

# HCPL0600, HCPL0601, HCPL0611, HCPL0637, HCPL0638, HCPL0639 High Speed-10 MBit/s Logic Gate Optocouplers

**Single Channel:** HCPL0600, HCPL0601, HCPL0611  
**Dual Channel:** HCPL0637, HCPL0638, HCPL0639

## Features

- Compact SO8 package
- Very high speed-10 MBit/s
- Superior CMR
- Logic gate output
- Strobable output (single channel devices)
- Wired OR-open collector
- U.L. recognized (File # E90700)
- IEC60747-5-2 approved (VDE option)  
– HCPL0600, HCPL0601, HCPL0611 only

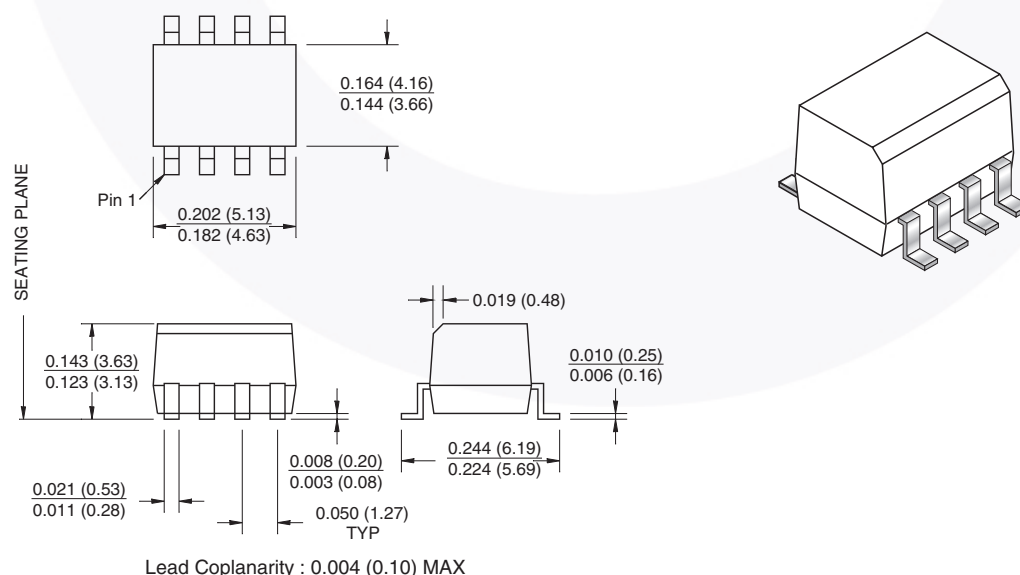
## Applications

- Ground loop elimination
- LSTTL to TTL, LSTTL or 5-volt CMOS
- Line receiver, data transmission
- Data multiplexing
- Switching power supplies
- Pulse transformer replacement
- Computer-peripheral interface

## Description

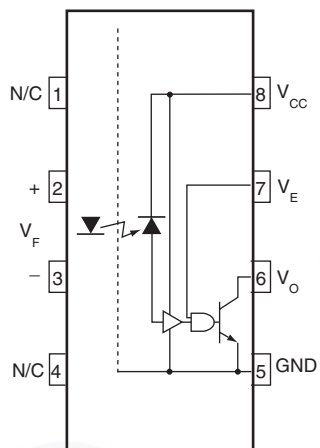
The HCPL06XX optocouplers consist of an AlGaAs LED, optically coupled to a very high speed integrated photo-detector logic gate with a strobable output (single channel devices). The devices are housed in a compact small-outline package. This output features an open collector, thereby permitting wired OR outputs. The HCPL0600, HCPL0601 and HCPL0611 output consists of bipolar transistors on a bipolar process while the HCPL0637, HCPL0638, and HCPL0639 output consists of bipolar transistors on a CMOS process for reduced power consumption. The coupled parameters are guaranteed over the temperature range of -40°C to +85°C. An internal noise shield provides superior common mode rejection.

## Package Dimensions

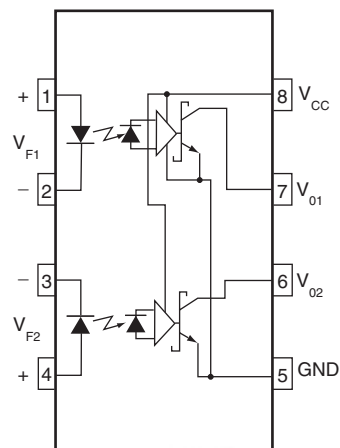


### Note:

All dimensions are in inches (millimeters)



**Single-channel circuit drawing**  
(HCPL0600, HCPL0601 and HCPL0611)



**Dual-channel circuit drawing**  
(HCPL0637, HCPL0638 and HCPL0639)

**Truth Table** (Positive Logic)

| Input | Enable | Output |
|-------|--------|--------|
| H     | H      | L      |
| L     | H      | H      |
| H     | L      | H      |
| L     | L      | H      |
| H*    | NC*    | L*     |
| L*    | NC*    | H*     |

\*Dual channel devices or single channel devices with pin 7 not connected.  
A 0.1 $\mu$ F bypass capacitor must be connected between pins 8 and 5. (See note 1)

## Absolute Maximum Ratings (No derating required up to 85°C)

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.

| Symbol                            | Parameter                                                    |                | Value       | Units |
|-----------------------------------|--------------------------------------------------------------|----------------|-------------|-------|
| T <sub>STG</sub>                  | Storage Temperature                                          |                | -40 to +125 | °C    |
| T <sub>OPR</sub>                  | Operating Temperature                                        |                | -40 to +85  | °C    |
| EMITTER                           |                                                              |                |             |       |
| I <sub>F</sub>                    | DC/Average Forward Input Current (each channel)              | Single Channel | 50          | mA    |
|                                   |                                                              | Dual Channel   |             |       |
| V <sub>E</sub>                    | Enable Input Voltage<br>Not to exceed VCC by more than 500mV | Single Channel | 5.5         | V     |
| V <sub>R</sub>                    | Reverse Input Voltage (each channel)                         |                | 5.0         | V     |
| P <sub>I</sub>                    | Power Dissipation                                            | Single Channel | 45          | mW    |
|                                   |                                                              | Dual Channel   |             |       |
| DETECTOR                          |                                                              |                |             |       |
| V <sub>CC</sub><br>(1 minute max) | Supply Voltage                                               |                | 7.0         | V     |
| I <sub>O</sub>                    | Output Current (each channel)                                | Single Channel | 50          | mA    |
|                                   |                                                              | Dual Channel   | 15          |       |
| V <sub>O</sub>                    | Output Voltage (each channel)                                |                | 7.0         | V     |
| P <sub>O</sub>                    | Collector Output Power Dissipation                           | Single Channel | 85          | mW    |
|                                   |                                                              | Dual Channel   | 85          |       |

