DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

MJ15022, MJ15024

NPN SILICON POWER TRANSISTORS

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Rating	Symbol	MJ15022	MJ15024	Unit
Collector emitter voltage	V_{CEO}	200	250	Vdc
Collector base voltage	V_{CBO}	350	400	Vdc
Emitter base voltage	V_{EBO}	5.0		Vdc
Collector emitter voltage	V_{CEX}	400		Vdc
Collector current **-Continuous** **-Peak**(1)	I_C	16 30		Adc
Base current – continuous	I_B	5		Adc
Total power dissipation @ T_C = 25°C **Derate above 25°C**	P_D	250 1.43		W W/°C
Operating and storage temperature range	T_J, T_{stg}	-65 to +200		°C
Thermal resistance, junction to case	$R_{\Theta JC}$	0.70		°C/W

Note 1: Pulse test: pulse width 5ms, duty cycle ≤ 10%.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector emitter sustaining voltage(2) (I_C = 100mAdc, I_B = 0)	MJ15022 MJ15024	$V_{CEO(sus)}$	200 250	- -	Vdc
Collector cutoff current (V_{CE} = 200Vdc, $V_{BE(off)}$ = 1.5Vdc) (V_{CE} = 250Vdc, $V_{BE(off)}$ = 1.5Vdc)	 MJ15022 MJ15024	I_{CEX}	 - -	 250 250	µAdc
Collector cutoff current (V_{CE} = 150Vdc, I_B = 0) (V_{CE} = 200Vdc, I_B = 0)	 MJ15022 MJ15024	I_{CEO}	 - -	 500 500	µAdc
Emitter cutoff current (V_{CE} = 5Vdc, I_B = 0)		I_{EBO}	-	500	µAdc
SECOND BREAKDOWN					
Second breakdown collector current with base forward biased (V_{CE} = 50Vdc, t = 0.5s(non-repetitive) (V_{CE} = 80Vdc, t = 0.5s(non-repetitive)		$I_{S/b}$	 5 2	 - -	Adc
ON CHARACTERISTICS					
DC current gain (I_C = 8Adc, V_{CE} = 4Vdc) (I_C = 16Adc, V_{CE} = 4Vdc)		h_{FE}	 15 5	 60 -	-

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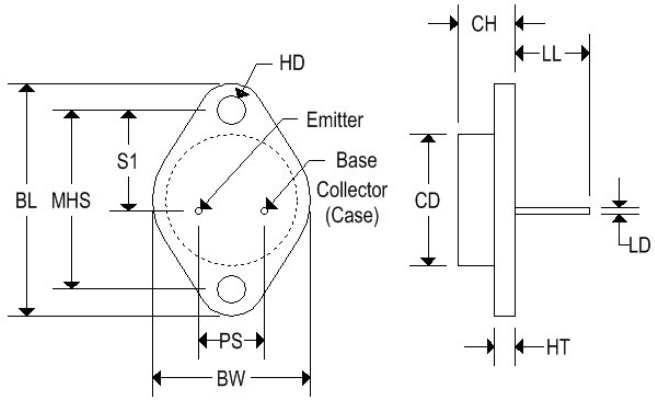
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Characteristic	Symbol	Min	Max	Unit
Collector emitter saturation voltage (I_C = 8Adc, I_B = 0.8Adc) (I_C = 16Adc, I_B = 3.2Adc)	$V_{CE(sat)}$	- -	1.4 4.0	Vdc
Base emitter on voltage (I_C = 8Adc, V_{CE} = 4Vdc)	$V_{BE(on)}$	-	2.2	Vdc
DYNAMIC CHARACTERISTICS				
Current gain – bandwidth product (I_C = 1Adc, V_{CE} = 10Vdc, f_{test} = 1MHz)	f_T	4	-	MHz
Output capacitance (V_{CB} = 10Vdc, I_E = 0, f_{test} = 1MHz)	C_{ob}	-	500	pF

Note 2: Pulse test: Pulse width = 300µs, duty cycle ≤ 2%.

MECHANICAL CHARACTERISTICS

Case	TO-3
Marking	Alpha-numeric
Polarity	See below



	TO-3			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	-	0.875	-	22.220
CH	0.250	0.380	6.860	9.650
HT	0.060	0.135	1.520	3.430
BW	-	1.050	-	26.670
HD	0.131	0.188	3.330	4.780
LD	0.038	0.043	0.970	1.090
LL	0.312	0.500	7.920	12.700
BL	1.550 REF		39.370 REF	
MHS	1.177	1.197	29.900	30.400
PS	0.420	0.440	10.670	11.180
S1	0.655	0.675	16.640	17.150

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FIGURE 1 – ACTIVE-REGION SAFE OPERATING AREA

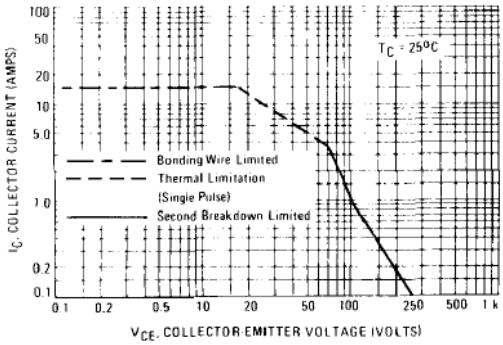

FIGURE 2 – CAPACITANCES

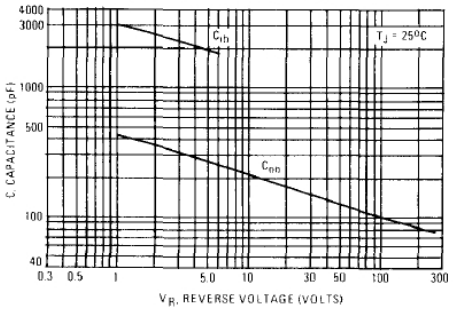

FIGURE 3 – CURRENT-GAIN–BANDWIDTH PRODUCT

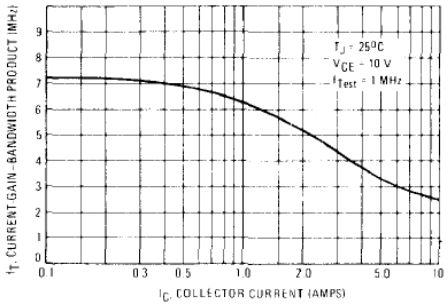

FIGURE 4 – DC CURRENT GAIN

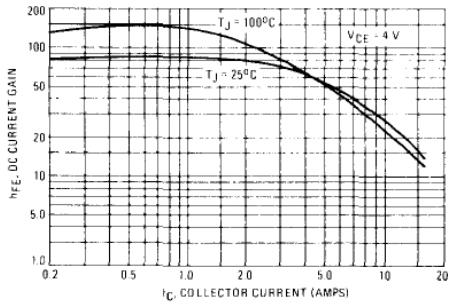

FIGURE 5 – "ON" VOLTAGE

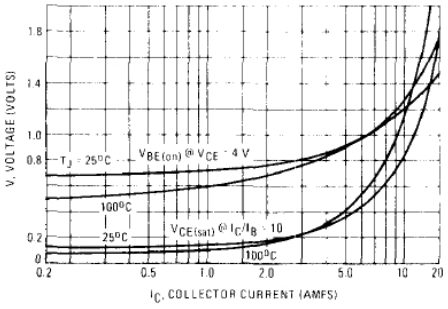

FIGURE 6 – COLLECTOR SATURATION REGION