

MJW0281A (NPN) MJW0302A (PNP)

Preferred Devices

Complementary NPN-PNP Power Bipolar Transistors

These complementary devices are lower power versions of the popular MJW3281A and MJW1302A audio output transistors. With superior gain linearity and safe operating area performance, these transistors are ideal for high fidelity audio amplifier output stages and other linear applications.

Features

- Exceptional Safe Operating Area
- NPN/PNP Gain Matching within 10% from 50 mA to 5 A
- Excellent Gain Linearity
- High BVCEO
- High Frequency

Benefits

- Reliable Performance at Higher Powers
- Symmetrical Characteristics in Complementary Configurations
- Accurate Reproduction of Input Signal
- Greater Dynamic Range
- High Amplifier Bandwidth

Applications

- High-End Consumer Audio Products
 - ◆Home Amplifiers
 - ◆Home Receivers
- Professional Audio Amplifiers
 - ◆Theater and Stadium Sound Systems
 - ◆Public Address Systems (PAs)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	260	Vdc
Collector-Base Voltage	V_{CBO}	260	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector-Emitter Voltage – 1.5 V	V_{CEX}	260	Vdc
Collector Current – Continuous – Peak (Note 1)	I_C	15 30	Adc
Base Current – Continuous	I_B	1.5	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_D	150	Watts
Operating and Storage Junction Temperature Range	T_J, T_{stg}	– 65 to +150	$^\circ\text{C}$

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.

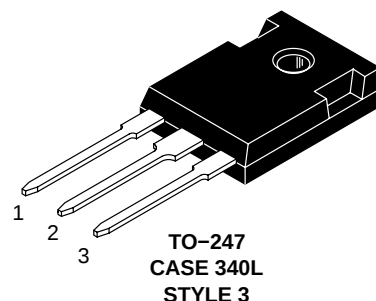
1. Pulse Test: Pulse Width = 5.0 ms, Duty Cycle < 10%.



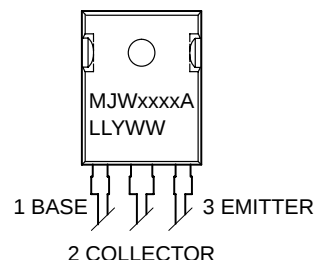
ON Semiconductor®

<http://onsemi.com>

**15 AMPERES
COMPLEMENTARY
SILICON POWER
TRANSISTORS
260 VOLTS
150 WATTS**



MARKING DIAGRAM



MJWxxxxA = Device Code
xxxx = 0281 OR 0302
LL = Location Code
Y = Year
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping
MJW0281A	TO-247	30 Units/Rail
MJW0302A	TO-247	30 Units/Rail

Preferred devices are recommended choices for future use and best overall value.

MJW0281A (NPN) MJW0302A (PNP)

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.83	$^{\circ}\text{C/W}$

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

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage ($I_C = 30\text{ mA}$, $I_B = 0$)	$V_{CE(sus)}$	260	–	V
Collector Cutoff Current ($V_{CB} = 260\text{ V}$, $I_E = 0$)	I_{CBO}	–	10	μA
Emitter Cutoff Current ($V_{EB} = 5.0\text{ V}$, $I_C = 0$)	I_{EBO}	–	5.0	μA

ON CHARACTERISTICS

DC Current Gain ($I_C = 0.5\text{ A}$, $V_{CE} = 5.0\text{ V}$) ($I_C = 1.0\text{ A}$, $V_{CE} = 5.0\text{ V}$) ($I_C = 3.0\text{ A}$, $V_{CE} = 5.0\text{ V}$)	h_{FE}	75 75 75	150 150 150	–
Collector-Emitter Saturation Voltage ($I_C = 5.0\text{ A}$, $I_B = 0.5\text{ A}$)	$V_{CE(sat)}$	–	1.0	V
Base-Emitter On Voltage ($I_C = 5.0\text{ A}$, $V_{CE} = 5.0\text{ V}$)	$V_{BE(on)}$	–	1.2	V

