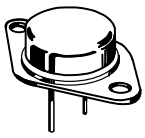
MJ423

High-Voltage NPN Silicon Transistor

. . . designed for medium–to–high voltage inverters, converters, regulators and switching circuits.

- High Voltage —
  V_{CEX} = 400 Vdc
- Gain Specified to 3.5 Amp
- High Frequency Response to 2.5 MHz

10 AMPERE
POWER TRANSISTOR
NPN SILICON
400 VOLTS
125 WATTS



CASE 1–07
TO–204AA
(TO–3)

MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Collector–Emitter Voltage	V_{CEX}	400	Vdc
Collector–Base Voltage	V_{CB}	400	Vdc
Emitter–Base Voltage	V_{EB}	5.0	Vdc
Collector Current — Continuous	I_C	10	Adc
Base Current	I_B	2.0	Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	125 1.0	Watts W/°C
Operating Junction Temperature Range	T_J	–65 to +150	°C
Storage Temperature Range	T_{stg}	–65 to +200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.0	°C/W

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Sustaining Voltage* (1) (I_C = 100 mAdc, I_B = 0)	$V_{(BR)CEO(sus)}$	325	—	Vdc
Collector Cutoff Current (V_{CE} = 400 Vdc, $V_{EB(off)}$ = 1.5 Vdc) (V_{CE} = 400 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 125°C)	I_{CEX}	 — —	 0.25 0.5	mAdc
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)	I_{EBO}	—	5.0	mAdc
ON CHARACTERISTICS				
DC Current Gain(1) (I_C = 1.0 Adc, V_{CE} = 5.0 Vdc) (I_C = 2.5 Adc, V_{CE} = 5.0 Vdc)	h_{FE}	 30 10	 90 —	—
Collector–Emitter Saturation Voltage (1) (I_C = 1.0 Adc, I_B – 0.10 Adc)	$V_{CE(sat)}$	—	0.8	Vdc
Base–Emitter Saturation Voltage (I_C = 1.0 Adc, I_B = 0.1 Adc)	$V_{BE(sat)}$	—	1.25	Vdc
DYNAMIC CHARACTERISTICS				
Current–Gain — Bandwidth Product (I_C = 200 mAdc, V_{CE} = 10 Vdc, f = 1.0 MHz)	f_T	2.5	—	MHz

(1) PW ≤ 300 μs Duty Cycle ≤ 2.0%.

