



**COMPLEMENTARY SILICON PLASTIC  
POWER TRANSISTORS**

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

**FEATURES:**

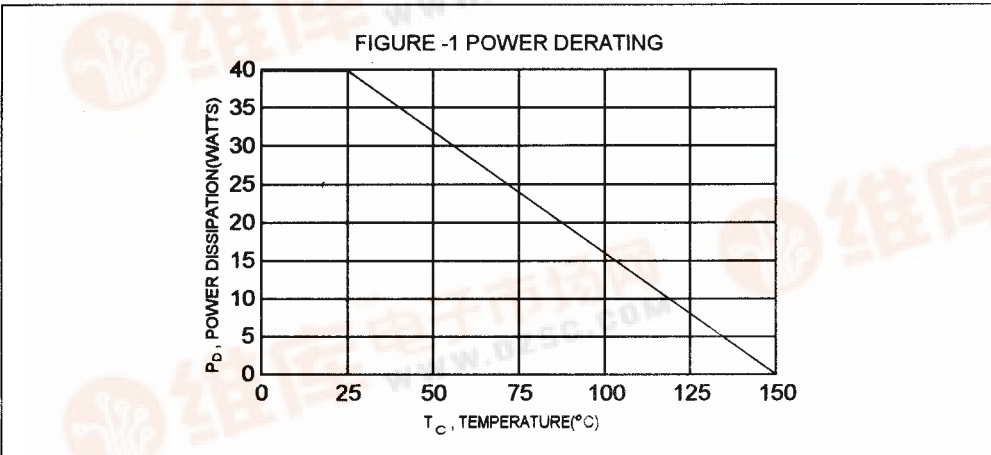
- \* Collector-Emitter Voltage  
 $V_{CE0} = 80V(\text{Min})$ -2SB703, 2SD743  
 $= 100V(\text{Min})$ -2SB703A, 2SD743A
- \* DC Current Gain  
 $hFE = 40-200 @ I_C = 500mA$

**MAXIMUM RATINGS**

Characteristic	Symbol	2SB703 2SB703	2SD703A 2SD743A	Unit
Collector-Emitter Voltage	$V_{CE0}$	80	100	V
Collector-Base Voltage	$V_{CB0}$	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		$^\circ C$

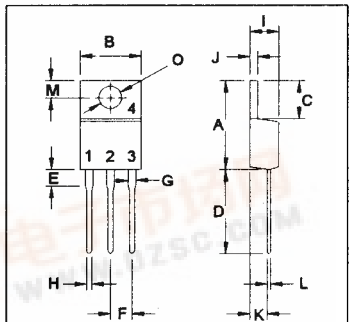
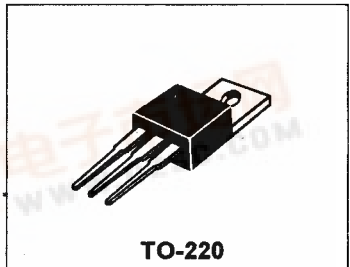
**THERMAL CHARACTERISTICS**

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



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 ( $V_{CB} = 80 \text{ V}, I_E = 0$ )		$I_{CBO}$		$\mu\text{A}$
Emitter Cutoff Current ( $V_{EB} = 3.0 \text{ V}, I_C = 0$ )		$I_{EBO}$		$\mu\text{A}$

**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
Base-Emitter Saturation Voltage ( $I_C = 3.0 \text{ A}, I_B = 300 \text{ mA}$ )		$V_{BE(on)}$		2.0

**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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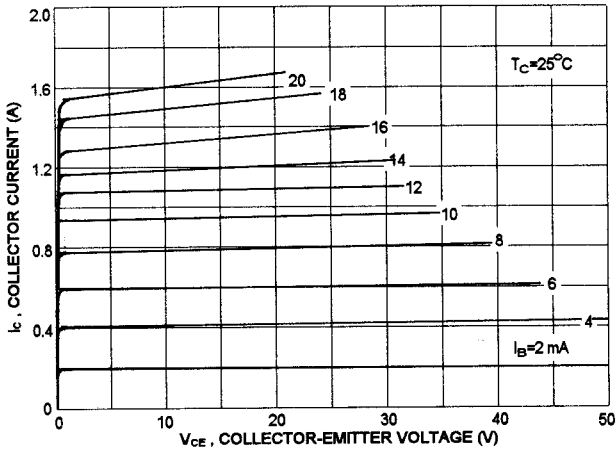
(1) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