DYNAMIC CHARACTERISTICS

Current-Gain – Bandwidth Product ($I_C = 1.0\text{ A}$, $V_{CE} = 5.0\text{ V}$, $f_{test} = 1.0\text{ MHz}$)	f_T	30	–	MHz
Output Capacitance ($V_{CB} = 10\text{ V}$, $I_E = 0$, $f_{test} = 1.0\text{ MHz}$)	C_{ob}	–	400	pF

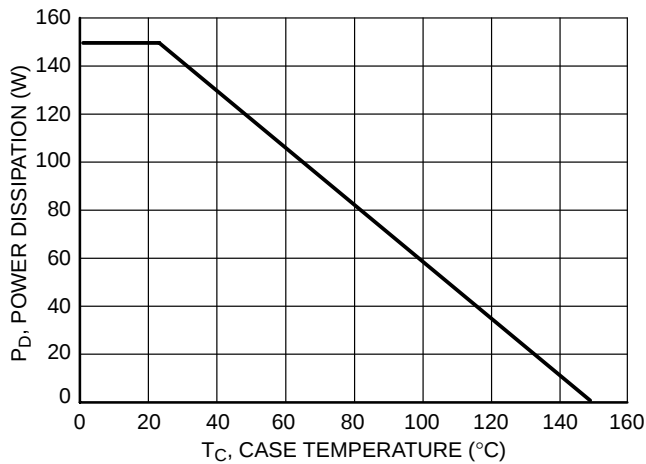


Figure 1. Power Derating

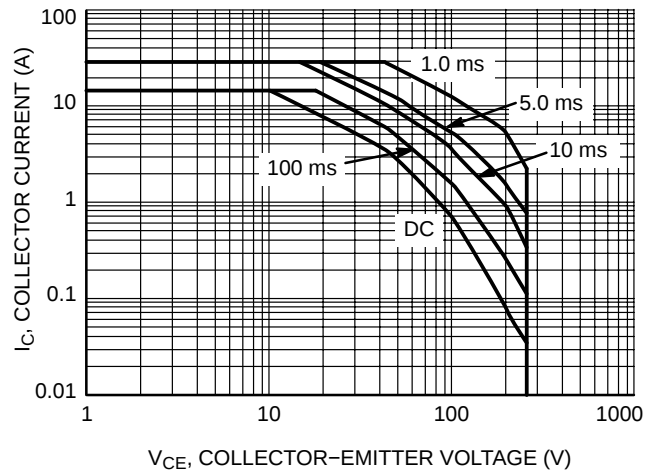


Figure 2. Safe Operating Area

MJW0281A (NPN) MJW0302A (PNP)

