

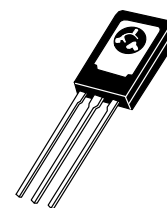
# Complementary Silicon Power Transistors

... designed specifically for use with the MC3419 Solid-State Subscriber Loop Interface Circuit (SLIC).

- High Safe Operating Area  
IS/B @ 40 V, 1.0 s = 0.375 A — TO-126
- Collector-Emitter Sustaining Voltage  
V<sub>CEO(sus)</sub> = 100 Vdc (Min)
- High DC Current Gain  
h<sub>FE</sub> @ 120 mA, 10 V = 1500 (Min)

**NPN**  
**MJE270**  
**PNP**  
**MJE271**

**2.0 AMPERE**  
**COMPLEMENTARY**  
**POWER DARLINGTON**  
**TRANSISTORS**  
**100 VOLTS**  
**15 WATTS**



**CASE 77-08**  
**TO-225AA TYPE**

## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	100	Vdc
Collector-Base Voltage	V <sub>CB</sub>	100	Vdc
Emitter-Base Voltage	V <sub>EB</sub>	5.0	Vdc
Collector Current — Continuous — Peak	I <sub>C</sub>	2.0 4.0	Adc
Base Current	I <sub>B</sub>	0.1	Adc
Total Power Dissipation @ T <sub>C</sub> = 25°C Derate above 25°C	P <sub>D</sub>	15 0.12	Watts W/°C
Total Power Dissipation @ T <sub>A</sub> = 25°C Derate above 25°C	P <sub>D</sub>	1.5 0.012	Watts W/°C
Operating and Storage Junction Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-65 to +150	°C

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	8.33	°C/W
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	83.3	°C/W

# MJE270 MJE271

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector–Emitter Sustaining Voltage (1) (I <sub>C</sub> = 10 mAdc, 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	mAdc
Collector Cutoff Current (V <sub>CB</sub> = 100 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	—	0.3	mAdc
Emitter Cutoff Current (V <sub>BE</sub> = 5.0 Vdc, I <sub>C</sub> = 0)	I <sub>EBO</sub>	—	0.1	mAdc

## 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	—	Adc
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## ON CHARACTERISTICS (1)

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

## DYNAMIC CHARACTERISTICS

Current Gain — Bandwidth Product (2) (I <sub>C</sub> = 0.05 Adc, 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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### NOTES:

- (1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
- (2) f<sub>T</sub> = |h<sub>fe</sub>| • f<sub>test</sub>.

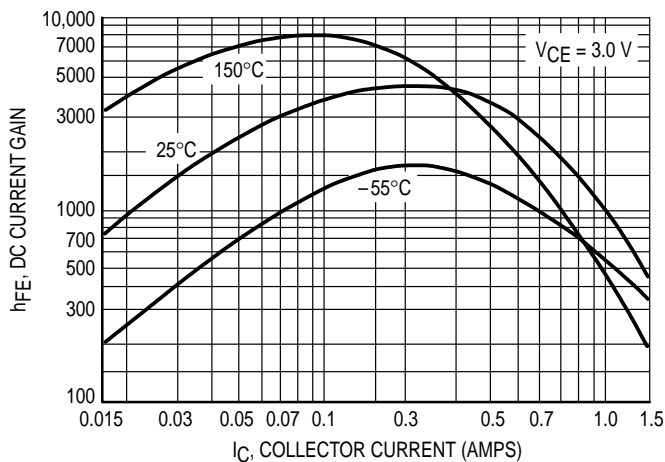


Figure 1. DC Current Gain

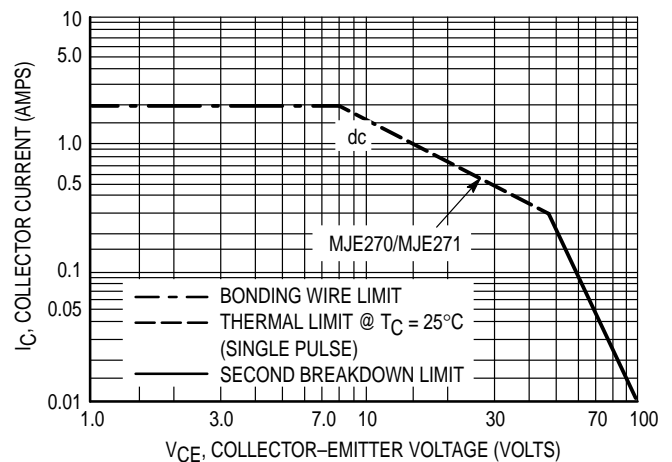
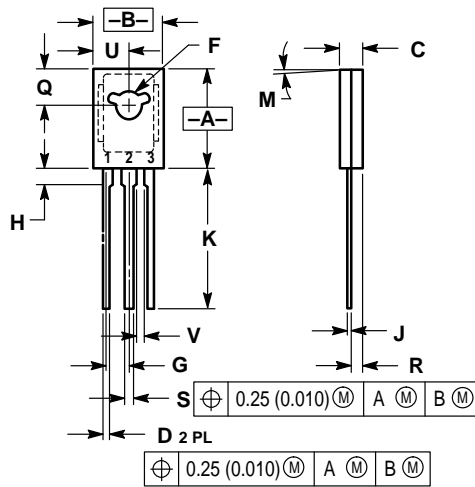


Figure 2. Safe Operating Area

PACKAGE DIMENSIONS



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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.055	1.15	1.39
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	—	1.02	—

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

CASE 77-08  
 TO-225AA TYPE  
 ISSUE V

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