



Micro Commercial Components
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MJ413
MJ423
MJ431

Features

- High Collector-Emitter Voltage $V_{CES}=400V$
- DC Current Gain Specified 3.5A
- High Frequency Response to 2.5 MHz

Maximum Ratings

- Operating Temperature: $-55^{\circ}C$ to $+150^{\circ}C$
- Storage Temperature: $-55^{\circ}C$ to $+150^{\circ}C$
- Maximum Thermal Resistance: $1.0^{\circ}C/W$ junction to case

10 Amp
NPN Silicon
Power Transistors
125W

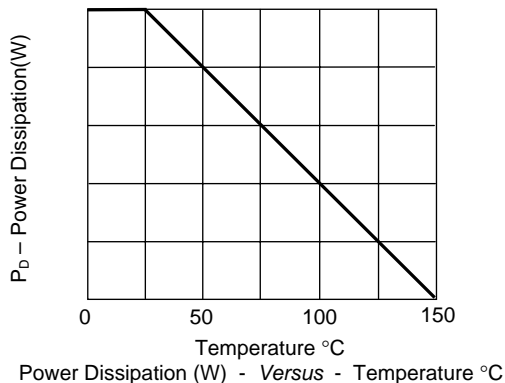
Characteristic	Symbol	Max	Unit
Collector-Emitter Voltage	V_{CEX}	400	Vdc
Collector-Base Voltage	V_{CB}	400	Vdc
Emitter-Base Voltage	V_{EB}	5.0	Vdc
Collector Current-Continuous	I_C	10	Adc
Base Current	I_B	2.0	Adc
Total Device Dissipation @ $T_C=25^{\circ}C$ Derate above $25^{\circ}C$	P_D	125 1.0	Watts $W/^{\circ}C$

TO-3

PIN 1. BASE
 PIN 2. EMITTER
 CASE. COLLECTOR

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	1.550	REF	39.37	REF	
B	----	1.050	----	26.67	
C	.250	.335	6.35	8.51	
D	.038	.043	0.97	1.09	
E	0.55	0.70	1.40	1.77	
G	.430	BSC	10.92	BSC	
H	.215	BSC	5.46	BSC	
K	.440	.480	11.18	12.19	
L	.665	BSC	16.89	BSC	
N	----	.830	----	21.08	
Q	.151	.165	3.84	4.19	∅
U	1.187	BSC	30.15	BSC	
V	.131	.188	3.33	4.77	

Figure 1 - Power Derating Curve



Electrical Characteristics @ 25 °C Unless Otherwise Specified

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage ⁽¹⁾ ($I_C=100\text{mA}$, $I_B=0$)	$V_{CEO(sus)}$	325	---	Vdc
Collector Cutoff Current ($V_{CE}=400\text{V}$, $V_{EB(off)}=1.5\text{V}$) MJ413 MJ423 MJ431 ($V_{CE}=400\text{V}$, $V_{EB(off)}=1.5\text{V}$, $T_C=125^\circ\text{C}$) MJ413 MJ423 MJ431	I_{CEX}		0.25 2.5 0.5 5.0	mAdc
Emitter Cutoff Current ($V_{BE}=5.0\text{Vdc}$, $I_C=0$) MJ413 MJ423 MJ431	I_{EBO}		5.0 2.0	mAdc
ON CHARACTERISTICS				
DC Current Gain ($I_C=0.5\text{A}$, $V_{CE}=5.0\text{V}$) MJ413 ($I_C=1.0\text{A}$, $V_{CE}=5.0\text{V}$) MJ423 ($I_C=1.0\text{A}$, $V_{CE}=5.0\text{V}$) MJ431 ($I_C=2.5\text{A}$, $V_{CE}=5.0\text{V}$) MJ431 ($I_C=2.5\text{A}$, $V_{CE}=5.0\text{V}$) MJ431 ($I_C=3.0\text{A}$, $V_{CE}=5.0\text{V}$) MJ431	h_{FE}	20 15 30 10 15 10	80 90 35	
Collector-Emitter Saturation Voltage ($I_C=0.5\text{A}$, $I_B=0.05\text{A}$) MJ413 ($I_C=1.0\text{A}$, $I_B=0.1\text{A}$) MJ423 ($I_C=2.5\text{A}$, $I_B=0.5\text{A}$) MJ431	$V_{CE(sat)}$		0.6 0.8 0.7	Vdc
Base-Emitter Saturation Voltage ($I_C=0.5\text{A}$, $I_B=0.05\text{A}$) MJ413 ($I_C=1.0\text{A}$, $I_B=0.1\text{A}$) MJ423 ($I_C=2.5\text{A}$, $I_B=0.5\text{A}$) MJ431	$V_{BE(sat)}$		1.25 1.25 1.50	Vdc
DYNAMIC CHARACTERISTICS				
Current Gain – Bandwidth Product ($I_C=200\text{mA}$, $V_{CE}=10\text{V}$, $f=1.0\text{MHz}$)	f_T	2.5		MHz

(1) Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$