DIGITRON Semiconductors

High-reliability discrete products
and engineering services since 1977

MJ15001 – NPN
MJ15002 - PNP

COMPLEMENTARY 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

Characteristic	Symbol	MJ15001	MJ15002	Unit
Collector-Emitter Voltage	V_{CEO}	140	140	V
Collector-Emitter Voltage	V_{CBO}	140	140	V
Emitter-Base Voltage	V_{EBO}	5.0		V
Collector Current – continuous	I_C	15		A
Base Current -continuous	I_B	5		A
Total Power Dissipation @ T_C = 25°C **Derate Above 25°C**	P_D	200 1.14		W W/°C
Operating and Storage Temperature Range	T_J, T_{stg}	-65 to +200		°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.875		°C/W
Maximum Lead Temperature for Soldering: **1/16" from case for ≤ 10s**	T_L	265		°C

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

Characteristic	Symbol	Min	Max	Unit
Collector-Emitter Sustaining Voltage[1] (I_C = 200mA, I_B = 0)	$V_{CEO(sus)}$	140	-	V
Collector Cutoff Current (V_{CE} = 140V, $V_{BE(off)}$ = 1.5V) (V_{CE} = 140V, $V_{BE(off)}$ = 1.5V, T_C = 150°C)	I_{CEX}	- -	100 2	µA
Collector Cutoff Current (V_{CE} = 140V, I_B = 0)	I_{CEO}	-	250	µA
Emitter Cutoff Current (V_{EB} = 5.0V, I_C = 0)	I_{EBO}	-	100	µA
Second Breakdown Collector Current with Base Forward (V_{CE} = 40V, t = 1s (non-repetitive) (V_{CE} = 100V, t = 1s (non-repetitive)	$I_{s/b}$	5 0.5	- -	A
DC Current Gain (I_C = 4.0A, V_{CE} = 2.0V)	h_{FE}	25	150	-
Collector-Emitter Saturation Voltage (I_C = 4.0A, I_B = 0.4A)	$V_{CE(sat)}$	-	1	V
Base-Emitter On-Voltage (I_C = 4.0A, V_{CE} = 2V)	$V_{BE(on)}$	-	2.0	V
Current Gain – Bandwidth Product (I_C = 0.5A, V_{CE} = 10V, f_{test} = 0.5MHz)	f_T	2.0	-	MHz
Output Capacitance (V_{CB} = 10V, I_E = 0, f_{test} = 1.0MHz)	C_{ob}	-	1000	pF

Note 1: Pulse test: Pulse width ≤ 300µs. Duty cycle ≤ 2%.

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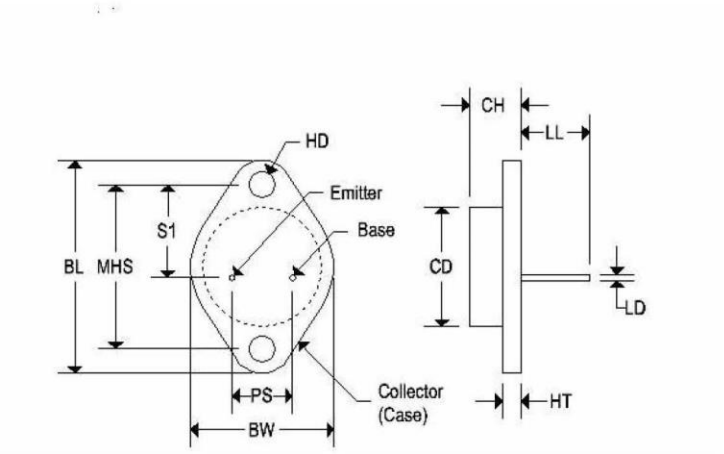
MECHANICAL CHARACTERISTICS

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

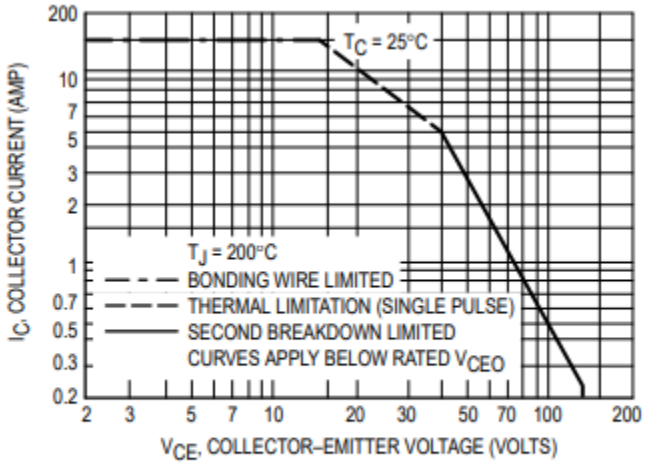


Figure 1. Active–Region Safe Operating Area

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TYPICAL CHARACTERISTICS

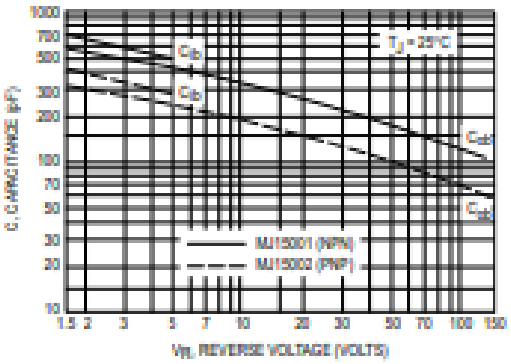

Figure 2. Capacitances

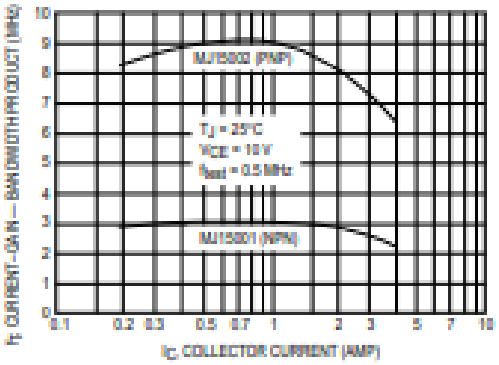

Figure 3. Current–Gain — Bandwidth Product

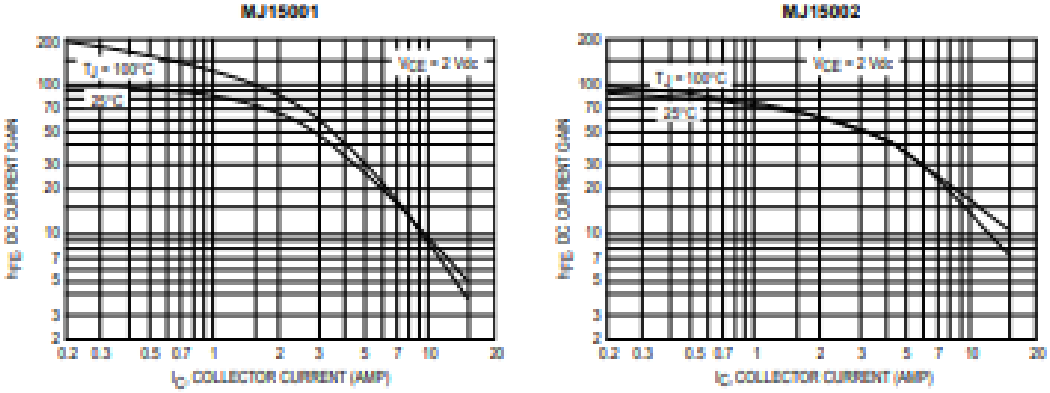

Figure 4. DC Current Gain

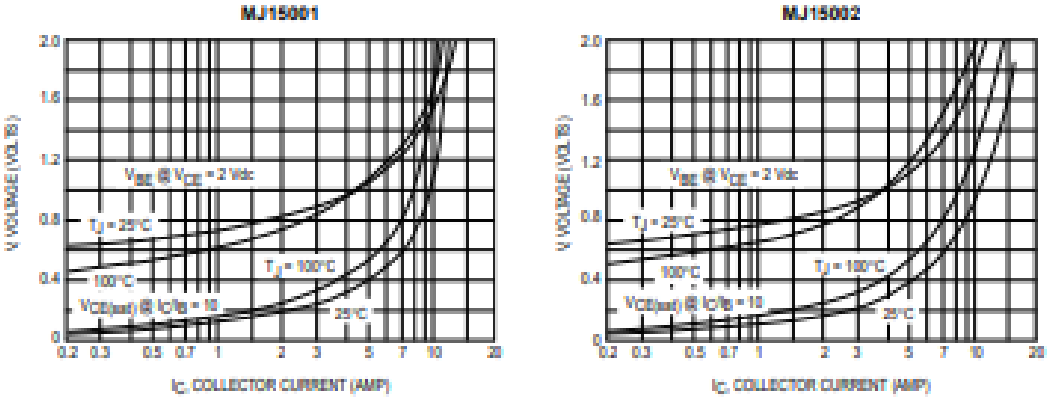

Figure 5. "On" Voltages