## 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.

| Symbol          | Parameter                  |                     | Min. | Max.            | Units     |
|-----------------|----------------------------|---------------------|------|-----------------|-----------|
| I <sub>FL</sub> | Input Current, Low Level   |                     | 0    | 250             | μA        |
| I <sub>FH</sub> | Input Current, High Level  |                     | *6.3 | 15              | mA        |
| V <sub>CC</sub> | Supply Voltage, Output     |                     | 4.5  | 5.5             | V         |
| V <sub>EL</sub> | Enable Voltage, Low Level  | Single Channel only | 0    | 0.8             | V         |
| V <sub>EH</sub> | Enable Voltage, High Level | Single Channel only | 2.0  | V <sub>CC</sub> | V         |
| T <sub>A</sub>  | Operating Temperature      |                     | -40  | +85             | °C        |
| N               | Fan Out (TTL load)         | Single Channel      |      | 8               | TTL Loads |
|                 |                            | Dual Channel        |      | 5               |           |
| R <sub>L</sub>  | Output Pull-up             |                     | 330  | 4K              | Ω         |

\*6.3mA is a guard banded value which allows for at least 20% CTR degradation. Initial input current threshold value is 5.0mA or less

# Electrical Characteristics (T<sub>A</sub> = -40°C to +85°C unless otherwise specified.)

## Individual Component Characteristics

| Symbol                           | Parameter                           | Test Conditions                                                         | Min.           | Typ.* | Max.        | Unit  |
|----------------------------------|-------------------------------------|-------------------------------------------------------------------------|----------------|-------|-------------|-------|
| <b>EMITTER</b>                   |                                     |                                                                         |                |       |             |       |
| V <sub>F</sub>                   | Input Forward Voltage               | I <sub>F</sub> = 10mA<br>T <sub>A</sub> = 25°C                          |                |       | 1.8<br>1.75 | V     |
| B <sub>VR</sub>                  | Input Reverse Breakdown Voltage     | I <sub>R</sub> = 10μA                                                   | 5.0            |       |             | V     |
| ΔV <sub>F</sub> /ΔT <sub>A</sub> | Input Diode Temperature Coefficient | I <sub>F</sub> = 10mA                                                   |                | -1.5  |             | mV/°C |
| <b>DETECTOR</b>                  |                                     |                                                                         |                |       |             |       |
| I <sub>CCH</sub>                 | High Level Supply Current           | I <sub>F</sub> = 0mA, V <sub>CC</sub> = 5.5V<br>V <sub>E</sub> = 0.5 V  | Single Channel |       | 10          | mA    |
|                                  |                                     |                                                                         | Dual Channel   |       | 15          |       |
| I <sub>CCL</sub>                 | Low Level Supply Current            | I <sub>F</sub> = 10mA, V <sub>CC</sub> = 5.5V<br>V <sub>E</sub> = 0.5 V | Single Channel |       | 13          | mA    |
|                                  |                                     |                                                                         | Dual Channel   |       | 21          |       |
| I <sub>EL</sub>                  | Low Level Enable Current            | V <sub>CC</sub> = 5.5V, V <sub>E</sub> = 0.5V                           | Single Channel |       | -1.6        | mA    |
| I <sub>EH</sub>                  | High Level Enable Current           | V <sub>CC</sub> = 5.5V, V <sub>E</sub> = 2.0V                           | Single Channel |       | -1.6        | mA    |
| V <sub>EH</sub>                  | High Level Enable Voltage           | V <sub>CC</sub> = 5.5V, I <sub>F</sub> = 10mA                           | Single Channel | 2.0   |             | V     |
| V <sub>EL</sub>                  | Low Level Enable Voltage            | V <sub>CC</sub> = 5.5V, I <sub>F</sub> = 10mA <sup>(2)</sup>            | Single Channel |       | 0.8         | V     |

## Switching Characteristics (T<sub>A</sub> = -40°C to +85°C, V<sub>CC</sub> = 5 V, I<sub>F</sub> = 7.5 mA unless otherwise specified.)

| Symbol                              | AC Characteristics                                    | Test Conditions                                                                                                                    | Device                                             | Min.             | Typ. | Max.      | Unit |
|-------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|------------------|------|-----------|------|
| T <sub>PLH</sub>                    | Propagation Delay Time to Output High Level           | R <sub>L</sub> = 350Ω, C <sub>L</sub> = 15pF <sup>(3)</sup><br>(Fig. 20)<br>T <sub>A</sub> = 25°C                                  | All                                                | 20               |      | 75<br>100 | ns   |
| T <sub>PHL</sub>                    | Propagation Delay Time to Output Low Level            | R <sub>L</sub> = 350Ω, C <sub>L</sub> = 15pF <sup>(4)</sup><br>(Fig. 20)<br>T <sub>A</sub> = 25°C                                  | All                                                | 25               |      | 75<br>100 | ns   |
| T <sub>PHL</sub> - T <sub>PLH</sub> | Pulse Width Distortion                                | R <sub>L</sub> = 350Ω, C <sub>L</sub> = 15pF (Fig. 20)                                                                             | All                                                |                  |      | 35        | ns   |
| t <sub>r</sub>                      | Output Rise Time (10-90%)                             | R <sub>L</sub> = 350Ω, C <sub>L</sub> = 15pF <sup>(5)</sup> (Fig. 20)                                                              | Single Ch                                          |                  | 50   |           | ns   |
|                                     |                                                       |                                                                                                                                    | Dual Ch                                            |                  | 17   |           |      |
| t <sub>f</sub>                      | Output Fall Time (90-10%)                             | R <sub>L</sub> = 350Ω, C <sub>L</sub> = 15pF <sup>(6)</sup> (Fig. 20)                                                              | Single Ch                                          |                  | 12   |           | ns   |
|                                     |                                                       |                                                                                                                                    | Dual Ch                                            |                  | 5    |           |      |
| t <sub>ELH</sub>                    | Enable Propagation Delay Time to Output High Level    | I <sub>F</sub> = 7.5mA, V <sub>EH</sub> = 3.5V, R <sub>L</sub> = 350Ω, C <sub>L</sub> = 15pF <sup>(7)</sup> (Fig. 21)              | HCPL0600<br>HCPL0601<br>HCPL0611                   |                  | 20   |           | ns   |
| t <sub>EHL</sub>                    | Enable Propagation Delay Time to Output Low Level     | I <sub>F</sub> = 7.5mA, V <sub>EH</sub> = 3.5V, R <sub>L</sub> = 350Ω, C <sub>L</sub> = 15 pF <sup>(8)</sup> (Fig. 21)             | HCPL0600<br>HCPL0601<br>HCPL0611                   |                  | 20   |           | ns   |
| ICM <sub>H</sub>                    | Common Mode Transient Immunity (at Output High Level) | R <sub>L</sub> = 350Ω, T <sub>A</sub> = 25°C, I <sub>F</sub> = 0mA, V <sub>OH</sub> (Min.) = 2.0 V <sup>(9)</sup> (Fig. 22, 23)    | V <sub>CM</sub>   = 10V<br>HCPL0600<br>HCPL0637    | 5,000            |      |           | V/μs |
|                                     |                                                       |                                                                                                                                    | V <sub>CM</sub>   = 50V<br>HCPL0601<br>HCPL0638    | 10,000           |      |           |      |
|                                     |                                                       |                                                                                                                                    | V <sub>CM</sub>   = 1,000V<br>HCPL0611<br>HCPL0639 | 15,000<br>25,000 |      |           |      |
| ICM <sub>L</sub>                    | Common Mode Transient Immunity (at Output Low Level)  | R <sub>L</sub> = 350Ω, T <sub>A</sub> = 25°C, I <sub>F</sub> = 7.5mA, V <sub>OL</sub> (Max.) = 0.8 V <sup>(10)</sup> (Fig. 22, 23) | V <sub>CM</sub>   = 10V<br>HCPL0600<br>HCPL0637    | 5,000            |      |           | V/μs |
|                                     |                                                       |                                                                                                                                    | V <sub>CM</sub>   = 50V<br>HCPL0601<br>HCPL0638    | 10,000           |      |           |      |
|                                     |                                                       |                                                                                                                                    | V <sub>CM</sub>   = 1,000V<br>HCPL0611<br>HCPL0639 | 15,000<br>25,000 |      |           |      |

