

BD435, BD437, BD439, BD441

Plastic Medium Power Silicon NPN Transistor

This series of plastic, medium-power silicon NPN transistors can be used for amplifier and switching applications. Complementary types are BD438 and BD442.

Features

- Pb-Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit	
Collector-Emitter Voltage	BD435 BD437 BD439 BD441	V_{CEO}	32 45 60 80	Vdc
Collector-Base Voltage	BD435 BD437 BD439 BD441	V_{CBO}	32 45 60 80	Vdc
Emitter-Base Voltage		V_{EBO}	5.0	Vdc
Collector Current		I_C	4.0	Adc
Base Current		I_B	1.0	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C		P_D	36 288	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range		T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	θ_{JC}	3.5	$^\circ\text{C}/\text{W}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

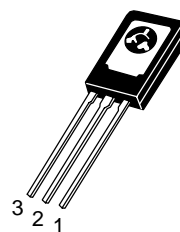
*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



ON Semiconductor®

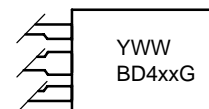
<http://onsemi.com>

4.0 AMPERES POWER TRANSISTORS NPN SILICON



TO-225AA
CASE 77
STYLE 1

MARKING DIAGRAM



BD4xx = Device Code
xx = 35, 37, 37T, 39, 41
Y = Year
WW = Work Week
G = Pb-Free Package

ORDERING INFORMATION

Device	Package	Shipping
BD435	TO-225AA	500 Units/Box
BD435G	TO-225AA (Pb-Free)	500 Units/Box
BD437	TO-225AA	500 Units/Box
BD437G	TO-225AA (Pb-Free)	500 Units/Box
BD437T	TO-225AA	50 Units/Rail
BD437TG	TO-225AA (Pb-Free)	50 Units/Rail
BD439	TO-225AA	500 Units/Box
BD439G	TO-225AA (Pb-Free)	500 Units/Box
BD441	TO-225AA	500 Units/Box
BD441G	TO-225AA (Pb-Free)	500 Units/Box

BD435, BD437, BD439, BD441

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
Collector–Emitter Breakdown Voltage ($I_C = 100\text{ mA}$, $I_B = 0$)	BD435 BD437 BD439 BD441	$V_{(BR)CEO}$	32 45 60 80	– – – –	– – – –	Vdc
Collector–Base Breakdown Voltage ($I_C = 100\ \mu\text{A}$, $I_B = 0$)	BD435 BD437 BD439 BD441	$V_{(BR)CBO}$	32 45 60 80	– – – –	– – – –	Vdc
Emitter–Base Breakdown Voltage ($I_E = 100\ \mu\text{A}$, $I_C = 0$)		$V_{(BR)EBO}$	5.0	–	–	Vdc
Collector Cutoff Current ($V_{CB} = 32\text{ V}$, $I_E = 0$) ($V_{CB} = 45\text{ V}$, $I_E = 0$) ($V_{CB} = 60\text{ V}$, $I_E = 0$) ($V_{CB} = 80\text{ V}$, $I_E = 0$)	BD435 BD437 BD439 BD441	I_{CBO}	– – – –	– – – –	0.1 0.1 0.1 0.1	mAdc
Emitter Cutoff Current ($V_{EB} = 5.0\text{ V}$)		I_{EBO}	–	–	1.0	mAdc
DC Current Gain ($I_C = 10\text{ mA}$, $V_{CE} = 5.0\text{ V}$)	BD435 BD437 BD439 BD441	h_{FE}	40 30 20 15	– – – –	– – – –	–
DC Current Gain ($I_C = 500\text{ mA}$, $V_{CE} = 1.0\text{ V}$)	BD435 BD437 BD439, BD441	h_{FE}	85 85 40	– – –	475 375 475	–
DC Current Gain ($I_C = 2.0\text{ A}$, $V_{CE} = 1.0\text{ V}$)	BD435 BD437 BD439 BD441	h_{FE}	50 40 25 15	– – – –	– – – –	–
Collector Saturation Voltage ($I_C = 2.0\text{ A}$, $I_B = 0.2\text{ V}$) ($I_C = 3.0\text{ A}$, $I_B = 0.3\text{ A}$)	BD435 BD437, BD439, BD441	$V_{CE(sat)}$	– –	– –	0.5 0.8	Vdc
Base–Emitter On Voltage ($I_C = 2.0\text{ A}$, $V_{CE} = 1.0\text{ V}$)		$V_{BE(on)}$	–	–	1.1	Vdc
Current–Gain – Bandwidth Product ($V_{CE} = 1.0\text{ V}$, $I_C = 250\text{ mA}$, $f = 1.0\text{ MHz}$)		f_T	3.0	–	–	MHz

