

COMPLEMENTARY SILICON PLASTIC POWER TRANSISTORS

...designed for use in audio frequency power amplifier, low speed switching application

FEATURES:

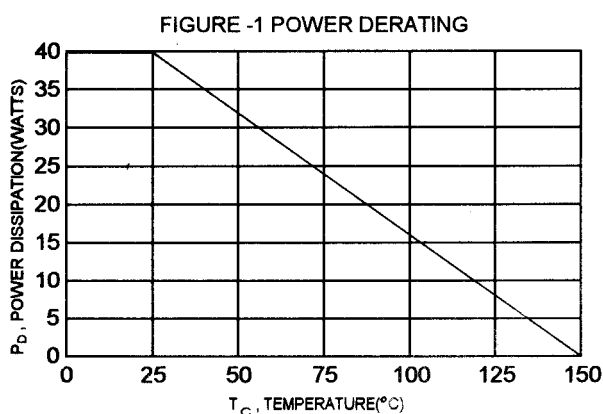
- * Collector-Emitter Voltage
 $V_{CEO} = 80V(\text{Min})$ -2SB703, 2SD743
 $= 100V(\text{Min})$ -2SB703A, 2SD743A
- * DC Current Gain
 $h_{FE} = 40-200 @ I_C = 500mA$

MAXIMUM RATINGS

Characteristic	Symbol	2SB703 2SB703	2SD703A 2SD743A	Unit
Collector-Emitter Voltage	V_{CEO}	80	100	V
Collector-Base Voltage	V_{CBO}	100	100	V
Emitter-Base Voltage	V_{EBO}	5.0		V
Collector Current - Continuous - Peak	I_C I_{CM}	4.0 6.0		A
Base current	I_B	1.0		A
Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	40 0.322		W W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150		$^\circ C$

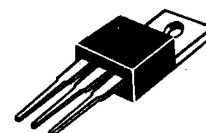
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	3.125	$^\circ C/W$

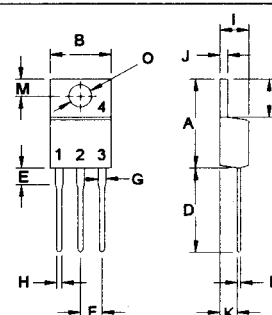


PNP NPN
2SB703 2SD743
2SD703A 2SD743A

4.0 AMPERE
 COMPLEMENTARY SILICON
 POWER TRANSISTORS
 80-100 VOLTS
 40 WATTS



TO-220



PIN 1.BASE
 2.COLLECTOR
 3.EMITTER
 4.COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

2SB703,2SB703A PNP / 2SD743, 2SD743A NPN
ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Base Breakdown Voltage ($I_C = 1.0\text{ mA}$, $I_B = 0$)	2SB703, 2SD743 2SB703A,2SD743A	$V_{(BR)CBO}$	80 100	V
Collector-Emitter Breakdown Voltage ($I_C = 10\text{ mA}$, $I_B = 0$)	2SB703, 2SD743 2SB703A,2SD743A	$V_{(BR)CEO}$	80 100	V
Emitter-Base Breakdown Voltage ($I_B = 1.0\text{ mA}$, $I_C = 0$)		$V_{(BR)EBO}$	5.0	V
Collector Cutoff Current ($V_{CB} = 80\text{ V}$, $I_E = 0$)		I_{CBO}	10	μA
Emitter Cutoff Current ($V_{EB} = 3.0\text{ V}$, $I_C = 0$)		I_{EBO}	10	μA

ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 20\text{ mA}$, $V_{CE} = 5.0\text{ V}$) ($I_C = 0.5\text{ A}$, $V_{CE} = 5.0\text{ V}$)*	2SB703,A/2SD743,A All Devices	$h_{FE(2)}$ $h_{FE(3)}$	30/20 40	200	
Collector-Emitter Saturation Voltage ($I_C = 3.0\text{ A}$, $I_B = 300\text{ mA}$)		$V_{CE(sat)}$		2.0	V
Base-Emitter Saturation Voltage ($I_C = 3.0\text{ A}$, $I_B = 300\text{ mA}$)		$V_{BE(on)}$		2.0	V