**Transfer Characteristics** ( $T_A = -40^\circ\text{C}$  to  $+85^\circ\text{C}$  unless otherwise specified.)

| Symbol   | DC Characteristics        | Test Conditions                                                                                      | Min. | Typ.* | Max. | Unit          |
|----------|---------------------------|------------------------------------------------------------------------------------------------------|------|-------|------|---------------|
| $I_{OH}$ | High Level Output Current | $V_{CC} = 5.5\text{V}$ , $V_O = 5.5\text{V}$ , $I_F = 250\mu\text{A}$ ,<br>$V_E = 2.0\text{V}^{(2)}$ |      |       | 100  | $\mu\text{A}$ |
| $V_{OL}$ | Low Level Output Voltage  | $V_{CC} = 5.5\text{V}$ , $I_F = 5\text{mA}$ , $V_E = 2.0\text{V}$ ,<br>$I_{OL} = 13\text{mA}^{(2)}$  |      |       | 0.6  | V             |
| $I_{FT}$ | Input Threshold Current   | $V_{CC} = 5.5\text{V}$ , $V_O = 0.6\text{V}$ , $V_E = 2.0\text{V}$ ,<br>$I_{OL} = 13\text{mA}$       |      |       | 5    | mA            |

**Isolation Characteristics** ( $T_A = -40^\circ\text{C}$  to  $+85^\circ\text{C}$  unless otherwise specified.)

| Symbol    | Characteristics                            | Test Conditions                                                                                               | Min. | Typ.*     | Max. | Unit          |
|-----------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------|------|-----------|------|---------------|
| $I_{I-O}$ | Input-Output<br>Insulation Leakage Current | Relative humidity = 45%,<br>$T_A = 25^\circ\text{C}$ , $t = 5\text{s}$ ,<br>$V_{I-O} = 3000\text{VDC}^{(11)}$ |      |           | 1.0* | $\mu\text{A}$ |
| $V_{ISO}$ | Withstand Insulation Test Voltage          | $R_H < 50\%$ , $T_A = 25^\circ\text{C}$ ,<br>$I_{I-O} \leq 2\mu\text{A}$ , $t = 1\text{min.}^{(11)}$          | 3750 |           |      | $V_{RMS}$     |
| $R_{I-O}$ | Resistance (Input to Output)               | $V_{I-O} = 500\text{V}^{(11)}$                                                                                |      | $10^{12}$ |      | $\Omega$      |
| $C_{I-O}$ | Capacitance (Input to Output)              | $f = 1\text{MHz}^{(11)}$                                                                                      |      | 0.6       |      | pF            |

\*All typical values are at  $V_{CC} = 5\text{V}$ ,  $T_A = 25^\circ\text{C}$

**Notes:**

1. The  $V_{CC}$  supply to each optoisolator must be bypassed by a  $0.1\mu\text{F}$  capacitor or larger. This can be either a ceramic or solid tantalum capacitor with good high frequency characteristic and should be connected as close as possible to the package  $V_{CC}$  and GND pins of each device.
2. Enable Input – No pull up resistor required as the device has an internal pull up resistor.
3.  $t_{PLH}$  – Propagation delay is measured from the 3.75mA level on the HIGH to LOW transition of the input current pulse to the 1.5V level on the LOW to HIGH transition of the output voltage pulse.
4.  $t_{PHL}$  – Propagation delay is measured from the 3.75mA level on the LOW to HIGH transition of the input current pulse to the 1.5V level on the HIGH to LOW transition of the output voltage pulse.
5.  $t_r$  – Rise time is measured from the 90% to the 10% levels on the LOW to HIGH transition of the output pulse.
6.  $t_f$  – Fall time is measured from the 10% to the 90% levels on the HIGH to LOW transition of the output pulse.
7.  $t_{ELH}$  – Enable input propagation delay is measured from the 1.5V level on the HIGH to LOW transition of the input voltage pulse to the 1.5V level on the LOW to HIGH transition of the output voltage pulse.
8.  $t_{EHL}$  – Enable input propagation delay is measured from the 1.5V level on the LOW to HIGH transition of the input voltage pulse to the 1.5V level on the HIGH to LOW transition of the output voltage pulse.
9.  $CM_H$  – The maximum tolerable rate of rise of the common mode voltage to ensure the output will remain in the high state (i.e.,  $V_{OUT} > 2.0\text{V}$ ). Measured in volts per microsecond ( $\text{V}/\mu\text{s}$ ).
10.  $CM_L$  – The maximum tolerable rate of fall of the common mode voltage to ensure the output will remain in the low output state (i.e.,  $V_{OUT} < 0.8\text{V}$ ). Measured in volts per microsecond ( $\text{V}/\mu\text{s}$ ).
11. Device considered a two-terminal device: Pins 1, 2, 3 and 4 shorted together, and Pins 5, 6, 7 and 8 shorted together.

