

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	MJ15023	MJ15025	Units
Collector-emitter voltage	V_{CEO}	200	250	V
Collector-base voltage	V_{CBO}	350	400	V
Emitter base voltage	V_{EBO}	5		V
Collector-emitter voltage	V_{CEX}	400		V
Collector current – continuous	I_C	16		A
Collector current – peak ⁽¹⁾	I_C	30		A
Base current – continuous	I_B	5		A
Total power dissipation $T_C = 25^\circ\text{C}$ Derate above 25°C	P_{tot}	250 1.43		W W/ $^\circ\text{C}$
Operating junction and storage temperature range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$
Thermal resistance, junction to case	$R_{\theta JC}$	0.70		$^\circ\text{C/W}$

Note 1: Pulse duration = 5ms, duty cycle \leq 10%.

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-emitter sustaining voltage ⁽¹⁾ ($I_B = 0, I_C = 100\text{mA}$)	MJ15023 MJ15025	$V_{CEO(sus)}$	200 250	- - V
Collector cutoff current ($V_{CE} = 200\text{V}, V_{BE(off)} = 1.5\text{V}$) ($V_{CE} = 250\text{V}, V_{BE(off)} = 1.5\text{V}$)	MJ15023 MJ15025	I_{CEX}	- -	250 250 μA
Collector cutoff current ($V_{CE} = 150\text{V}, I_B = 0$) ($V_{CE} = 200\text{V}, I_B = 0$)	MJ15023 MJ15025	I_{CEO}	- -	500 500 μA
Emitter cutoff current ($V_{CE} = 5\text{V}, I_B = 0$)		I_{EBO}	-	500 μA
SECOND BREAKDOWN				
Second breakdown collector current with base forward biased ($V_{CE} = 50\text{V}, t = 0.5\text{s}$ (non-repetitive)) ($V_{CE} = 80\text{V}, t = 0.5\text{s}$ (non-repetitive))		$I_{S/b}$	5 2	- - A
ON CHARACTERISTICS				
DC current gain ($I_C = 8\text{A}, V_{CE} = 4\text{V}$) ($I_C = 16\text{A}, V_{CE} = 4\text{V}$)		h_{FE}	15 5	60 - -

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PNP SILICON POWER TRANSISTORS

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

Characteristic	Symbol	Min	Max	Unit
Collector emitter saturation voltage ($I_C = 8\text{A}, I_B = 0.8\text{A}$) ($I_C = 16\text{A}, I_B = 3.2\text{A}$)	$V_{CE(sat)}$	-	1.4 4.0	V
Base emitter voltage ($I_C = 8\text{A}, V_{CE} = 4\text{V}$)	$V_{BE(ON)}$	-	2.2	V
DYNAMIC CHARACTERISTICS				
Current gain – bandwidth product ($I_C = 1\text{A}, V_{CE} = 10\text{V}, f_{test} = 1\text{MHz}$)	f_T	4	-	MHz
Output capacitance ($V_{CB} = 10\text{V}, I_E = 0, f_{test} = 1\text{MHz}$)	C_{ob}	-	600	pF

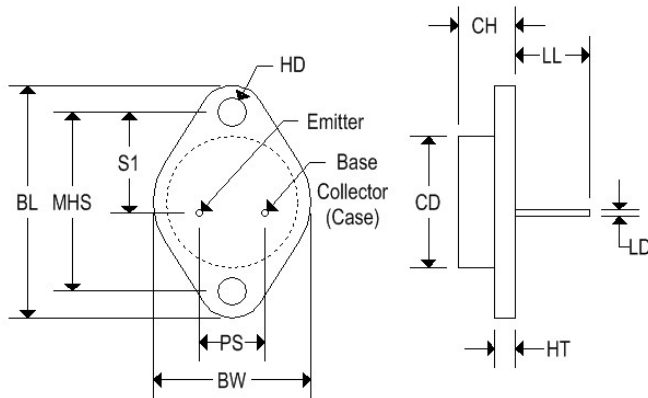
Note 1: Pulse width = 300 μs , duty cycle $\leq 2\%$.

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PNP SILICON POWER TRANSISTORS

MECHANICAL CHARACTERISTICS

Case	TO-3
Marking	Alpha-numeric
Pin out	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

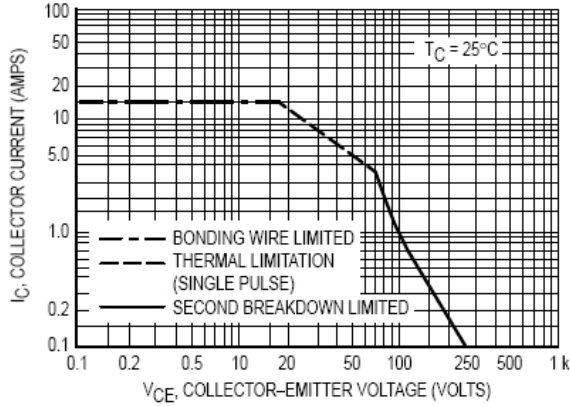


Figure 1. Active-Region Safe Operating Area

There are two limitations on the powerhandling 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 of Figure 1 is based on $T_{J(pk)} = 200^\circ\text{C}$; T_C is variable depending on conditions. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

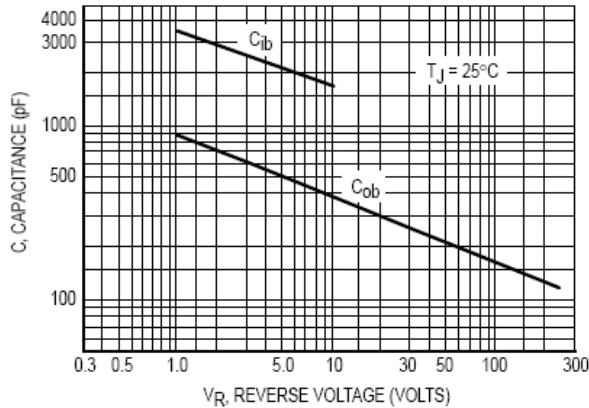


Figure 2. Capacitances

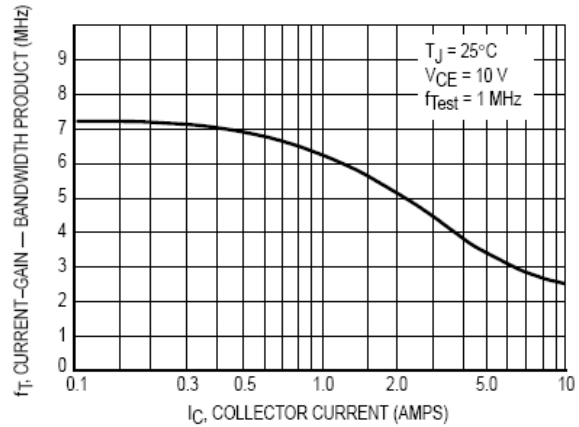


Figure 3. Current-Gain — Bandwidth Product

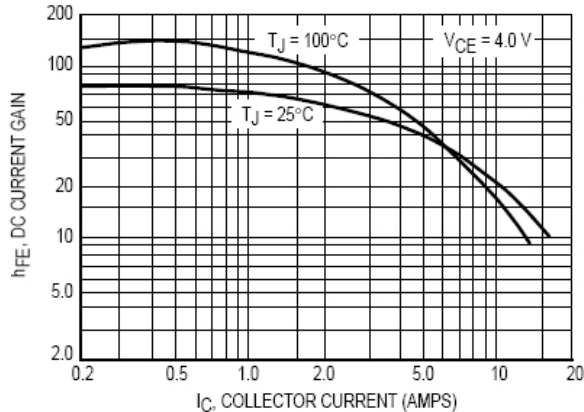


Figure 4. DC Current Gain

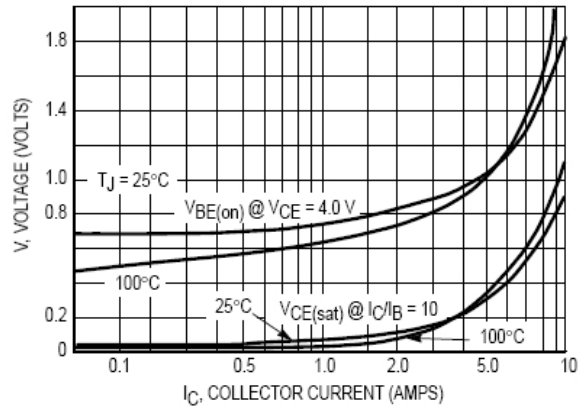


Figure 5. "On" Voltages