DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

TIPL755, TIPL755A

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	TIPL755	TIPL755A	Unit
Collector emitter voltage	V_{CEO}	375	420	Vdc
Collector base voltage	V_{CBO}	800	1000	Vdc
Emitter base voltage	V_{EB}	10		Vdc
Collector current-Continuous **Peak**	I_C I_{CM}	10 15		Adc
Base current	I_B	5.0		Adc
Total power dissipation @ T_C = 25°C **Derate above 25°C**	P_D	180 1.03		W W/°C
Operating and storage temperature range	T_J, T_{stg}	-65 to +200		°C
Thermal resistance, junction to case	$R_{\theta JC}$	0.97		°C/W

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector emitter sustaining voltage[1] (I_C = 100mA, L = 25mH)	TIP755 TIP755A	$V_{CEO(sus)}$	375 420	- -	Vdc
Collector cutoff current (V_{CE} = 375Vdc, V_{BE} = 0) (V_{CE} = 420Vdc, V_{BE} = 0)	 TIP755 TIP755A	I_{CEO}	 - -	 50 50	µA
Collector cutoff current (V_{CE} = 800Vdc, V_{BE} = 0) (V_{CE} = 1000Vdc, V_{BE} = 0) (V_{CE} = 800Vdc, V_{BE} = 0, T_C = 100°C) (V_{CE} = 1000Vdc, V_{BE} = 0, T_C = 100°C)	 TIPL755 TIPL755A TIPL755 TIPL755A	I_{CES}	 - - - -	 50 50 500 500	µA
Emitter cutoff current (V_{EB} = 10Vdc, I_C = 0)		I_{EBO}	 -	 1.0	mAdc
ON CHARACTERISTICS					
DC current gain [1] (I_C = 0.5Adc, V_{CE} = 5Vdc)		h_{FE}	 15	 60	-
Collector emitter saturation voltage[1] (I_C = 2.0Adc, I_B = 0.4Adc) (I_C = 5.0Adc, I_B = 1.0Adc) (I_C = 10Adc, I_B = 2.0Adc)		$V_{CE(sat)}$	 - - -	 0.5 1.0 2.5	Vdc
Base emitter saturation voltage[1] (I_C = 2.0Adc, I_B = 0.4Adc) (I_C = 5.0Adc, I_B = 1.0Adc) (I_C = 10Adc, I_B = 2.0Adc)		$V_{BE(sat)}$	 - - -	 1.1 1.3 1.8	Vdc

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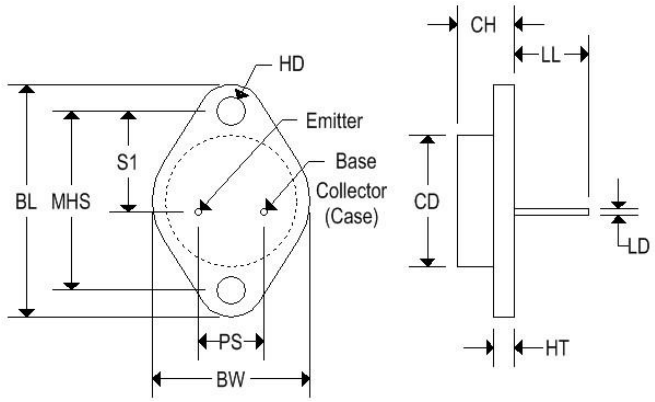
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Characteristic		Symbol	Min	Max	Unit
DYNAMIC CHARACTERISTICS					
Current gain- bandwidth product[2] (I_C = 500mAdc, V_{CE} = 10Vdc, f = 1MHz)		f_T	5.0	-	MHz
Output Capacitance (V_{CB} = 20V, I_E = 0, f = 0.1MHz)		C_{ob}	150 (typ)		pF
On time	I_C = 10A, V_{CC} = 250V, I_{B1} = 2.0A, I_{B2} = -2.5A, t_p = 100µs, duty cycle ≤ 2.0%	t_{on}	-	0.75	µs
Storage time		t_s	-	2.0	
Fall time		t_f	-	0.7	

Note 1: Pulse test: pulse width ≤ 300µs, duty cycle ≤ 2.0%.
Note 2: $f_T = |h_{fe}| * f_{TEST}$

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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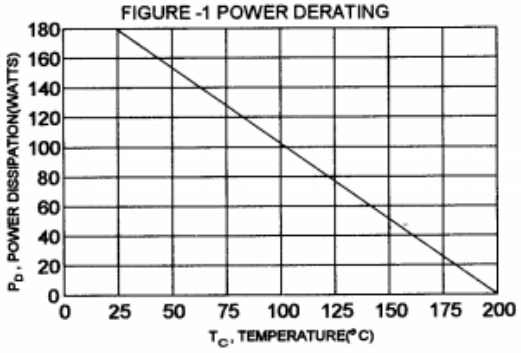
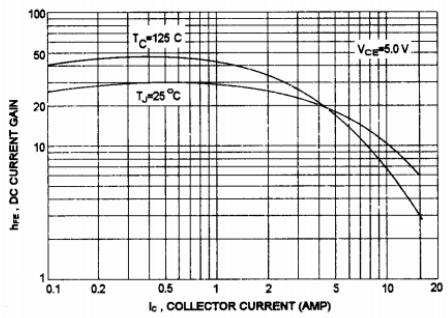
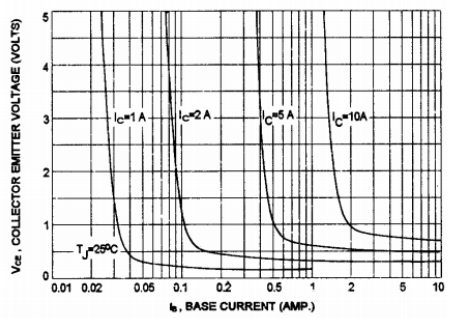
FIGURE -1 POWER DERATING



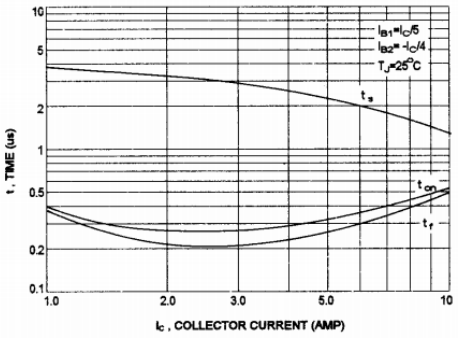
DC CURRENT GAIN



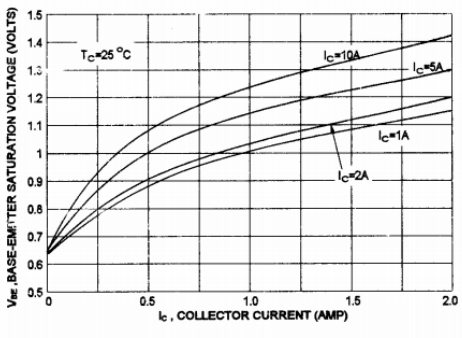
COLLECTOR SATURATION REGION



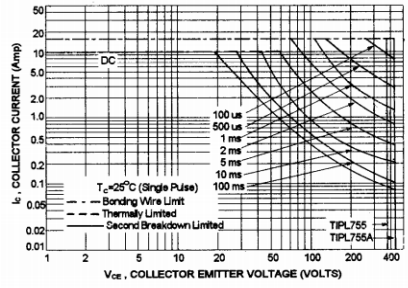
TURN-OFF TIME



BASE - EMITTER SATURATION VOLTAGE



ACTIVE REGION SAFE OPERATING AREA



REVERSE- BIAS SAFE OPERATING AREA