

# Complementary Silicon Power Transistors

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

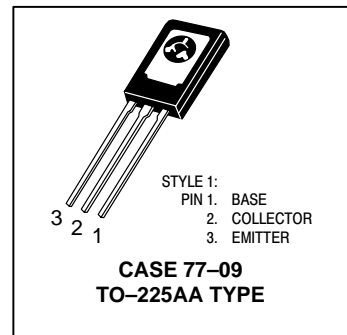
- High Safe Operating Area  
 $I_{S/B} @ 40 \text{ V}, 1.0 \text{ s} = 0.375 \text{ A} \text{ — TO-126}$
- Collector-Emitter Sustaining Voltage  
 $V_{CEO(sus)} = 100 \text{ Vdc (Min)}$
- High DC Current Gain  
 $h_{FE} @ 120 \text{ mA}, 10 \text{ V} = 1500 \text{ (Min)}$

**NPN  
MJE270  
PNP  
MJE271**

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

## 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 @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	15 0.12	Watts 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	Watts W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +150	$^\circ\text{C}$



## 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	$^\circ\text{C/W}$

# MJE270 MJE271

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector–Emitter Sustaining Voltage (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
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## ON CHARACTERISTICS (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 (2) ( $I_C = 0.05\text{ Adc}$ , $V_{CE} = 5.0\text{ Vdc}$ , $f_{test} = 1.0\text{ MHz}$ )	$f_T$	6.0	—	MHz
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### NOTES:

- (1) Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$
- (2)  $f_T = |h_{fe}| \cdot f_{test}$ .

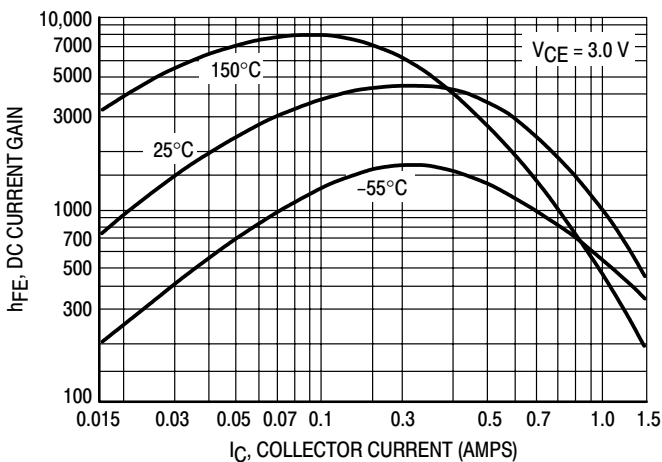


Figure 1. DC Current Gain

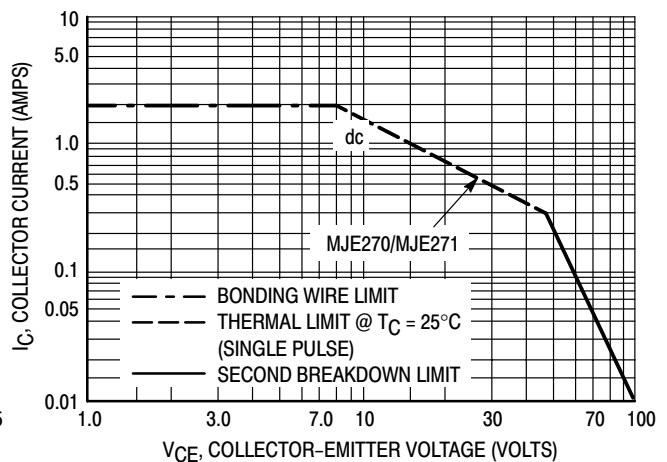
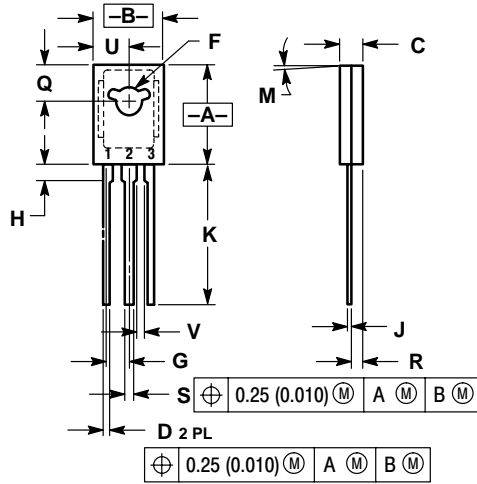


Figure 2. Safe Operating Area

# MJE270 MJE271

## PACKAGE DIMENSIONS

TO-225AA  
CASE 77-09  
ISSUE W




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	0.065	1.15	1.65
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	---	1.02	---

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

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