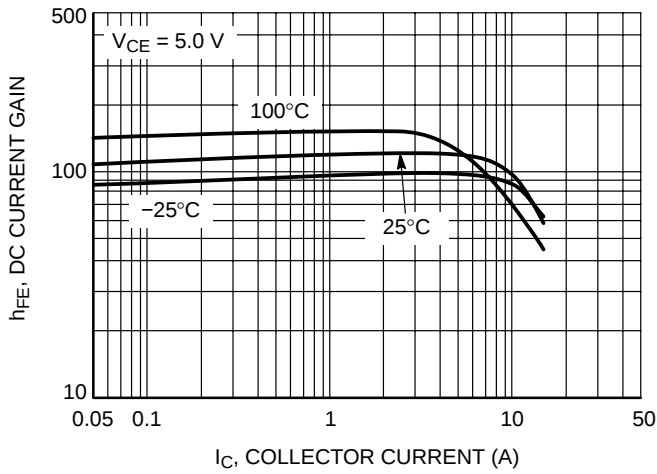


Figure 3. MJW0281A DC Current Gain

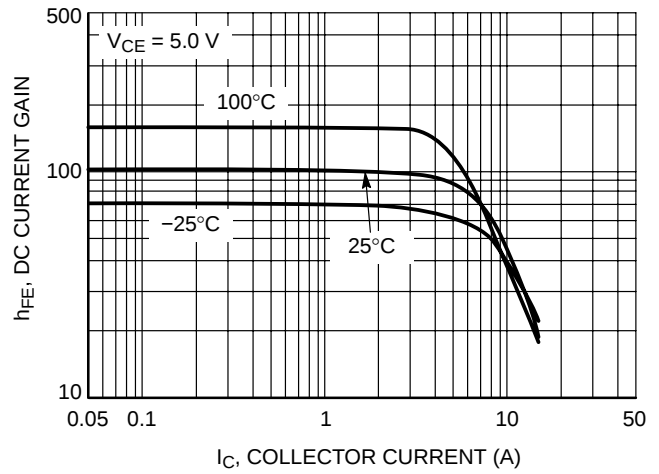


Figure 4. MJW0302A DC Current Gain

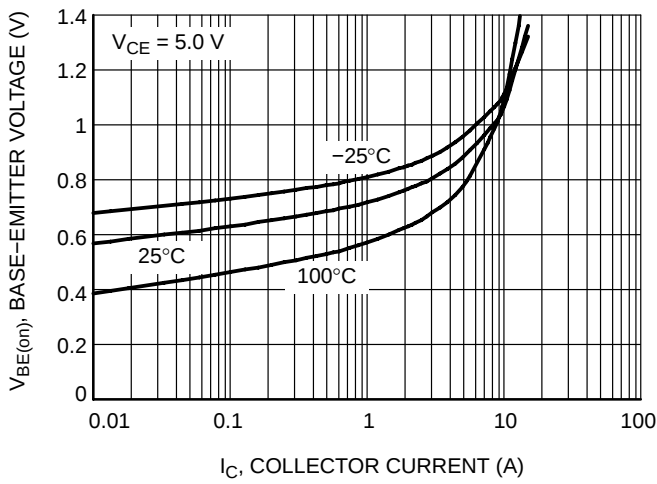


Figure 5. MJW0281A Base-Emitter Voltage

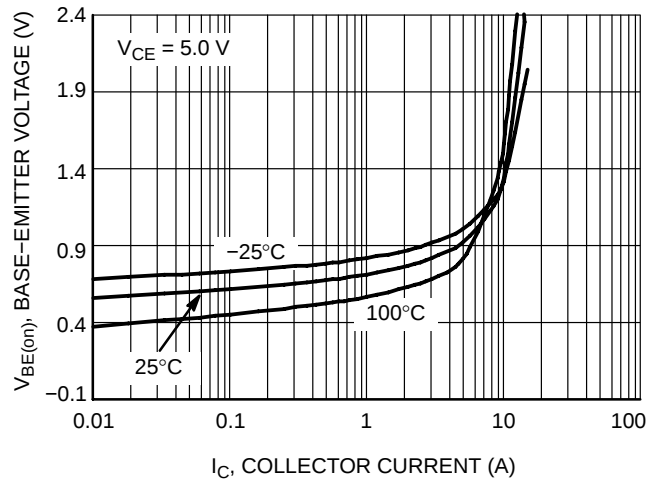


Figure 6. MJW0302A Base-Emitter Voltage

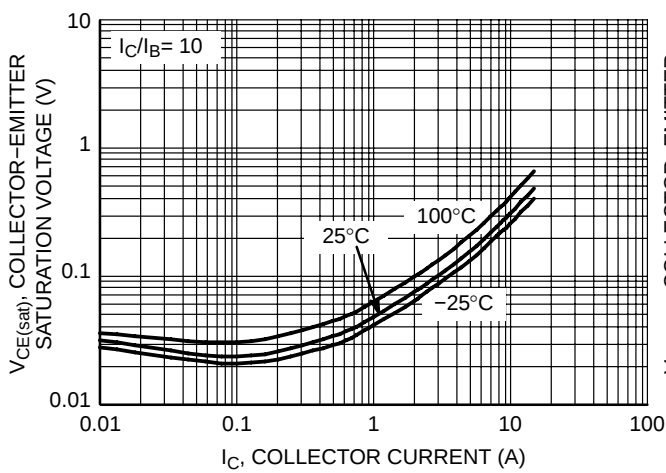


