DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

MJ13335

NPN SILICON POWER DARLINGTON TRANSISTOR

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	MJ13335	Unit
Collector emitter voltage	V_{CEV}	800	V
Collector emitter voltage	V_{CEO}	500	V
Emitter base voltage	V_{EBO}	6.0	V
Collector current - Continuous **Peak**	I_C I_C	20 30	A
Base current - Continuous **Peak**	I_B I_{BM}	10 15	A
Total power dissipation @ T_C = 25°C	P_D	175	W
Operating and storage temperature range	T_J, T_{stg}	-65 to +200	°C
Thermal resistance, junction to case	$R_{\theta JC}$	1.0	°C/W

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

Characteristic	Symbol	Min	Max	Unit
Collector emitter sustaining voltage (I_C = 100mA, I_B = 0)	$V_{CEO(sus)}$	500	-	Vdc
Collector emitter saturation voltage (I_C = 10A, I_B = 2.0A) (I_C = 20A, I_B = 6.7A) (I_C = 10A, I_B = 2.0A, T_C = 100°C)	$V_{CE(sat)}$	- - -	1.8 5.0 2.4	V
Base-emitter saturation voltage (I_C = 10A, I_B = 2.0A) (I_C = 10A, I_B = 2.0A, T_C = 100°C)	$V_{BE(sat)}$	- -	1.8 1.8	V
Collector cutoff current (V_{CE} = 450V, R_{BE} = 50Ω, T_C = 100°C)	I_{CER}	-	5.0	mA
Collector cutoff current (V_{CEV} = 500V, $V_{BE(off)}$ = 1.5V) (V_{CEV} = 500V, $V_{BE(off)}$ = 1.5V, T_C = 150°C)	I_{CEV}	- -	0.25 5.0	mA
Emitter cutoff current (V_{EB} = 6.0V, I_C = 0)	I_{EBO}	-	1.0	mA
DC current gain (I_C = 5.0A, V_{CE} = 5.0V)	h_{FE}	10	60	-
Current gain – bandwidth product (I_C = 0.3A, V_{CE} = 10V, f_{test} = 1MHz)	f_T	5	40	-
Output capacitance (V_{CB} = 10V, I_E = 0, f_{test} = 100kHz)	C_{ob}	125	500	pF

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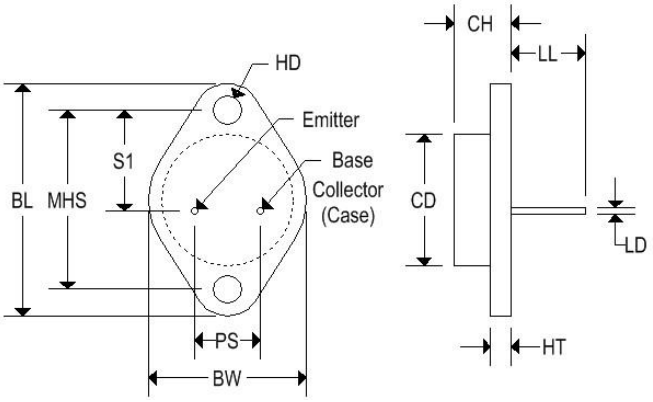
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Characteristic		Symbol	Min	Typ	Max	Unit
SWITCHING TIMES (Resistive Load)						
Delay time	(V_{CC} = 250V, I_C = 10A, I_{B1} = 2A, $V_{BE(off)}$ = 5V, t_p = 10µs, duty cycle ≤ 2%)	t_d	-	0.02	0.1	µs
Rise time		t_r	-	0.3	0.7	
Storage time		t_s	-	1.6	4.0	
Fall time		t_f	-	0.3	0.7	

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