

NPN Darlington Power Transistor

NJD35N04G, NJVNJD35N04G, NJVNJD35N04T4G

This high voltage power Darlington has been specifically designed for inductive applications such as Electronic Ignition, Switching Regulators and Motor Control.

Features

- Exceptional Safe Operating Area
- High V_{CE} ; High Current Gain
- NJV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These are Pb-Free Devices*

Benefits

- Reliable Performance at Higher Powers
- Designed for Inductive Loads
- Very Low Current Requirements

Applications

- Internal Combustion Engine Ignition Control
- Switching Regulators
- Motor Controls
- Light Ballast
- Photo Flash

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Sustaining Voltage	V_{CEO}	350	Vdc
Collector-Base Breakdown Voltage	V_{CBO}	700	Vdc
Collector-Emitter Breakdown Voltage	V_{CES}	700	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current Continuous	I_C	4.0	Adc
Peak	I_{CM}	8.0	
Base Current	I_B	0.5	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	45 0.36	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

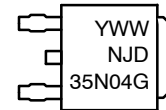
* For additional information on our Pb-Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques Reference Manual, [SOLDERRM/D](#).

DARLINGTON POWER TRANSISTORS 4 AMPERES 350 VOLTS 45 WATTS



DPAK3
CASE 369C
STYLE 1

MARKING DIAGRAM



Y = Year
WW = Work Week
NJD35N04 = Device Code
G = Pb-Free Device

ORDERING INFORMATION

Device	Package	Shipping†
NJD35N04G	DPAK3 (Pb-Free)	75 Units / Rail
NJD35N04T4G	DPAK3 (Pb-Free)	2,500 / Tape & Reel
NJVNJD35N04T4G	DPAK3 (Pb-Free)	2,500 / Tape & Reel

DISCONTINUED (Note 1)

NJVNJD35N04G	DPAK3 (Pb-Free)	75 Units / Rail
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† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

1. **DISCONTINUED:** This device is not available. Please contact your onsemi representative for information. The most current information on this device may be available on [www.onsemi.com](#).

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance Junction-to-Case Junction-to-Ambient	$R_{\theta JC}$ $R_{\theta JA}$	2.78 71.4	$^{\circ}\text{C/W}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage ($I_C = 10\text{ mA}$, $L = 10\text{ mH}$)	$V_{CEO(sus)}$	350	–	–	V
Collector Cutoff Current ($V_{CE} = 500\text{ V}$) ($I_B = 0$) ($V_{CE} = 500\text{ V}$, $T_C = 125^{\circ}\text{C}$)	I_{CES}	–	–	50 250	μA
Collector Cutoff Current ($V_{CE} = 250\text{ V}$) ($I_B = 0$) ($V_{CE} = 200\text{ V}$, $T_C = 125^{\circ}\text{C}$)	I_{CEO}	–	–	50 250	μA
Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$)	I_{EBO}	–	–	5.0	μA

ON CHARACTERISTICS

Collector-Emitter Saturation Voltage ($I_C = 2.0\text{ A}$, $I_B = 20\text{ mA}$) ($I_C = 2.0\text{ A}$, $I_B = 20\text{ mA}$ 125°C)	$V_{CE(sat)}$	– –	– –	1.5 1.5	V
Base-Emitter Saturation Voltage ($I_C = 2.0\text{ A}$, $I_B = 20\text{ mA}$) ($I_C = 2.0\text{ A}$, $I_B = 20\text{ mA}$ 125°C)	$V_{BE(sat)}$	– –	– –	2.0 2.0	V
Base-Emitter On Voltage ($I_C = 2.0\text{ A}$, $V_{CE} = 2.0\text{ V}$) ($I_C = 2.0\text{ A}$, $V_{CE} = 2.0\text{ V}$ 125°C)	$V_{BE(on)}$	– –	– –	2.0 2.0	V
DC Current Gain ($I_C = 2.0\text{ A}$, $V_{CE} = 2.0\text{ V}$) ($I_C = 4.0\text{ A}$, $V_{CE} = 2.0\text{ Vdc}$)	h_{FE}	2000 300	– –	– –	–

DYNAMIC CHARACTERISTICS

Current-Gain – Bandwidth Product ($I_C = 2.0\text{ A}$, $V_{CE} = 10\text{ V}$, $f = 1.0\text{ MHz}$)	f_T	90	–	–	MHz
Output Capacitance ($V_{CB} = 10\text{ V}$, $I_E = 0$, $f = 0.1\text{ MHz}$)	C_{ob}	–	60	–	pF

