

# MJE340

## Plastic Medium-Power NPN Silicon Transistor

This device is useful for high-voltage general purpose applications.

### Features

- Suitable for Transformerless, Line-Operated Equipment
- Thermopad Construction Provides High Power Dissipation Rating for High Reliability
- Pb-Free Package is Available\*

### MAXIMUM RATINGS

| Rating                                                                                | Symbol         | Value       | Unit                      |
|---------------------------------------------------------------------------------------|----------------|-------------|---------------------------|
| Collector-Emitter Voltage                                                             | $V_{CEO}$      | 300         | Vdc                       |
| Emitter-Base Voltage                                                                  | $V_{EB}$       | 3.0         | Vdc                       |
| Collector Current – Continuous                                                        | $I_C$          | 500         | mAdc                      |
| Total Power Dissipation @ $T_C = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 20<br>0.16  | W<br>mW/ $^\circ\text{C}$ |
| Operating and Storage Junction<br>Temperature Range                                   | $T_J, T_{stg}$ | -65 to +150 | $^\circ\text{C}$          |

### THERMAL CHARACTERISTICS

| Characteristic                       | Symbol        | Max  | Unit               |
|--------------------------------------|---------------|------|--------------------|
| Thermal Resistance, Junction-to-Case | $\theta_{JC}$ | 6.25 | $^\circ\text{C/W}$ |

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.

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

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

### OFF CHARACTERISTICS

|                                                                         |                |     |     |                 |
|-------------------------------------------------------------------------|----------------|-----|-----|-----------------|
| Collector-Emitter Sustaining Voltage<br>( $I_C = 1.0$ mAdc, $I_B = 0$ ) | $V_{CEO(sus)}$ | 300 | –   | Vdc             |
| Collector Cutoff Current<br>( $V_{CB} = 300$ Vdc, $I_E = 0$ )           | $I_{CBO}$      | –   | 100 | $\mu\text{Adc}$ |
| Emitter Cutoff Current<br>( $V_{EB} = 3.0$ Vdc, $I_C = 0$ )             | $I_{EBO}$      | –   | 100 | $\mu\text{Adc}$ |

### ON CHARACTERISTICS

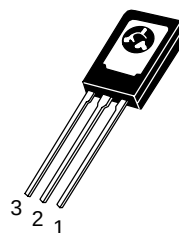
|                                                          |          |    |     |   |
|----------------------------------------------------------|----------|----|-----|---|
| DC Current Gain<br>( $I_C = 50$ mAdc, $V_{CE} = 10$ Vdc) | $h_{FE}$ | 30 | 240 | – |
|----------------------------------------------------------|----------|----|-----|---|



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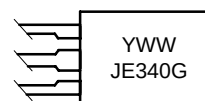
<http://onsemi.com>

**0.5 AMPERE  
POWER TRANSISTOR  
NPN SILICON  
300 VOLTS, 20 WATTS**



**TO-225  
CASE 77  
STYLE 1**

### MARKING DIAGRAM



Y = Year  
WW = Work Week  
JE340 = Device Code  
G = Pb-Free Package

### ORDERING INFORMATION

| Device  | Package             | Shipping      |
|---------|---------------------|---------------|
| MJE340  | TO-225              | 500 Units/Box |
| MJE340G | TO-225<br>(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.

