

## SILICON POWER TRANSISTORS

The MJ15022 and MJ15024 are power base power transistors designed for high power audio, disk head positioners and other linear applications.

### FEATURES

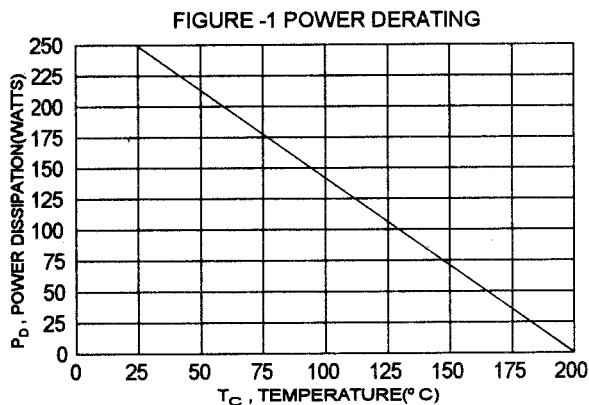
- \* High Safe Operating Area
- \* High DC Current Gain-  
 $h_{FE} = 15(\text{Min}) @ I_C = 8.0 \text{ A } V_{CE} = 4.0 \text{ V}$

### MAXIMUM RATINGS

Characteristic	Symbol	MJ15022	MJ15024	Unit
Collector-Emitter Voltage	$V_{CEO}$	200	250	V
Collector-Base Voltage	$V_{CBO}$	350	400	V
Emitter-Base Voltage	$V_{EBO}$	5.0		V
Collector-Emitter Voltage	$V_{CEX}$	400		V
Collector Current - Continuous - Peak	$I_C$ $I_{CM}$	16 30		A
Base Current-Continuous	$I_B$	5		A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	250 1.43		W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +200		$^\circ\text{C}$

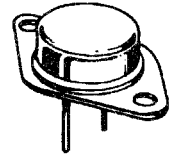
### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	UNIT
Thermal Resistance Junction to Case	$R_{\theta jc}$	0.7	$^\circ\text{C}/\text{W}$

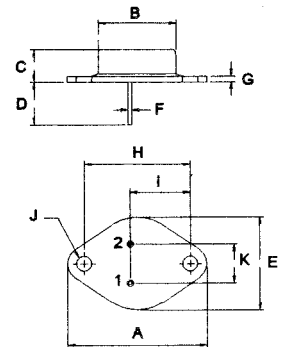


**NPN**  
**MJ15022**  
**MJ15024**

**16 AMPERE**  
**SILICON POWER**  
**TRANSISTORS**  
**200 - 250 VOLTS**  
**250 WATTS**



**TO-3**



PIN 1. BASE  
 2. EMITTER  
 COLLECTOR (CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

**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) ( $I_C = 100\text{ mA}$ , $I_B = 0$ )	MJ15022 MJ15024	$V_{CEO(sus)}$	200 250	V
Collector Cutoff Current ( $V_{CE} = 200\text{ V}$ , $V_{BE(on)} = 1.5\text{ V}$ ) ( $V_{CE} = 250\text{ V}$ , $V_{BE(on)} = 1.5\text{ V}$ )	MJ15022 MJ15024	$I_{CEX}$	250 250	$\mu\text{A}$
Collector Cutoff Current ( $V_{CE} = 150\text{ V}$ , $I_B = 0$ ) ( $V_{CE} = 200\text{ V}$ , $I_B = 0$ )	MJ15022 MJ15024	$I_{CEO}$	500 500	$\mu\text{A}$
Emitter Cutoff Current ( $V_{EB} = 5.0\text{ V}$ , $I_B = 0$ )		$I_{EBO}$	500	$\mu\text{A}$

**ON CHARACTERISTICS (1)**

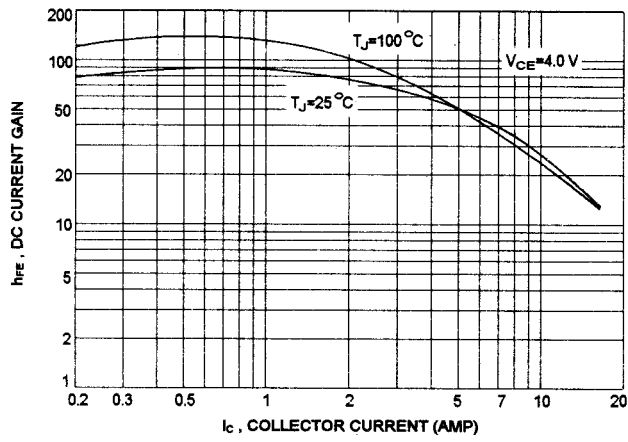
DC Current Gain ( $I_C = 8.0\text{ A}$ , $V_{CE} = 4.0\text{ V}$ ) ( $I_C = 16\text{ A}$ , $V_{CE} = 4.0\text{ V}$ )		$h_{FE}$	15 5	60	
Collector-Emitter Saturation Voltage ( $I_C = 8.0\text{ A}$ , $I_B = 0.8\text{ A}$ ) ( $I_C = 16\text{ A}$ , $I_B = 3.2\text{ A}$ )		$V_{CE(sat)}$		1.4 4.0	V
Base-Emitter On Voltage ( $I_C = 8.0\text{ A}$ , $V_{CE} = 4.0\text{ V}$ )		$V_{BE(on)}$		2.2	V

