DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

MJ15018, MJ15020 – NPN
MJ15019, MJ15021 - 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	MJ15018 MJ15019	MJ15020 MJ15021	Unit
Collector-Emitter Voltage	V_{CEO}	200	250	V
Collector-Emitter Voltage	V_{CBO}	200	250	V
Emitter-Base Voltage	V_{EBO}	7.0		V
Collector Current – continuous	I_C	4.0		A
Base Current -continuous	I_B	2.0		A
Total Power Dissipation @ T_C = 25°C **Derate Above 25°C**	P_D	150 0.86		W W/°C
Operating and Storage Temperature Range	T_J, T_{stg}	-65 to +200		°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.17		°C/W

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

Characteristic		Symbol	Min	Max	Unit
Collector-Emitter Sustaining Voltage[1] (I_C = 100mA, I_B = 0)	MJ15018, MJ15019 MJ15020, MJ15021	$V_{CEO(sus)}$	200 250	- -	V
Collector Cutoff Current (V_{CE} = 150V, I_B = 0) (V_{CE} = 200V, I_B = 0)	MJ15018, MJ15019 MJ15020, MJ15021	I_{CEX}	- -	500 500	µA
Emitter Cutoff Current (V_{EB} = 7.0V, I_C = 0)		I_{EBO}	-	500	µA
Second Breakdown Collector Current with Base Forward (V_{CE} = 50V, t = 1s (non-repetitive)		$I_{s/b}$	3.0	-	A
DC Current Gain (I_C = 1.0A, V_{CE} = 4.0V) (I_C = 3.0A, V_{CE} = 42.0V)		h_{FE}	30 10	- -	-
Collector-Emitter Saturation Voltage (I_C = 1.0A, I_B = 0.1A)		$V_{CE(sat)}$	-	1	V
Base-Emitter On-Voltage (I_C = 1.0A, V_{CE} = 4V)		$V_{BE(on)}$	-	2.0	V
Current Gain – Bandwidth Product (I_C = 0.5A, V_{CE} = 10V, f_{test} = 1.0MHz)		f_T	20	-	MHz
Output Capacitance (V_{CB} = 10V, I_E = 0, f_{test} = 1.0MHz)		C_{ob}	-	500	pF

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

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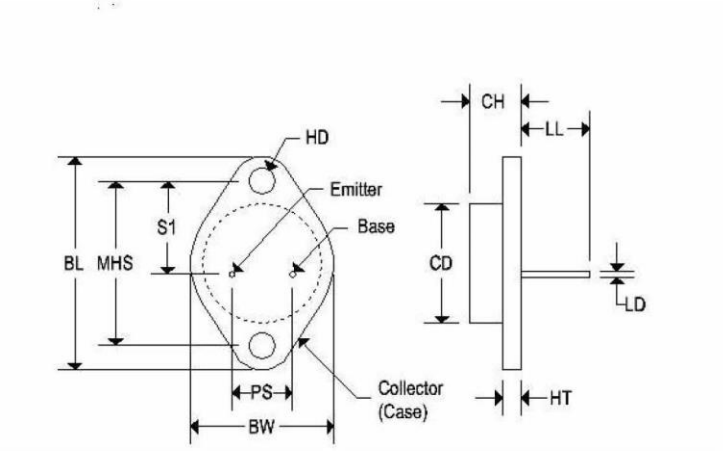
MECHANICAL CHARACTERISTICS

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

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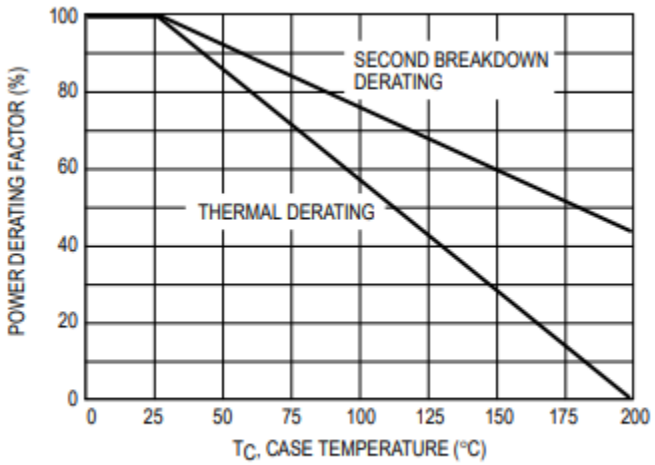

Figure 1. Power Derating

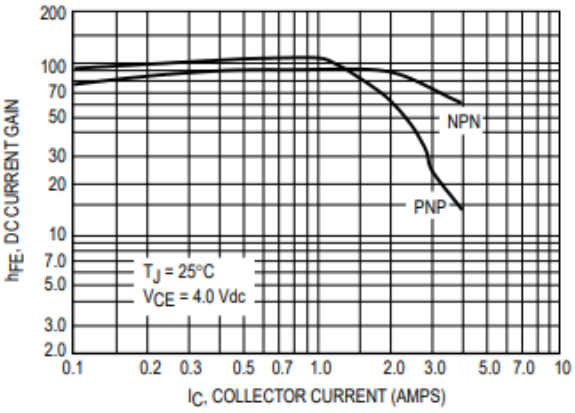

Figure 2. DC Current Gain

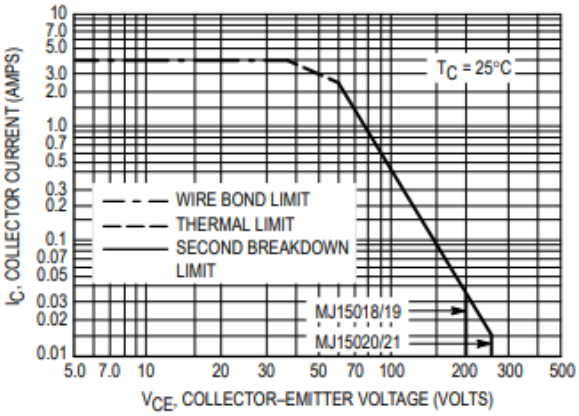

Figure 3. Maximum Rated Forward Biased Safe Operating Area