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

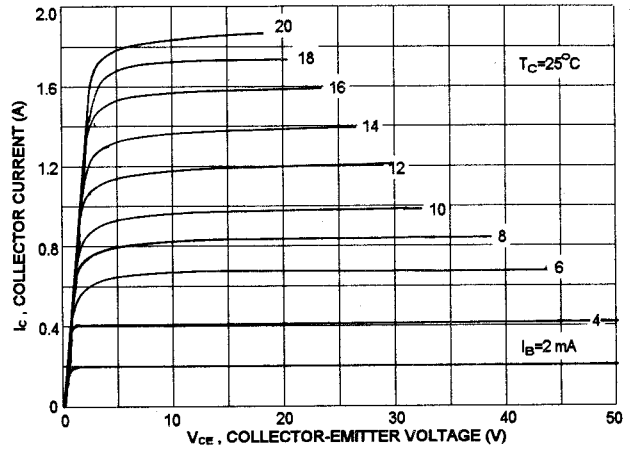
40	S	80	60	R	120	100	Q	200
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2SB703,703A PNP/ 2SD743,743A NPN

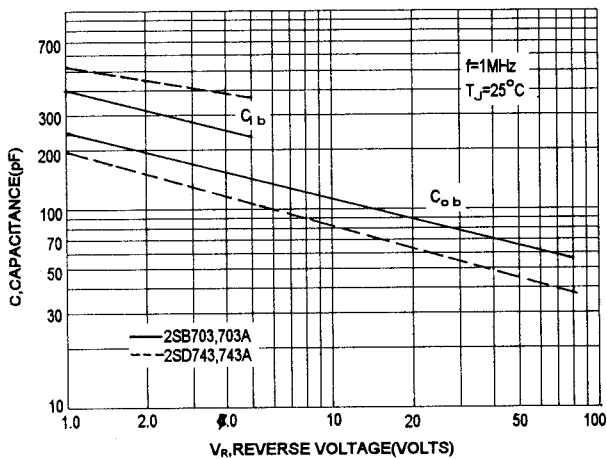
2SB703,2SB703A  $I_c - V_{ce}$



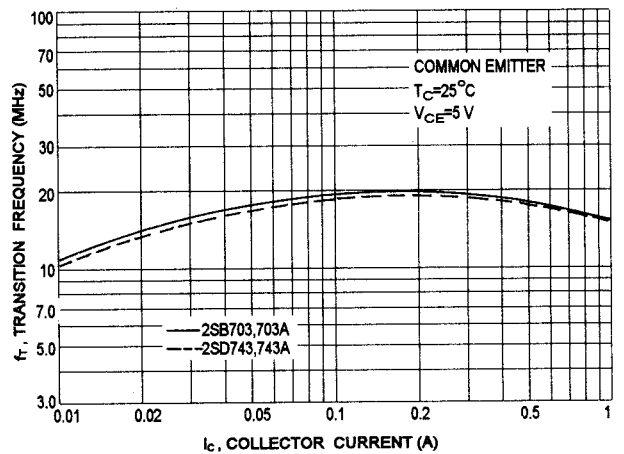
2SD743,2SD743A  $I_c - V_{ce}$



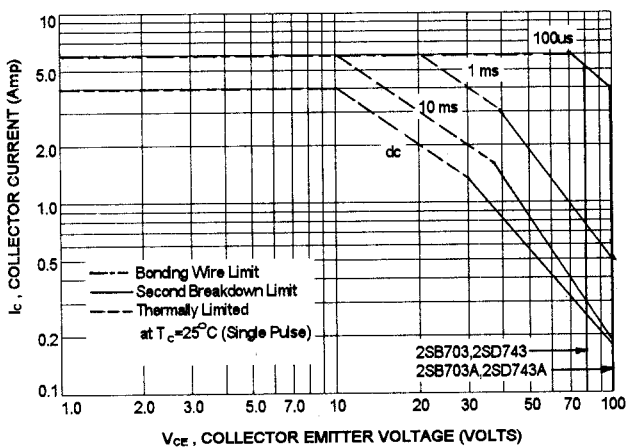
