Is Now Part of

ON Semiconductor®

To learn more about ON Semiconductor, please visit our website at
www.onsemi.com

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

ON Semiconductor and the ON Semiconductor logo are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

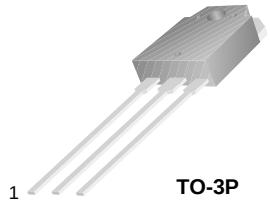
FAIRCHILD SEMICONDUCTOR®

October 2009

TIP145 / TIP146 / TIP147
PNP Epitaxial Silicon Darlington Transistor

Features

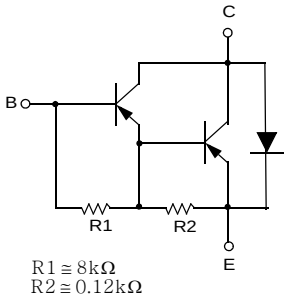
- Monolithic Construction With Built In Base-Emitter Shunt Resistors
- High DC Current Gain : h_{FE} = 1000 @ V_{CE} = -4V, I_C = -5A (Min.)
- Industrial Use
- Complement to TIP140/141/142



TO-3P

1.Base 2.Collector 3.Emitter

Equivalent Circuit



$R1 \cong 8k\Omega$
$R2 \cong 0.12k\Omega$

Absolute Maximum Ratings* T_A = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : TIP145 : TIP146 : TIP147	- 60 - 80 - 100	V V V
V_{CEO}	Collector-Emitter Voltage : TIP145 : TIP146 : TIP147	- 60 - 80 - 100	V V V
V_{EBO}	Emitter-Base Voltage	- 5	V
I_C	Collector Current (DC)	- 10	A
I_{CP}	Collector Current (Pulse)	- 15	A
I_B	Base Current (DC)	- 0.5	A
P_C	Collector Dissipation (T_C=25°C)	125	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	- 65 to +150	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

© 2009 Fairchild Semiconductor Corporation

Electrical Characteristics* T_A=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V_{CEO}(sus)	Collector-Emitter Sustaining Voltage : TIP145 : TIP146 : TIP147	I_C = - 30mA, I_B = 0	 - 60 - 80 - 100			 V V V
I_{CEO}	Collector Cut-off Current : TIP145 : TIP146 : TIP147	 V_{CE} = - 30V, I_B = 0 V_{CE} = - 40V, I_B = 0 V_{CE} = - 50V, I_B = 0			 - 2 - 2 - 2	 mA mA mA
I_{CBO}	Collector Cut-off Current : TIP145 : TIP146 : TIP147	 V_{CB} = - 60V, I_E = 0 V_{CB} = - 80V, I_E = 0 V_{CB} = - 100V, I_E = 0			 - 1 - 1 - 1	 mA mA mA
I_{EBO}	Emitter Cut-off Current	V_{BE} = - 5V, I_C = 0			- 2	mA
h_{FE}	DC Current Gain	V_{CE} = - 4V,I_C = - 5A V_{CE} = - 4V, I_C = - 10A	1000 500			
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = - 5A, I_B = - 10mA I_C = - 10A, I_B = - 40mA			- 2 - 3	V V
V_{BE}(sat)	Base-Emitter Saturation Voltage	I_C = - 10A, I_B = - 40mA			- 3.5	V
V_{BE}(on)	Base-Emitter On Voltage	V_{CE} = - 4V, I_C = - 10A			- 3	V
t_D	Delay Time	V_{CC} = - 30V, I_C = - 5A I_{B1}= -20mA, I_{B2} = 20mA R_L = 6Ω		0.15		µs
t_R	Rise Time			0.55		µs
t_{STG}	Storage Time			2.5		µs
t_F	Fall Time			2.5		µs