Figure 7. MJW0281A Saturation Voltage

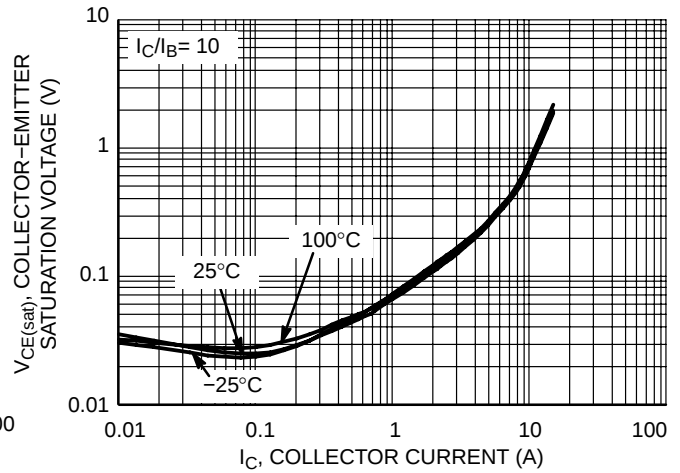


Figure 8. MJW0302A Saturation Voltage

MJW0281A (NPN) MJW0302A (PNP)

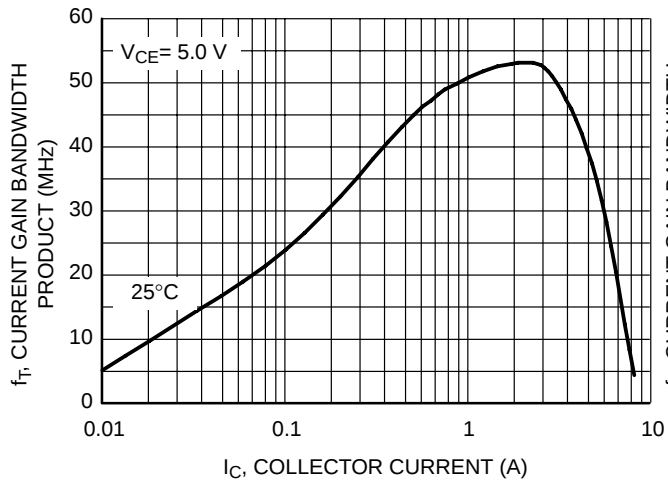


Figure 9. MJW0281A Current Gain Bandwidth Product

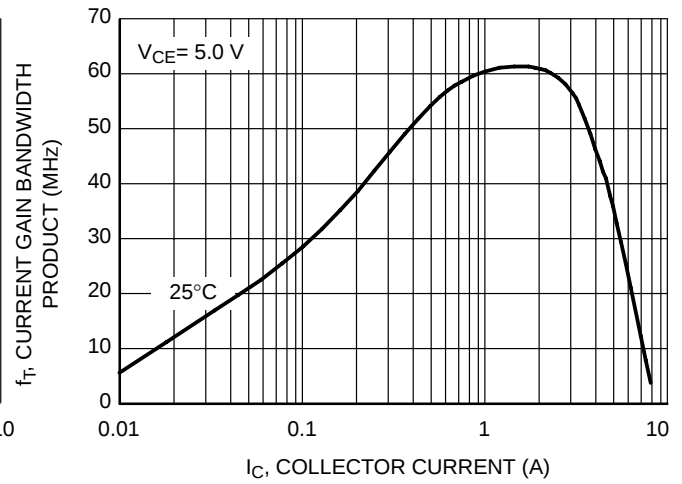
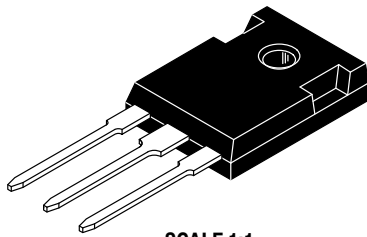


