

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

- Pb-Free Packages are Available
- Lead Formed for Surface Mount Applications in Plastic Sleeves (No Suffix)
- Lead Formed Version in 16 mm Tape and Reel ("T4" 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

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°C	P_D	15 0.12	W W/ $^\circ\text{C}$
Total Power Dissipation* @ $T_A = 25^\circ\text{C}$ Derate above 25°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	$^\circ\text{C}$

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.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	8.33	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient*	$R_{\theta JA}$	80	$^\circ\text{C/W}$
Leading Temperature for Soldering Purpose	T_L	260	$^\circ\text{C}$

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

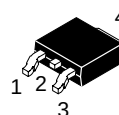


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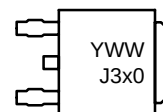
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**SILICON
POWER TRANSISTORS
0.5 AMPERE
300 VOLTS
15 WATTS**

MARKING DIAGRAM



DPAK
CASE 369C
STYLE 1



Y = Year
WW = Work Week
x = 4 or 5

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (Note 1) ($I_C = 1\text{ mAdc}$, $I_B = 0$)	$V_{CEO(sus)}$	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
ON CHARACTERISTICS (Note 1)				
DC Current Gain ($I_C = 50\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$)	h_{FE}	30	240	–

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

ORDERING INFORMATION

Device	Package Type	Package	Shipping [†]
MJD340	DPAK	369C	75 Units / Rail
MJD340G	DPAK (Pb-Free)	369C	75 Units / Rail
MJD340RL	DPAK	369C	1800 Tape & Reel
MJD340RLG	DPAK (Pb-Free)	369C	1800 Tape & Reel
MJD340T4	DPAK	369C	2500 Tape & Reel
MJD350	DPAK	369C	75 Units / Rail
MJD350T4	DPAK	369C	2500 Tape & Reel

[†]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.

TYPICAL CHARACTERISTICS

MJD340

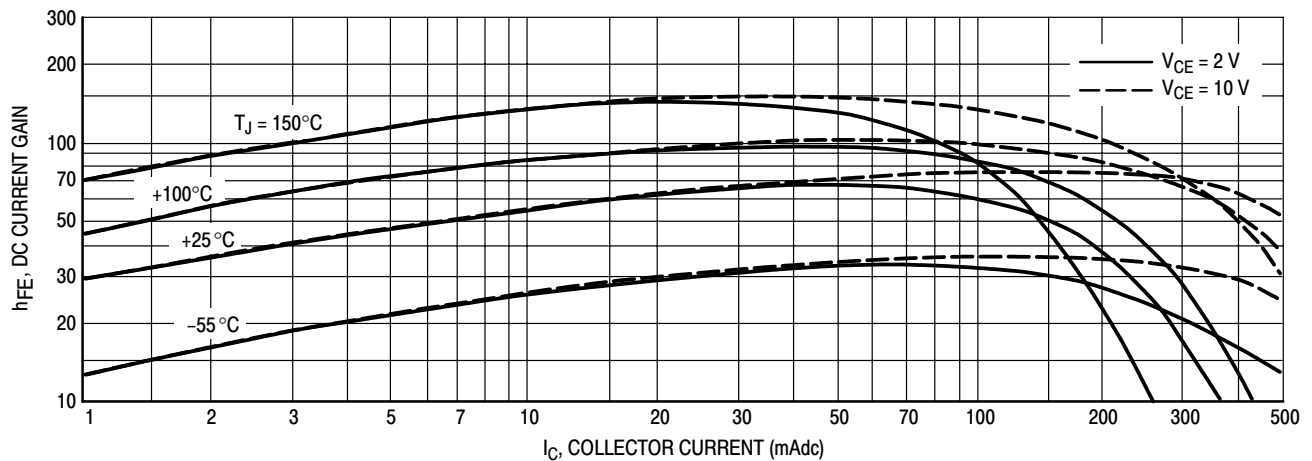


Figure 1. DC Current Gain

MJD340 (NPN) MJD350 (PNP)

