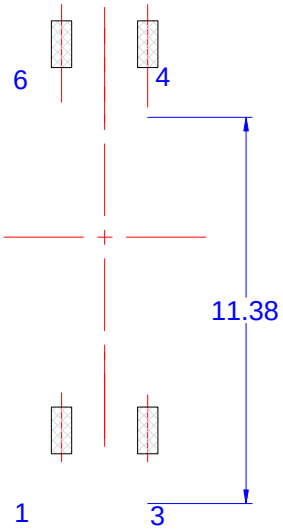
Figure 16. Test Circuit for Instantaneous Common-Mode Rejection Voltage

Reflow Profile

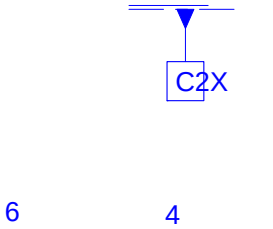
Figure 17. Reflow Profile

Profile Freature	Pb-Free Assembly Profile
Temperature Minimum (T_{smin})	150°C
Temperature Maximum (T_{smax})	200°C
Time (t_S) from (T_{smin} to T_{smax})	60 to 120 seconds
Ramp-Up Rate (t_L to t_P)	3°C/second maximum
Liquidous Temperature (T_L)	217°C
Time (t_L) Maintained Above (T_L)	60 to 150 seconds
Peak Body Package Temperature	260°C +0°C / –5°C
Time (t_P) within 5°C of 260°C	30 seconds
Ramp-Down Rate (T_P to T_L)	6°C/second maximum
Time 25°C to Peak Temperature	





LAND PATTERN
RECOMMENDATION



DETAIL A
SCALE: 3.2:1

NOTES: UNLESS OTHERWISE SPECIFIED

A) THIS PACKAGE DOES NOT CONFORM TO ANY STANDARD.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS
D) DRAWING CONFORMS TO ASME Y14.5M-1994
E) DRAWING FILE NAME: MKT-M05AREV3