# Typical Performance Curves (HCPL0600, HCPL0601 and HCPL0611 only)

Fig. 1 Forward Current vs. Input Forward Voltage

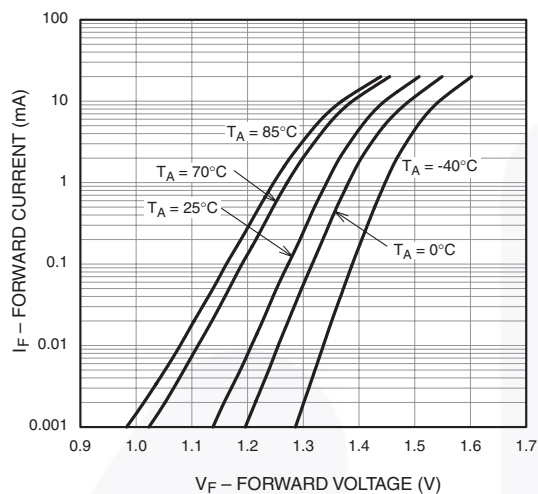


Fig. 2 Output Voltage vs. Forward Current

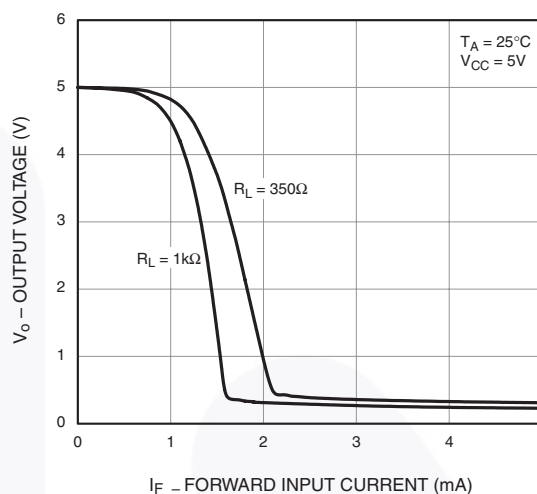


Fig. 3 Input Threshold Current vs. Temperature

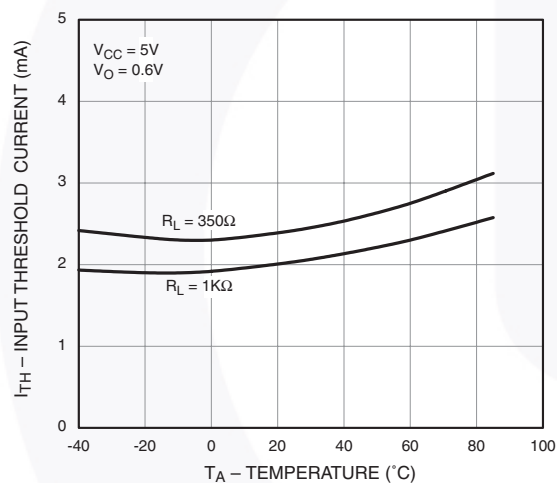
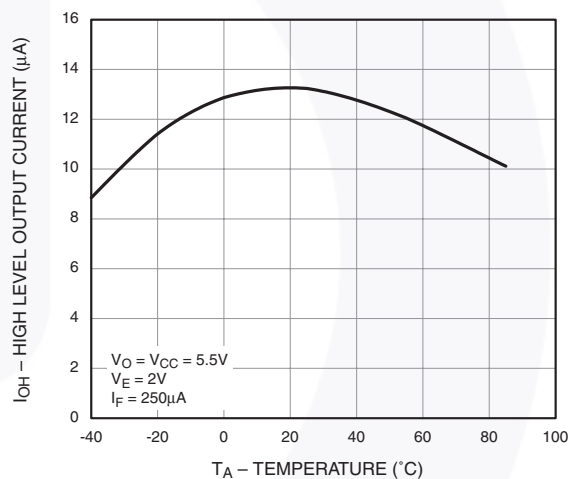


Fig. 4 High Level Output Current vs. Temperature



# Typical Performance Curves (HCPL0600, HCPL0601 and HCPL0611 only)

Fig. 5 Low Level Output Voltage vs. Temperature

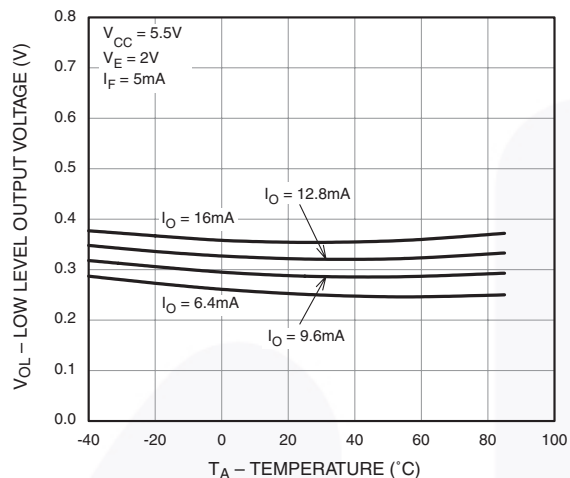


Fig. 6 Low Level Output Current vs. Temperature

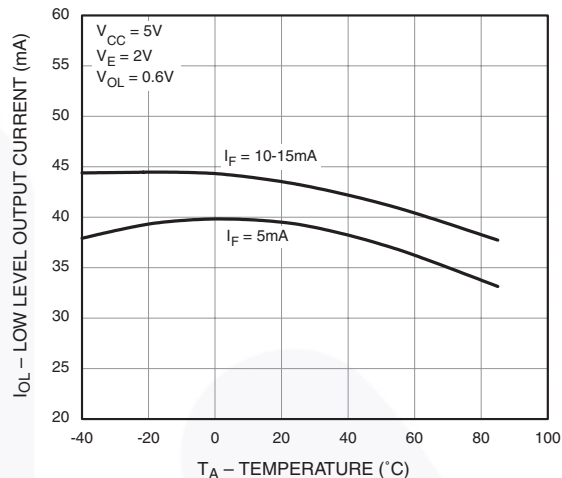


Fig. 7 Propagation Delay vs. Temperature

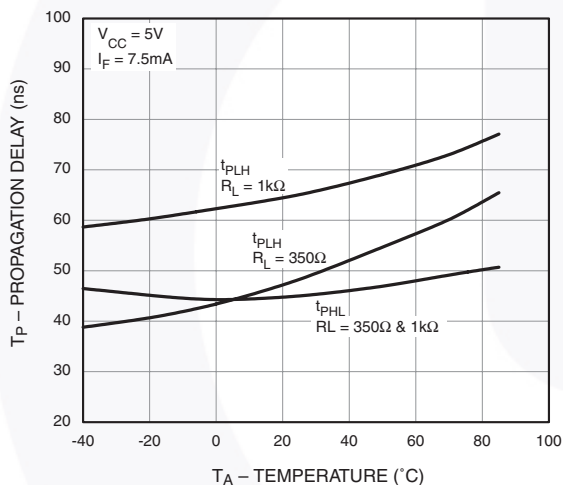
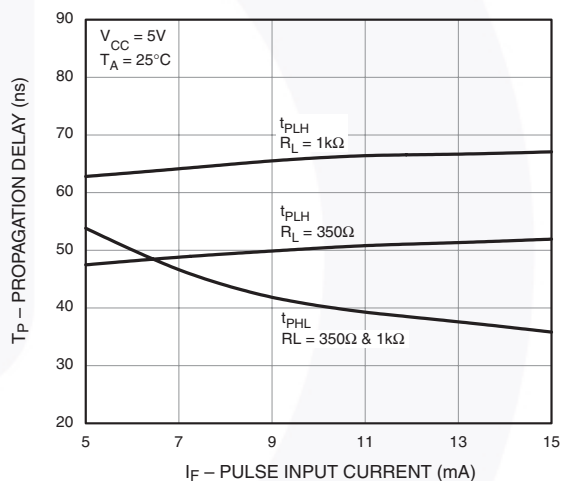
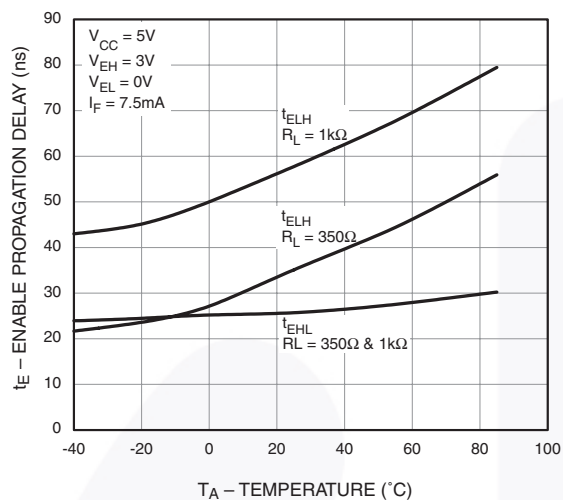


