MJ15023 / MJ15025

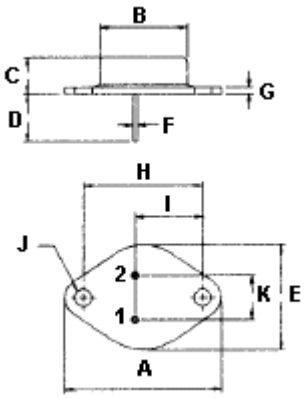
Power Transistors

The MJ15023 and MJ15025 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 (Minimum) at I_C = 8.0A, V_{CE} = 4.0V.



Pin 1. Base
2. Emitter
Collector(Case)

Dimensions	Minimum	Maximum
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

Dimensions : Millimetres

PNP
MJ15023
MJ15025

16 Ampere
Silicon Power
Transistors
200 - 250 Volts
250 Watts

TO-3

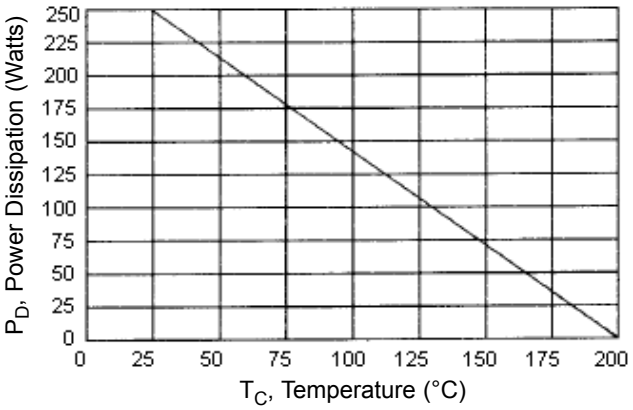
Maximum Ratings

Characteristic	Symbol	MJ15023	MJ15025	Unit
Collector-Emitter Voltage	V_{CEO}	200	250	V
Collector-Base Voltage	V_{CBO}	350	400	
Emitter-Base Voltage	V_{EBO}	5.0		
Collector-Emitter Voltage	V_{CEX}	400		
Collector Current-Continuous -Peak	I_C I_{CM}	16 30		A
Base Current-Continuous	I_B	5		
Total Power Dissipation at T_C = 25°C Derate above 25°C	P_D	250 1.43		W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +200		°C

Thermal Characteristics

Characteristic	Symbol	Maximum	Unit
Thermal Resistance Junction to Case	Rθjc	0.7	°C/W

Figure - 1 Power Derating



Electrical Characteristics (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Minimum	Maximum	Unit
OFF Characteristics				
Collector-Emitter Sustaining Voltage (1) (I_C = 100mA, I_B = 0)	$V_{CEO(sus)}$	200 250	-	V
Collector Cut off Current (V_{CE} = 200V, $V_{BE(off)}$ = 1.5V) (V_{CE} = 250V, $V_{BE(off)}$ = 1.5V)	I_{CEX}	-	250	µA
Collector Cut off Current (V_{CE} = 150V, I_B = 0) (V_{CE} = 200V, I_B = 0)	I_{CEO}	-	500	
Emitter Cut off Current (V_{EB} = 5.0V, I_B = 0)	I_{EBO}	-		
ON Characteristics (1)				
DC Current Gain (I_C = 8.0A, V_{CE} = 4.0V) (I_C = 16A, V_{CE} = 4.0V)	h_{FE}	15 5.0	60	-
Collector-Emitter Saturation Voltage (I_C = 8.0A, I_B = 0.8A) (I_C = 16A, I_B = 3.2A)	$V_{CE(sat)}$	-	1.4 4.0	V
Base-Emitter On Voltage (I_C = 8.0A, V_{CE} = 4.0A)	$V_{BE(on)}$	-	2.2	
Dynamic Characteristics				
Current Gain-Bandwidth Product (2) (I_C = 1.0A, V_{CE} = 10V, f = 1.0MHz)	f_T	4.0	-	MHz
Output Capacitance (V_{CB} = 10V, I_E = 0, f = 1.0MHz	C_{ob}	-	600	pF

(1) Pulse Test: Pulse Width = 300µs, Duty Cycle ≤2.0%

(2) $f_T = |h_{fe}| \bullet f_{test}$

Figure - 2 DC Current Gain

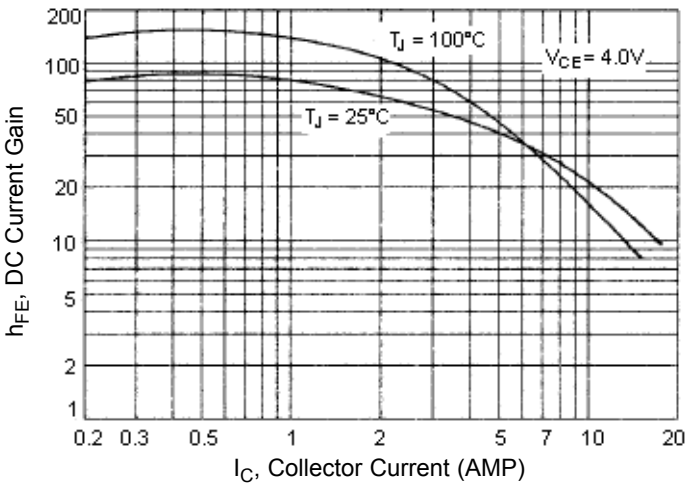


Figure - 3 "ON" Voltage

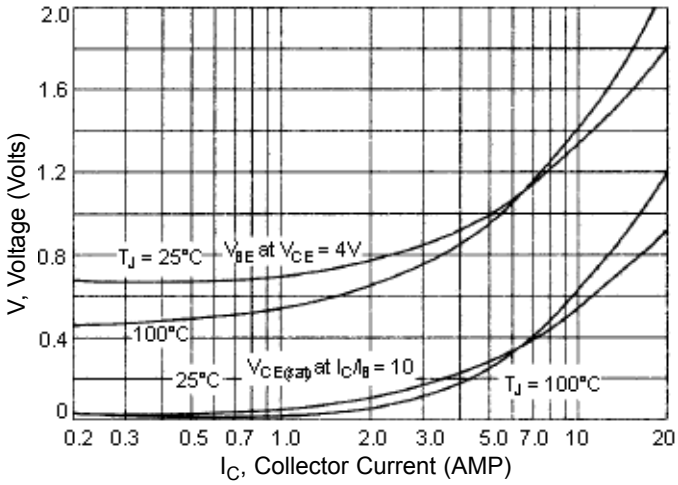


Figure - 4 Capacitances

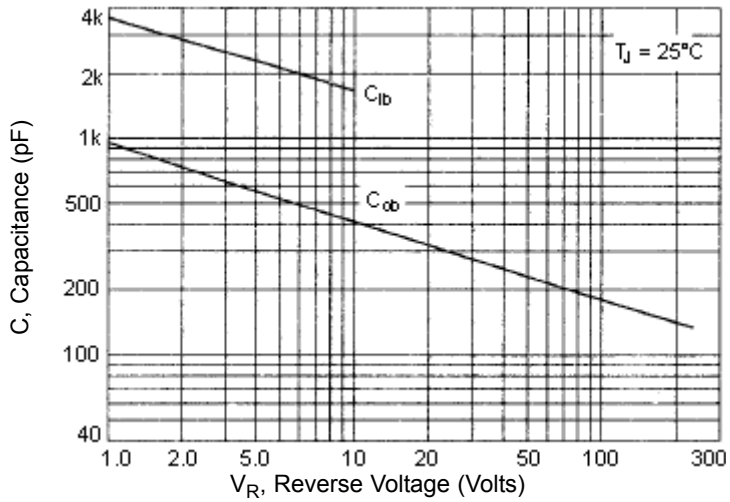


Figure - 5 Current Gain - Bandwidth Product

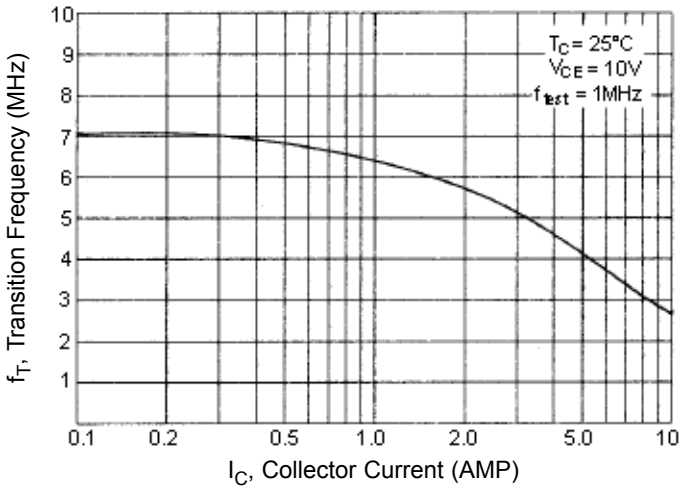
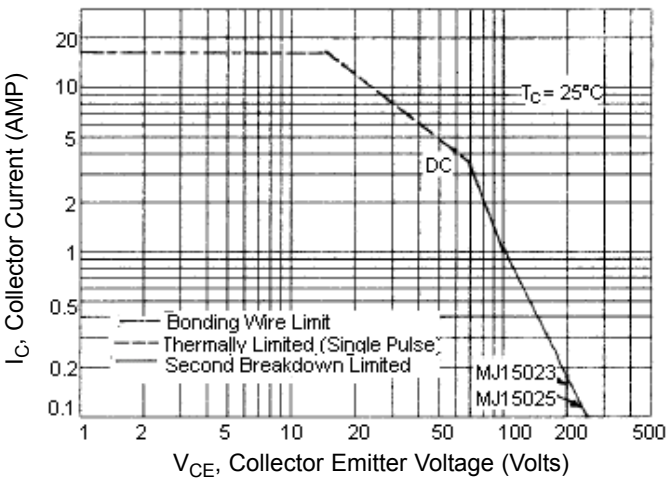


Figure - 6 Active-Region Safe Operating Area



There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data Figure - 6 is based on $T_{J(pk)}$ = 200°C; T_C is variable depending on conditions. At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

Specifications

$I_{C(av)}$ maximum (A)	V_{CEO} maximum (V)	h_{FE} minimum at I_C = 8A	P_{tot} at 25°C (W)	Package	Type	Part Number
16	200	15	250	TO-3	PNP	MJ15023
	250					MJ15025

Notes:

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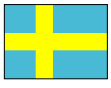

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