

# MJD340 (NPN) MJD350 (PNP)

Preferred Device

## High Voltage Power Transistors

### DPAK For Surface Mount Applications

Designed for line operated audio output amplifier, switchmode power supply drivers and other switching applications.

#### Features

- Lead Formed for Surface Mount Applications in Plastic Sleeves (No Suffix)
- Electrically Similar to Popular MJE340 and MJE350
- 300 V (Min) –  $V_{CEO(sus)}$
- 0.5 A Rated Collector Current
- Epoxy Meets UL 94 V-0 @ 0.125 in
- ESD Ratings: Human Body Model, 3B > 8000 V  
Machine Model, C > 400 V
- Pb-Free Packages are Available

#### MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	$V_{CEO}$	300	Vdc
Collector-Base Voltage	$V_{CB}$	300	Vdc
Emitter-Base Voltage	$V_{EB}$	3	Vdc
Collector Current – Continuous – Peak	$I_C$	0.5 0.75	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	15 0.12	W W/ $^\circ\text{C}$
Total Power Dissipation (Note 1) @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.56 0.012	W W/ $^\circ\text{C}$
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	$R_{\theta JC}$	8.33	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	80	$^\circ\text{C}/\text{W}$
Leading Temperature for Soldering Purpose	$T_L$	260	$^\circ\text{C}$

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.

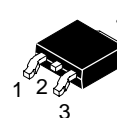
1. These ratings are applicable when surface mounted on the minimum pad sizes recommended.



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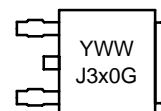
<http://onsemi.com>

**SILICON  
POWER TRANSISTORS  
0.5 AMPERE  
300 VOLTS, 15 WATTS**



DPAK  
CASE 369C  
STYLE 1

#### MARKING DIAGRAM



Y = Year  
WW = Work Week  
J3x0 = Device Code  
x = 4 or 5  
G = Pb-Free Package

#### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

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

# MJD340 (NPN) MJD350 (PNP)

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Sustaining Voltage (Note 2) ( $I_C = 1\text{ mAdc}$ , $I_B = 0$ )	$V_{CEO(sus)}$	300	-	Vdc
Collector Cutoff Current ( $V_{CB} = 300\text{ Vdc}$ , $I_E = 0$ )	$I_{CEO}$	-	0.1	mAdc
Emitter Cutoff Current ( $V_{BE} = 3\text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$	-	0.1	mAdc
<b>ON CHARACTERISTICS (Note 2)</b>				
DC Current Gain ( $I_C = 50\text{ mAdc}$ , $V_{CE} = 10\text{ Vdc}$ )	$h_{FE}$	30	240	-

2. Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

## TYPICAL CHARACTERISTICS

### MJD340

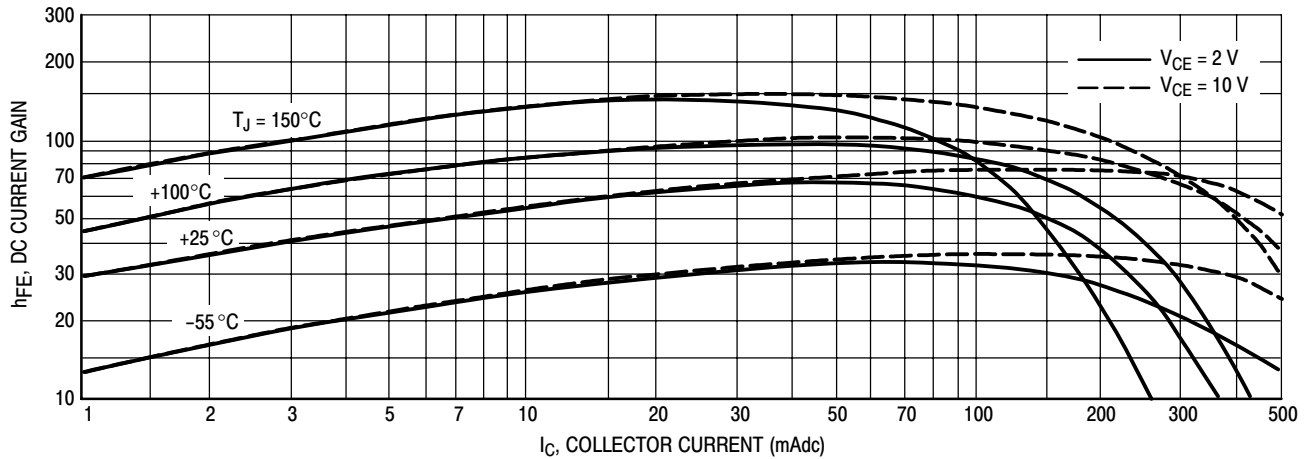


Figure 1. DC Current Gain

### MJD340

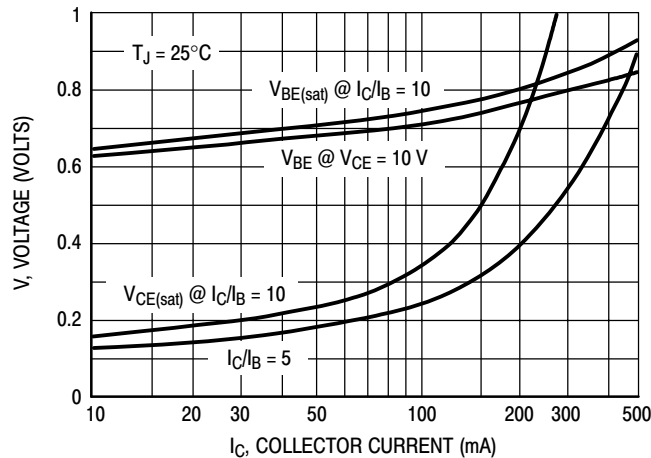


Figure 2. "On" Voltages

# MJD340 (NPN) MJD350 (PNP)

MJD350

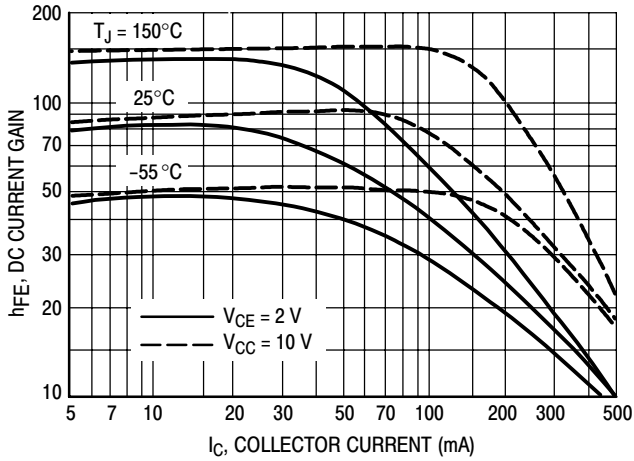


Figure 3. DC Current Gain

MJD350

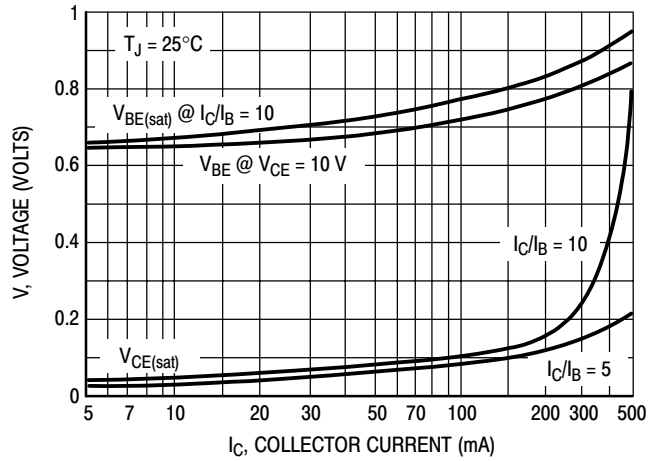


Figure 4. "On" Voltages