MJD340

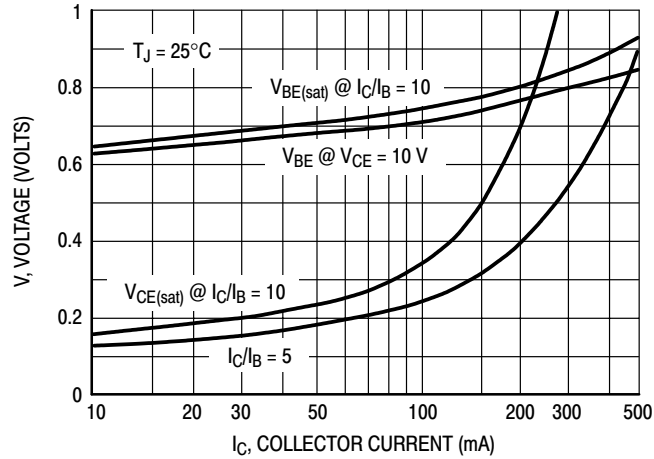


Figure 2. "On" Voltages

MJD350

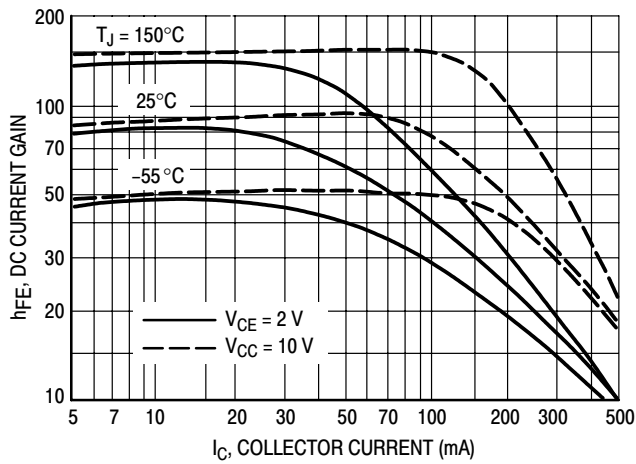


Figure 3. DC Current Gain

MJD350

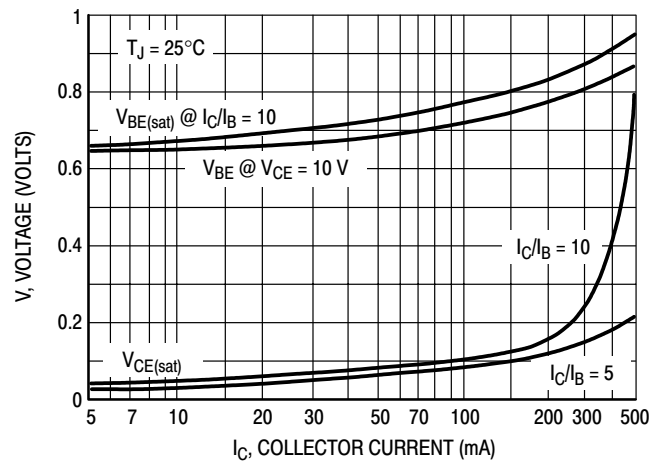


Figure 4. "On" Voltages

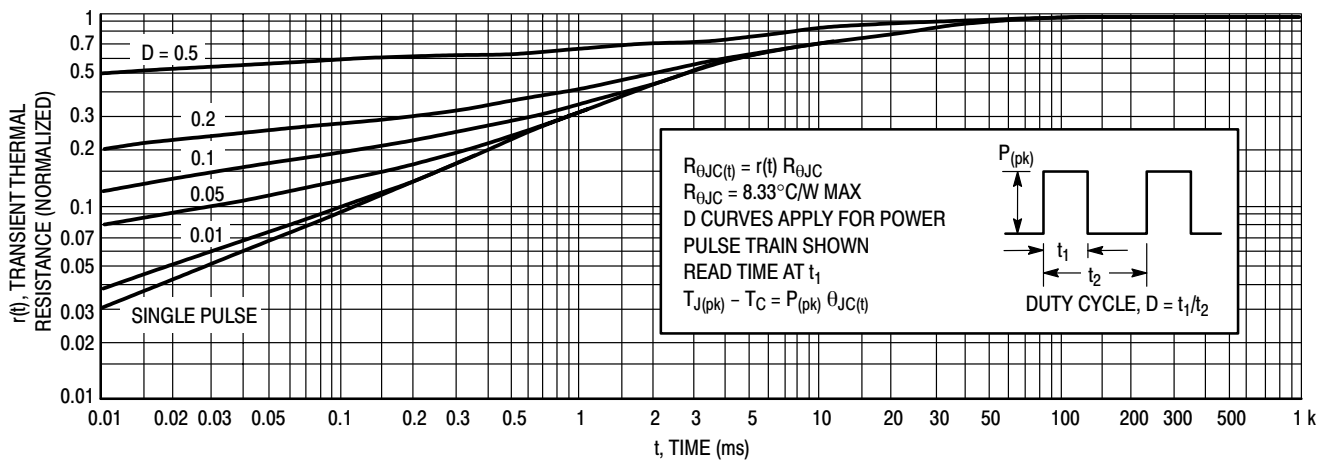


Figure 5. Thermal Response

MJD340 (NPN) MJD350 (PNP)

