

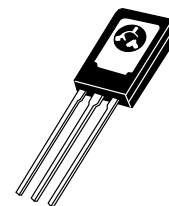
Complementary Silicon Power Transistors

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

- High Safe Operating Area
I_{S/B} @ 40 V, 1.0 s = 0.375 A — TO-126
- Collector-Emitter Sustaining Voltage
V_{CEO(sus)} = 100 Vdc (Min)
- High DC Current Gain
h_{FE} @ 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 _{CEO} | 100 | Vdc |
| Collector-Base Voltage | V _{CB} | 100 | Vdc |
| Emitter-Base Voltage | V _{EB} | 5.0 | Vdc |
| Collector Current — Continuous — Peak | I _C | 2.0 4.0 | Adc |
| Base Current | I _B | 0.1 | Adc |
| Total Power Dissipation @ T _C = 25°C Derate above 25°C | P _D | 15 0.12 | Watts W/°C |
| Total Power Dissipation @ T _A = 25°C Derate above 25°C | P _D | 1.5 0.012 | Watts W/°C |
| Operating and Storage Junction Temperature Range | T _J , T _{stg} | -65 to +150 | °C |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|------------------|------|------|
| Thermal Resistance, Junction to Case | R _{θJC} | 8.33 | °C/W |
| Thermal Resistance, Junction to Ambient | R _{θJA} | 83.3 | °C/W |

MJE270 MJE271

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

| Characteristic | Symbol | Min | Max | Unit |
|--|-----------------------|-----|-----|------|
| OFF CHARACTERISTICS | | | | |
| Collector–Emitter Sustaining Voltage (1) (I _C = 10 mAdc, I _B = 0) | V _{CEO(sus)} | 100 | — | Vdc |
| Collector Cutoff Current (V _{CE} = 100 Vdc, I _B = 0) | I _{CEO} | — | 1.0 | mAdc |
| Collector Cutoff Current (V _{CB} = 100 Vdc, I _E = 0) | I _{CBO} | — | 0.3 | mAdc |
| Emitter Cutoff Current (V _{BE} = 5.0 Vdc, I _C = 0) | I _{EBO} | — | 0.1 | mAdc |

SECOND BREAKDOWN

| | | | | |
|--|------------------|-----|---|-----|
| Second Breakdown Collector Current with Base Forward Biased (V _{CE} = 40 Vdc, t = 1.0 s, non–repetitive) | I _{S/b} | 375 | — | Adc |
|--|------------------|-----|---|-----|

ON CHARACTERISTICS (1)

| | | | | |
|---|----------------------|-------------|------------|-----|
| DC Current Gain (I _C = 20 mAdc, V _{CE} = 3.0 Vdc) (I _C = 120 mAdc, V _{CE} = 10 Vdc) | h _{FE} | 500 1500 | — | — |
| Collector–Emitter Saturation Voltage (I _C = 20 mAdc, I _B = 0.2 mAdc) (I _C = 120 mAdc, I _B = 1.2 mAdc) | V _{CE(sat)} | — | 2.0 3.0 | Vdc |
| Base–Emitter On Voltage (I _C = 120 mAdc, V _{CE} = 10 Vdc) | V _{BE(on)} | — | 2.0 | Vdc |

DYNAMIC CHARACTERISTICS

| | | | | |
|---|----------------|-----|---|-----|
| Current Gain — Bandwidth Product (2) (I _C = 0.05 Adc, V _{CE} = 5.0 Vdc, f _{test} = 1.0 MHz) | f _T | 6.0 | — | MHz |
|---|----------------|-----|---|-----|

NOTES:

- (1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
- (2) f_T = |h_{fe}| • f_{test}.

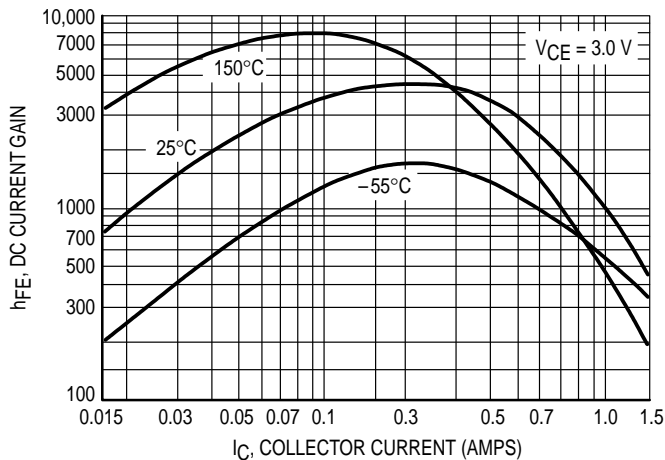


Figure 1. DC Current Gain

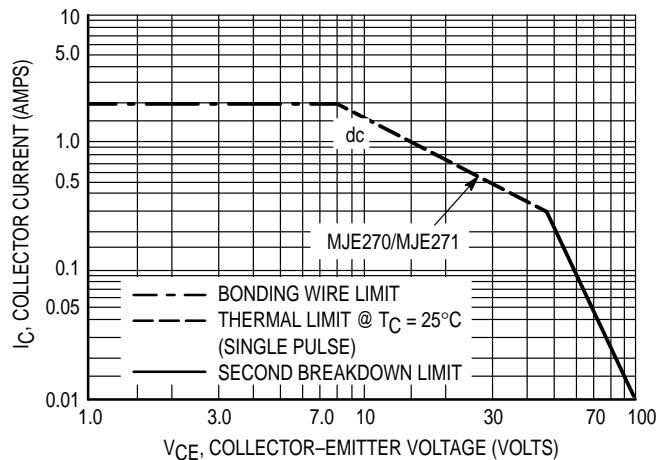
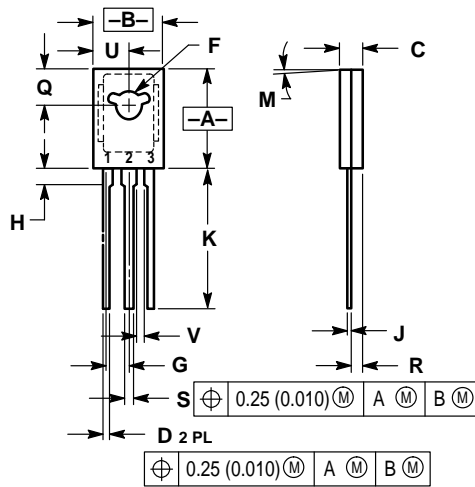


Figure 2. Safe Operating Area

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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