**DYNAMIC CHARACTERISTICS**

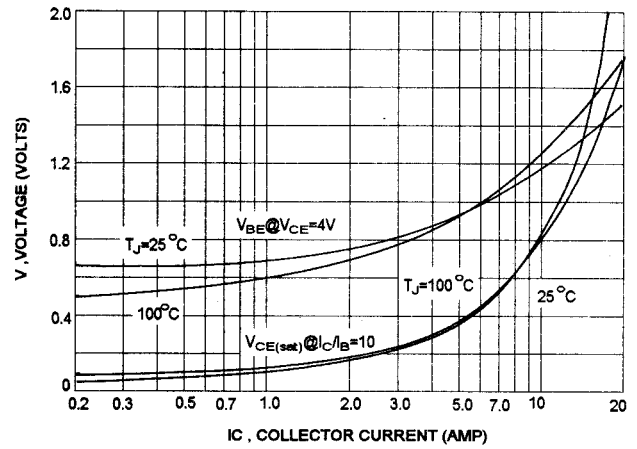
Current-Gain-Bandwidth Product (2) ( $I_C = 1.0\text{ A}$ , $V_{CE} = 10\text{ V}$ , $f = 1.0\text{ MHz}$ )		$f_T$	4.0		MHz
Output Capacitance ( $V_{CB} = 10\text{ V}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$ )		$C_{ob}$		500	pF

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

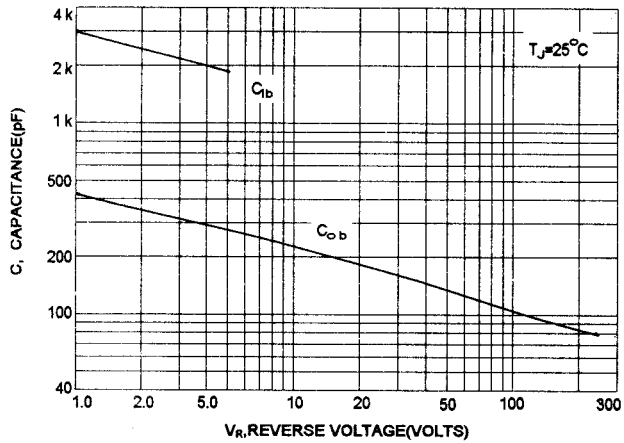
DC CURRENT GAIN



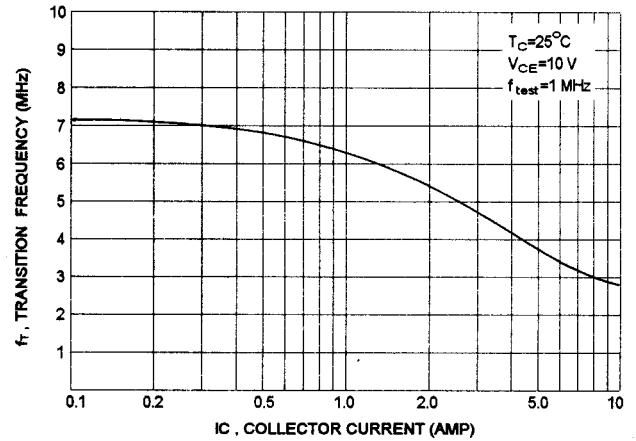
"ON" VOLTAGE



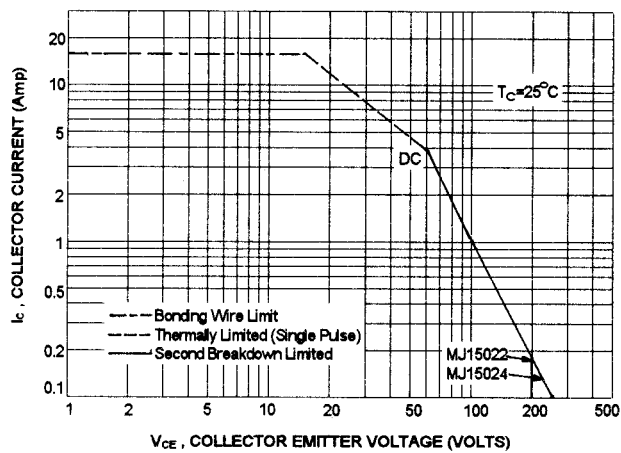
CAPACITANCES



CURRENT GAIN-BANDWIDTH PRODUCT



ACTIVE-REGION SAFE OPERATING AREA



COLLECTOR SATURATION REGION