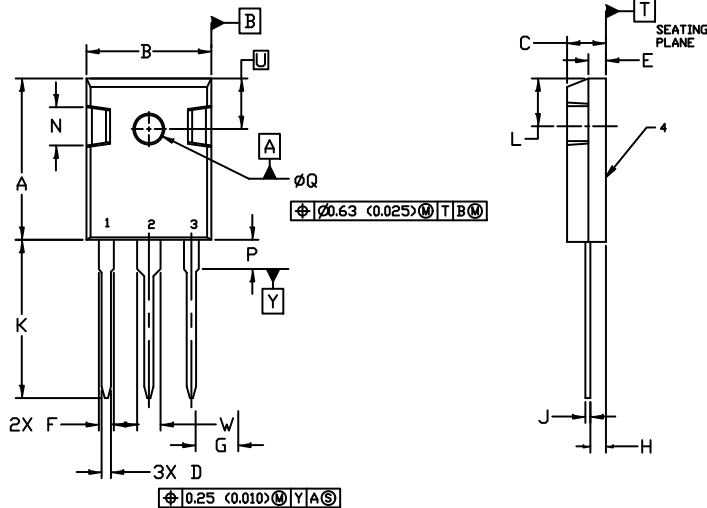
Figure 10. MJW0302A Current Gain Bandwidth Product



TO-247
CASE 340L
ISSUE G

DATE 06 OCT 2021

SCALE 1:1

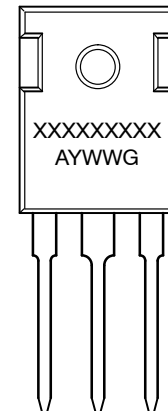


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER

	MILLIMETERS		INCHES	
DIM	MIN.	MAX.	MIN.	MAX.
A	20.32	21.08	0.800	0.830
B	15.75	16.26	0.620	0.640
C	4.70	5.30	0.185	0.209
D	1.00	1.40	0.040	0.055
E	1.90	2.60	0.075	0.102
F	1.65	2.13	0.065	0.084
G	5.45 BSC		0.215 BSC	
H	1.50	2.49	0.059	0.098
J	0.40	0.80	0.016	0.031
K	19.81	20.83	0.780	0.820
L	5.40	6.20	0.212	0.244
N	4.32	5.49	0.170	0.216
P	----	4.50	----	0.177
Q	3.55	3.65	0.140	0.144
U	6.15 BSC		0.242 BSC	
W	2.87	3.12	0.113	0.123

GENERIC
MARKING DIAGRAM*



STYLE 1: PIN 1. GATE 2. DRAIN 3. SOURCE 4. DRAIN	STYLE 2: PIN 1. ANODE 2. CATHODE (S) 3. ANODE 2 4. CATHODE (S)	STYLE 3: PIN 1. BASE 2. COLLECTOR 3. EMITTER 4. COLLECTOR	STYLE 4: PIN 1. GATE 2. COLLECTOR 3. EMITTER 4. COLLECTOR
STYLE 5: PIN 1. CATHODE 2. ANODE 3. GATE 4. ANODE	STYLE 6: PIN 1. MAIN TERMINAL 1 2. MAIN TERMINAL 2 3. GATE 4. MAIN TERMINAL 2		

XXXXX = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
G = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.

DOCUMENT NUMBER:	98ASB15080C	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	TO-247	PAGE 1 OF 1

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi 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. onsemi does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** 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 **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** 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. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** 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 **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** 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 **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales