

The HVIC high voltage integrated circuit is designed to drive n-channel IGBTs or MOSFETs in a half-bridge configuration up to 500V_{DC}. Power supply and motor control inverters can be configured for voltages up to 230V_{AC} using the HVIC, IGBTs and a few other components.

A few precautions should be taken in using the circuit. Lead lengths between the external power circuit (including gate and pilot leads), the 15V bypass capacitor (C_{DD}), the bootstrap diode (D_F) and capacitor (C_F) and the HVIC should be minimized.

The basic components required to evaluate the features of the SP601 are shown in the simplified schematic. The recommended load is largely resistive so that the largest current component will flow through the IGBTs, IGT1 and IGT2.

The flyback diodes, D1 and D2, rated 8A, will carry a much smaller flyback current component. A small amount of load

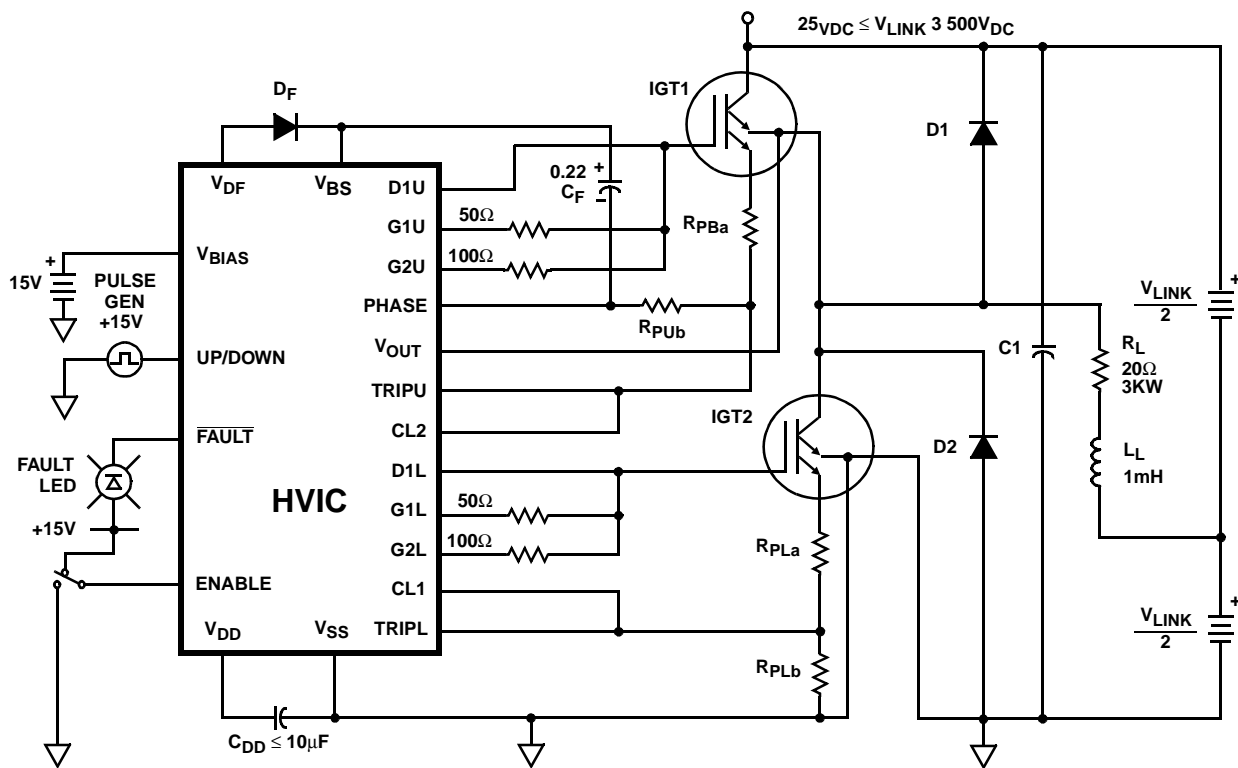
inductance will cause the switching waveforms to simulate the conditions which would normally be observed with motor or transformer loads, while limiting the current carried by the lower rated flyback diodes in this circuit.

The values for R_{PUBa}, R_{PUBb}, etc., have been chosen to result in overcurrent trip at approximately 25A_{pk}. At this level of current, heat sinking for the IGTs and flyback diodes is required. The series resistance of the upper and lower pilot resistor dividers would be approximately 1KΩ; the divider ratio should cause 0.1V at the tap at the desired trip current.

When first energizing your evaluation circuit, begin with a reduced bus voltage of about 20V_{DC} to 30V_{DC} to verify proper circuit operation before proceeding to higher voltages.

More specific information can be found in File Number 2428 and File Number 2429 Half-Bridge 500V_{DC} Driver data sheets and in the Application Note, AN-8829.1.

Simplified Schematic



HVIC - Fairchild Part # SP601 (Formerly GS601)

IGT1, 2 - Fairchild Part # HGTA24N60D1C

D1, 2 - Fairchild Part # RUR860

D_F - Fairchild Part # A114M

R_{PUBa}, R_{PLa} - 910Ω, 1.8W

R_{PUBb}, R_{PLb} - 68Ω, 1.8W

C1 - 0.1μF, 600V_{DC}

R_L - 20Ω, 3KW 13-50

TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACE _x [™]	FAST [®]	MICROWIRE [™]	SILENT SWITCHER [®]	UHC [™]
Bottomless [™]	FAST _r [™]	OPTOLOGIC [®]	SMART START [™]	UltraFET [®]
CoolFET [™]	FRFET [™]	OPTOPLANAR [™]	SPM [™]	VCX [™]
CROSSVOLT [™]	GlobalOptoisolator [™]	PACMAN [™]	STAR*POWER [™]	
DenseTrench [™]	GTO [™]	POP [™]	Stealth [™]	
DOME [™]	HiSeC [™]	Power247 [™]	SuperSOT [™] -3	
EcoSPARK [™]	I ² C [™]	PowerTrench [®]	SuperSOT [™] -6	
E ² CMOS [™]	ISOPLANAR [™]	QFET [™]	SuperSOT [™] -8	
EnSigna [™]	LittleFET [™]	QS [™]	SyncFET [™]	
FACT [™]	MicroFET [™]	QT Optoelectronics [™]	TinyLogic [™]	
FACT Quiet Series [™]	MicroPak [™]	Quiet Series [™]	TruTranslation [™]	

STAR*POWER is used under license

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.

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, or (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 significant injury to the user.
2. A critical component is 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.

PRODUCT STATUS DEFINITIONS

Definition of Terms

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