Fig. 8 Propagation Delay vs. Pulse Input Current

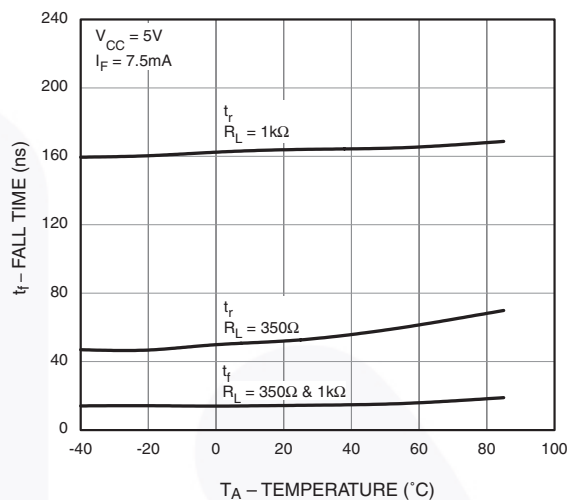


# Typical Performance Curves (HCPL0600, HCPL0601 and HCPL0611 only)

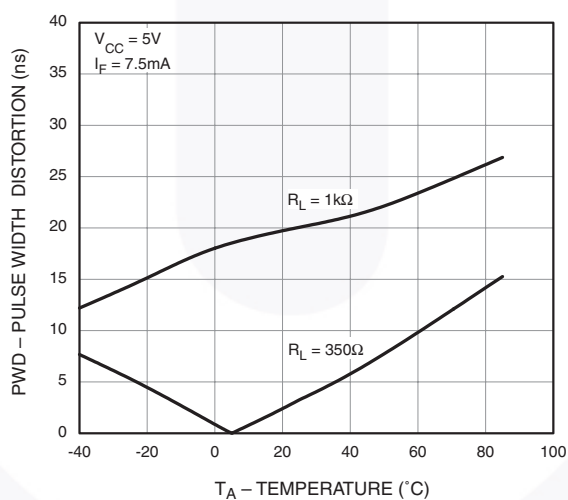
**Fig. 9 Typical Enable Propagation Delay vs. Temperature**



**Fig. 10 Typical Rise and Fall Time vs. Temperature**



**Fig. 11 Typical Pulse Width Distortion vs. Temperature**





# Typical Performance Curves (HCPL0637, HCPL0638 and HCPL0639 only)

Fig. 12 Input Forward Current vs. Forward Voltage

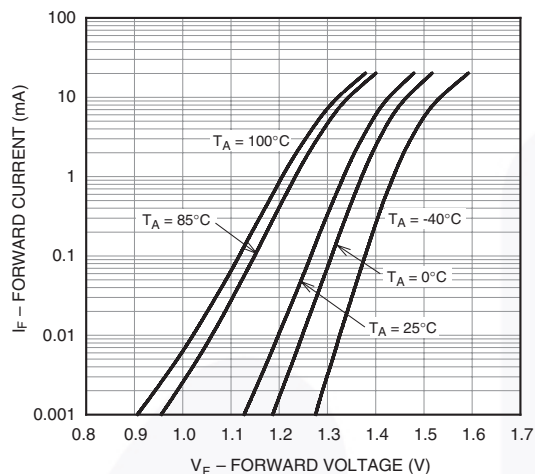


Fig. 13 Input Threshold Current vs. Ambient Temperature

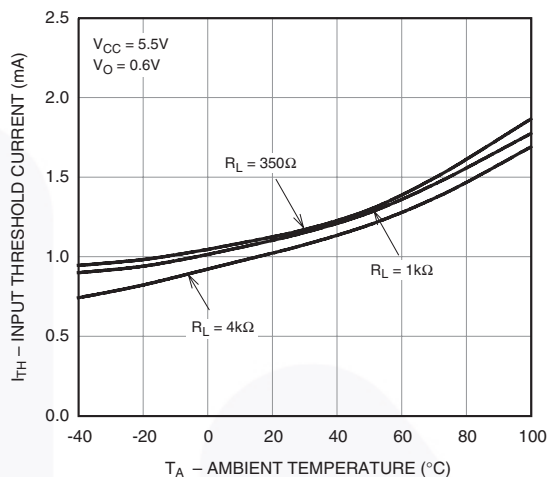


Fig. 14 High Level Output Current vs. Ambient Temperature

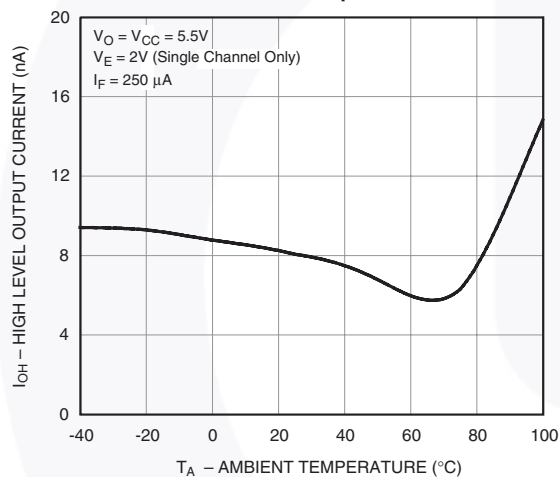


Fig. 15 Low Level Output Current vs. Ambient Temperature

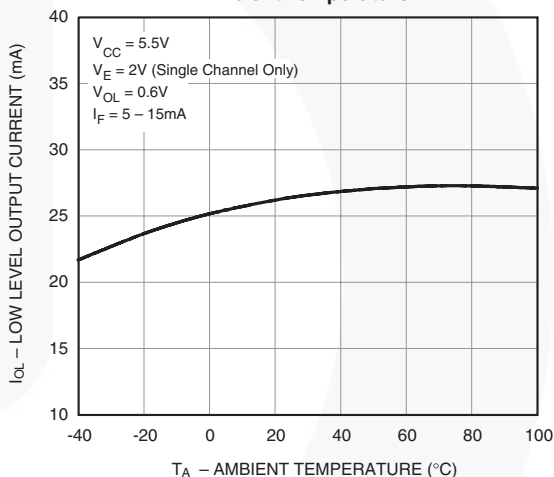


Fig. 16 Low Level Output Voltage vs. Ambient Temperature

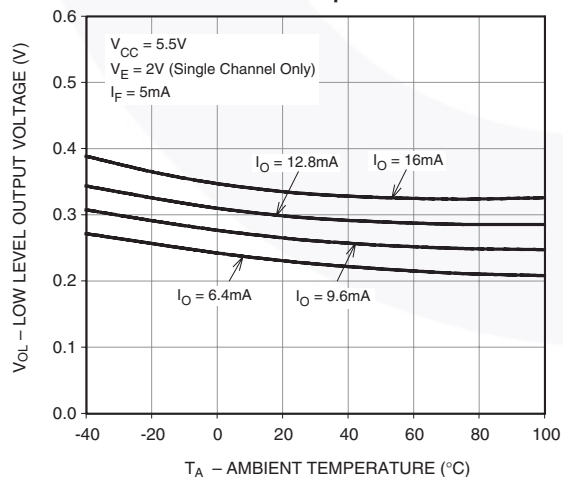
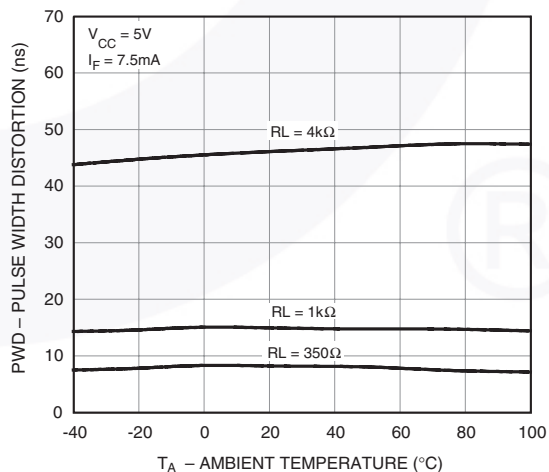
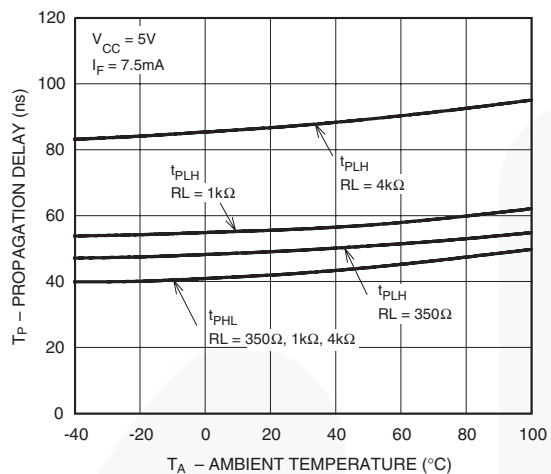


