

# MJE270 Datasheet



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	MJE270-DG
Manufacturer	<a href="#">onsemi</a>
Manufacturer Product Number	MJE270
Description	TRANS NPN DARL 100V 2A TO126
Detailed Description	Bipolar (BJT) Transistor NPN - Darlington 100 V 2 A 6MHz 1.5 W Through Hole TO-126



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## Purchase and inquiry

Manufacturer Product Number:

MJE270

Series:

-

Transistor Type:

NPN - Darlington

Voltage - Collector Emitter Breakdown (Max):

100 V

Current - Collector Cutoff (Max):

1mA

Power - Max:

1.5 W

Operating Temperature:

-65°C ~ 150°C (TJ)

Package / Case:

TO-225AA, TO-126-3

Base Product Number:

MJE27

Manufacturer:

onsemi

Product Status:

Obsolete

Current - Collector (Ic) (Max):

2 A

Vce Saturation (Max) @ Ib, Ic:

3V @ 1.2mA, 120mA

DC Current Gain (hFE) (Min) @ Ic, Vce:

1500 @ 120mA, 10V

Frequency - Transition:

6MHz

Mounting Type:

Through Hole

Supplier Device Package:

TO-126

## Environmental & Export classification

RoHS Status:

RoHS non-compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

# Complementary Silicon Power Transistors

## MJE270G (NPN), MJE271G (PNP)

### Features

- High Safe Operating Area  
 $I_{S/B} @ 40 \text{ V}, 1.0 \text{ s} = 0.375 \text{ A}$
- Collector–Emitter Sustaining Voltage  
 $V_{CEO(sus)} = 100 \text{ Vdc (Min)}$
- High DC Current Gain  
 $h_{FE} @ 120 \text{ mA}, 10 \text{ V} = 1500 \text{ (Min)}$
- These Devices are Pb–Free and are RoHS Compliant

### MAXIMUM RATINGS

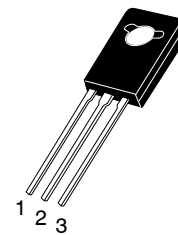
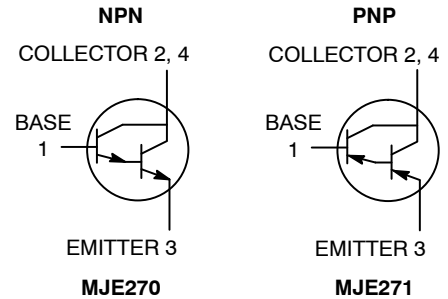
Rating	Symbol	Value	Unit
Collector–Emitter Voltage	$V_{CEO}$	100	Vdc
Collector–Base Voltage	$V_{CB}$	100	Vdc
Emitter–Base Voltage	$V_{EB}$	5.0	Vdc
Collector Current – Continuous	$I_C$	2.0	Adc
Collector Current – Peak	$I_{CM}$	4.0	Adc
Base Current	$I_B$	0.1	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	15 0.12	W W/ $^\circ\text{C}$
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.5 0.012	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.

### THERMAL CHARACTERISTICS

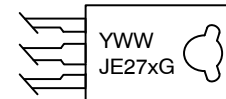
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction–to–Case	$R_{\theta JC}$	8.33	$^\circ\text{C/W}$
Thermal Resistance, Junction–to–Ambient	$R_{\theta JA}$	83.3	$^\circ\text{C/W}$

## 2.0 AMPERE COMPLEMENTARY POWER DARLINGTON TRANSISTORS 100 VOLTS, 15 WATTS



TO–225  
CASE 77–09  
STYLE 3

### MARKING DIAGRAM



- Y = Year  
 WW = Work Week  
 JE27x = Specific Device Code  
 x = 0 or 1  
 G = Pb–Free Package

### ORDERING INFORMATION

Device	Package	Shipping†
MJE270G	TO–225 (Pb–Free)	500 Units / Box
MJE270TG	TO–225 (Pb–Free)	50 Units / Box

### DISCONTINUED (Note 1)

MJE271G	TO–225 (Pb–Free)	500 Units / Box
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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 Specifications Brochure, [BRD8011/D](#).

