



D45H11

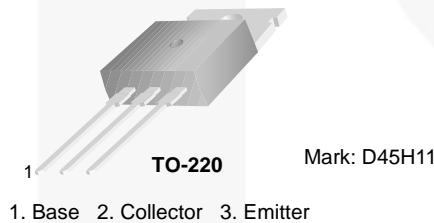
PNP Power Amplifier

Features

- Sourced from process 5Q
- General-Purpose Switching Transistor
- Low Corrector-Emitter Saturation Voltage
- High-Fast Switching Speed

Description

This device is designed for power amplifier, regulator, and switching circuits where speed is important.



Ordering Information

| Part Number | Marking | Package | Packing Method |
|-------------|---------|-----------|----------------|
| D45H11 | D45H11 | TO-220 3L | Rail |

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. Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Value | Unit |
|----------------|--|-------------|------------------|
| V_{CEO} | Collector-Emitter Voltage | -80 | V |
| I_C | Collector Current - Continuous | -10 | A |
| T_J, T_{STG} | Operating and Storage Junction Temperature Range | -55 to +150 | $^\circ\text{C}$ |

Thermal Characteristics⁽¹⁾

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Max. | Unit |
|-----------------------|---|------|---------------------------|
| P_D | Total Device Dissipation | 60 | W |
| | Derate Above 25°C | 480 | mW/ $^\circ\text{C}$ |
| $R_{\theta\text{JC}}$ | Thermal Resistance, Junction to Case | 2.1 | $^\circ\text{C}/\text{W}$ |
| $R_{\theta\text{JA}}$ | Thermal Resistance, Junction to Ambient | 62.5 | $^\circ\text{C}/\text{W}$ |

Note:

- Device mounted on FR-4 PCB 36 mm x 18 mm x 1.5 mm: mounting pad for the collector lead minimum 6 cm².

Electrical Characteristics

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Conditions | Min. | Max. | Unit |
|-------------------------------------|--------------------------------------|--|-------|-------|---------------|
| Off Characteristics | | | | | |
| $V_{(\text{BR})\text{CEO}}$ | Collector-Emitter Breakdown Voltage | $I_C = -100\text{ mA}, I_B = 0$ | -80 | | V |
| I_{CBO} | Collector Cut-Off Current | $V_{\text{CB}} = -80\text{ V}, I_E = 0$ | | -10 | μA |
| I_{EBO} | Emitter Cut-Off Current | $V_{\text{EB}} = -5\text{ V}, I_C = 0$ | | -100 | μA |
| On Characteristics | | | | | |
| h_{FE} | DC Current Gain | $V_{\text{CE}} = -1\text{ V}, I_C = -2\text{ A}$ | 60 | | |
| | | $V_{\text{CE}} = -1\text{ V}, I_C = -4\text{ A}$ | 40 | | |
| $V_{\text{CE(sat)}}$ | Collector-Emitter Saturation Voltage | $I_C = -8\text{ A}, I_B = -0.4\text{ A}$ | | -1.0 | V |
| $V_{\text{BE(sat)}}$ | Base-Emitter Saturation Voltage | $I_C = -8\text{ A}, I_B = -0.8\text{ A}$ | | -1.5 | V |
| $V_{\text{BE(on)}}$ | Base-Emitter On Voltage | $V_{\text{CE}} = -2\text{ V}, I_C = -10\text{ mA}$ | -0.54 | -0.65 | V |
| Small Signal Characteristics | | | | | |
| f_T | Current Gain Bandwidth Product | $I_C = -500\text{ mA}, V_{\text{CE}} = -10\text{ V}$ | 40 | | MHz |