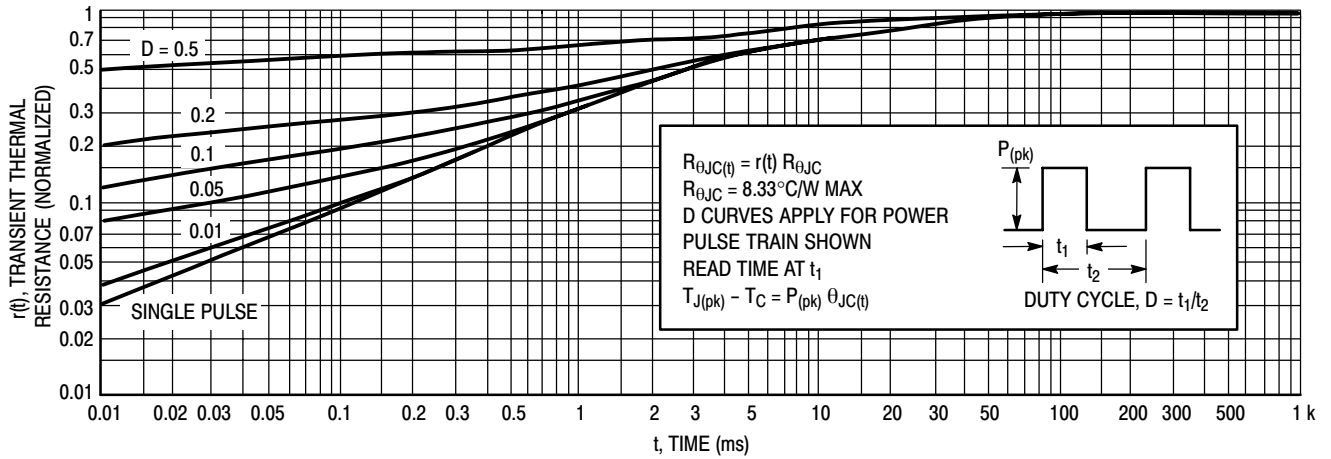


Figure 5. Thermal Response

## MJD340 (NPN) MJD350 (PNP)

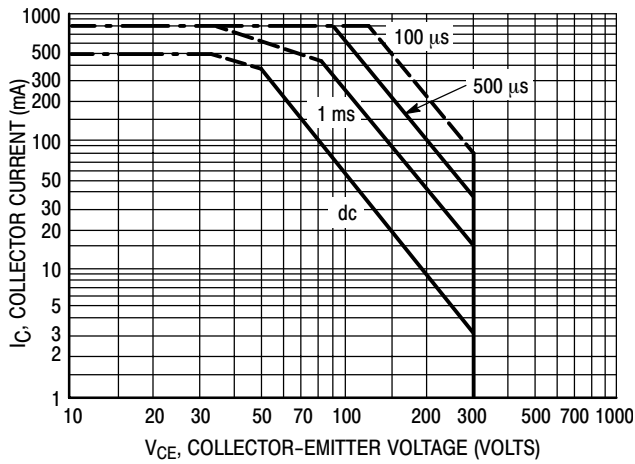


Figure 6. Active Region Safe Operating Area

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 6 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  $T_{J(pk)} \leq 150^\circ\text{C}$ .  $T_{J(pk)}$  may be calculated from the data in Figure 5. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