SWITCHING CHARACTERISTICS

$V_{CC} = 12\text{ V}$, $V_{clamp} = 250\text{ V}$, $L = 4\text{ mH}$ $I_C = 2\text{ A}$, $I_{B1} = 20\text{ mA}$, $I_{B2} = -20\text{ mA}$	t_s t_f	– –	18 0.8	– –	μSec
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Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

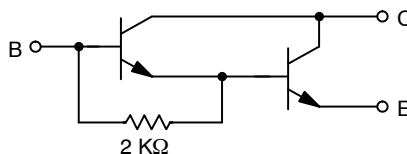


Figure 1. Darlington Circuit Schematic

TYPICAL CHARACTERISTICS

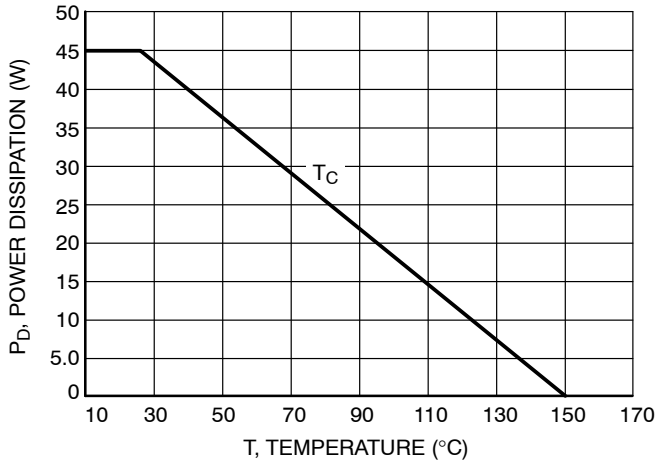


Figure 2. Power Derating

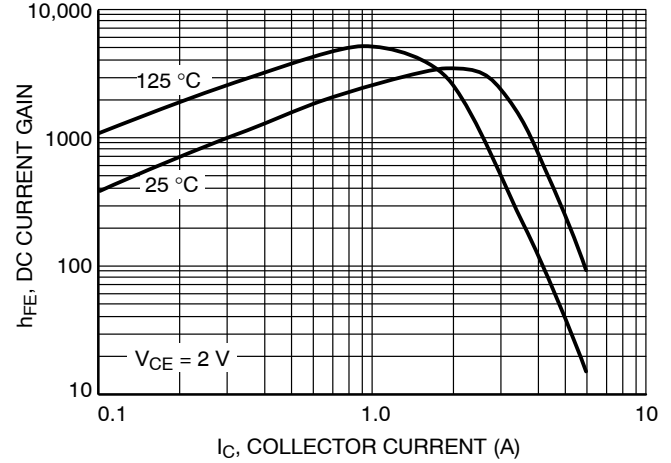


Figure 3. DC Current Gain

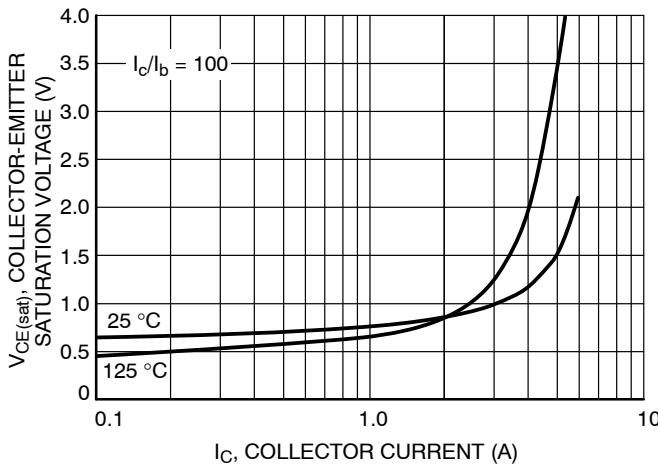


Figure 4. Collector-Emitter Saturation Voltage