Typical Performance Characteristics

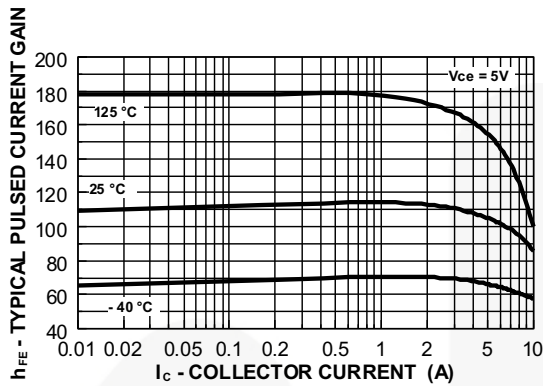


Figure 1. Typical Pulsed Current Gain vs. Collector Current

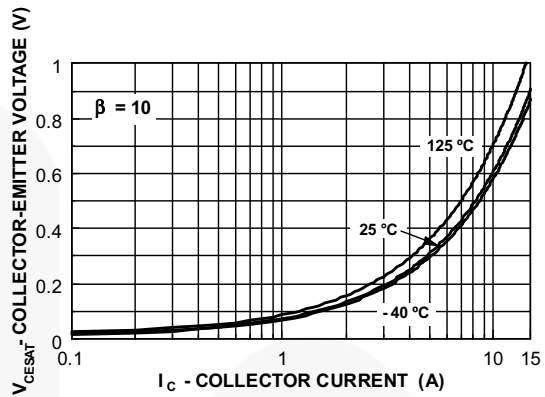


Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current

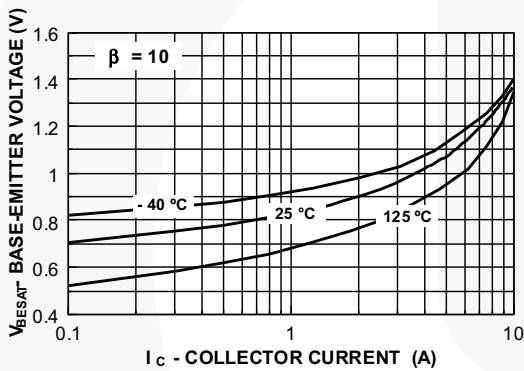


Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

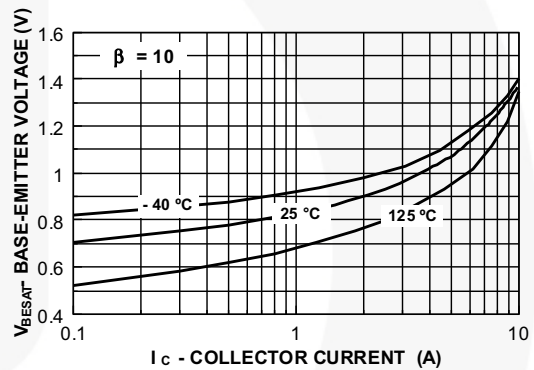


Figure 4. Base-Emitter ON Voltage vs. Collector Current

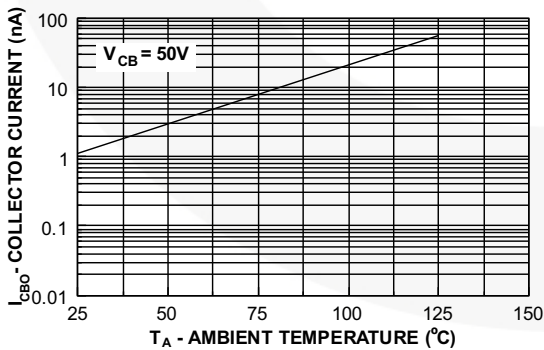


Figure 5. Collector Cut-Off Current vs. Ambient Temperature

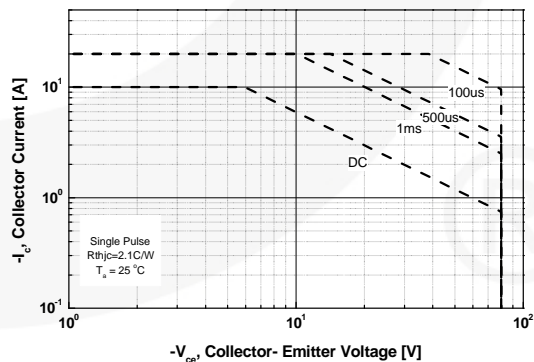


Figure 6. Safe Operating Area TO-220

Typical Performance Characteristics (Continued)