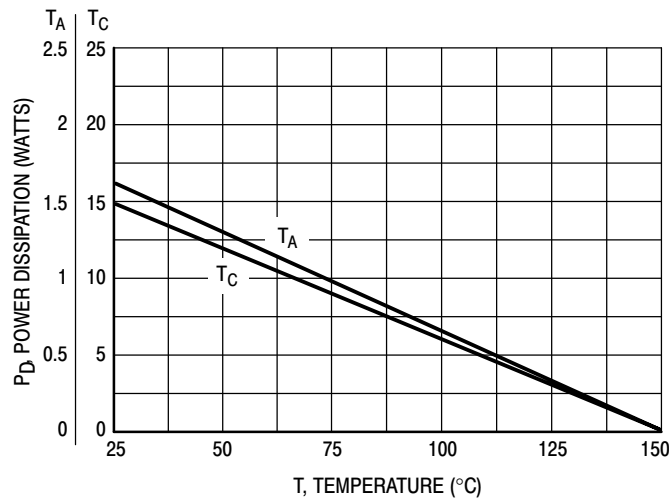


Figure 7. Power Derating

### ORDERING INFORMATION

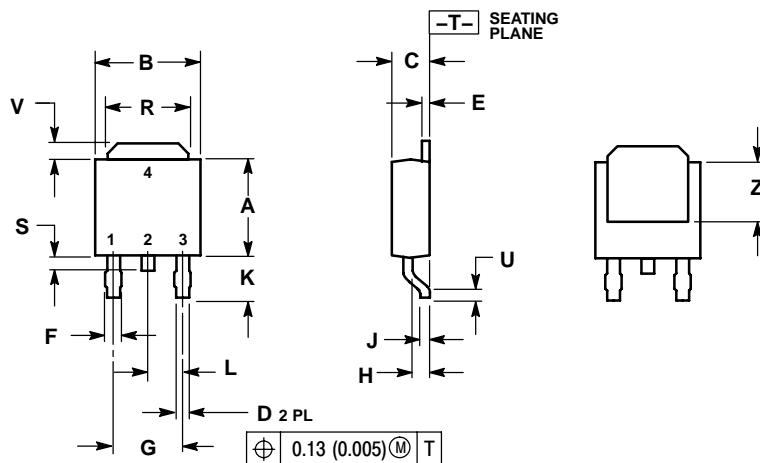
Device	Package	Shipping†
MJD340	DPAK	75 Units / Rail
MJD340G	DPAK (Pb-Free)	
MJD340RL	DPAK	1800 / Tape & Reel
MJD340RLG	DPAK (Pb-Free)	
MJD340T4	DPAK	2500 / Tape & Reel
MJD340T4G	DPAK (Pb-Free)	
MJD350	DPAK	75 Units / Rail
MJD350G	DPAK (Pb-Free)	
MJD350T4	DPAK	2500 / Tape & Reel
MJD350T4G	DPAK (Pb-Free)	

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MJD340 (NPN) MJD350 (PNP)

## PACKAGE DIMENSIONS

### DPAK CASE 369C ISSUE O

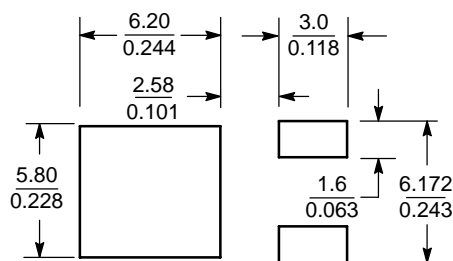


- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.235	0.245	5.97	6.22
B	0.250	0.265	6.35	6.73
C	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
E	0.018	0.023	0.46	0.58
F	0.037	0.045	0.94	1.14
G	0.180 BSC		4.58 BSC	
H	0.034	0.040	0.87	1.01
J	0.018	0.023	0.46	0.58
K	0.102	0.114	2.60	2.89
L	0.090 BSC		2.29 BSC	
R	0.180	0.215	4.57	5.45
S	0.025	0.040	0.63	1.01
U	0.020	---	0.51	---
V	0.035	0.050	0.89	1.27
Z	0.155	---	3.93	---

- STYLE 1:  
PIN 1. BASE  
2. COLLECTOR  
3. EMITTER  
4. COLLECTOR

### SOLDERING FOOTPRINT\*



SCALE 3:1 (mm/inches)

\*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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