

MJE3439G

NPN Silicon High-Voltage Power Transistor

This device is designed for use in line-operated equipment requiring high f_T .

Features

- High DC Current Gain
- High Current-Gain – Bandwidth Product
- Low Output Capacitance
- These Devices are Pb-Free and are RoHS Compliant*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	350	Vdc
Collector-Base Voltage	V_{CB}	450	Vdc
Emitter-Base Voltage	V_{EB}	5.0	Vdc
Collector Current – Continuous	I_C	0.3	Adc
Base Current	I_B	150	mAdc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	15 0.12	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

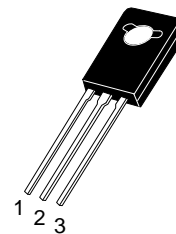
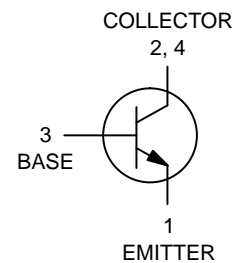
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	θ_{JC}	8.33	$^\circ\text{C/W}$



ON Semiconductor[®]

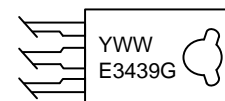
<http://onsemi.com>

**0.3 AMPERE
POWER TRANSISTOR
NPN SILICON
350 VOLTS, 15 WATTS**



**TO-225
CASE 77-09
STYLE 1**

MARKING DIAGRAM



Y = Year
WW = Work Week
E3439 = Device Code
G = Pb-Free Package

ORDERING INFORMATION

Device	Package	Shipping
MJE3439G	TO-225 (Pb-Free)	500 Units/Box

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

MJE3439G

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Sustaining Voltage ($I_C = 5.0\text{ mA}$, $I_B = 0$)	$V_{CEO(sus)}$	350	–	Vdc
Collector Cutoff Current ($V_{CE} = 300\text{ Vdc}$, $I_B = 0$)	I_{CEO}	–	20	μAdc
Collector Cutoff Current ($V_{CE} = 450\text{ Vdc}$, $V_{EB(off)} = 1.5\text{ Vdc}$)	I_{CEX}	–	500	μAdc
Collector Cutoff Current ($V_{CB} = 350\text{ Vdc}$, $I_E = 0$)	I_{CBO}	–	20	μAdc
Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	–	20	μAdc
ON CHARACTERISTICS				
DC Current Gain ($I_C = 2.0\text{ mA}$, $V_{CE} = 10\text{ Vdc}$) ($I_C = 20\text{ mA}$, $V_{CE} = 10\text{ Vdc}$)	h_{FE}	30 15	– 200	–
Collector–Emitter Saturation Voltage ($I_C = 50\text{ mA}$, $I_B = 4.0\text{ mA}$)	$V_{CE(sat)}$	–	0.5	Vdc
Base–Emitter Saturation Voltage ($I_C = 50\text{ mA}$, $I_B = 4.0\text{ mA}$)	$V_{BE(sat)}$	–	1.3	Vdc
Base–Emitter On Voltage ($I_C = 50\text{ mA}$, $V_{CE} = 10\text{ Vdc}$)	$V_{BE(on)}$	–	0.8	Vdc
DYNAMIC CHARACTERISTICS				
Current–Gain – Bandwidth Product ($I_C = 10\text{ mA}$, $V_{CE} = 10\text{ Vdc}$, $f = 5.0\text{ MHz}$)	f_T	15	–	MHz
Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{ob}	–	10	pF
Small–Signal Current Gain ($I_C = 5.0\text{ mA}$, $V_{CE} = 10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{fe}	25	–	–

