

# MJE350

## Plastic Medium Power PNP Silicon Transistor

This device is designed for use in line-operated applications such as low power, line-operated series pass and switching regulators requiring PNP capability.

### Features

- High Collector-Emitter Sustaining Voltage –  
 $V_{CEO(sus)} = 300 \text{ Vdc @ } I_C = 1.0 \text{ mAdc}$
- Excellent DC Current Gain –  
 $h_{FE} = 30-240 @ I_C = 50 \text{ mAdc}$
- Plastic Thermopad Package
- 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 @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	20 0.16	W mW/ $^\circ\text{C}$
Operating and Storage Junction 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	$^\circ\text{C/W}$

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.

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

Characteristic	Symbol	Min	Max	Unit
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### OFF CHARACTERISTICS

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

### ON CHARACTERISTICS

DC Current Gain ( $I_C = 50 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ )	$h_{FE}$	30	240	-
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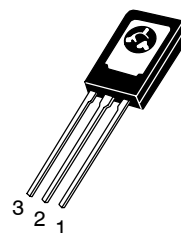
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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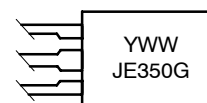
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**0.5 AMPERE  
POWER TRANSISTOR  
PNP SILICON  
300 VOLTS, 20 WATTS**



TO-225  
CASE 77  
STYLE 1

### MARKING DIAGRAM



Y = Year  
 WW = Work Week  
 JE350 = Device Code  
 G = Pb-Free Package

### ORDERING INFORMATION

Device	Package	Shipping
MJE350	TO-225	500 Units/Box
MJE350G	TO-225 (Pb-Free)	500 Units/Box