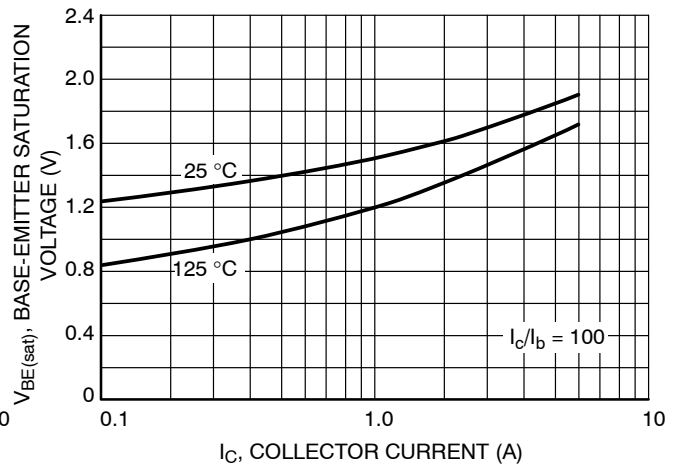


Figure 5. Base-Emitter Saturation Voltage

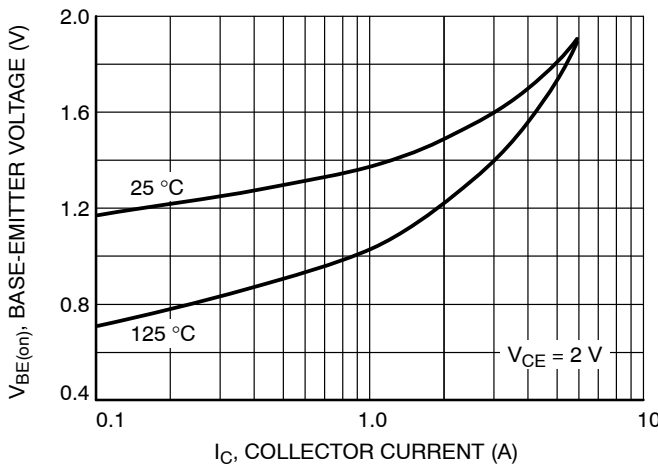


Figure 6. Base-Emitter Voltage

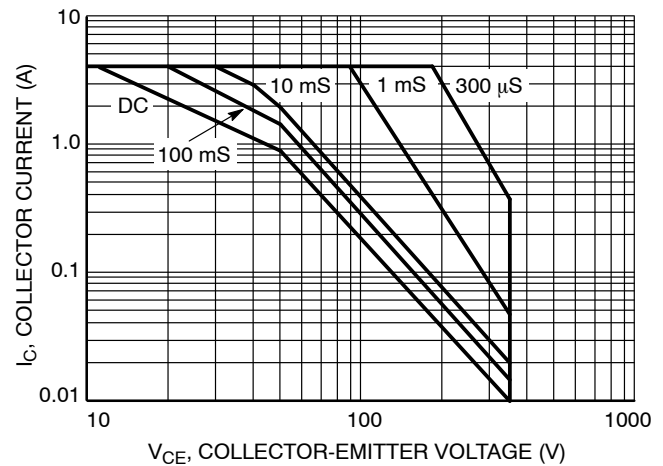


Figure 7. Forward Bias Safe Operating Area (FBSOA)

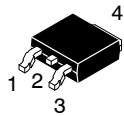
NJD35N04G, NJVNJD35N04G, NJVNJD35N04T4G

REVISION HISTORY

Revision	Description of Changes	Date
6	Document rebranded to onsemi format. OPN NJVNJD35N04G marked as discontinued.	2/5/2026

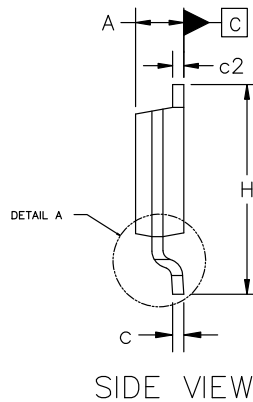
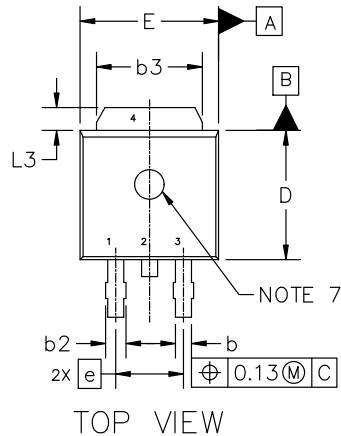
This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.