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

MJE3439G

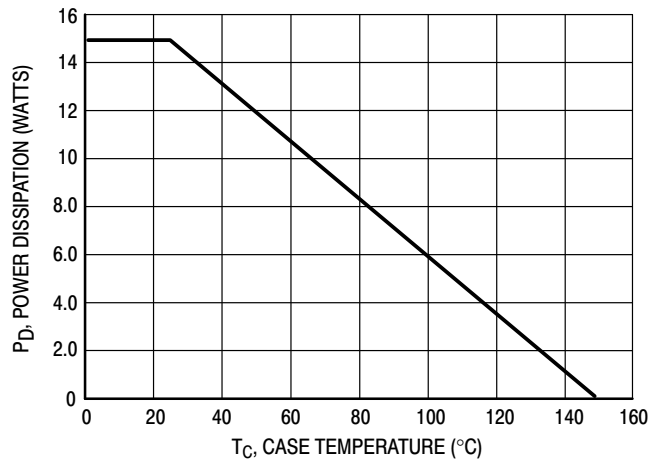


Figure 1. Power-Temperature Derating Curve

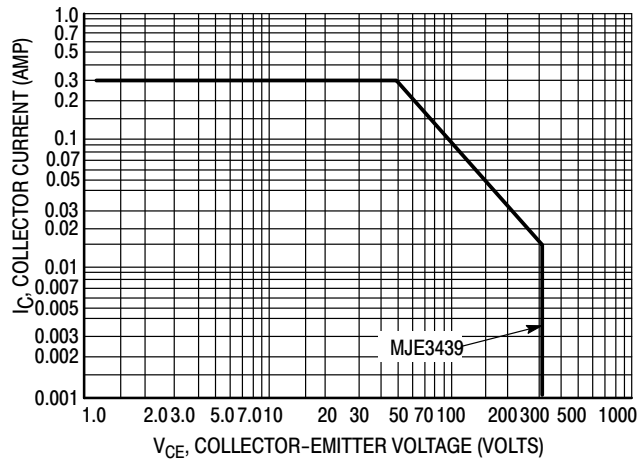


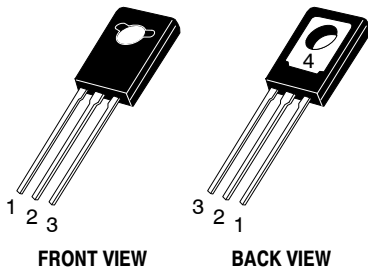
Figure 2. Active-Region Safe Operating Area

The Safe Operating Area Curves indicate $I_C - V_{CE}$ limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum T_J , power-temperature derating must be observed for both steady state and pulse power conditions.

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

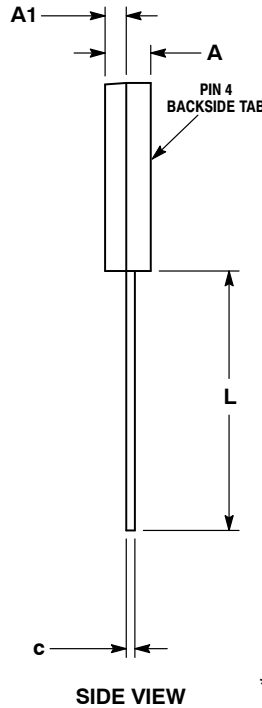
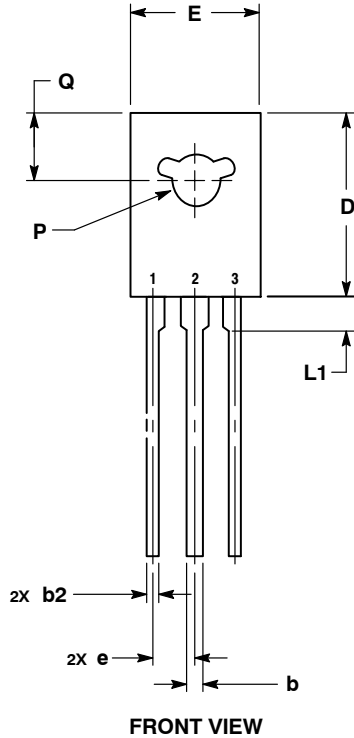
ON Semiconductor®



TO-225
CASE 77-09
ISSUE AD

DATE 25 MAR 2015

SCALE 1:1

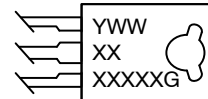


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. NUMBER AND SHAPE OF LUGS OPTIONAL.

DIM	MILLIMETERS	
	MIN	MAX
A	2.40	3.00
A1	1.00	1.50
b	0.60	0.90
b2	0.51	0.88
c	0.39	0.63
D	10.60	11.10
E	7.40	7.80
e	2.04	2.54
L	14.50	16.63
L1	1.27	2.54
P	2.90	3.30
Q	3.80	4.20

GENERIC MARKING DIAGRAM*



- Y = Year
- WW = Work Week
- XXXXX = Device Code
- G = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "μ", may or may not be present.

- | | | | | |
|---|---|---|---|---|
| <p>STYLE 1:
PIN 1. EMITTER
2., 4. COLLECTOR
3. BASE</p> | <p>STYLE 2:
PIN 1. CATHODE
2., 4. ANODE
3. GATE</p> | <p>STYLE 3:
PIN 1. BASE
2., 4. COLLECTOR
3. EMITTER</p> | <p>STYLE 4:
PIN 1. ANODE 1
2., 4. ANODE 2
3. GATE</p> | <p>STYLE 5:
PIN 1. MT 1
2., 4. MT 2
3. GATE</p> |
| <p>STYLE 6:
PIN 1. CATHODE
2., 4. GATE
3. ANODE</p> | <p>STYLE 7:
PIN 1. MT 1
2., 4. GATE
3. MT 2</p> | <p>STYLE 8:
PIN 1. SOURCE
2., 4. GATE
3. DRAIN</p> | <p>STYLE 9:
PIN 1. GATE
2., 4. DRAIN
3. SOURCE</p> | <p>STYLE 10:
PIN 1. SOURCE
2., 4. DRAIN
3. GATE</p> |

DOCUMENT NUMBER:	98ASB42049B	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-225	PAGE 1 OF 1

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. 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. ON Semiconductor 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