Fig. 17 Pulse Width Distortion vs. Ambient Temperature

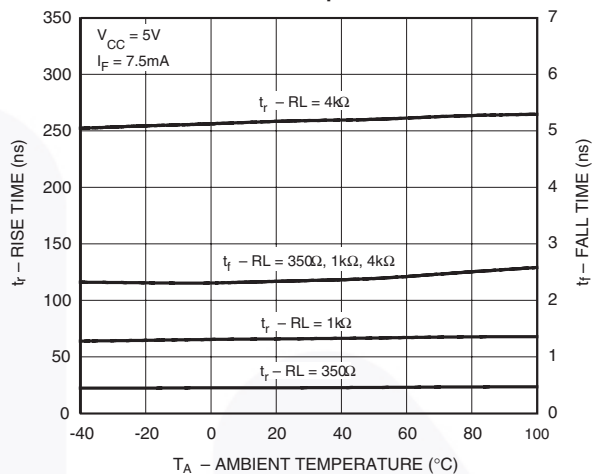


# Typical Performance Curves (HCPL0637, HCPL0638 and HCPL0639 only)

**Fig. 18 Propagation Delay vs. Ambient Temperature**



**Fig. 19 Rise and Fall Times vs. Ambient Temperature**



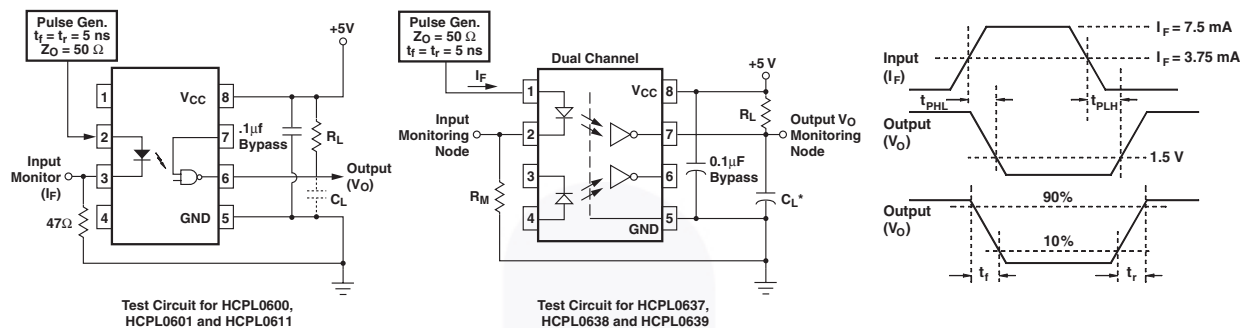


Fig. 20 Test Circuit and Waveforms for  $t_{PLH}$ ,  $t_{PHL}$ ,  $t_r$  and  $t_f$ .

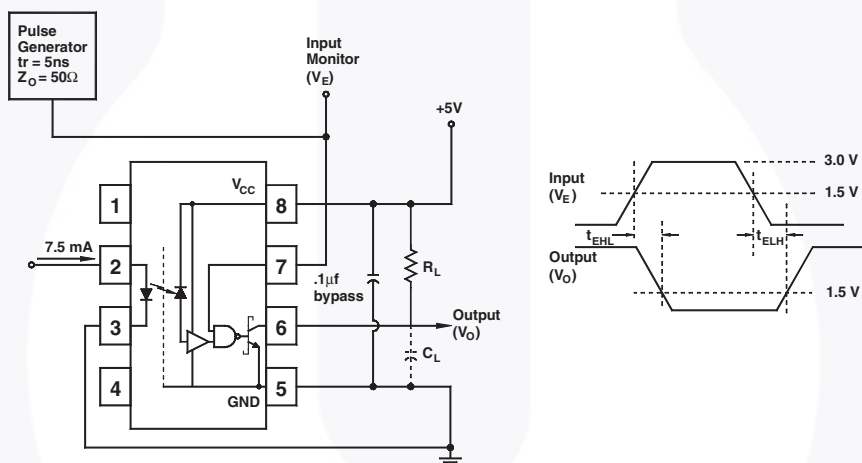
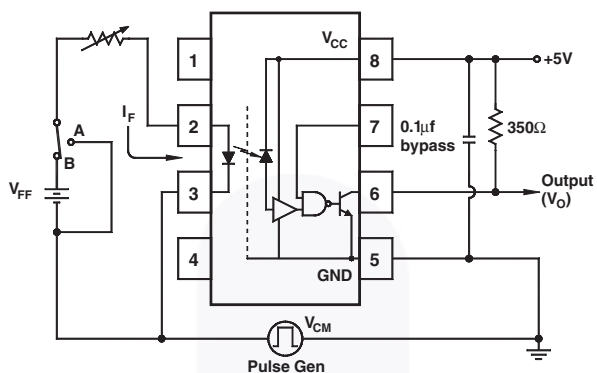


Fig. 21 Test Circuit  $t_{EHL}$  and  $t_{ELH}$ .



Test Circuit for HCPL0600, HCPL0601, and HCPL0611

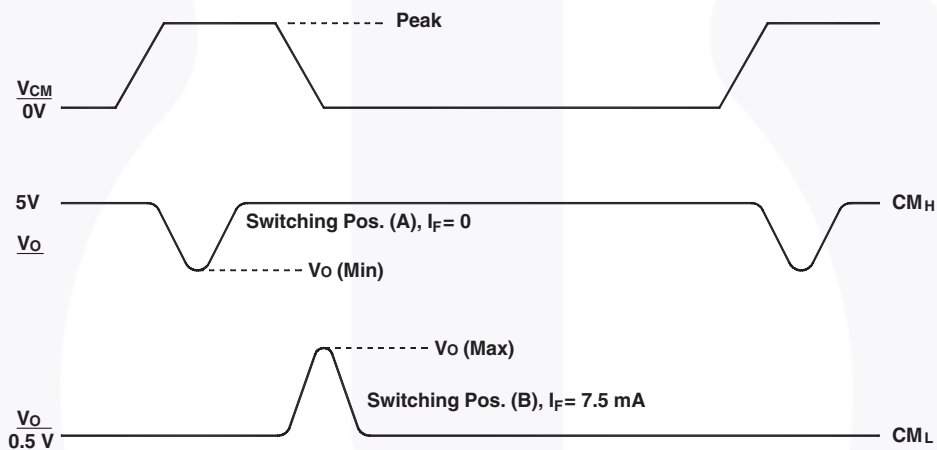
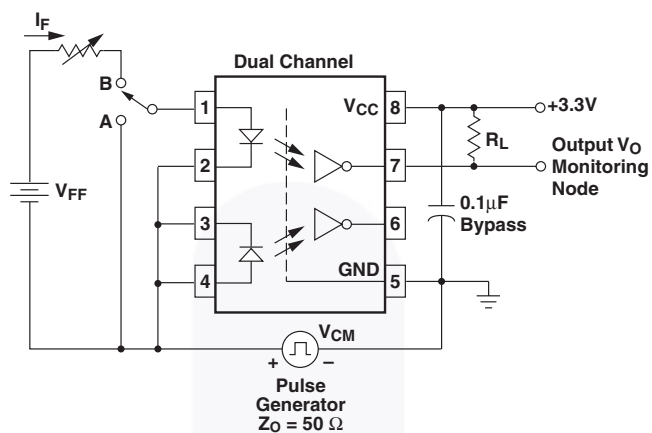