CAPACITANCES



$f_T - I_c$



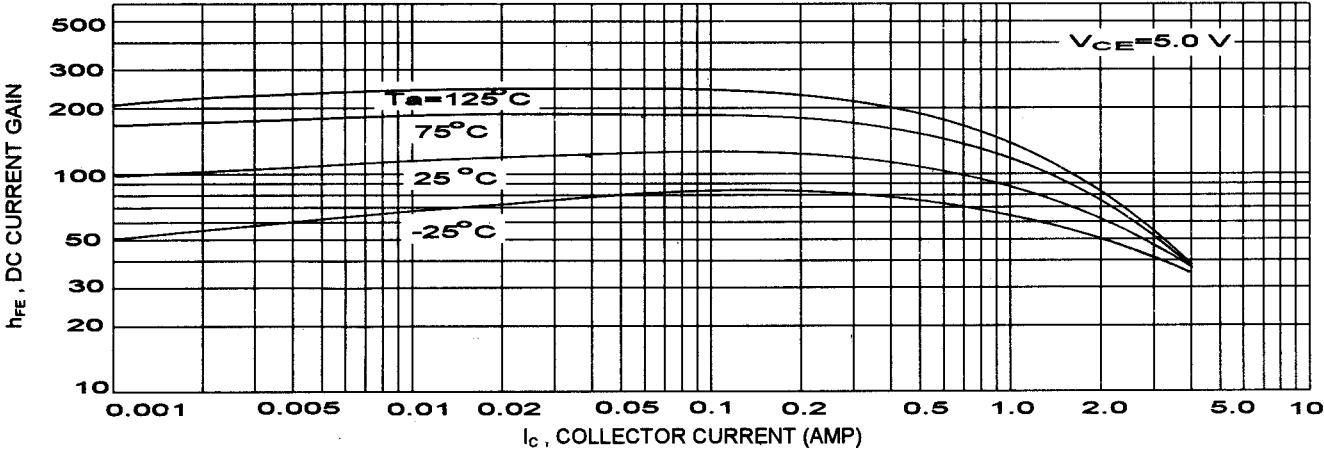
ACTIVE-REGION SAFE OPERATING AREA (SOA)



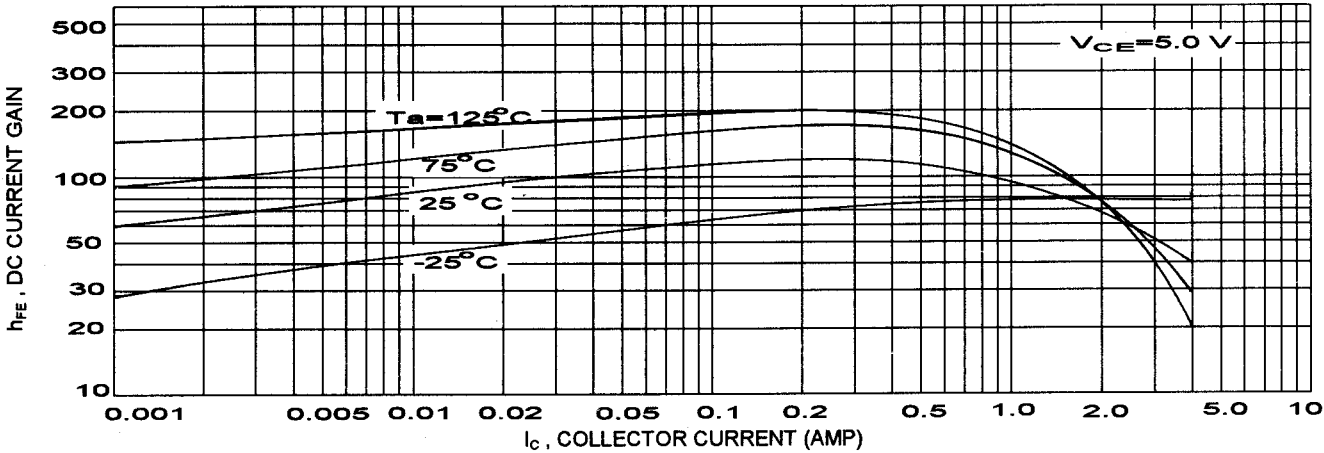
There are two limitation on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate  $I_c - V_{CE}$  limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation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

