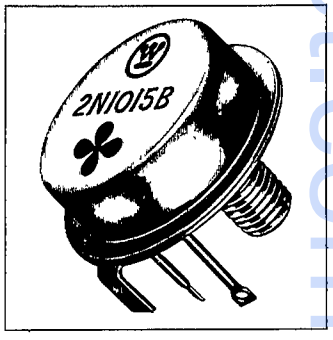
Westinghouse

Silicon Power Transistors JEDEC Types 2N1015, 2N1016

7.5 Amperes, 150 Watts
Collector-to-Emitter Voltage 30 to 300 Volts



Thermal Characteristics

*Thermal resistance, θ_{JC}, °C/watt, max. . 0.7
Derating factor, Watts/°C 1.43
*Typical thermal drop, case to heat sink, °C/watt 0.3

Application

The Westinghouse 2N1015 and 2N1016 series are NPN fused silicon power transistors. These transistors are rated at a maximum collector current of 7.5 amperes, the 2N1015 series having a minimum d-c gain of 10 at 2 amperes and the 2N1016 having a minimum d-c gain of 10 at 5 amperes. Exhibiting extremely low saturation resistance and characterized by excellent operating capabilities at True Voltage Ratings and high temperatures, these transistors provide a new degree of flexibility for circuit design. The silicon power transistor is hermetically sealed in a welded case and features an all-welded internal construction, thus assuring maximum reliability and long life. The mounting stud of the single-ended case style is designed for good thermal contact to an external heat sink as well as ease of installation.

Specifically designed for high-power switching, voltage and current regulators, and amplifier application in industrial and military equipments, each transistor is 100 percent tested for electrical characteristics, and in addition, each production lot is further subjected to rigid environmental testing.

All of these transistors carry the Westinghouse Lifetime Guarantee.

Guarantee

Westinghouse warrants to the original purchaser that it will correct any defect or defects in workmanship, by repair or replacement f.o.b. factory, for any silicon power semiconductor bearing this symbol ✣™ during the life of the equipment in which it is originally installed, provided said device is used within manufacturer's published ratings and applied in accordance with good engineering practice. This warranty shall constitute a fulfillment of all Westinghouse liabilities in respect to said products. This warranty is exclusive and in lieu of all other warranties of quality, whether written, oral, or implied (including any warranty of merchantability or fitness for purpose). Westinghouse shall not be liable for any consequential damages.

② The maximum collector to emitter voltage rating is guaranteed up to the maximum rated power dissipation of the transistor with the base emitter forward biased
The maximum collector to emitter voltage rating is below the various "break-down" voltages, BV_{CEX}, BV_{CES}, BV_{CER} and the $\alpha m=1$ curve in the sustaining region, V_{CEO} (sus). Each transistor is power tested within its maximum limits of V_{CE}, P_D and I_C, (see figures 3 and 4).

Maximum Ratings

Voltage

•Collector to emitter, V_{CE},② Vdc	2N1015 ✚	2N1016 ✚	30
	2N1015A✚	2N1016A✚	60
	2N1015B✚	2N1016B✚	100
	2N1015C✚	2N1016C✚	150
	2N1015D✚	2N1016D✚	200
	2N1015E✚	2N1016E✚	250
	2N1015F✚	2N1016F✚	300

•Emitter to base, V_{EB}, Vdc 25
Collector to base, V_{CB}, Vdc ..... equal to rated V_{CE}

Current

•Collector current, I_C, Adc 7.5
•Base current, I_B, Adc 5.0
•Emitter current, I_E, Adc 7.5

Power

•Power dissipation, P_T at T_C=45°C, watts, max. 150

Temperature

•Junction temperature, T_J, °C ..... +150
•Storage temperature, T_{stg}, °C min. ..... − 65
max. ..... +150

