

## GMBT2222A

### NPN EPITAXIAL PLANAR TRANSISTOR

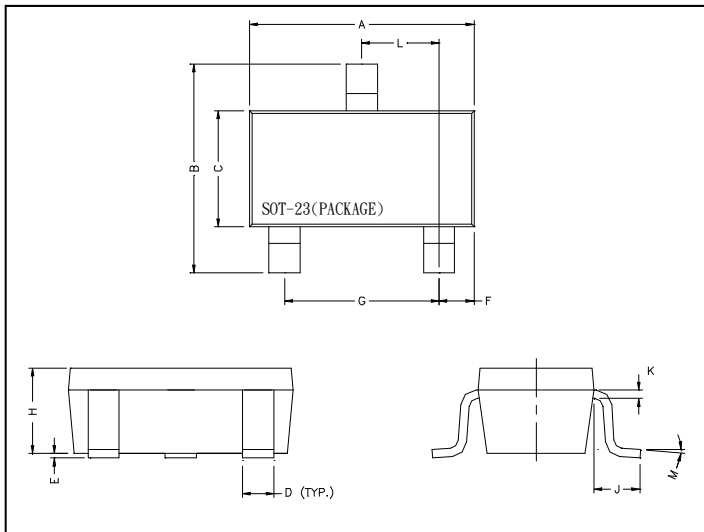
#### Description

The GMBT2222A is designed for general purpose amplifier and high speed, medium-power switching applications.

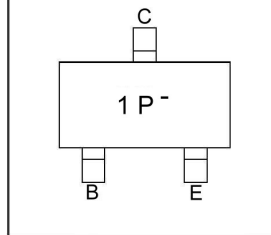
#### Features

- High frequency current gain
- High speed switching
- For complementary use with PNP type GMBT2907A

#### Package Dimensions



Marking:



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	1.90	REF.
B	2.40	2.80	H	1.00	1.30
C	1.40	1.60	K	0.10	0.20
D	0.35	0.50	J	0.40	-
E	0	0.10	L	0.85	1.15
F	0.45	0.55	M	0°	10°

#### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Ratings	Unit
Junction Temperature	Tj	+150	°C
Storage Temperature	Tstg	-55 ~ +150	°C
Collector to Base Voltage at Ta=25°C	VCBO	75	V
Collector to Emitter Voltage at Ta=25°C	VCEO	40	V
Emitter to Base Voltage at Ta=25°C	VEBO	6	V
Collector Current at Ta=25°C	IC	600	mA
Total Power Dissipation at Ta=25°C	PD	225	mW

#### Characteristics at Ta = 25°C

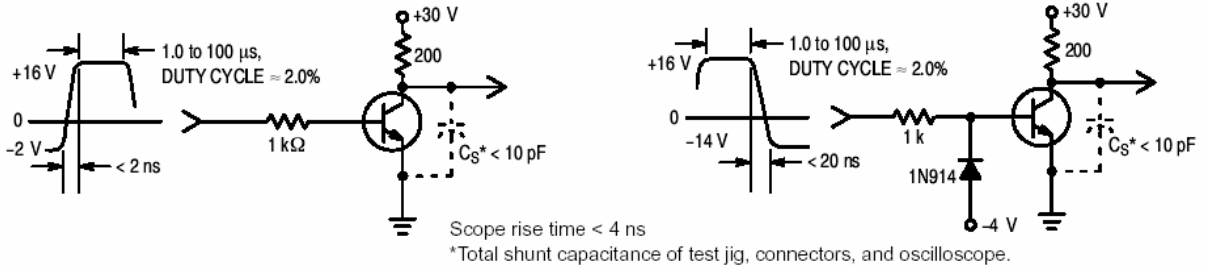
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BVCBO	75	-	-	V	IC=100uA, IE=0
BVCEO	40	-	-	V	IC=10mA, IB=0
BVEBO	6	-	-	V	IE=10uA, IC=0
ICBO	-	-	10	nA	VCB=60V, IE=0
ICEX	-	-	10	nA	VCE=60V, VEB(OFF)=3V
IEBO	-	-	10	nA	VEB=3V, IC=0
*VCE(sat)1	-	-	500	mV	IC=380mA, IB=10mA
*VCE(sat)2	-	-	1.0	V	IC=500mA, IB=50mA
*VBE(sat)1	-	-	1.2	V	IC=150mA, IB=15mA
*VBE(sat)2	-	-	2.0	V	IC=500mA, IB=50mA
*hFE1	35	-	-		VCE=10V, IC=100uA
*hFE2	50	-	-		VCE=10V, IC=1mA
*hFE3	75	-	-		VCE=10V, IC=10mA
*hFE4	100	-	300		VCE=10V, IC=150mA
*hFE5	40	-	-		VCE=10V, IC=500mA
fT	300	-	-	MHz	VCB=20V, IC=20mA, f=100MHz
Cob	-	-	8	pF	VCB=10V, IE=0, f=1MHz

