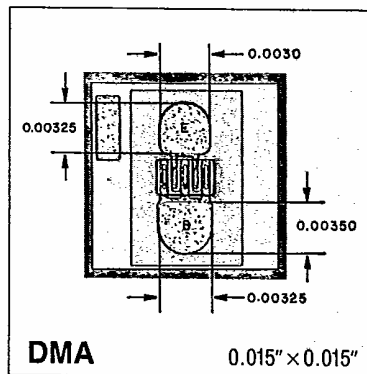


## Process DMA NPN Small-Signal Transistor

Process DMA is a double-diffused NPN silicon epitaxial planar device designed for use in VHF and UHF amplifiers, mixers, and oscillators.

### ABSOLUTE MAXIMUM RATINGS

Collector Current,  $I_C$  ..... 50 mA  
 Operating Junction Temperature,  $T_J$  ..... +150°C  
 Storage Temperature Range,  $T_S$  ..... -55°C to +150°C

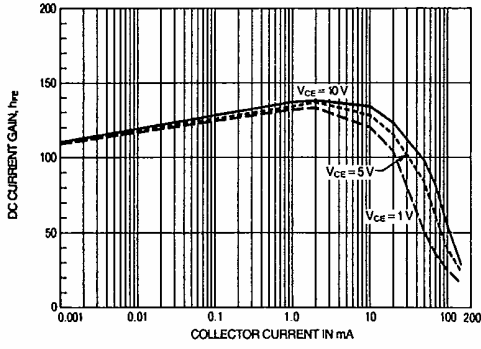


### ELECTRICAL CHARACTERISTICS at $T_A = +25^\circ\text{C}$

Characteristic	Symbol	Test Conditions	Limits			Units
			Min.	Typ.	Max.	
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{ mA}$	15	27	—	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\ \mu\text{A}$	5.0	5.7	—	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\ \mu\text{A}$	30	45	—	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 30\text{ V}$	—	—	100	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 4.0\text{ V}$	—	—	100	nA
Static Forward Current Transfer Ratio	$h_{FE}$	$V_{CE} = 1.0\text{ V}, I_C = 0.1\text{ mA}$	—	120	—	—
		$V_{CE} = 1.0\text{ V}, I_C = 10\text{ mA}$	30	120	300	—
		$V_{CE} = 1.0\text{ V}, I_C = 50\text{ mA}$	20	50	—	—
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{ mA}, I_B = 1.0\text{ mA}$	—	0.09	0.4	V
		$I_C = 50\text{ mA}, I_B = 5.0\text{ mA}$	—	0.28	1.0	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{ mA}, I_B = 1.0\text{ mA}$	—	0.85	1.0	V
Gain-Bandwidth Product	$f_T$	$V_{CE} = 10\text{ V}, I_C = 10\text{ mA}$	600	900	—	MHz
Output Capacitance	$C_{cb}$	$V_{CB} = 10\text{ V}, f = 1.0\text{ MHz}$	—	0.7	1.7	pF
Input Capacitance	$C_{eb}$	$V_{EB} = 0.5\text{ V}, f = 1.0\text{ MHz}$	—	0.9	2.0	pF

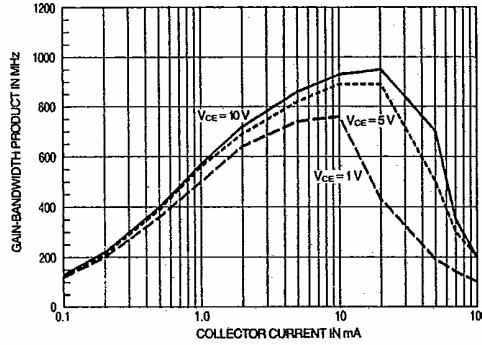
Typical Characteristics  
at  $T_A = +25^\circ\text{C}$

$h_{FE}$  AS A FUNCTION  
OF COLLECTOR CURRENT



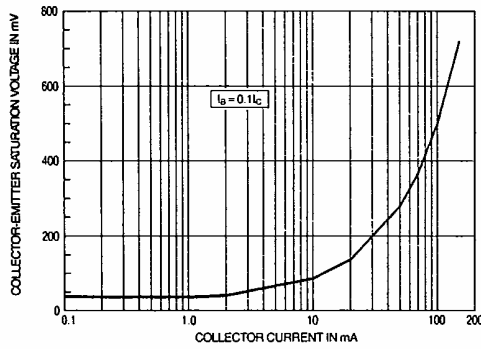
Dwg. No. A-13, 811

$f_T$  AS A FUNCTION  
OF COLLECTOR CURRENT



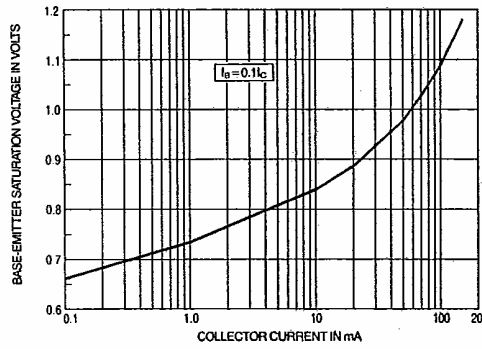
Dwg. No. A-13, 808

$V_{CE(sat)}$  AS A FUNCTION  
OF COLLECTOR CURRENT



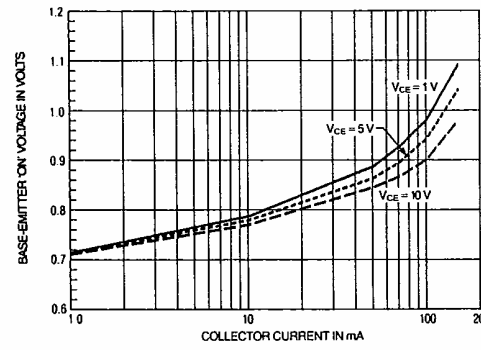
Dwg. No. A-13, 809

$V_{BE(sat)}$  AS A FUNCTION  
OF COLLECTOR CURRENT



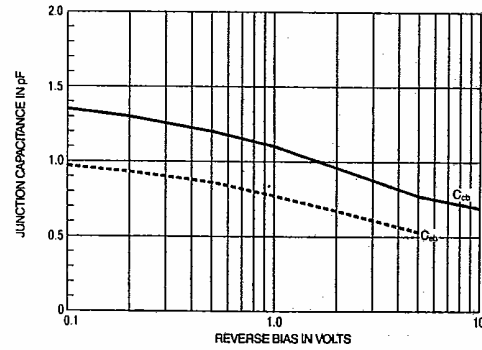
Dwg. No. A-13, 810

$V_{BE(on)}$  AS A FUNCTION  
OF COLLECTOR CURRENT



Dwg. No. A-13, 812

JUNCTION CAPACITANCE  
AS A FUNCTION OF REVERSE BIAS



Dwg. No. A-13, 807