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

## MJE270G (NPN), MJE271G (PNP)

### ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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#### OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage (Note 2) (I <sub>C</sub> = 10 mA <sub>dc</sub> , I <sub>B</sub> = 0)	V <sub>CEO(sus)</sub>	100	-	Vdc
Collector Cutoff Current (V <sub>CE</sub> = 100 Vdc, I <sub>B</sub> = 0)	I <sub>CEO</sub>	-	1.0	mA <sub>dc</sub>
Collector Cutoff Current (V <sub>CB</sub> = 100 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	-	0.3	mA <sub>dc</sub>
Emitter Cutoff Current (V <sub>BE</sub> = 5.0 Vdc, I <sub>C</sub> = 0)	I <sub>EBO</sub>	-	0.1	mA <sub>dc</sub>

#### SECOND BREAKDOWN

Second Breakdown Collector Current with Base Forward Biased (V <sub>CE</sub> = 40 Vdc, t = 1.0 s, Non-repetitive)	I <sub>S/b</sub>	375	-	A <sub>dc</sub>
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#### ON CHARACTERISTICS (Note 2)

DC Current Gain (I <sub>C</sub> = 20 mA <sub>dc</sub> , V <sub>CE</sub> = 3.0 Vdc) (I <sub>C</sub> = 120 mA <sub>dc</sub> , V <sub>CE</sub> = 10 Vdc)	h <sub>FE</sub>	500 1500	- -	-
Collector-Emitter Saturation Voltage (I <sub>C</sub> = 20 mA <sub>dc</sub> , I <sub>B</sub> = 0.2 mA <sub>dc</sub> ) (I <sub>C</sub> = 120 mA <sub>dc</sub> , I <sub>B</sub> = 1.2 mA <sub>dc</sub> )	V <sub>CE(sat)</sub>	- -	2.0 3.0	Vdc
Base-Emitter On Voltage (I <sub>C</sub> = 120 mA <sub>dc</sub> , V <sub>CE</sub> = 10 Vdc)	V <sub>BE(on)</sub>	-	2.0	Vdc

#### DYNAMIC CHARACTERISTICS

Current Gain – Bandwidth Product (Note 3) (I <sub>C</sub> = 0.05 A <sub>dc</sub> , V <sub>CE</sub> = 5.0 Vdc, f <sub>test</sub> = 1.0 MHz)	f <sub>T</sub>	6.0	-	MHz
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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.

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

3. f<sub>T</sub> = |h<sub>fe</sub>| • f<sub>test</sub>.

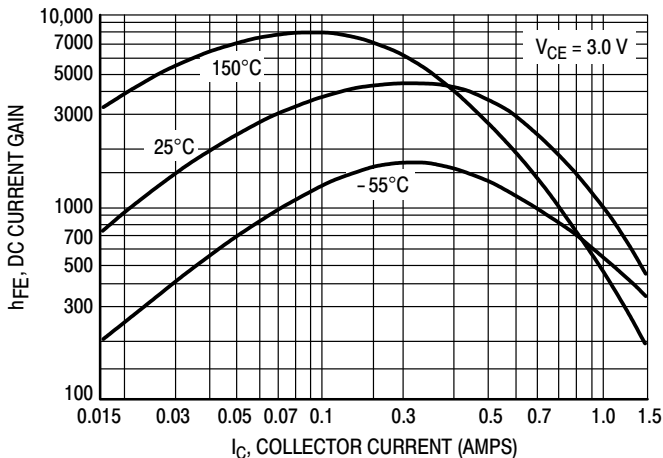


Figure 1. DC Current Gain

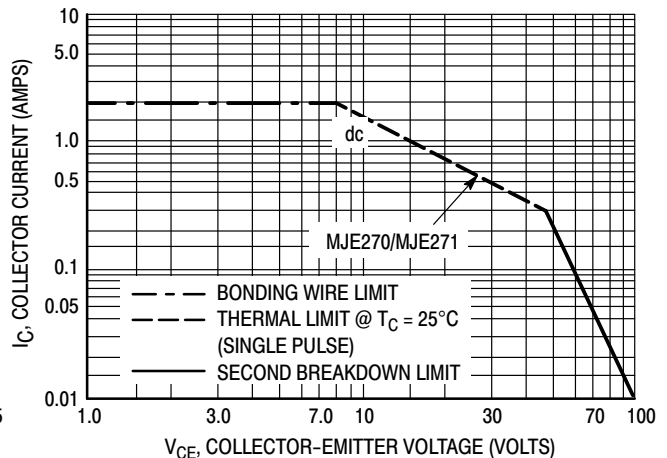
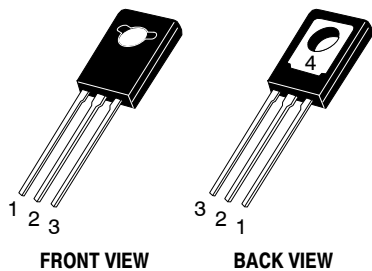