Fig. 22 Test Circuit Common Mode Transient Immunity (HCPL0600, HCPL0601 and HCPL0611)



Test Circuit for HCPL0637, HCPL0638 and HCPL0639

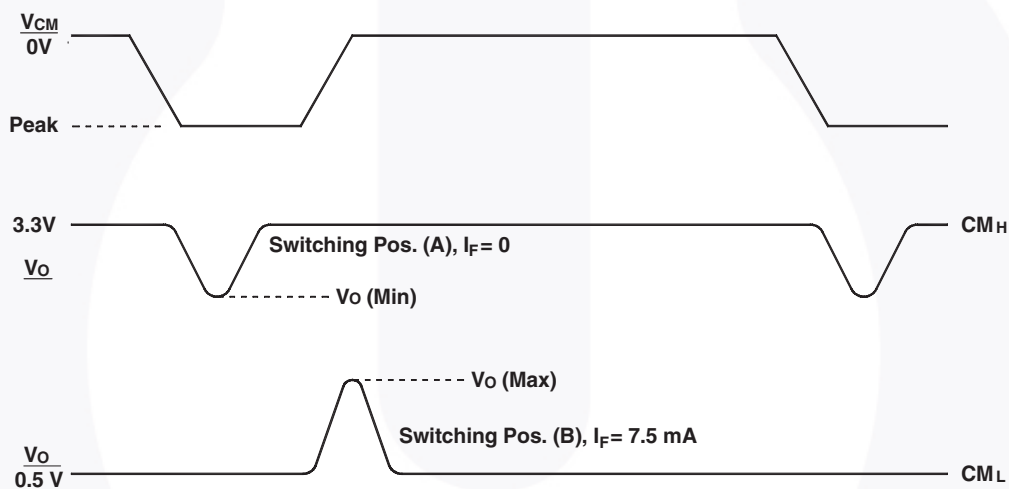
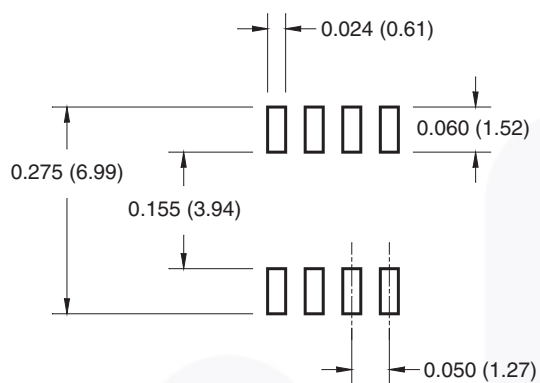


Fig. 23 Test Circuit Common Mode Transient Immunity (HCPL0637, HCPL0638 and HCPL0639)

## 8-Pin Small Outline

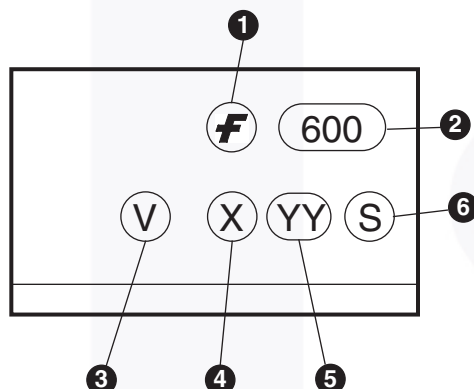


## Ordering Information

| Option    | Order Entry Identifier | Description                                                |
|-----------|------------------------|------------------------------------------------------------|
| No Suffix | HCPL0600               | Shipped in tubes (50 units per tube)                       |
| V*        | HCPL0600V              | IEC60747-5-2 approval                                      |
| R2        | HCPL0600R2             | Tape and Reel (2500 units per reel)                        |
| R2V*      | HCPL0600R2V            | IEC60747-5-2 approval, Tape and Reel (2500 units per reel) |

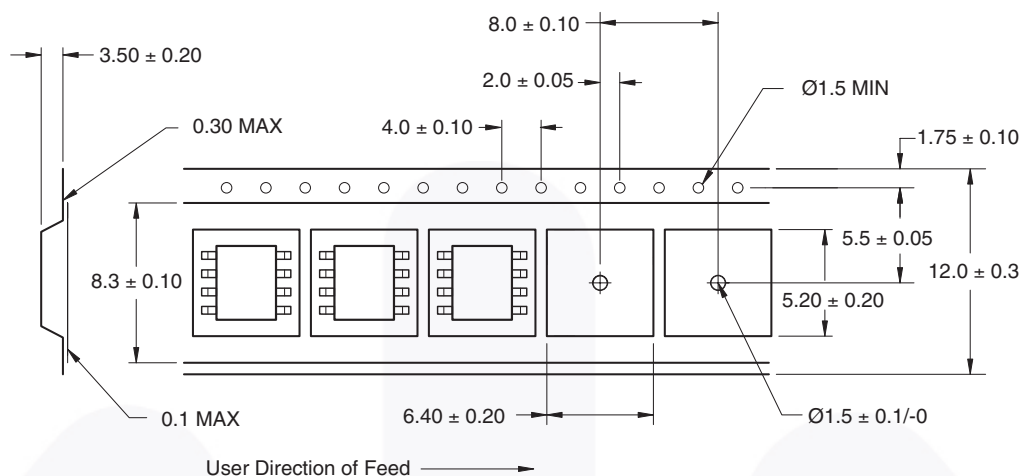
\*Available for HCPL0600, HCPL0601, HCPL0611 only.