March, 2001 – Rev. 2
Publication Order Number:
MJ423/D

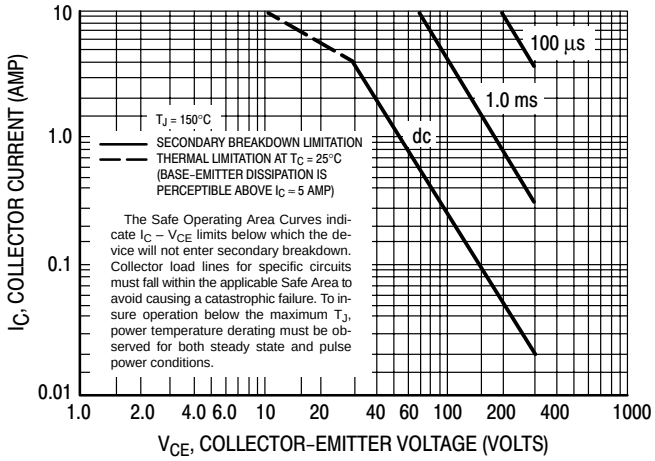


Figure 1. Active–Region Safe–Operating Area

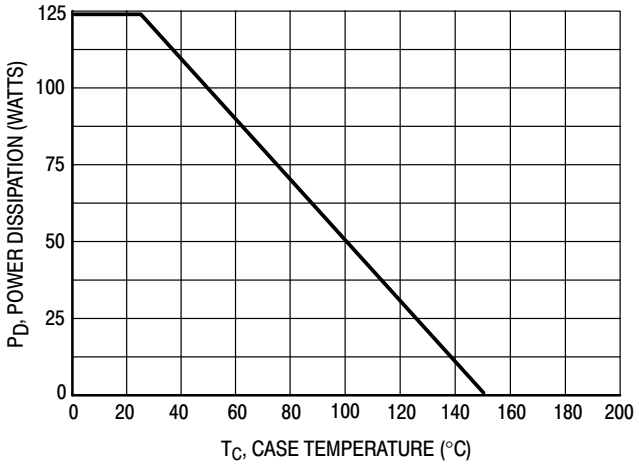


Figure 2. Power–Temperature Derating Curve

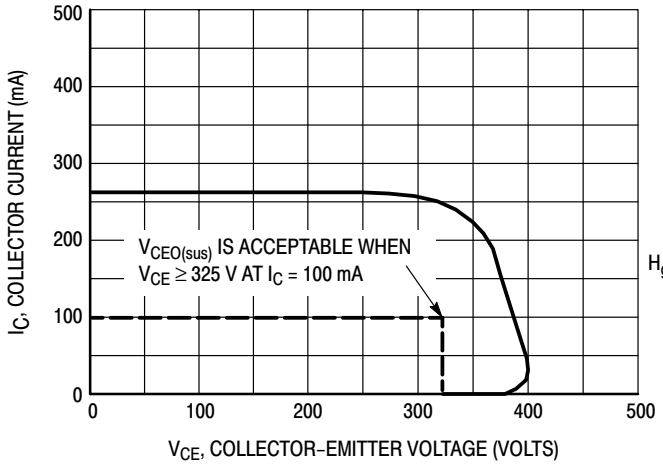


Figure 3. Sustaining Voltage Test Load Line

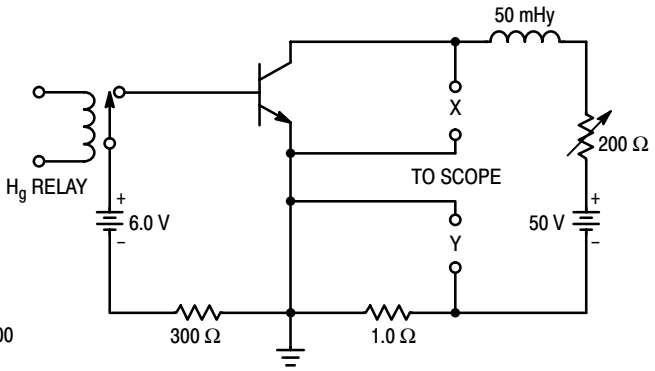


Figure 4. Sustaining Voltage Test Circuit

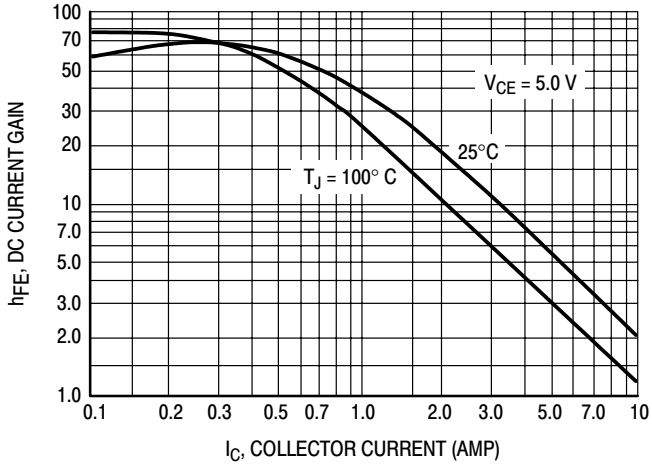


Figure 5. Current Gain

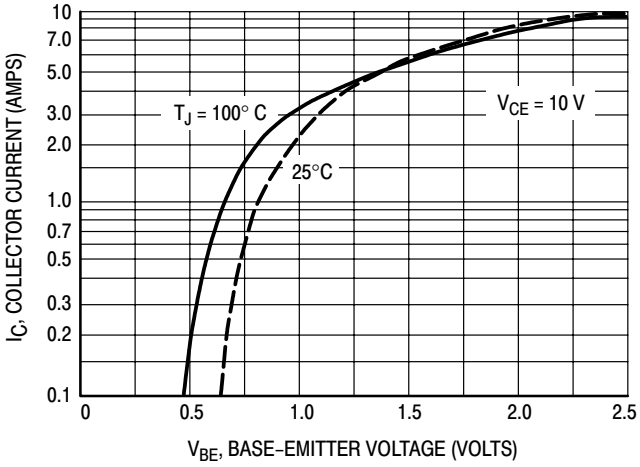
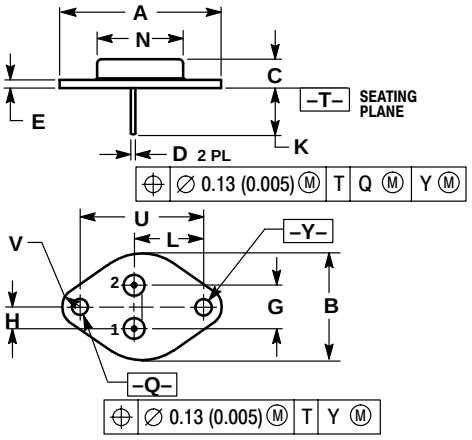


Figure 6. Transconductance

PACKAGE DIMENSIONS

CASE 1–07
TO–204AA (TO–3)
ISSUE Z



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL RULES AND NOTES ASSOCIATED WITH REFERENCED TO–204AA OUTLINE SHALL APPLY.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	1.550 REF		39.37 REF	
B	---	1.050	---	26.67
C	0.250	0.335	6.35	8.51
D	0.038	0.043	0.97	1.09
E	0.055	0.070	1.40	1.77
G	0.430 BSC		10.92 BSC	
H	0.215 BSC		5.46 BSC	
K	0.440	0.480	11.18	12.19
L	0.665 BSC		16.89 BSC	
N	---	0.830	---	21.08
Q	0.151	0.165	3.84	4.19
U	1.187 BSC		30.15 BSC	
V	0.131	0.188	3.33	4.77

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

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