

# MJE13009G

## SWITCHMODE Series NPN Silicon Power Transistors

The MJE13009G is designed for high-voltage, high-speed power switching inductive circuits where fall time is critical. They are particularly suited for 115 and 220 V SWITCHMODE applications such as Switching Regulators, Inverters, Motor Controls, Solenoid/Relay drivers and Deflection circuits.

### Features

- $V_{CEO(sus)}$  400 V and 300 V
- Reverse Bias SOA with Inductive Loads @  $T_C = 100^\circ\text{C}$
- Inductive Switching Matrix 3 to 12 Amp, 25 and  $100^\circ\text{C } t_c @ 8 \text{ A}$ ,  $100^\circ\text{C}$  is 120 ns (Typ)
- 700 V Blocking Capability
- SOA and Switching Applications Information
- These Devices are Pb-Free and are RoHS Compliant\*

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO(sus)}$	400	Vdc
Collector-Emitter Voltage	$V_{CEV}$	700	Vdc
Emitter-Base Voltage	$V_{EBO}$	9	Vdc
Collector Current - Continuous - Peak (Note 1)	$I_C$ $I_{CM}$	12 24	Adc
Base Current - Continuous - Peak (Note 1)	$I_B$ $I_{BM}$	6 12	Adc
Emitter Current - Continuous - Peak (Note 1)	$I_E$ $I_{EM}$	18 36	Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	2 0.016	W W/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	100 0.8	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +150	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.25	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 5 Seconds	$T_L$	275	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Pulse Test: Pulse Width = 5 ms, Duty Cycle  $\leq 10\%$ .

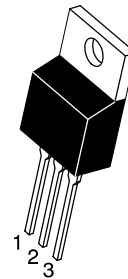
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERM/D.



ON Semiconductor®

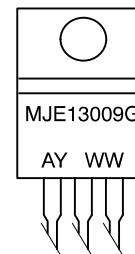
<http://onsemi.com>

**12 AMPERE  
NPN SILICON  
POWER TRANSISTOR  
400 VOLTS – 100 WATTS**



TO-220AB  
CASE 221A-09  
STYLE 1

### MARKING DIAGRAM



A = Assembly Location  
Y = Year  
WW = Work Week  
G = Pb-Free Package

### ORDERING INFORMATION

Device	Package	Shipping
MJE13009G	TO-220 (Pb-Free)	50 Units / Rail