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MJE270G (NPN), MJE271G (PNP)

Complementary Silicon Power Transistors

Features

- High Safe Operating Area
 $I_{S/B} @ 40 V, 1.0 s = 0.375 A$
- Collector–Emitter Sustaining Voltage
 $V_{CEO(sus)} = 100 Vdc (Min)$
- High DC Current Gain
 $h_{FE} @ 120 mA, 10 V = 1500 (Min)$
- 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 @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	15 0.12	W W/ $^\circ C$
Total Power Dissipation @ $T_A = 25^\circ C$ Derate above $25^\circ C$	P_D	1.5 0.012	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–65 to +150	$^\circ C$

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

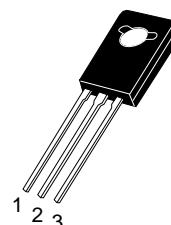
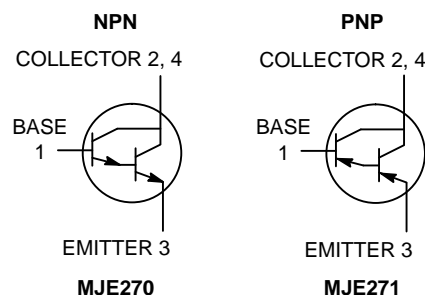
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction–to–Case	$R_{\theta JC}$	8.33	$^\circ C/W$
Thermal Resistance, Junction–to–Ambient	$R_{\theta JA}$	83.3	$^\circ C/W$



ON Semiconductor®

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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
MJE271G	TO–225 (Pb–Free)	500 Units/Box

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (Note 1) ($I_C = 10\text{ mAdc}$, $I_B = 0$)	$V_{CEO(sus)}$	100	–	Vdc
Collector Cutoff Current ($V_{CE} = 100\text{ Vdc}$, $I_B = 0$)	I_{CEO}	–	1.0	mAdc
Collector Cutoff Current ($V_{CB} = 100\text{ Vdc}$, $I_E = 0$)	I_{CBO}	–	0.3	mAdc
Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	–	0.1	mAdc
SECOND BREAKDOWN				
Second Breakdown Collector Current with Base Forward Biased ($V_{CE} = 40\text{ Vdc}$, $t = 1.0\text{ s}$, Non-repetitive)	$I_{S/b}$	375	–	Adc
ON CHARACTERISTICS (Note 1)				
DC Current Gain ($I_C = 20\text{ mAdc}$, $V_{CE} = 3.0\text{ Vdc}$) ($I_C = 120\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$)	h_{FE}	500 1500	– –	–
Collector-Emitter Saturation Voltage ($I_C = 20\text{ mAdc}$, $I_B = 0.2\text{ mAdc}$) ($I_C = 120\text{ mAdc}$, $I_B = 1.2\text{ mAdc}$)	$V_{CE(sat)}$	– –	2.0 3.0	Vdc
Base-Emitter On Voltage ($I_C = 120\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$)	$V_{BE(on)}$	–	2.0	Vdc
DYNAMIC CHARACTERISTICS				
Current Gain – Bandwidth Product (Note 2) ($I_C = 0.05\text{ Adc}$, $V_{CE} = 5.0\text{ Vdc}$, $f_{test} = 1.0\text{ MHz}$)	f_T	6.0	–	MHz

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.

1. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

2. $f_T = |h_{fe}| \cdot f_{test}$.

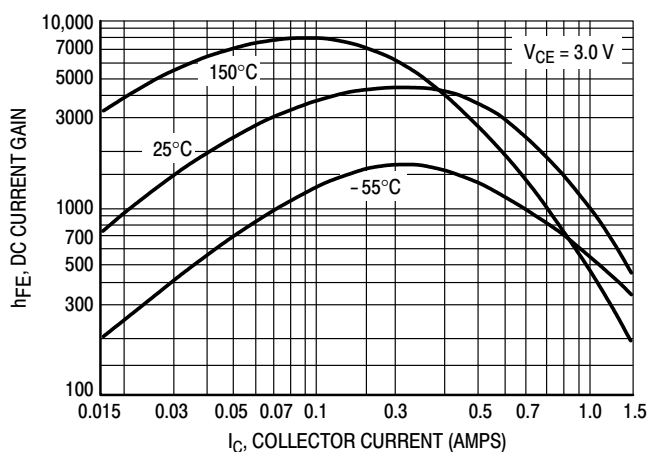


Figure 1. DC Current Gain

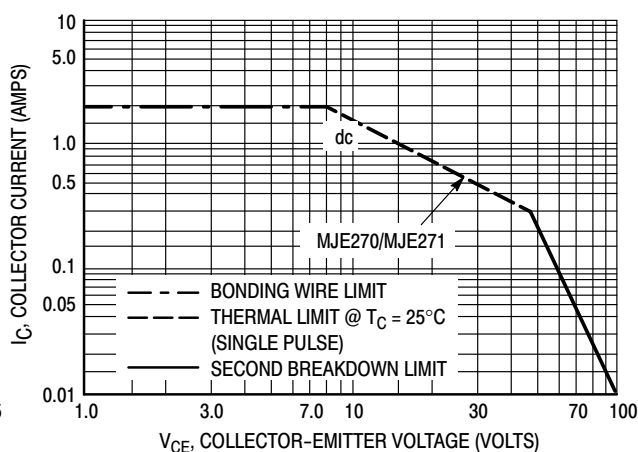
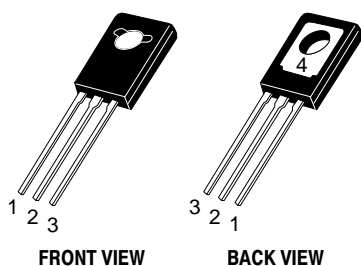


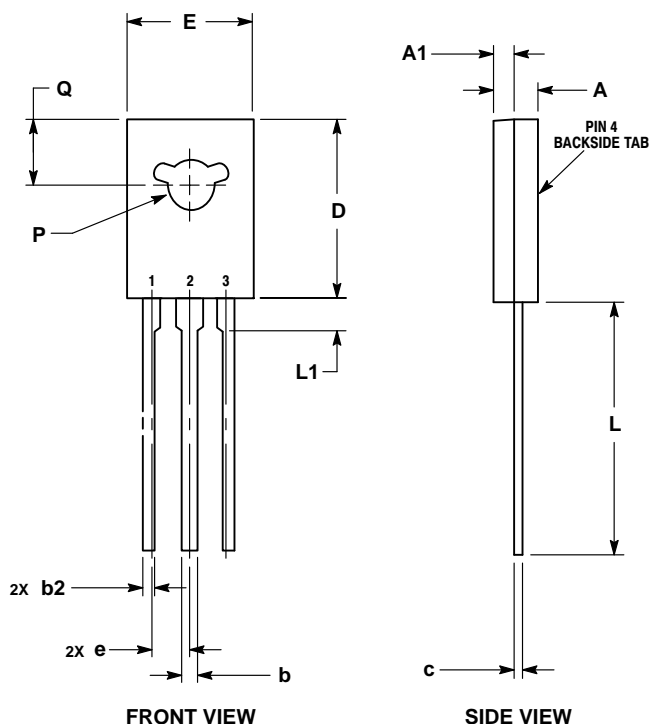
Figure 2. Safe Operating Area

MJE270G (NPN), MJE271G (PNP)

PACKAGE DIMENSIONS



TO-225
CASE 77-09
ISSUE AC




NOTES:

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

DIM	MILLIMETERS	
	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

STYLE 3:

- PIN 1. BASE
2., 4. COLLECTOR
3. EMITTER

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