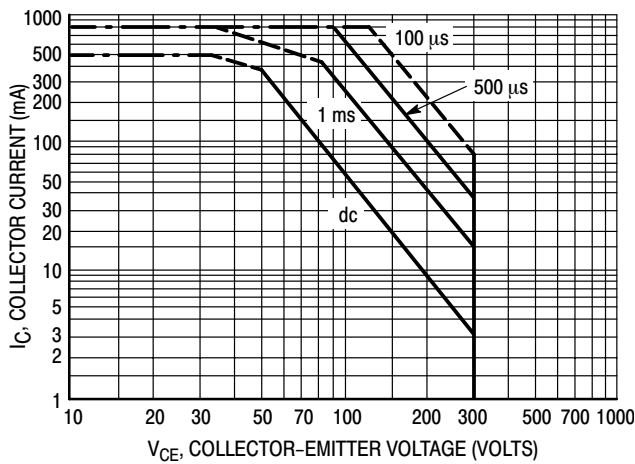


Figure 6. Active Region Safe Operating Area

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.

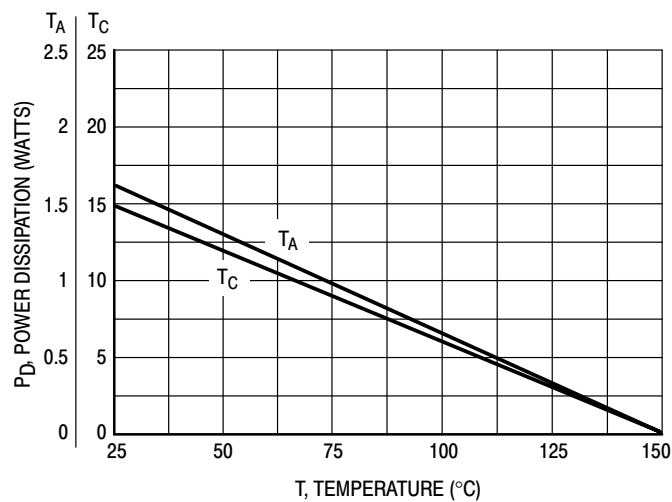
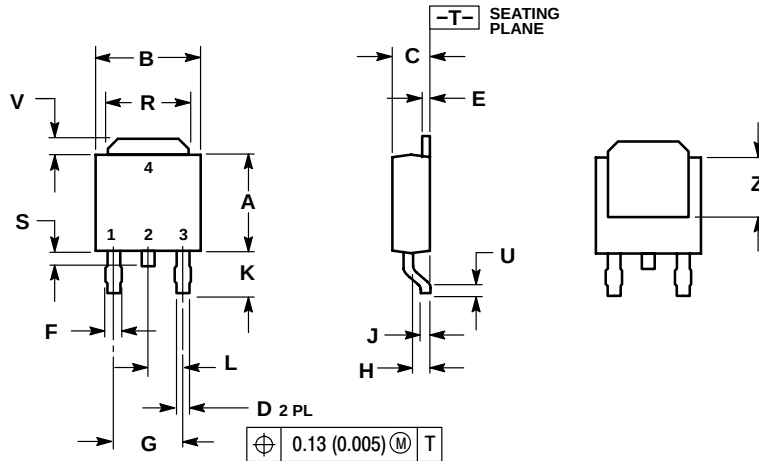


Figure 7. Power Derating

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PACKAGE DIMENSIONS

DPAK
CASE 369C
ISSUE O

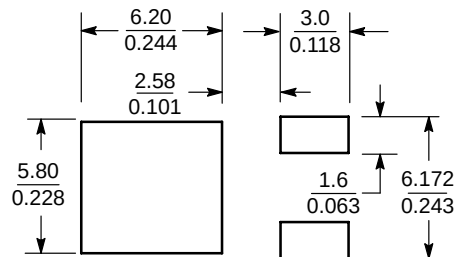


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

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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