DYNAMIC CHARACTERISTICS

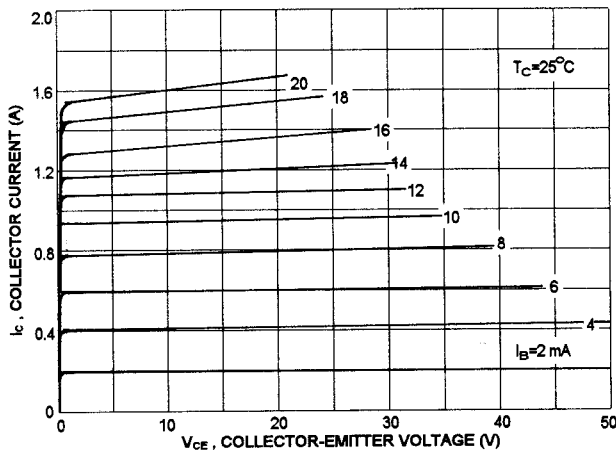
Current-Gain-Bandwidth Product ($I_C = 0.1\text{ A}$, $V_{CE} = 5.0\text{ V}$, $f = 1.0\text{ MHz}$)	f_T	10		MHz
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(1) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

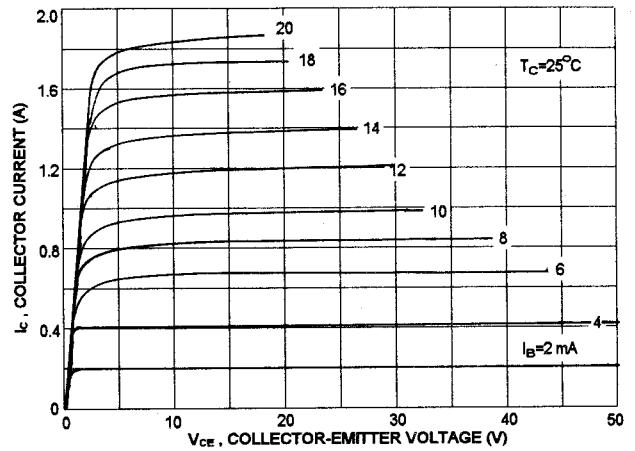
* $h_{FE(3)}$ Classification :

40	S	80	60	R	120	100	Q	200
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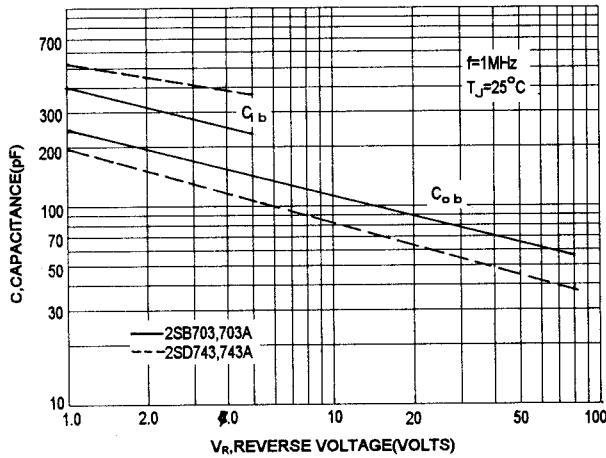
2SB703,2SB703A $I_c - V_{ce}$



