



# SA160DP/SA160DPA

## 10A H-Bridge Motor Driver ICs



12-PIN POWER SIP

Footprint 31mm X 4mm

## FEATURES

- Low cost complete H-Bridge
- Self-contained smart low-side/high-side drive circuitry
- Very low  $R_{DS(ON)}$  rated at  $140m\Omega$  typical over the full operating temperature range
- Up to 80V supply
- 10A continuous output current (14A for A grade)
- Isolated case for direct heat sinking
- Four quadrant operation with current control capability
- Internal/programmable PWM frequency generation

## Product Overview

The SA160DP and SA160DPA are low cost, complete H-bridge, Class D “switching” amplifiers for driving brush-type motors and reactive loads. These full-bridge amplifiers can operate on supplies up to 80V while providing up to 10A continuous output current with the standard model SA160DP, and up to 14A continuous with the A Grade SA160DPA.

As follow-on products to the Apex Microtechnology SA60 H-bridge motor driver, both the SA160DP/SA160DPA are designed with very low  $R_{DS(ON)}$  to cut the efficiency loss by nearly 2X in comparison to their predecessor product. These new ICs are rated at a typical  $140m\Omega$  over the full  $-40^{\circ}C$  to  $+85^{\circ}C$  operating temperature range.

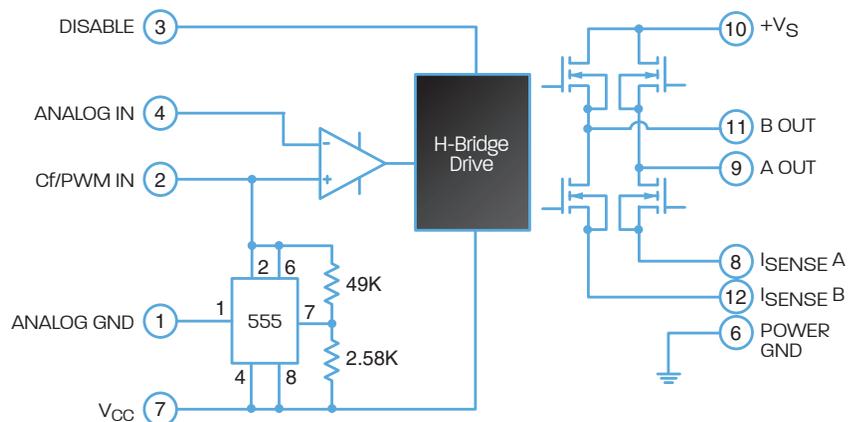
The PWM switching signal for both the SA160DP and SA160DPA can be internally generated and is programmable up to 125kHz using an external integrator capacitor. Both devices can also be controlled by external switching signals up to 250kHz.

Smart low-side and high-side drive circuitry is self-contained, and power efficiency is 97% typical at 10A output. Power delivery to the load is an impressive 800W for the standard grade and up to 1.2kW with the SA160DPA. Housed in the same 12-pin PowerSIP package as the SA60, the SA160DP/SA160DPA are drop-in, pin compatible replacements.

## Target Applications

The SA160DP/SA160DPA are designed specifically to drive brush-type motors up to 2 HP. Other applications include vibration cancellation, active magnetic bearing and magnetic coils.

## Block Diagram



# SA160DP/SA160DPA

10A H-Bridge Motor Driver ICs

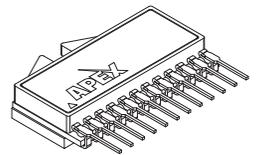
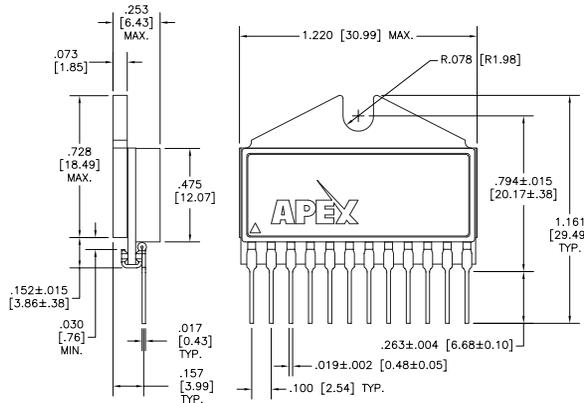
## Product Selector Table

Parameter	SA60	SA160DP	SA160DPA
Maximum Supply Voltage	80V		
Output Current, continuous (case $\leq +85^{\circ}\text{C}$ )	10A	10A	14A <sup>1)</sup>
Power Delivered to Load	800W	800W	1.2kW
Operating Temperature, (case)	-40 to +85°C	-40 to +85°C	-40 to +125°C
Switching Frequency, (C <sub>F</sub> = 270pF)	45 kHz (typical), 250 kHz (maximum)		
Dead Time (typical)	90nS		
R <sub>DS(on)</sub> , both MOSFETs (typical)		140mΩ	140mΩ
Output Efficiency, 10A Output	91% (typical)	97% (typical)	97% (typical)
Package	12-Pin Power SIP, style DP or style EE		
Order Code	SA60DP	SA160DP	SA160DPA

<sup>1)</sup> 10A at +125°C case temperature

## Packaging, Evaluation Kit

With a footprint measuring less than 0.3 square inches mounted vertically, the 12-pin Power SIP "DP" package style offers space-efficient vertical mounting possibilities and the case is isolated to allow direct heat sinking. An alternative "EE" package style features 90° bent leads for mounting situations where the PCB and heatsink are in parallel. The new microcontroller-based EK-SA160DP is the evaluation kit for the SA160DP/SA160DPA and it includes a demonstration board, heatsink and all necessary hardware to provide out-of-the-box functionality for quick and immediate evaluation.



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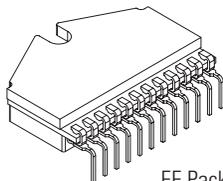
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## DP Package, 12-Pin Power SIP

Isolated Case for Direct Heat Sinking  
Formed Leads Available With EE Package



EE Package Option