## MJE340

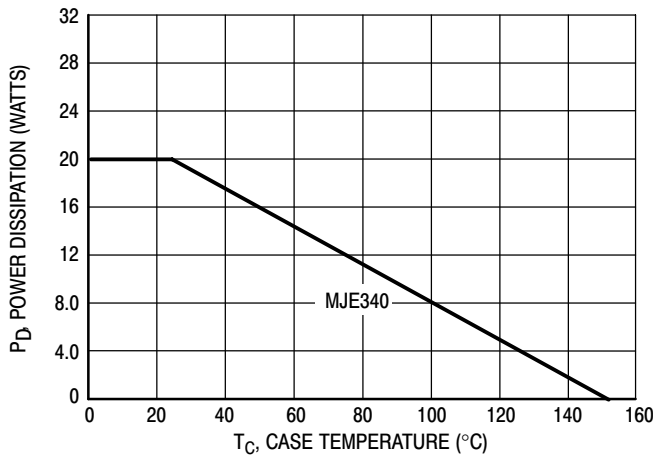


Figure 1. Power Temperature Derating

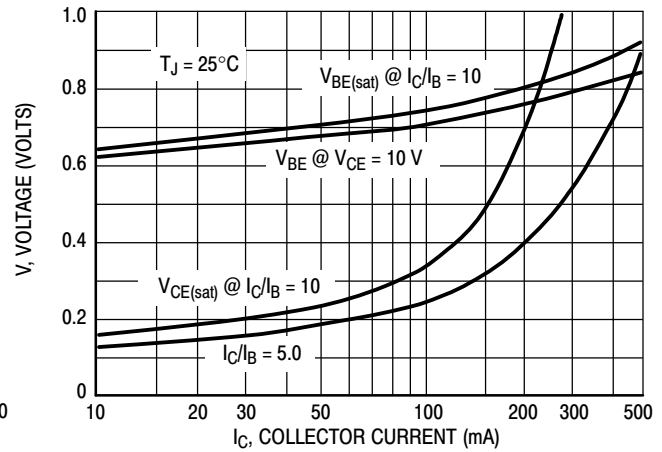


Figure 2. "On" Voltages

### ACTIVE-REGION SAFE OPERATING AREA

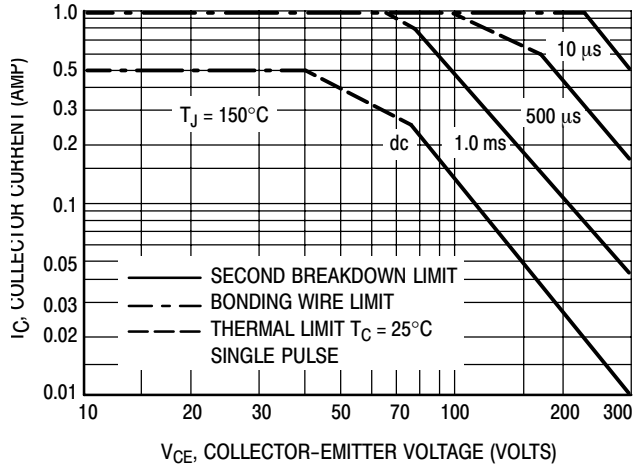


Figure 3. MJE340

There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate  $I_C - V_{CE}$  limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation than the curves indicate. The data of Figure 3 is based on  $T_{J(pk)} = 150^\circ\text{C}$ ;  $T_C$  is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided  $T_{J(pk)} \leq 150^\circ\text{C}$ . At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