Figure 2. Safe Operating Area



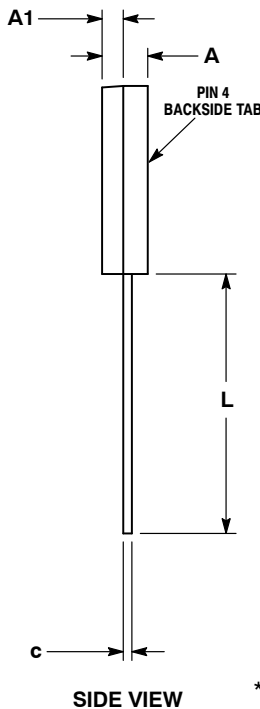
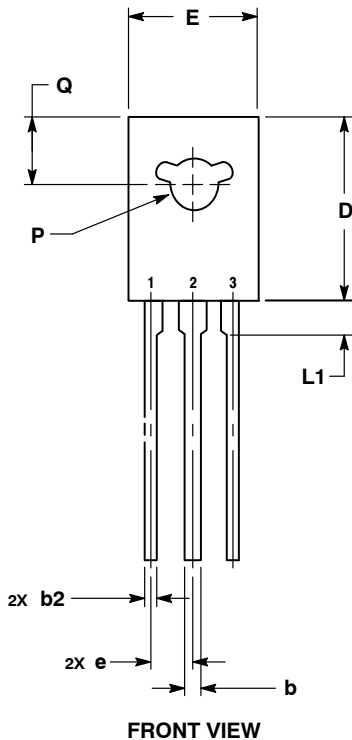
**MECHANICAL CASE OUTLINE  
PACKAGE DIMENSIONS**



**TO-225  
CASE 77-09  
ISSUE AD**

DATE 25 MAR 2015

SCALE 1:1

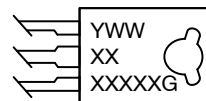


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. NUMBER AND SHAPE OF LUGS OPTIONAL.

MILLIMETERS		
DIM	MIN	MAX
A	2.40	3.00
A1	1.00	1.50
b	0.60	0.90
b2	0.51	0.88
c	0.39	0.63
D	10.60	11.10
E	7.40	7.80
e	2.04	2.54
L	14.50	16.63
L1	1.27	2.54
P	2.90	3.30
Q	3.80	4.20

**GENERIC MARKING DIAGRAM\***



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

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

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|--|--|--|--|--|
| <p><b>STYLE 1:</b><br/>PIN 1. EMITTER<br/>2., 4. COLLECTOR<br/>3. BASE</p> | <p><b>STYLE 2:</b><br/>PIN 1. CATHODE<br/>2., 4. ANODE<br/>3. GATE</p> | <p><b>STYLE 3:</b><br/>PIN 1. BASE<br/>2., 4. COLLECTOR<br/>3. EMITTER</p> | <p><b>STYLE 4:</b><br/>PIN 1. ANODE 1<br/>2., 4. ANODE 2<br/>3. GATE</p> | <p><b>STYLE 5:</b><br/>PIN 1. MT 1<br/>2., 4. MT 2<br/>3. GATE</p>     |
| <p><b>STYLE 6:</b><br/>PIN 1. CATHODE<br/>2., 4. GATE<br/>3. ANODE</p>     | <p><b>STYLE 7:</b><br/>PIN 1. MT 1<br/>2., 4. GATE<br/>3. MT 2</p>     | <p><b>STYLE 8:</b><br/>PIN 1. SOURCE<br/>2., 4. GATE<br/>3. DRAIN</p>      | <p><b>STYLE 9:</b><br/>PIN 1. GATE<br/>2., 4. DRAIN<br/>3. SOURCE</p>    | <p><b>STYLE 10:</b><br/>PIN 1. SOURCE<br/>2., 4. DRAIN<br/>3. GATE</p> |

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<b>DESCRIPTION:</b> TO-225	<b>PAGE 1 OF 1</b>

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