

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

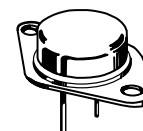
**10 AMPERE
POWER TRANSISTOR
NPN SILICON
400 VOLTS
125 WATTS**

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 @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	125 1.0	Watts W/ $^\circ\text{C}$
Operating Junction Temperature Range	T_J	-65 to +150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to +200	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.0	$^\circ\text{C}/\text{W}$



**CASE 1-07
TO-204AA
(TO-3)**

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

Characteristic	Symbol	Min	Max	Unit
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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, $T_C = 125^\circ\text{C}$)	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
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(1) $PW \leq 300$ μs Duty Cycle $\leq 2.0\%$.

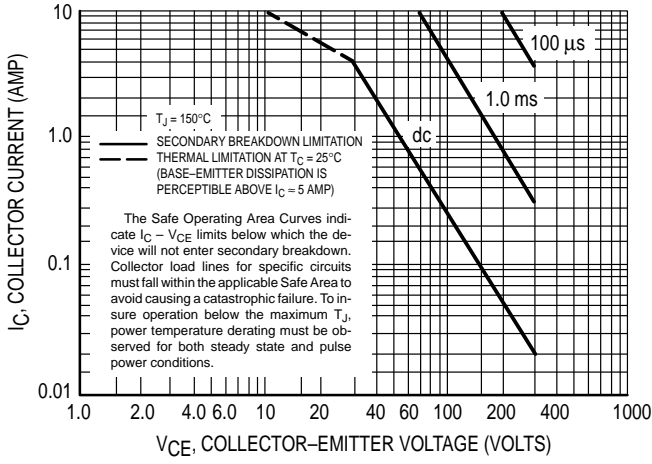


Figure 1. Active-Region Safe-Operating Area

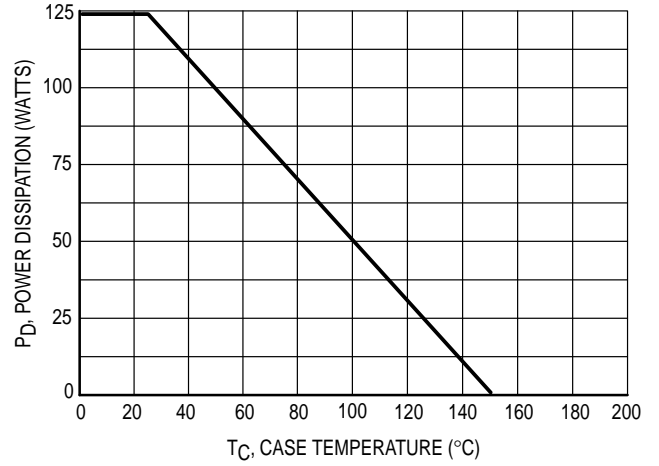


Figure 2. Power-Temperature Derating Curve

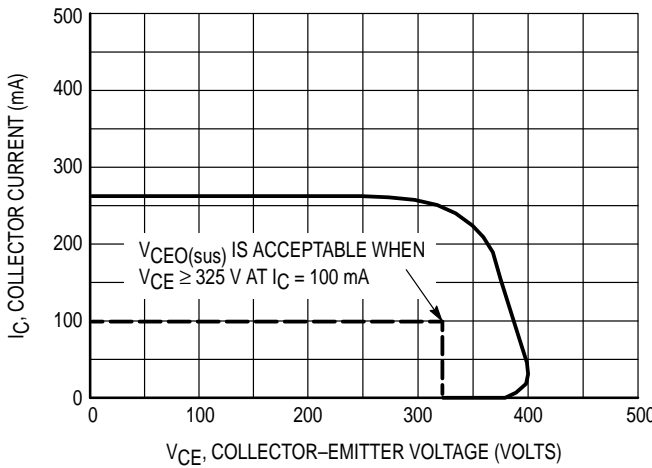


Figure 3. Sustaining Voltage Test Load Line

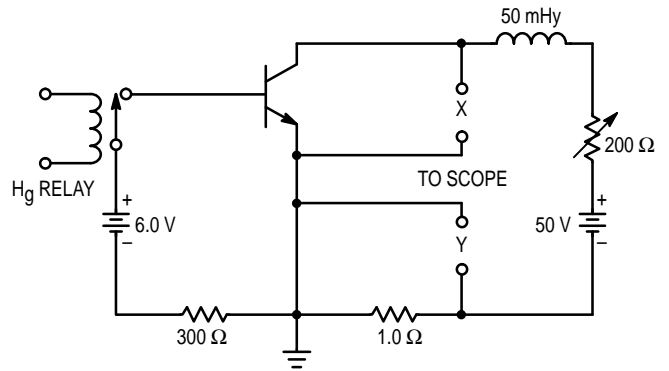


Figure 4. Sustaining Voltage Test Circuit

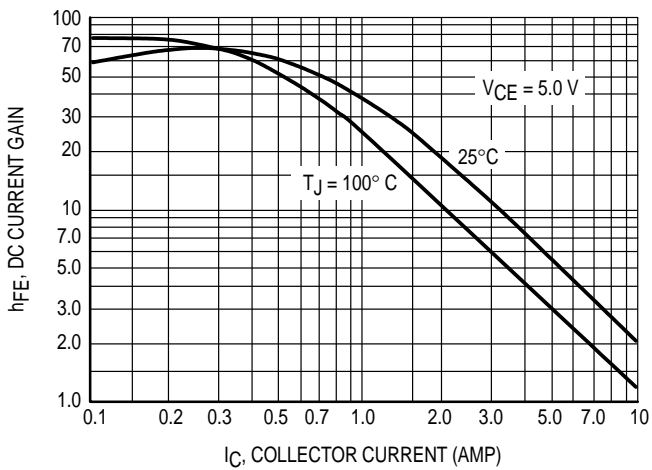


Figure 5. Current Gain

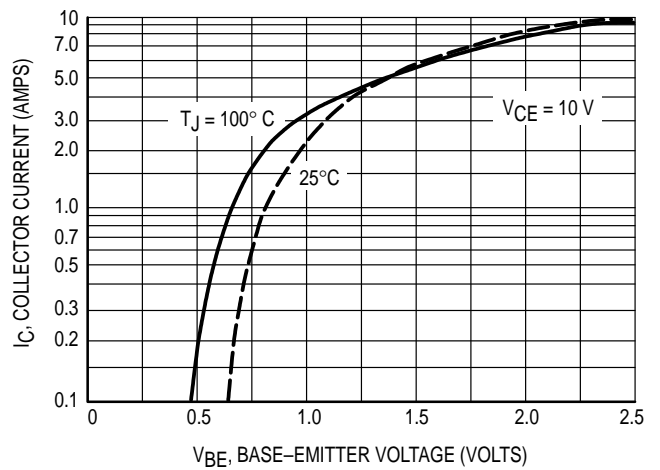



Figure 6. Transconductance

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