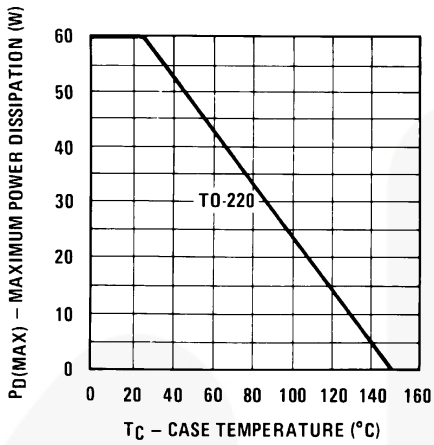


Figure 7. Maximum Power Dissipation vs. Case Temperature

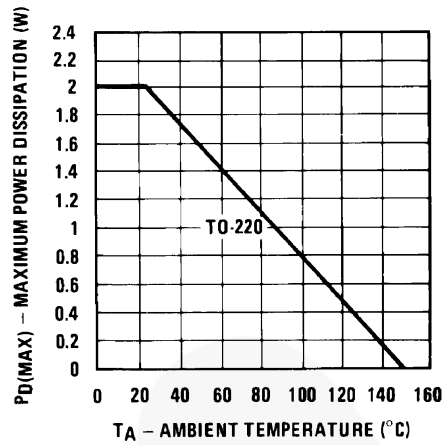


Figure 8. Maximum Power Dissipation vs. Ambient Temperature

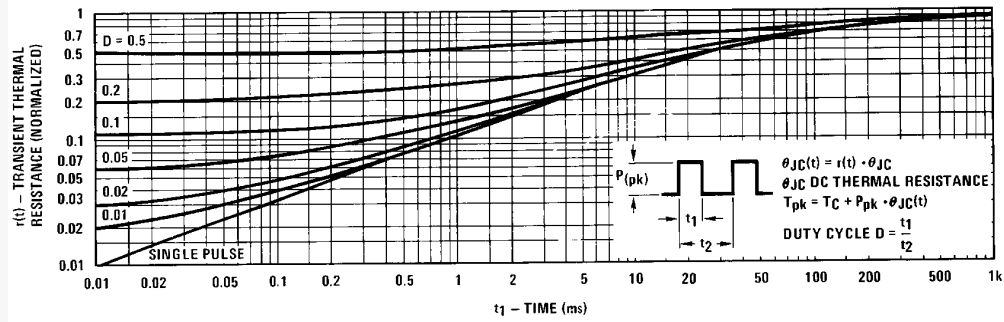


Figure 9. Thermal Response

Physical Dimensions

TO-220

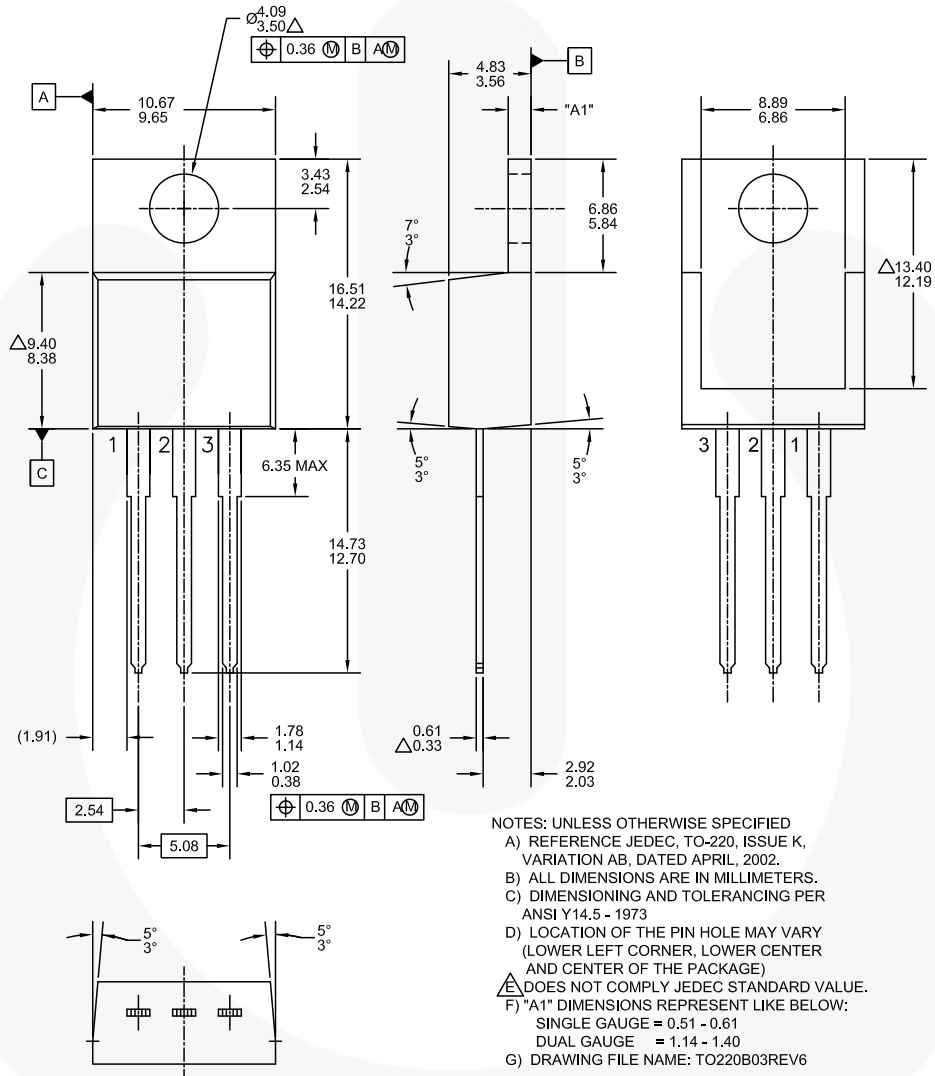


Figure 10. TO-220, MOLDED, 3-LEAD, JEDEC VARIATION AB (ACTIVE)

Package drawings are provided as a service to customers considering Fairchild components. Drawings may change in any manner without notice. Please note the revision and/or date on the drawing and contact a Fairchild Semiconductor representative to verify or obtain the most recent revision. Package specifications do not expand the terms of Fairchild's worldwide terms and conditions, specifically the warranty therein, which covers Fairchild products.

Always visit Fairchild Semiconductor's online packaging area for the most recent package drawings:
<http://www.fairchildsemi.com/dwg/TO/TO220B03.pdf>.

For current tape and reel specifications, visit Fairchild Semiconductor's online packaging area:
http://www.fairchildsemi.com/packing_dwg/PKG-TO220B03.pdf.



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.

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

* 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, 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. |