# MJE340

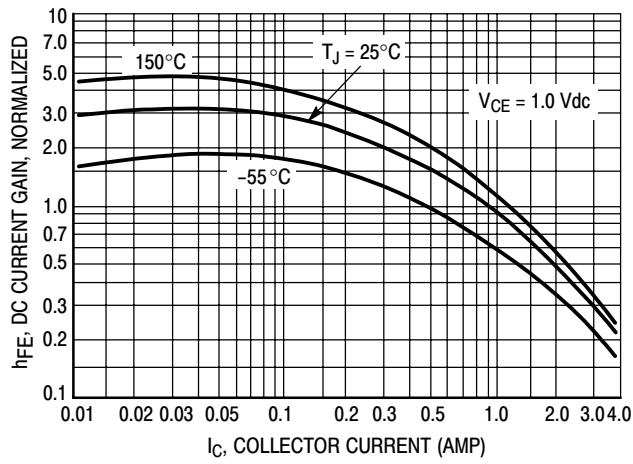


Figure 4. DC Current Gain

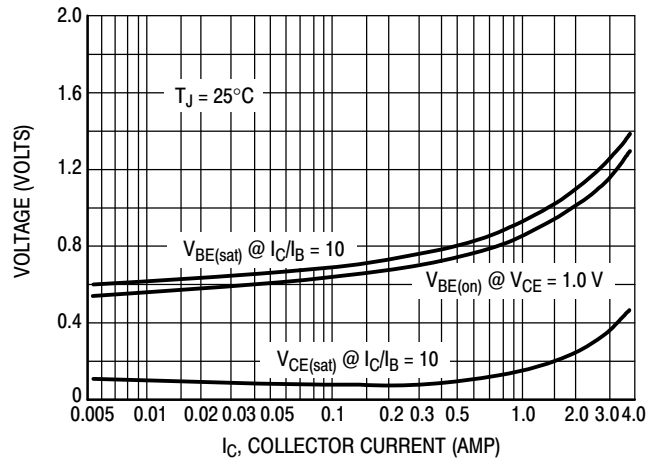


Figure 5. "On" Voltage

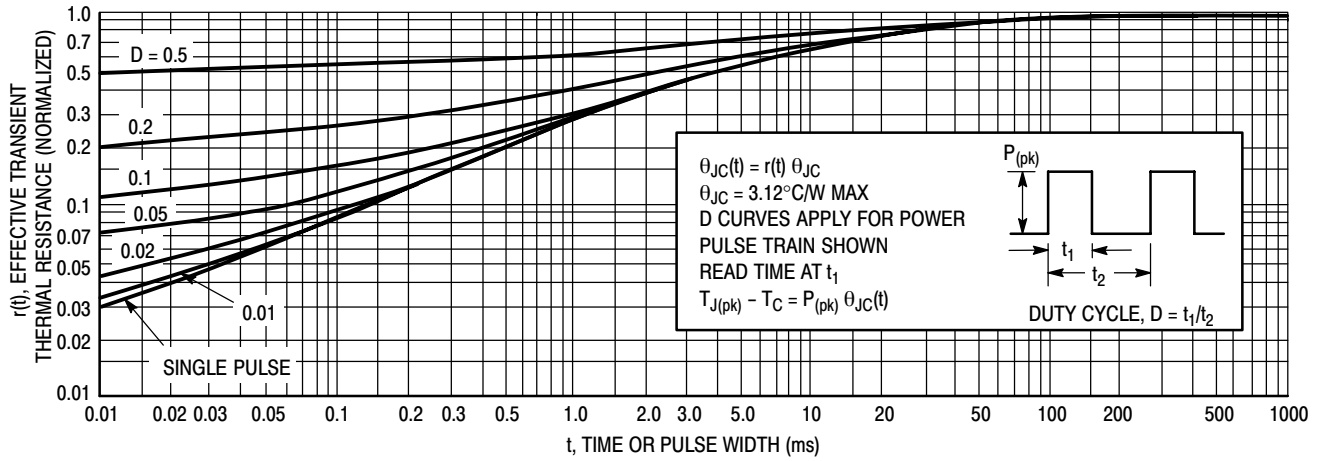


Figure 6. Thermal Response

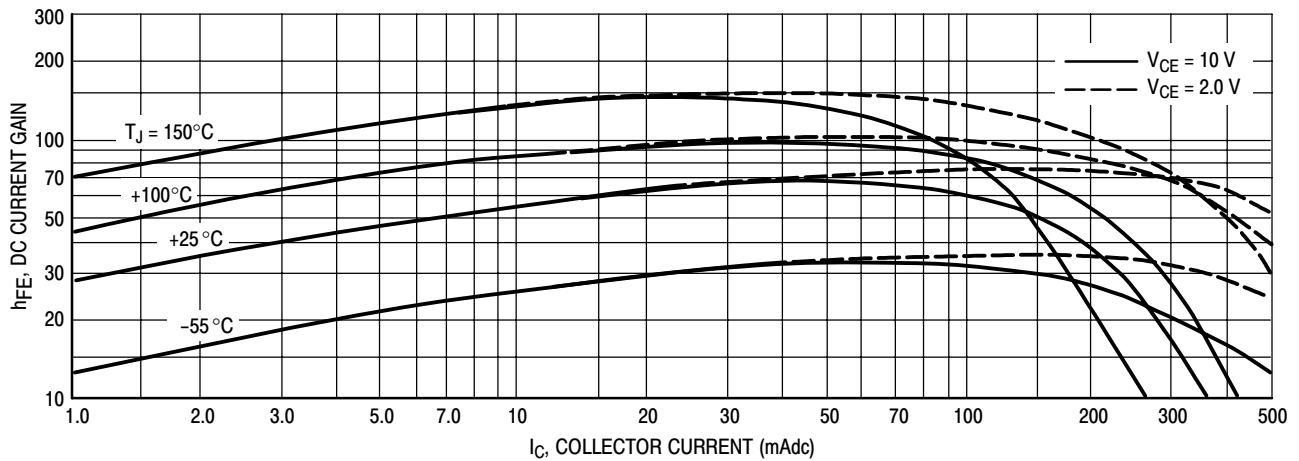
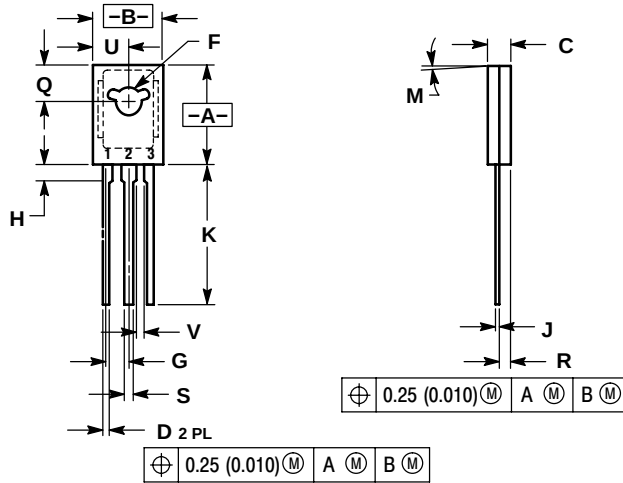


Figure 7. DC Current Gain

# MJE340

## PACKAGE DIMENSIONS

TO-225  
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:

1. EMITTER
2. COLLECTOR
3. BASE

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