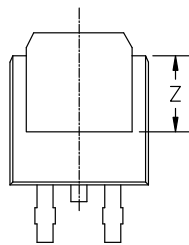

DPAK-3 6.10x6.54x2.28, 2.29P
CASE 369C
ISSUE K

DATE 14 MAY 2026

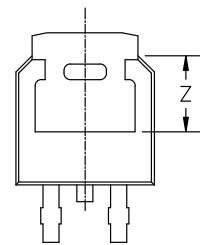
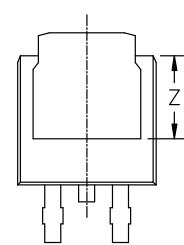
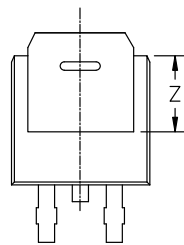
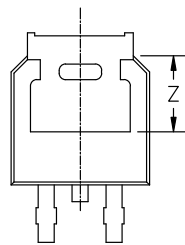
SCALE 1:1



MILLIMETERS			
DIM	MIN	NOM	MAX
A	2.18	2.28	2.38
A1	0.00	---	0.13
b	0.63	0.76	0.89
b2	0.72	0.93	1.14
b3	4.57	5.02	5.46
c	0.46	0.54	0.61
c2	0.46	0.54	0.61
D	5.97	6.10	6.22
E	6.35	6.54	6.73
e	2.29 BSC		
H	9.40	9.91	10.41
L	1.40	1.59	1.78
L1	2.90 REF		
L2	0.51 BSC		
L3	0.89	---	1.27
L4	---	---	1.01
Z	3.93	---	---



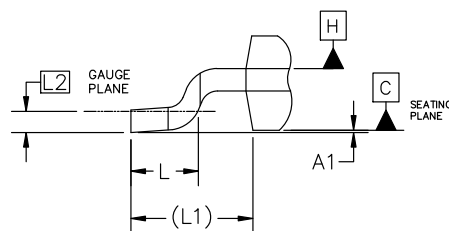
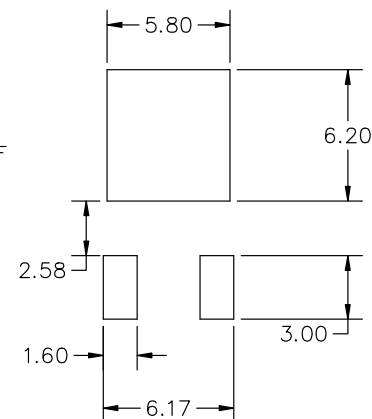
BOTTOM VIEW



ALTERNATE CONSTRUCTIONS

NOTES:

1. DIMENSIONING AND TOLERANCING ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3, AND Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
7. OPTIONAL MOLD FEATURE.


DETAIL A
ROTATED 90° CW


RECOMMENDED MOUNTING FOOTPRINT*

*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ONSEMI SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

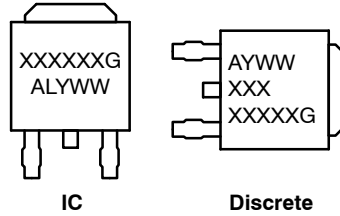
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**DPAK–3 6.10x6.54x2.28, 2.29P
 CASE 369C
 ISSUE K**

DATE 13 MAY 2026

**GENERIC
 MARKING DIAGRAM***



XXXXXX = Device Code
 A = Assembly Location
 L = Wafer Lot
 Y = Year
 WW = Work Week
 G = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

STYLE 1: PIN 1. BASE 2. COLLECTOR 3. EMITTER 4. COLLECTOR	STYLE 2: PIN 1. GATE 2. DRAIN 3. SOURCE 4. DRAIN	STYLE 3: PIN 1. ANODE 2. CATHODE 3. ANODE 4. CATHODE	STYLE 4: PIN 1. CATHODE 2. ANODE 3. GATE 4. ANODE	STYLE 5: PIN 1. GATE 2. ANODE 3. CATHODE 4. ANODE
STYLE 6: PIN 1. MT1 2. MT2 3. GATE 4. MT2	STYLE 7: PIN 1. GATE 2. COLLECTOR 3. EMITTER 4. COLLECTOR	STYLE 8: PIN 1. N/C 2. CATHODE 3. ANODE 4. CATHODE	STYLE 9: PIN 1. ANODE 2. CATHODE 3. RESISTOR ADJUST 4. CATHODE	STYLE 10: PIN 1. CATHODE 2. ANODE 3. CATHODE 4. ANODE

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