## Marking Information



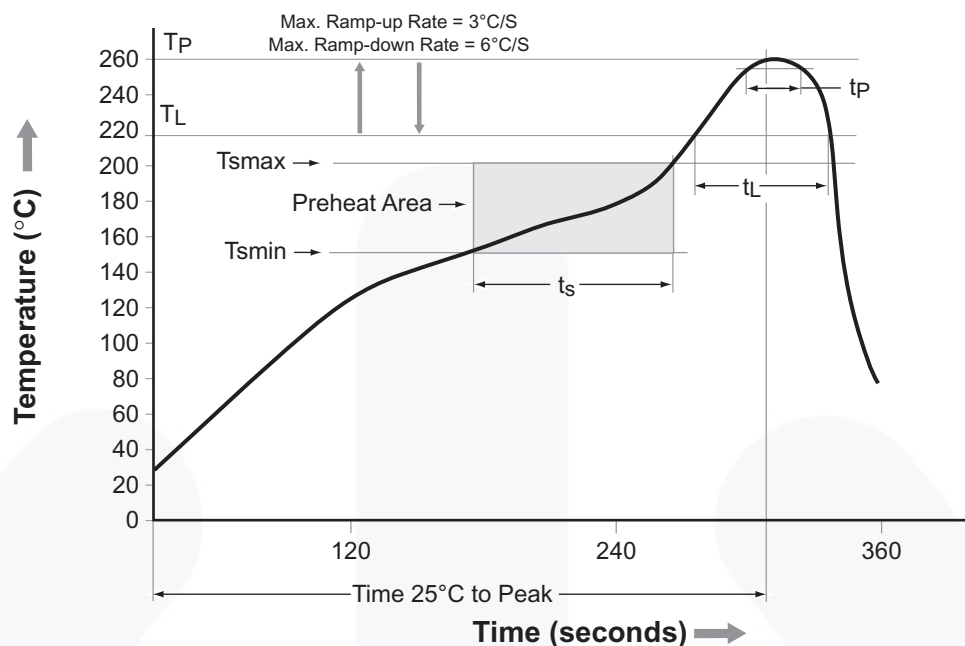
| Definitions |                                                                                                                           |
|-------------|---------------------------------------------------------------------------------------------------------------------------|
| 1           | Fairchild logo                                                                                                            |
| 2           | Device number                                                                                                             |
| 3           | VDE mark indicates IEC60747-5-2 approval<br>(Note: Only appears on parts ordered with VDE option – See order entry table) |
| 4           | One digit year code, e.g., '3'                                                                                            |
| 5           | Two digit work week ranging from '01' to '53'                                                                             |
| 6           | Assembly package code                                                                                                     |

## Carrier Tape Specifications





## Reflow Profile



| Profile Feature                  | Pb-Free Assembly Profile |
|----------------------------------|--------------------------|
| Temperature Min. (Tsmmin)        | 150°C                    |
| Temperature Max. (Tsmax)         | 200°C                    |
| Time (ts) from (Tsmmin to Tsmax) | 60–120 seconds           |
| Ramp-up Rate (tL to tp)          | 3°C/second max.          |
| Liquidous Temperature (TL)       | 217°C                    |
| Time (tL) Maintained Above (TL)  | 60–150 seconds           |
| Peak Body Package Temperature    | 260°C +0°C / –5°C        |
| Time (tp) within 5°C of 260°C    | 30 seconds               |
| Ramp-down Rate (TP to TL)        | 6°C/second max.          |
| Time 25°C to Peak Temperature    | 8 minutes max.           |

## TRADEMARKS

The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

|                                                                                   |                                                |                                                                                   |                                                                                     |
|-----------------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 2Cool™                                                                            | FPS™                                           |  | Sync-Lock™                                                                          |
| AccuPower™                                                                        | F-PFS™                                         | PowerTrench®                                                                      | SYSTEM GENERAL®                                                                     |
| AX-CAP®*                                                                          | FRFET®                                         | PowerXS™                                                                          | TinyBoost®                                                                          |
| BitSiC™                                                                           | Global Power Resource™                         | Programmable Active Droop™                                                        | TinyBuck®                                                                           |
| Build it Now™                                                                     | GreenBridge™                                   | QFET®                                                                             | TinyCalc™                                                                           |
| CorePLUS™                                                                         | Green FPS™                                     | QS™                                                                               | TinyLogic®                                                                          |
| CorePOWER™                                                                        | Green FPS™ e-Series™                           | Quiet Series™                                                                     | TINYOPTO™                                                                           |
| CROSSVOLT™                                                                        | Gmax™                                          | RapidConfigure™                                                                   | TinyPower™                                                                          |
| CTL™                                                                              | GTO™                                           |  | TinyPWM™                                                                            |
| Current Transfer Logic™                                                           | IntelliMAX™                                    | Saving our world, 1mW/W/kW at a time™                                             | TinyWire™                                                                           |
| DEUXPEED®                                                                         | ISOPLANAR™                                     | SignalWise™                                                                       | TranSiC™                                                                            |
| Dual Cool™                                                                        | Making Small Speakers Sound Louder and Better™ | SmartMax™                                                                         | TriFault Detect™                                                                    |
| EcoSPARK®                                                                         | MegaBuck™                                      | SMART START™                                                                      | TRUECURRENT®*                                                                       |
| EfficientMax™                                                                     | MICROCOUPLER™                                  | Solutions for Your Success™                                                       | µSerDes™                                                                            |
| ESBC™                                                                             | MicroFET™                                      | SPM®                                                                              |  |
|  | MicroPak™                                      | STEALTH™                                                                          | UHC®                                                                                |
| Fairchild®                                                                        | MicroPak2™                                     | SuperFET®                                                                         | Ultra FRFET™                                                                        |
| Fairchild Semiconductor®                                                          | MillerDrive™                                   | SuperSOT™-3                                                                       | UniFET™                                                                             |
| FACT Quiet Series™                                                                | MotionMax™                                     | SuperSOT™-6                                                                       | VCX™                                                                                |
| FACT®                                                                             | mWSaver®                                       | SuperSOT™-8                                                                       | VisualMax™                                                                          |
| FAST®                                                                             | OptoHiT™                                       | SupreMOS®                                                                         | VoltagePlus™                                                                        |
| FastvCore™                                                                        | OPTOLOGIC®                                     | SyncFET™                                                                          | XS™                                                                                 |
| FETBench™                                                                         | OPTOPLANAR®                                    |                                                                                   |                                                                                     |

\* Trademarks of System General Corporation, used under license by Fairchild Semiconductor.

## DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

## LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

## ANTI-COUNTERFEITING POLICY

Fairchild Semiconductor Corporation's Anti-Counterfeiting Policy. Fairchild's Anti-Counterfeiting Policy is also stated on our external website, [www.fairchildsemi.com](http://www.fairchildsemi.com), under Sales Support.

Counterfeiting of semiconductor parts is a growing problem in the industry. All manufacturers of semiconductor products are experiencing counterfeiting of their parts. Customers who inadvertently purchase counterfeit parts experience many problems such as loss of brand reputation, substandard performance, failed applications, and increased cost of production and manufacturing delays. Fairchild is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. Fairchild strongly encourages customers to purchase Fairchild parts either directly from Fairchild or from Authorized Fairchild Distributors who are listed by country on our web page cited above. Products customers buy either from Fairchild directly or from Authorized Fairchild Distributors are genuine parts, have full traceability, meet Fairchild's quality standards for handling and storage and provide access to Fairchild's full range of up-to-date technical and product information. Fairchild and our Authorized Distributors will stand behind all warranties and will appropriately address any warranty issues that may arise. Fairchild will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. Fairchild is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

## PRODUCT STATUS DEFINITIONS

### Definition of Terms

| Datasheet Identification | Product Status        | Definition                                                                                                                                                                                          |
|--------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Advance Information      | Formative / In Design | Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.                                                                       |
| Preliminary              | First Production      | Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design. |
| No Identification Needed | Full Production       | Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.                                               |
| Obsolete                 | Not In Production     | Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.                                                    |

Rev. I65