# MJE350

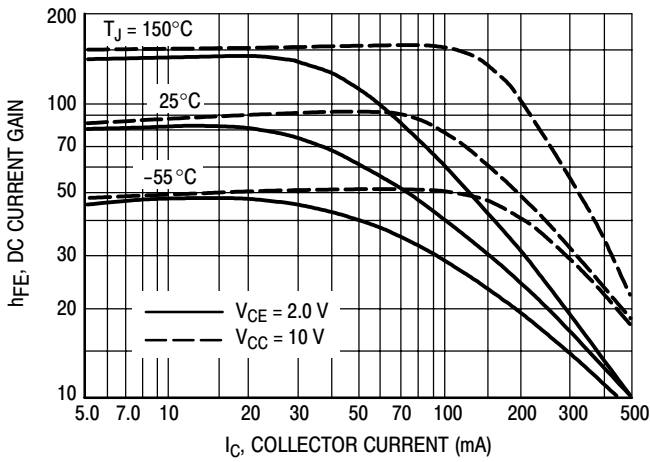


Figure 1. DC Current Gain

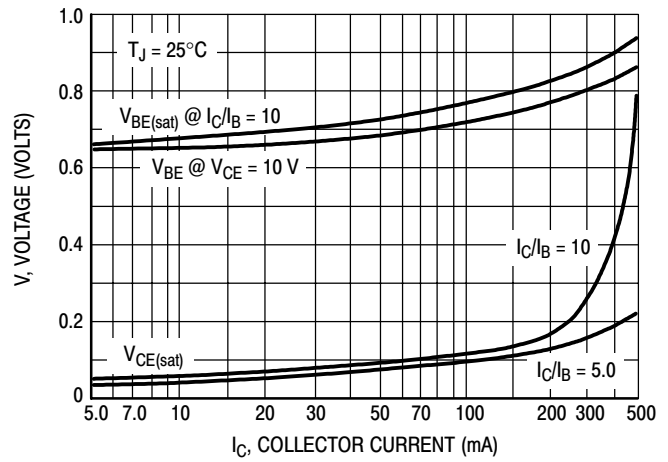


Figure 2. "On" Voltages

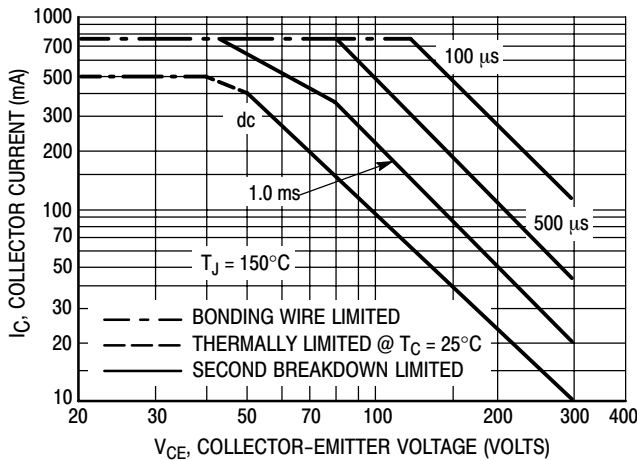


Figure 3. Active-Region Safe Operating Area

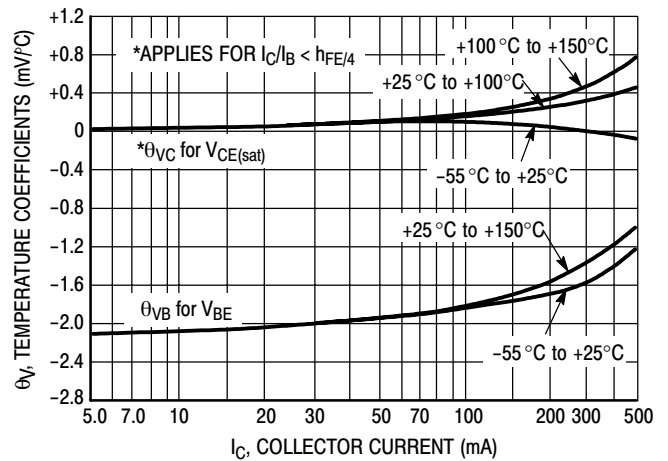


Figure 4. Temperature Coefficients

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.

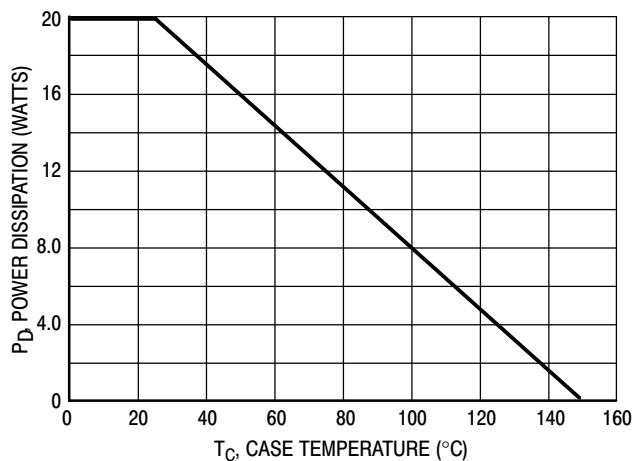
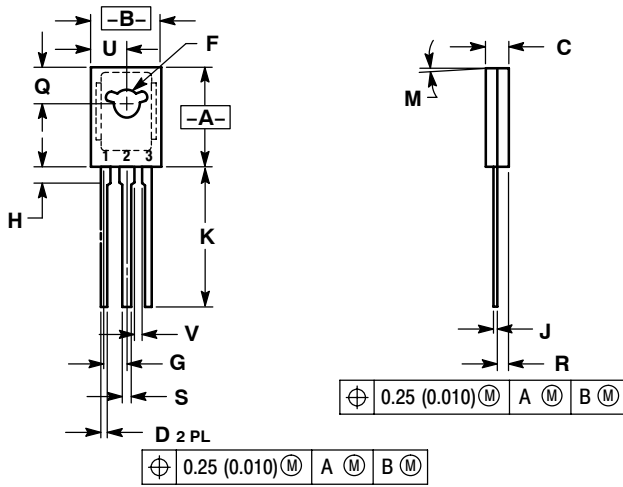


Figure 5. Power Derating

# MJE350

## 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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