* Pulse Test: Pulse Width≤300µs, Duty Cycle≤2%

© 2009 Fairchild Semiconductor Corporation

Typical Performance Characteristics

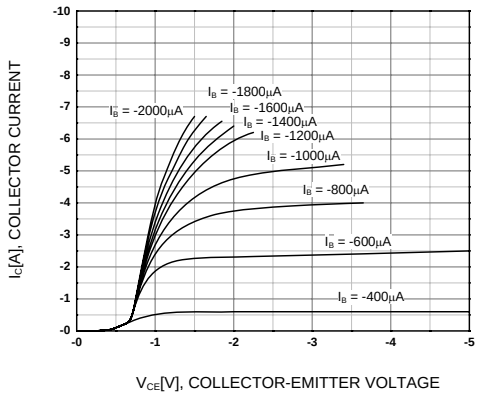


Figure 1. Static Characteristic

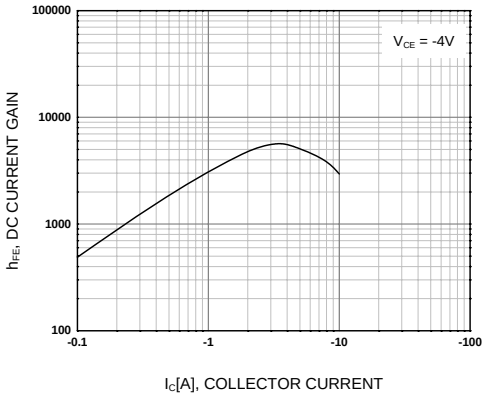


Figure 2. DC current Gain

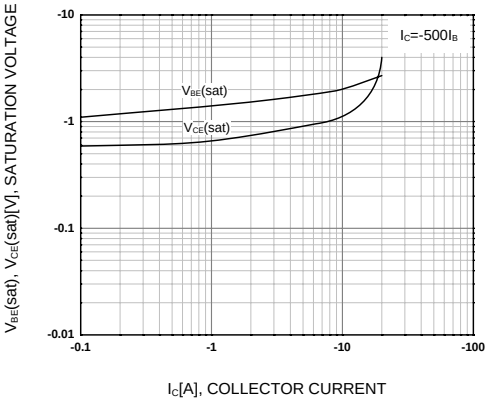


Figure 3. Collector-Emitter Saturation Voltage Base-Emitter Saturation Voltage

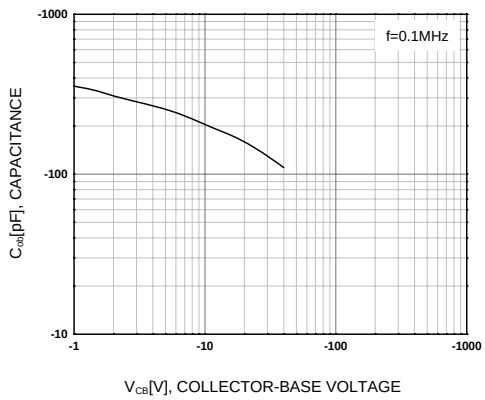


Figure 4. Collector Output Capacitance

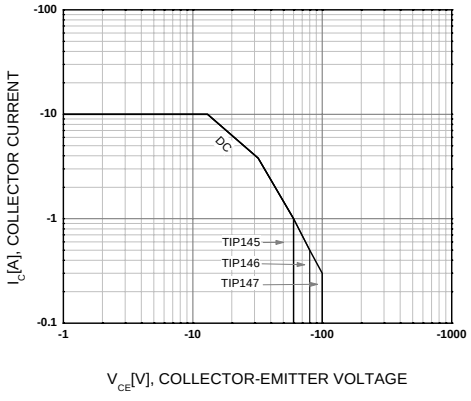


Figure 5. Safe Operating Area

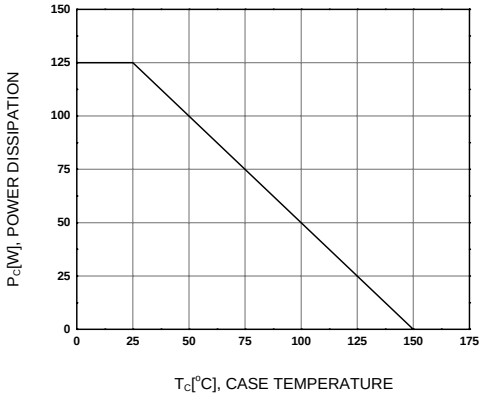
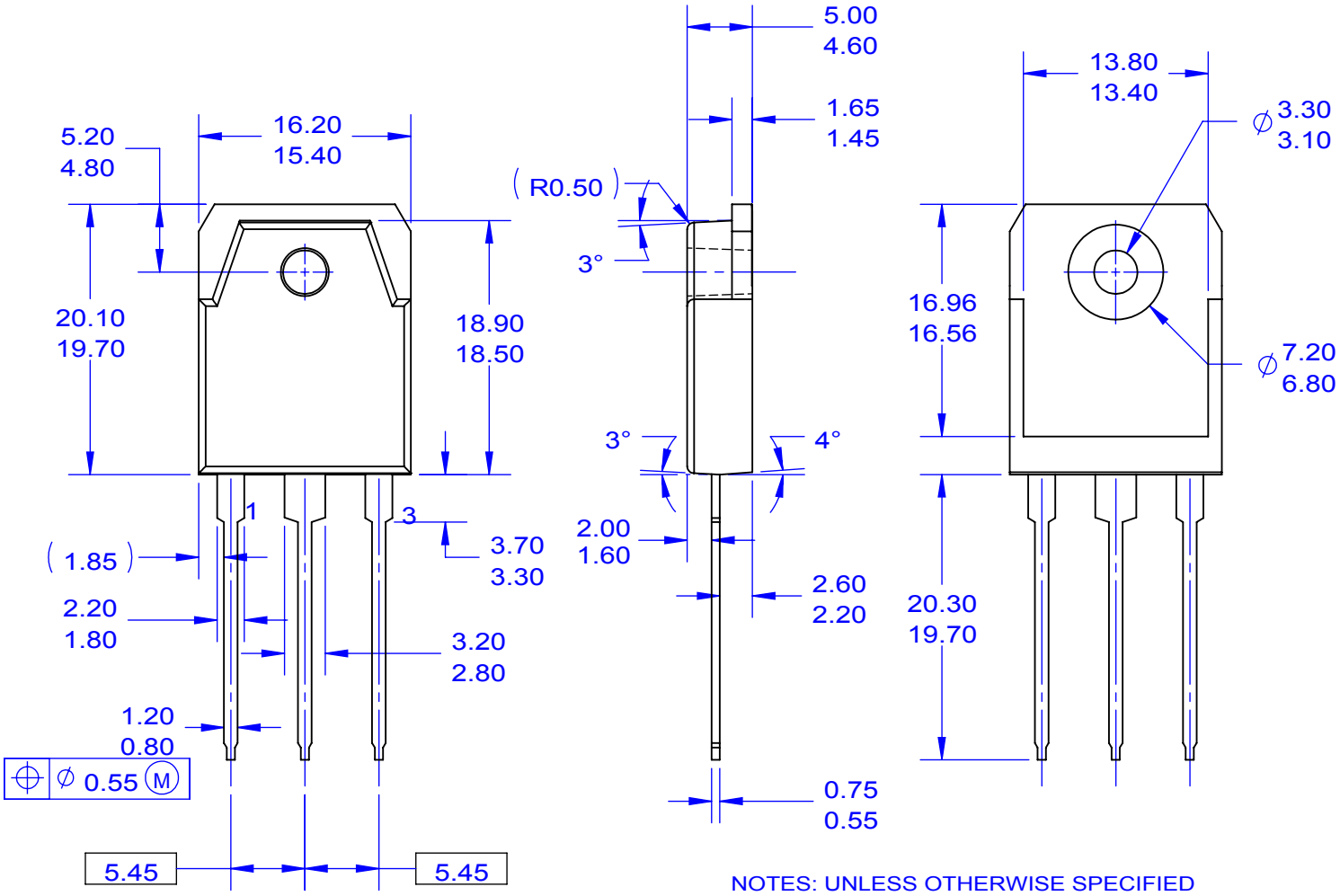
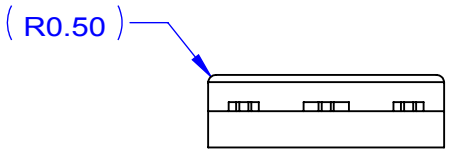


Figure 6. Power Derating

© 2009 Fairchild Semiconductor Corporation





NOTES: UNLESS OTHERWISE SPECIFIED

A) THIS PACKAGE CONFORMS TO EIAJ SC-65 PACKAGING STANDARD.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSION AND TOLERANCING PER ASME14.5-2009.
D) DIMENSIONS ARE EXCLUSSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSSIONS.
E) DRAWING FILE NAME: TO3PN03AREV2.
F) FAIRCHILD SEMICONDUCTOR.

FAIRCHILD ™

ON Semiconductor and ON are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent−Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81−3−5817−1050

ON Semiconductor Website: **www.onsemi.com**

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative