DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

2SC681(ARD)(AYL)

SILICON NPN 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

Parameter	Symbol	2SC681	2SC681ARD	2SC681AYL	Unit
Collector-emitter voltage	V_{CEO}	70	80	80	V
Collector-base voltage	V_{CBO}	200	250	300	V
Emitter-base voltage	V_{EBO}	5.0			V
Collector current – continuous	I_C	6.0			A
Collector current – peak	I_{CM}	20	20	25	A
Base current	I_B	2.0			A
Total power dissipation **Derate above 25°C**	P_D	50 0.4			W W/°C
Junction and storage temperature range	T_J, T_{stg}	-65 to 150			°C
Thermal resistance, junction to case	$R_{\Theta JC}$	2.5			°C/W

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

Parameter	Symbol	Conditions	2SD681		2SD681ARD		2SC681AYL		Unit
			Min	Max	Min	Max	Min	Max	
Collector-emitter sustaining voltage	$V_{CEO(sus)}$	I_C = 50mA, I_B = 0	70	-	80	-	80	-	V
Collector cutoff current	I_{CBO}	V_{CE} = 200V, I_E = 0 V_{CE} = 250V, I_E = 0 V_{CE} = 300V, I_E = 0	- - -	1.0 1.0 1.0	- - -	1.0 1.0 1.0	- - -	1.0 1.0 1.0	mA
Emitter cutoff current	I_{EBO}	V_{EB} = 5V, I_C = 0	-	10	-	10	-	10	mA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 5.0A, I_B = 0.6A	-	2.0	-	2.0	-	2.0	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 5.0A, I_B = 0.6A	-	1.5	-	1.5	-	1.5	V
Fall time	t_f	I_C = 5.0A, I_{B1} = 0.6A, I_{B2} = -1.0A, V_{CC} = 25V	-	0.5	-	0.5	-	0.5	µs

Note 1: Pulse Test: Pulse width = 300µs, duty cycle ≤ 2.0%.

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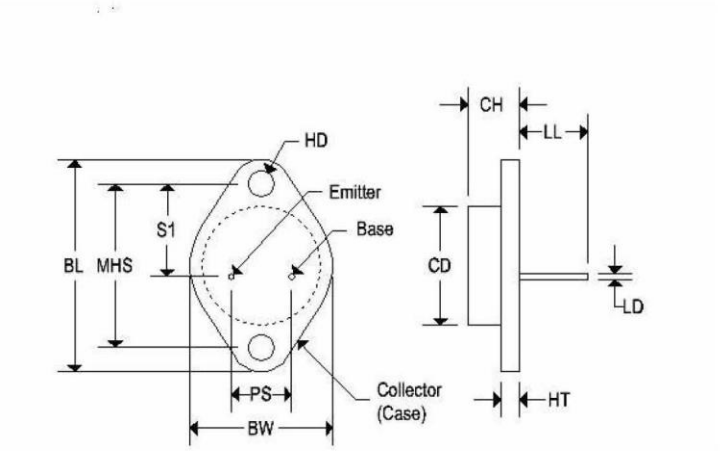
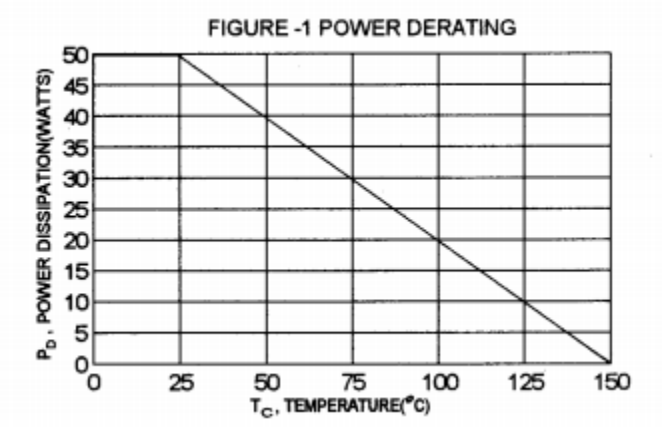
MECHANICAL CHARACTERISTICS

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 POWER DERATING



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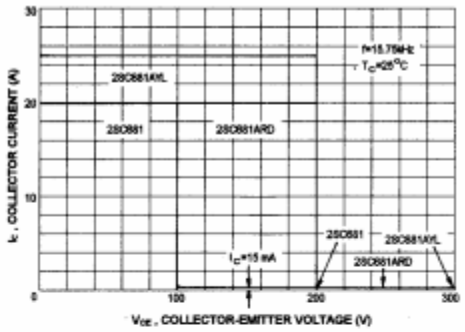
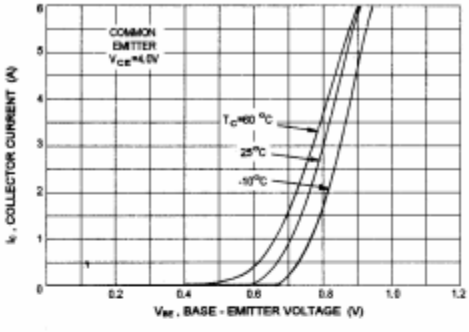
REVERSE BIASE SAFE OPERATING AREA



Ic - Vbe



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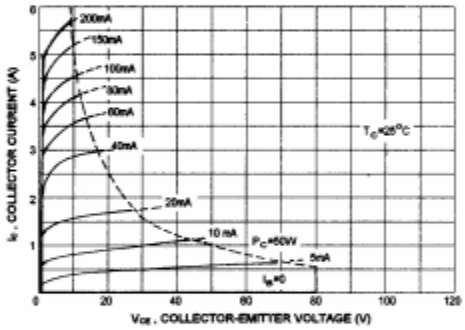

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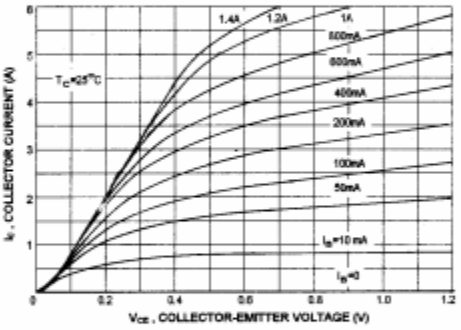
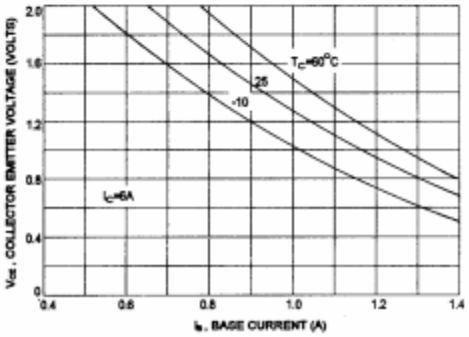


COLLECTOR SATURATION REGION



I_B - Vbe