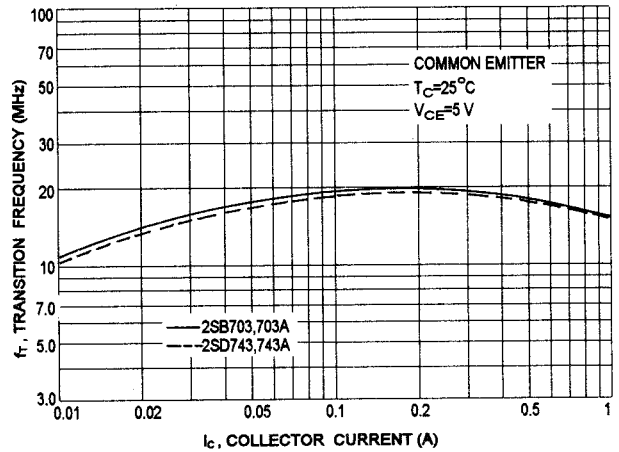
2SD743,2SD743A $I_c - V_{ce}$



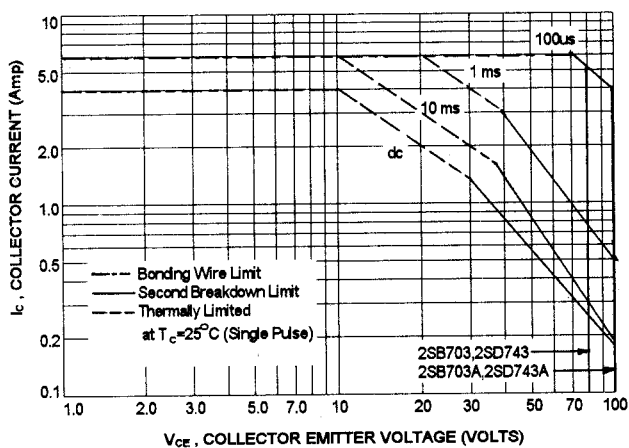
CAPACITANCES



$f_T - I_c$



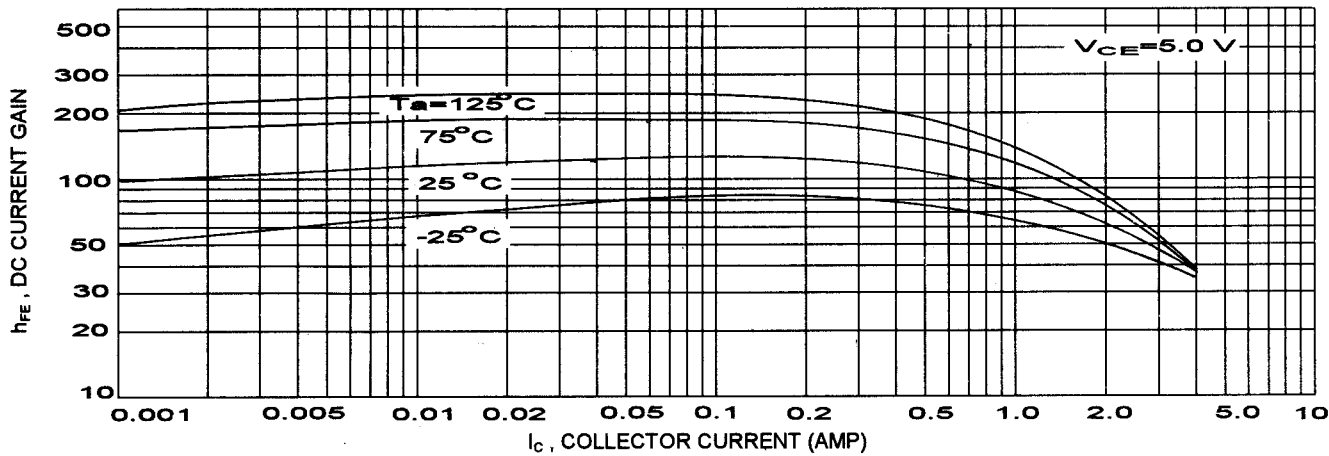
ACTIVE-REGION SAFE OPERATING AREA (SOA)



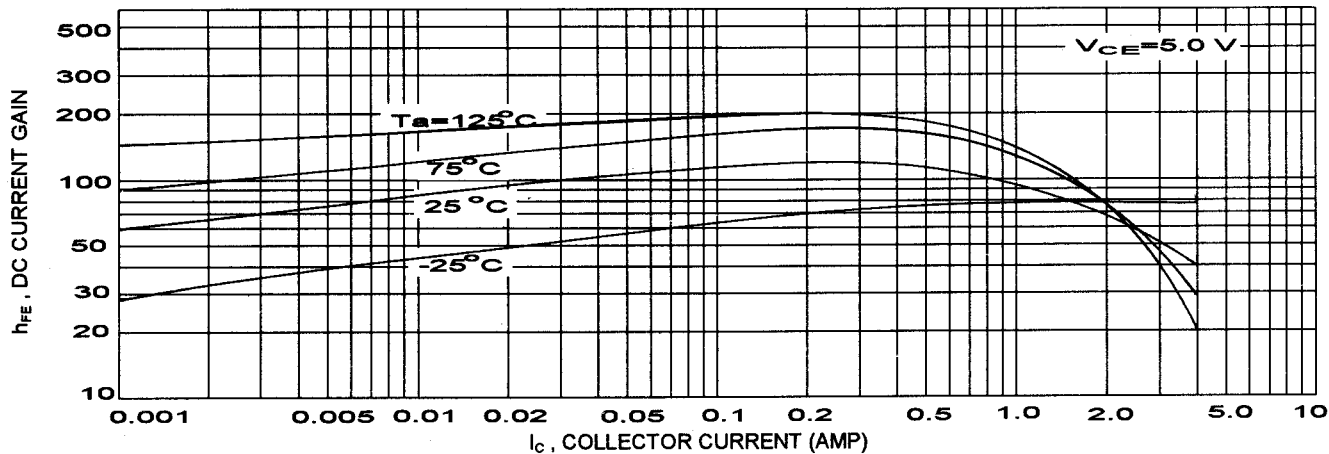
There are two limitation on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate $I_c - V_{CE}$ limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than curves indicate.

The data of SOA curve is base on $T_{J(PK)} = 150^\circ\text{C}$; T_C is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} < 150^\circ\text{C}$. At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

2SB703,2SB703A DC CURRENT GAIN



2SD743,2SD743A DC CURRENT GAIN



"ON" VOLTAGE