\* Pulse Test: Pulse Width ≤ 380μs, Duty Cycle ≤ 2%

## Switching Characteristics

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
td (Delay Time)	-	-	10	ns	VCC=30V, VBE(off)=-0.5V IC=150mA, IB1=15mA
tr (Rise Time)	-	-	25	ns	
ts (Storage Time)	-	-	225	ns	VCC=30V, IC=150mA, IB1=IB2=15mA
tf (Fall Time)	-	-	60	ns	

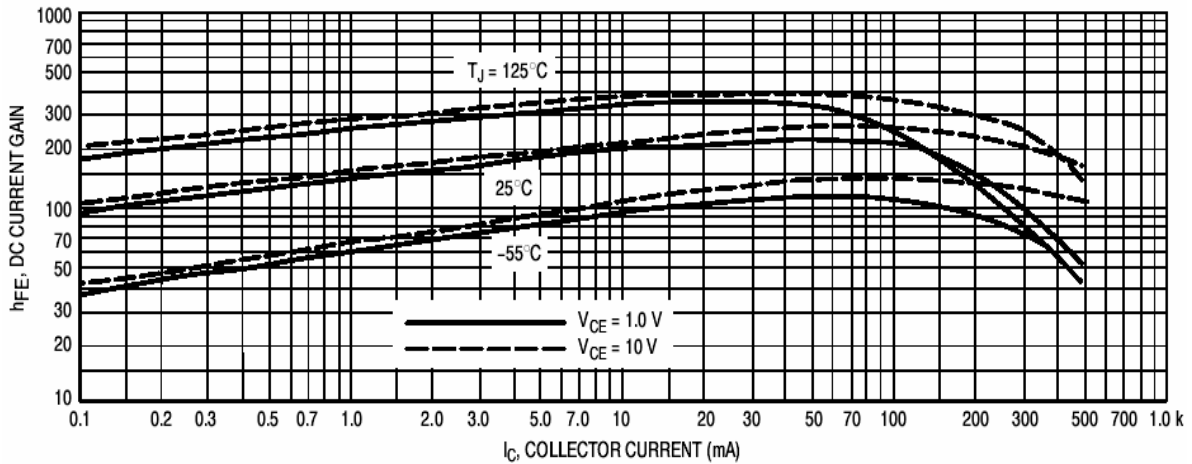
## Switching Time Equivalent Test Circuits



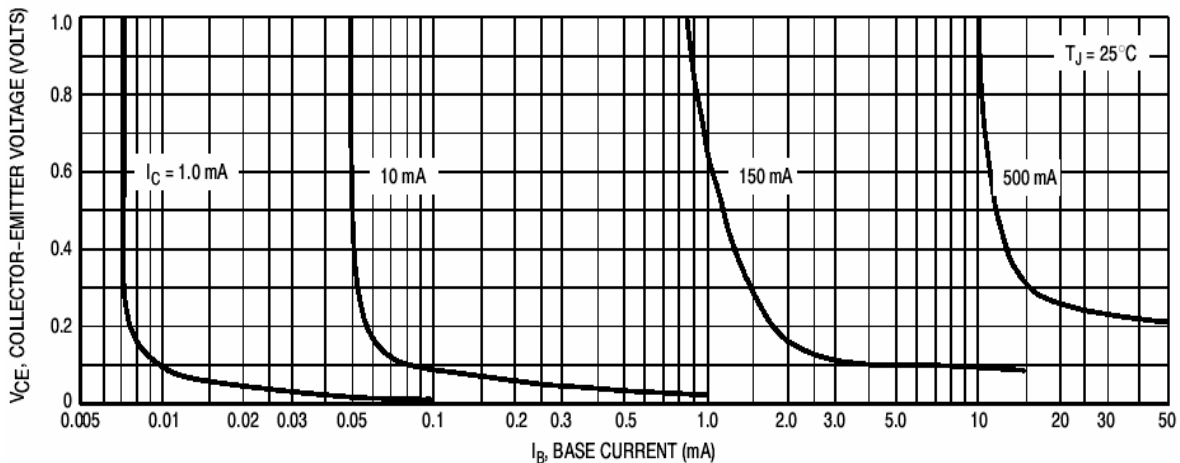
**Turn-On Time**

**Turn-Off Time**

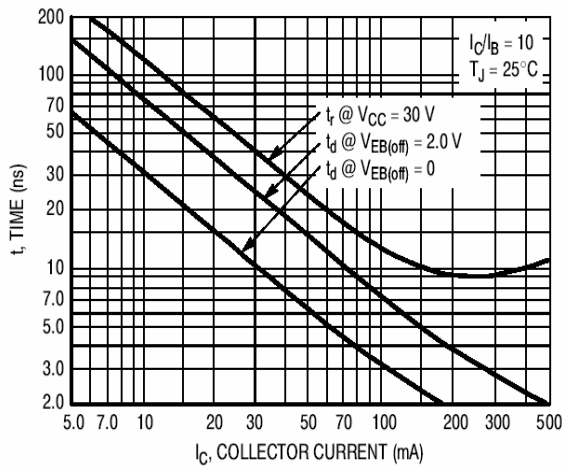
## Characteristics Curve



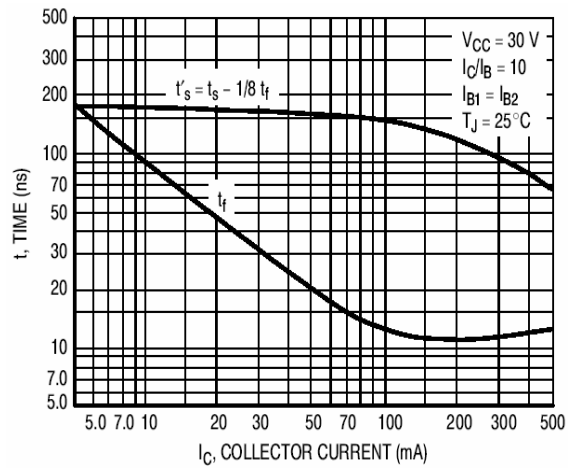
**Fig 1. DC Current Gain**



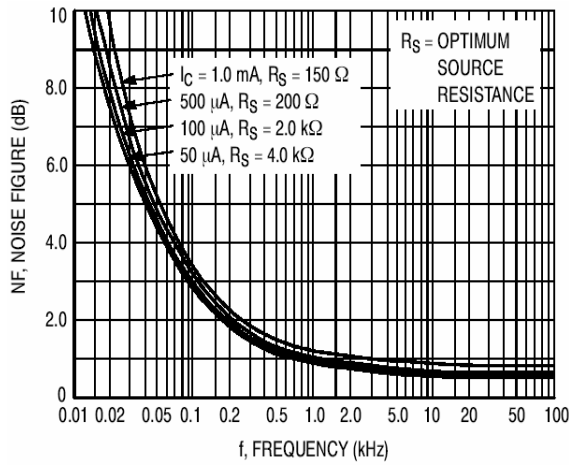
**Fig 2. Collector saturation Region**



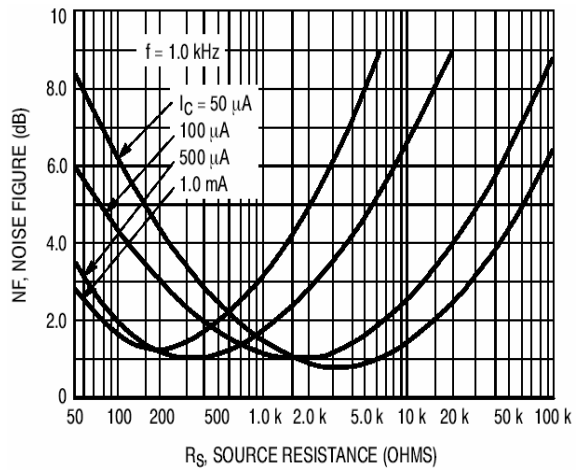
**Fig 3. Turn-On Time**



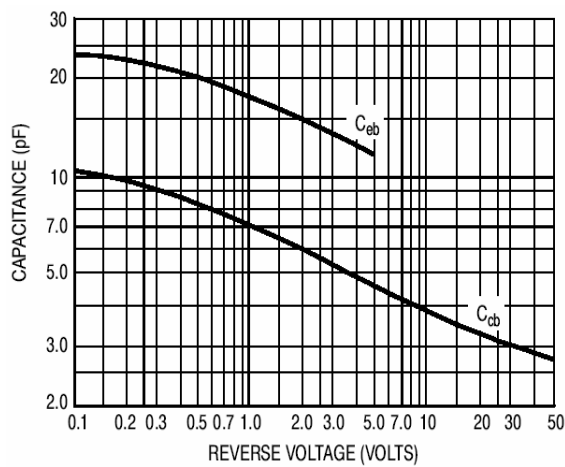
**Fig 4. Turn-Off Time**



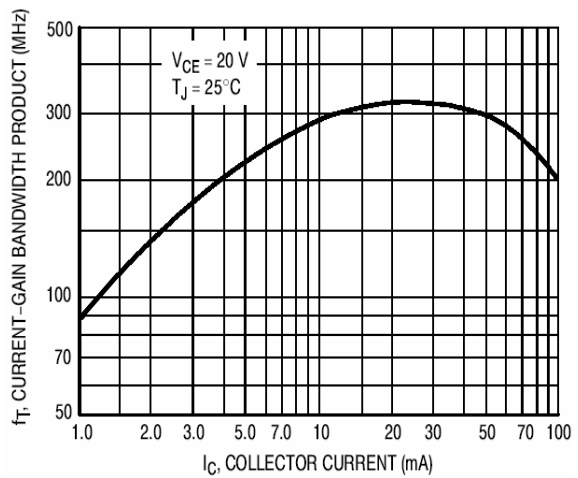
**Fig 5. Frequency Effects**



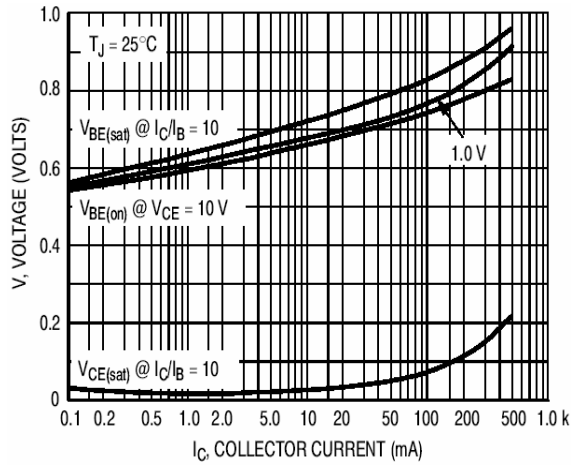
**Fig 6. Source Resistance Effects**



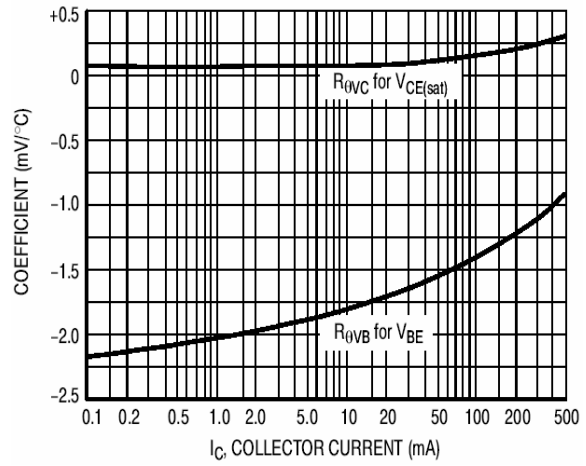
**Fig 7. Capacitance**



**Fig 8. Current-Gain Bandwidth Product**



**Fig 9. "On" Voltage**



**Fig 10. Temperature Coefficients**

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