BD435, BD437, BD439, BD441

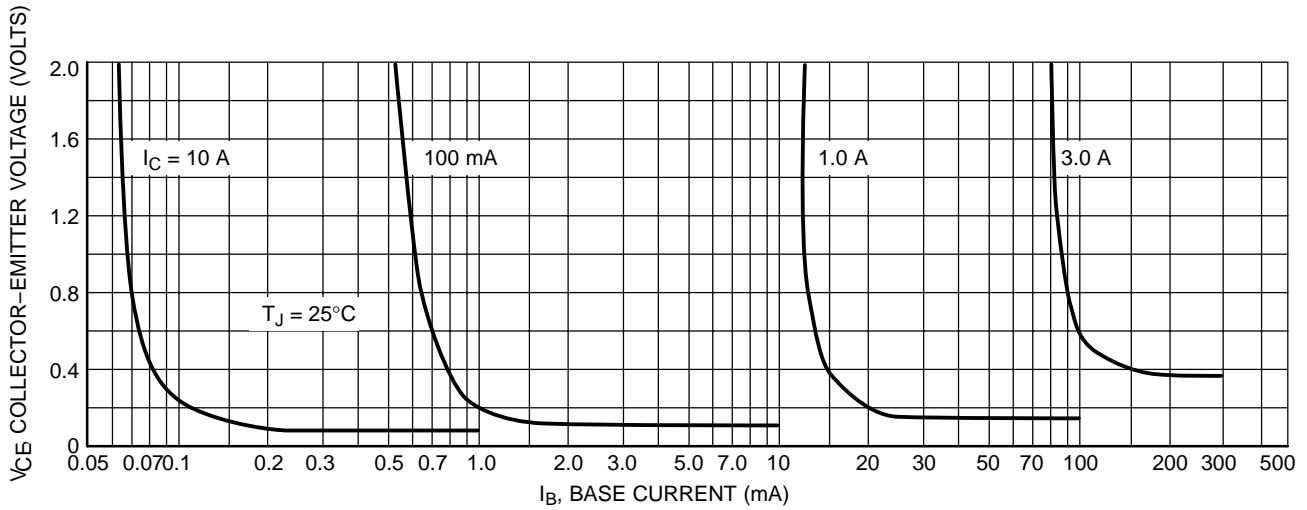


Figure 1. Collector Saturation Region

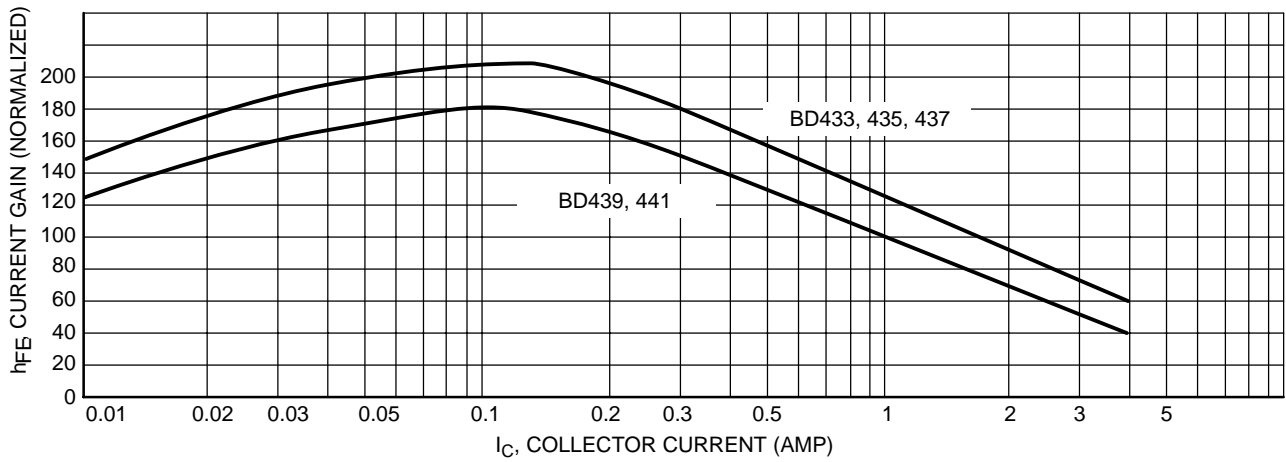


Figure 2. Current Gain

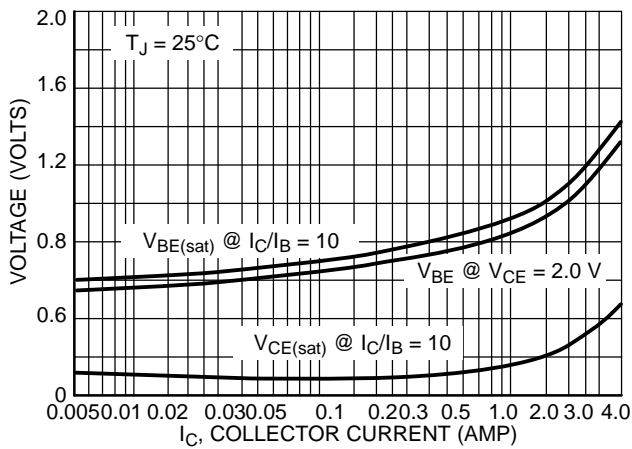


Figure 3. "On" Voltage

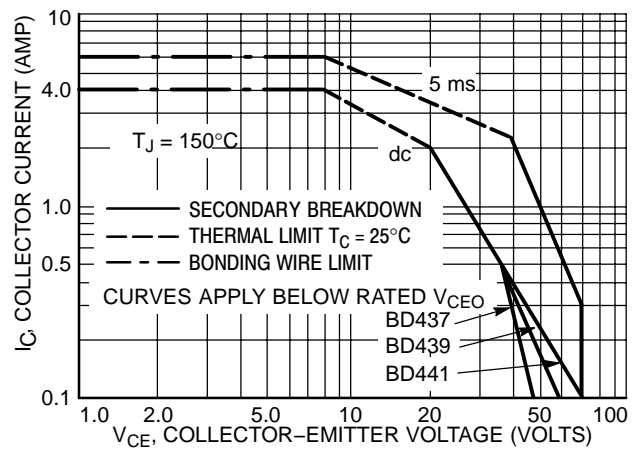
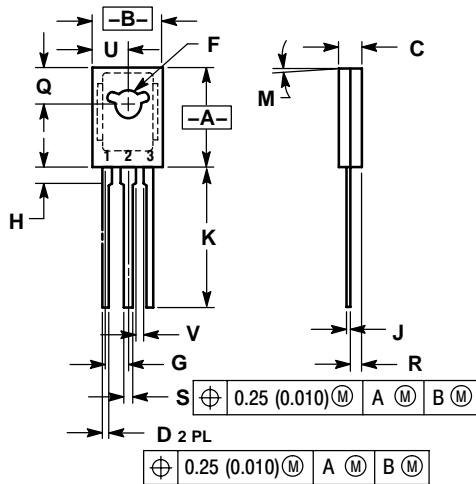


Figure 4. Active Region Safe Operating Area

BD435, BD437, BD439, BD441

PACKAGE DIMENSIONS

TO-225AA
CASE 77-09
ISSUE Z



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 077-01 THRU -08 OBSOLETE, NEW STANDARD 077-09.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.065	1.15	1.65
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	---	1.02	---

STYLE 1:

- PIN 1. EMITTER
- COLLECTOR
- BASE

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC 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. "Typical" parameters which may be provided in SCILLC 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. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC 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 SCILLC was negligent regarding the design or manufacture of the part. SCILLC 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
P.O. Box 61312, Phoenix, Arizona 85082-1312 USA
Phone: 480-829-7710 or 800-344-3860 Toll Free USA/Canada
Fax: 480-829-7709 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051
Phone: 81-3-5773-3850

ON Semiconductor Website: <http://onsemi.com>

Order Literature: <http://www.onsemi.com/litorder>

For additional information, please contact your local Sales Representative.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.