

**66079****OPTICALLY COUPLED DIGITAL FILTER****Mii****OPTOELECTRONIC PRODUCTS  
DIVISION****Features:**

- DSCC Approved 916761HXX
- 10 MBd typical
- Meets Tempest EMI/RFI emanation criteria
- TTL compatible input and output
- RFI Rejection 80dB to 1GHz
- Faraday shield to provide high common mode rejection

**Applications:**

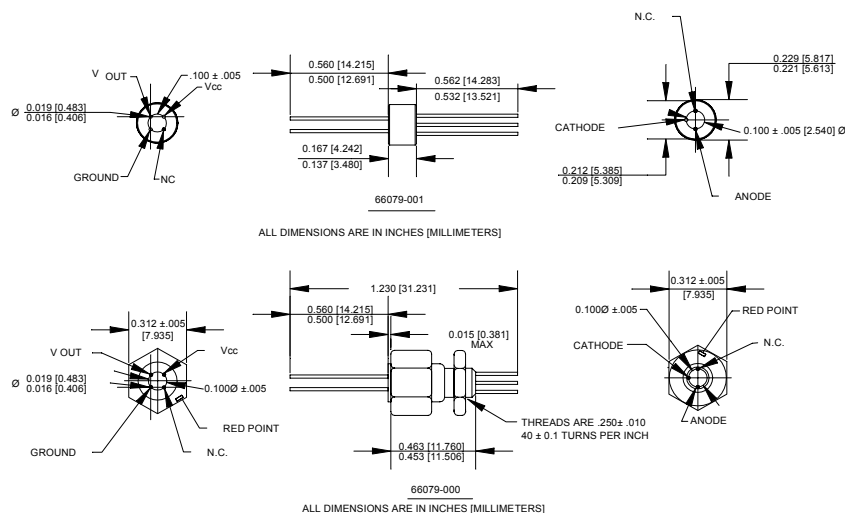
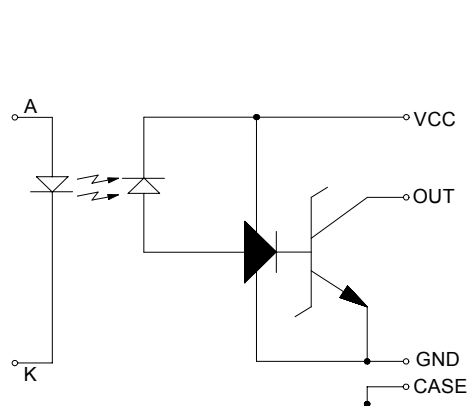
- Military and space
- Secure communication systems
- Isolated receiver input
- Microprocessor system interface
- Digital isolation for A/D, D/A converters

**DESCRIPTION**

The **66079** Optically Coupled Digital Filter consists of an LED optically coupled to a high speed, high gain inverting detector gate. Maximum isolation can be achieved while providing a TTL output capable of switching with propagation delays of 55nS typical. The 66079 is a hermetically sealed package which is threaded in order to provide convenient bulkhead mounting and is available in standard and screened versions or tested to customer specifications. The 66079-001 is a hermetically sealed package which can be soldered or press-fit mounted and is also available in standard and MIL-PRF-38534 screened versions or tested to customer specifications.

**ABSOLUTE MAXIMUM RATINGS**

Storage Temperature.....	-65°C to +150°C
Operating Free-Air Temperature Range .....	-55°C to +125°C
Lead Solder Temperature.....	260°C for 10s (1.6mm below seating plane)
Peak Forward Input Current .....	40mA (1ms duration)
Forward Input Current Continuous .....	20mA
Supply voltage - $V_{CC}$ .....	7V(1 minute maximum)
Output Current - $I_O$ .....	25mA
Output Power Dissipation .....	40mW
Output Voltage - $V_O$ .....	7V
Total Power Dissipation .....	175mW

**Package Dimensions****Schematic Diagram**

**ELECTRICAL CHARACTERISTICS**  $T_a = -55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
High Level Output Current	$I_{OH}$		5	250	$\mu\text{A}$	$V_{CC} = 5.5\text{V}$ , $V_O = 5.5\text{V}$ , $I_F = 250\mu\text{A}$	
Low Level Output Voltage	$V_{OL}$		0.5	0.6	V	$V_{CC} = 5.5\text{V}$ , $I_F = 10\text{mA}$ $I_{OL}$ (Sinking) = 10mA	
High Level Supply Current	$I_{CCH}$		10	20	mA	$V_{CC} = 5.5\text{V}$ , $I_F = 0$ (Both Channels)	
Low Level Supply Current	$I_{CCL}$		20	30	mA	$V_{CC} = 5.5\text{V}$ , $I_F = 20\text{mA}$ (Both Channels)	
Input Forward Voltage	$V_F$		1.5	1.75	V	$I_F = 20\text{mA}$	
Input Reverse Breakdown Voltage	$BV_R$	5			V	$I_R = 10\mu\text{A}$	
Input-Output Insulation Leakage Current	$I_{I-O}$			1.0	$\mu\text{A}$	$V_{I-O} = 1500\text{Vdc}$ , Relative Humidity = 45% $T_a = 25^{\circ}\text{C}$ , $t = 5\text{s}$	
Propagation Delay Time To High Output Level	$t_{PLH}$		65	100	ns	$R_L = 510\Omega$ , $C_L = 15\text{pF}$ , $I_F = 13\text{mA}$ , $t_a = 25^{\circ}\text{C}$	
Propagation Delay Time To Low Output Level	$t_{PHL}$		55	100	ns	$R_L = 510\Omega$ , $C_L = 15\text{pF}$ , $I_F = 13\text{mA}$ , $t_a = 25^{\circ}\text{C}$	

**TYPICAL CHARACTERISTICS**  $T_a = 25^{\circ}\text{C}$ ,  $V_{CC} = 5\text{V}$  EACH CHANNEL

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Capacitance	$C_{IN}$		60			$V_F = 0$ , $f = \text{MHz}$	
Input to Case Capacitance	$C_{IC}$		2	5	pF	$V_F = 0$ , $f = \text{MHz}$	
Input Diode Temperature Coefficient	$\Delta V_F$		-1.9		mV/ $^{\circ}\text{C}$	$I_F = 20\text{mA}$	
Capacitance (Input-Output)	$C_{I-O}$		1	3	pF	$f = 1\text{MHz}$	
Output Rise-Fall Time (10-90%)	$t_r$ , $t_f$		35		ns	$R_L = 510\Omega$ , $C_L = 50\text{pF}$ $I_F = 13\text{mA}$	
Common Mode Transient Immunity at High Output Level	$CM_H$	1000	10000		V/ $\mu\text{s}$	$V_{CM} = 10\text{V}$ (peak), $V_O$ (min) = 2V, $R_L = 510\Omega$ , $I_F = 0\text{mA}$	1
Common Mode Transient Immunity at Low Output Level	$CM_L$	1000	10000		V/ $\mu\text{s}$	$V_{CM} = 10\text{V}$ (peak), $V_O$ (max) = 0.8V, $R_L = 510\Omega$ , $I_F = 10\text{mA}$	2

**NOTES:**

- $CM_H$  is the max. tolerable common mode transient to assure that the output will remain in a high logic state (i.e.  $V_O > 2.0\text{V}$ ).
- $CM_L$  is the max. tolerable common mode transient to assure that the output will remain in a low logic state (i.e.  $V_O < 0.8\text{V}$ ).

**RECOMMENDED OPERATING CONDITIONS:**

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level Each Channel	$I_{FL}$	0	250	$\mu\text{A}$
Input Current, High Level Each Channel	$I_{FH}$	12.5	20	mA
Supply Voltage	$V_C$	4.5	5.5	V
Fan Out (TTL Load) Each Channel	N		6	
Operating Temperature	$T_A$	-55	125	$^{\circ}\text{C}$

**SELECTION GUIDE**

PART NUMBER	PART DESCRIPTION
66079-000	With housing, with 100% screening
66079-000C	DSCC Drawing # 5962-916761HXX, with housing
66079-001	Without housing, with 100% screening
66079-001C	DSCC Drawing #5962-916760HXX (without housing)
66079-002	With housing, commercial mil-temp ( $-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ )
66079-003	Without housing, commercial mil-temp ( $-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ )
66079-004	Without housing, commercial extended temp ( $-40^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ )
66079-004H	With housing, commercial extended temp ( $-40^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ )
66079-005	Without housing, commercial temp ( $0^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ )
66079-005H	With housing, commercial temp ( $0^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ )