

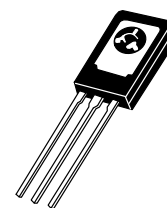
Complementary Silicon Power Transistors

... 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 @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	15 0.12	Watts W/ $^\circ C$
Total Power Dissipation @ $T_A = 25^\circ C$ Derate above $25^\circ C$	P_D	1.5 0.012	Watts W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ C$

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	$^\circ C/W$

MJE270 MJE271

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
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
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

NOTES:

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

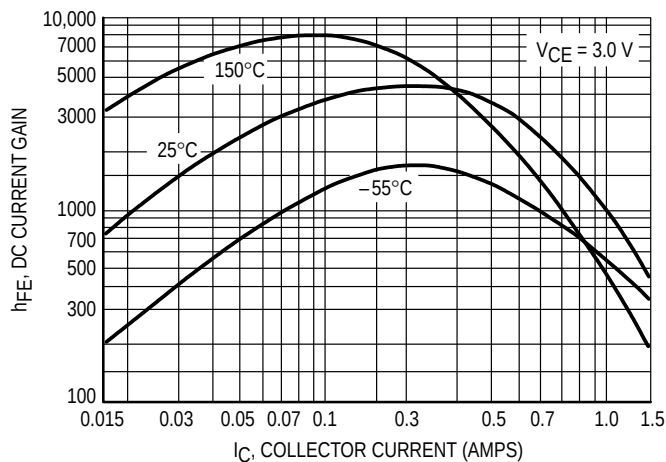


Figure 1. DC Current Gain

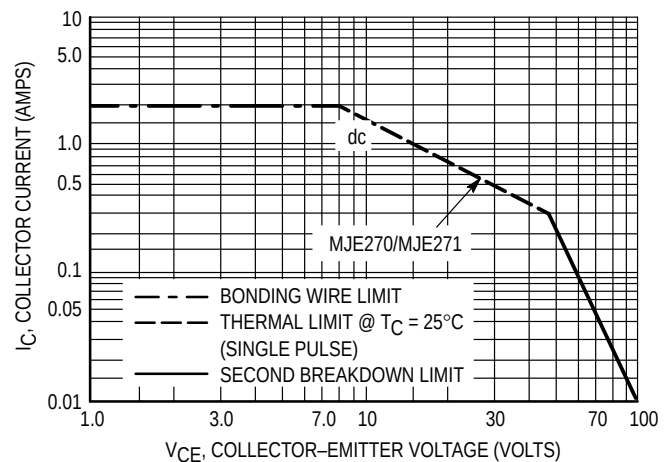
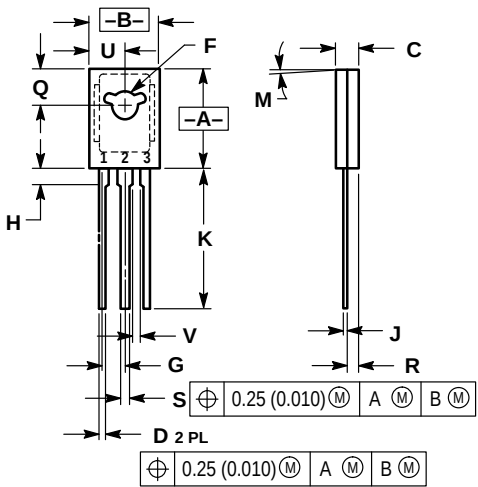


Figure 2. Safe Operating Area

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:
1. BASE
 2. COLLECTOR
 3. EMITTER

CASE 77-08
TO-225AA TYPE
ISSUE V

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