Electrical Characteristics

T_C=25°C unless otherwise specified

	Symbol	Minimum	Typical	Max.	Units
2N1015/2N1016					
Collector current at $V_{CEX}=V_{CE}$ (from max. ratings), T_J=150°C, V_{BE}=−1.5 Vdc	I_{CEX}	..	2	*20	mAdc
Emitter current at V_{EB}=25 Vdc, I_C=0, T_J=150°C	I_{EBO}	..	3	*20	mAdc
Switching time, delay plus rise time	t_d+t_r	..	3	....	μsec
Storage plus fall time	t_s+t_f	..	7	....	μsec
2N1015					
Saturation resistance at I_C=2 Adc, I_B=300 mAdc	r_{CE} (sat)	..	0.25	* 0.75	ohms
Dc current gain at V_{CE}=4 Vdc, I_C=2 Adc	h_{FE}	*10	14	....	.....
Base voltage, at I_C=2 Adc, I_B=300 mAdc	V_{BE} (sat)	..	1.15	....	Vdc
Beta cut-off frequency	f_{hfe}	..	25	....	kHz
2N1016					
Saturation resistance at I_C=5 Adc, I_B=750 mAdc	r_{CE} (sat)	..	0.12	* 0.5	ohms
Dc current gain at V_{CE}=4 Vdc, I_C=5 Adc	h_{FE}	*10	18	....	.....
Base voltage, at I_C=5 Adc, I_B=750 mAdc	V_{BE} (sat)	..	1.25	....	Vdc
Beta cut-off frequency	f_{hfe}	..	30	....	kHz

*JEDC registered parameters.

Typical Characteristics

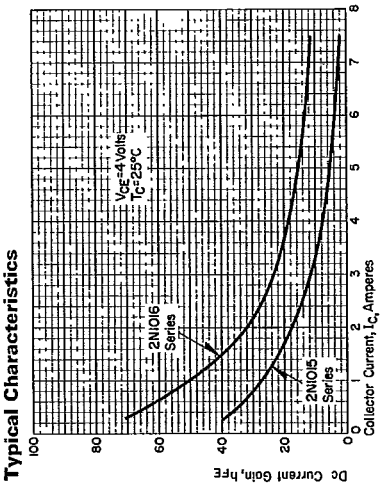


Figure 1. Dc gain versus collector current.

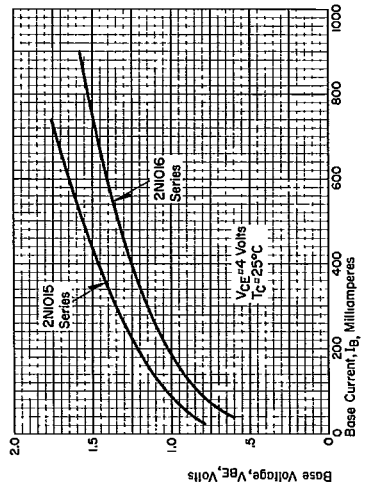


Figure 2. Input characteristics.

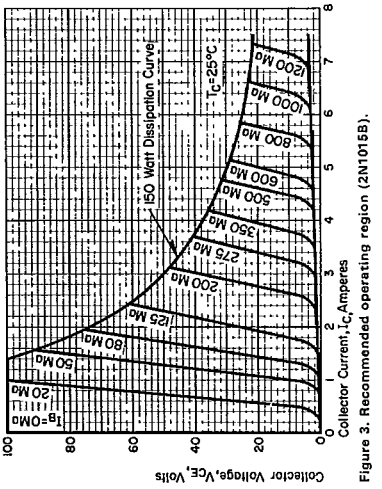
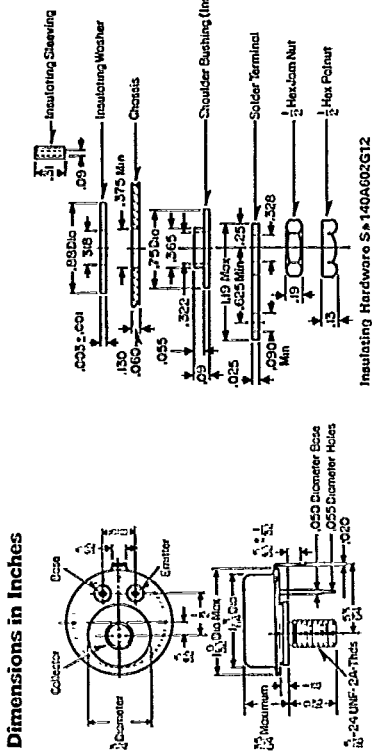


Figure 4. Recommended operating region (2N1016B)

Figure 3. Recommended operating region (2N1015B).

Dimensions in Inches



Westinghouse Electric Corporation
Semiconductor Division, Youngwood, Pa. 15697
Printed in USA

February, 1967
Supersedes TD 54-661, pages 1 and 2, dated
August, 1963
E, D, C/2116/DB; E, D, C/2117