

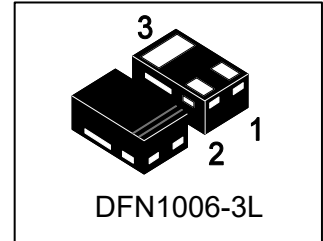
# MBT2222AN

## S-MBT2222AN

General Purpose Transistors NPN Silicon

### 1. FEATURES

- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.

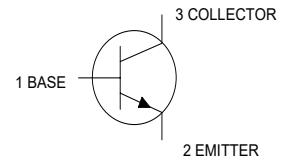


### 2. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
MBT2222AN	1P	10000/Tape&Reel

### 3. MAXIMUM RATINGS(Ta = 25°C)

Parameter	Symbol	Limits	Unit
Collector–Emitter Voltage	VCEO	40	Vdc
Collector–Base Voltage	VCBO	75	Vdc
Emitter–Base Voltage	VEBO	6	Vdc
Collector Current — Continuous	IC	600	mAdc



### 4. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation, FR-5 Board (Note 1) @ TA = 25°C Derate above 25°C	PD	225 1.8	mW mW/°C
Thermal Resistance, Junction–to–Ambient(Note 1)	RθJA	556	°C/W
Junction and Storage temperature	TJ, Tstg	-55~+150	°C

1. FR-5 = 1.0×0.75×0.062 in.



**5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)**
**OFF CHARACTERISTICS**

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Collector–Emitter Breakdown Voltage (IC = 10 mAdc, IB = 0)	VBR(CEO)	40	-	-	V
Collector–Base Breakdown Voltage (IC = 10 μAdc, IE = 0)	VBR(CBO)	75	-	-	V
Emitter–Base Breakdown Voltage (IE = 10 μAdc, IC = 0)	VBR(EBO)	6	-	-	V
Collector Cutoff Current (VCE = 60 Vdc, VEB(off) = 3.0Vdc)	ICEX	-	-	10	nA
Collector Cutoff Current (VCB = 60 Vdc, IE = 0) (VCB = 60 Vdc, IE = 0, TA = 125°C)	ICBO	-	-	0.01 10	μA
Emitter Cutoff Current (VEB = 3.0 Vdc, IC = 0)	IEBO	-	-	100	nA
Base Cutoff Current (VCE = 60 Vdc, VEB(off) = 3.0 Vdc)	IBL	-	-	20	nA

**ON CHARACTERISTICS (Note 2.)**

DC Current Gain (IC = 0.1 mAdc, VCE = 10 Vdc) (IC = 1.0 mAdc, VCE = 10 Vdc) (IC = 10 mAdc, VCE = 10 Vdc) (IC = 10 mAdc, VCE = 10 Vdc, TA= -55°C) (IC = 150 mAdc, VCE = 10 Vdc) (IC = 150 mAdc, VCE = 1.0 Vdc) (IC = 500 mAdc, VCE = 10 Vdc)	HFE	35 50 75 35 100 50 40	- - - - - - -	- - - - 300 - -	
Collector–Emitter Saturation Voltage (IC = 150 mAdc, IB = 15 mAdc) (IC = 500 mAdc, IB = 50 mAdc)	VCE(sat)	- -	- -	0.3 1	V
Base–Emitter Saturation Voltage (IC = 150 mAdc, IB = 15 mAdc) (IC = 500 mAdc, IB = 50 mAdc)	VBE(sat)	0.6 -	- -	1.2 2	V

**SMALL–SIGNAL CHARACTERISTICS**

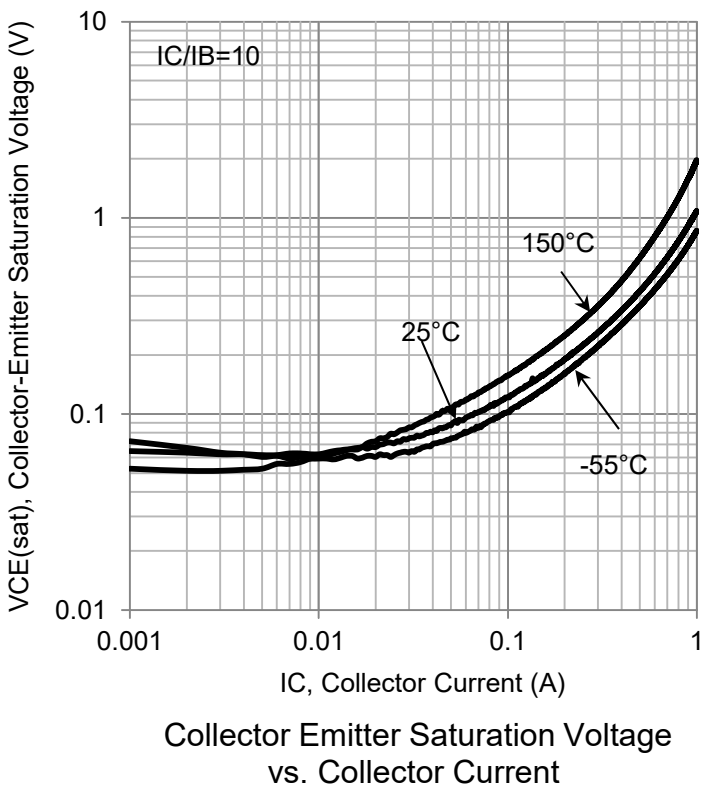
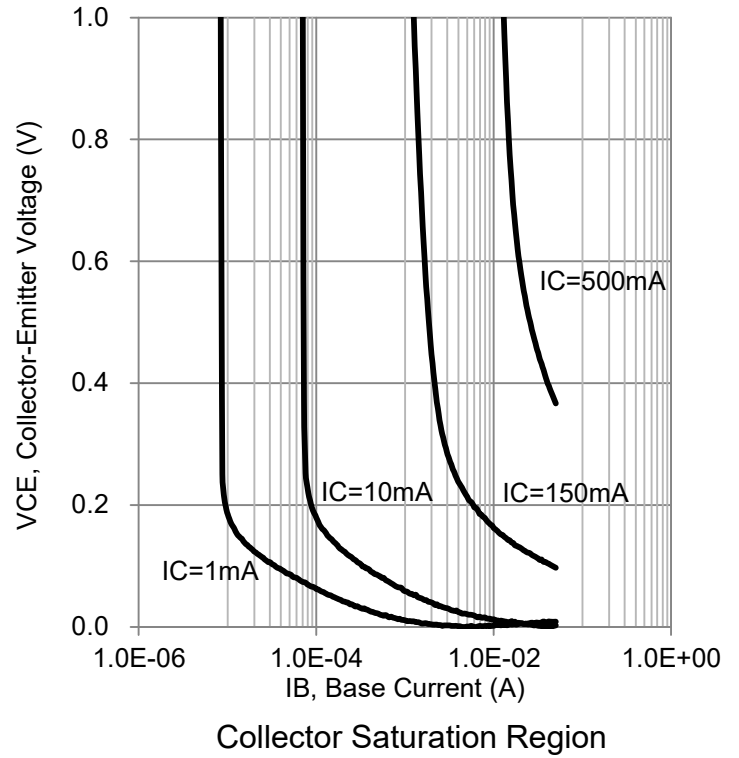
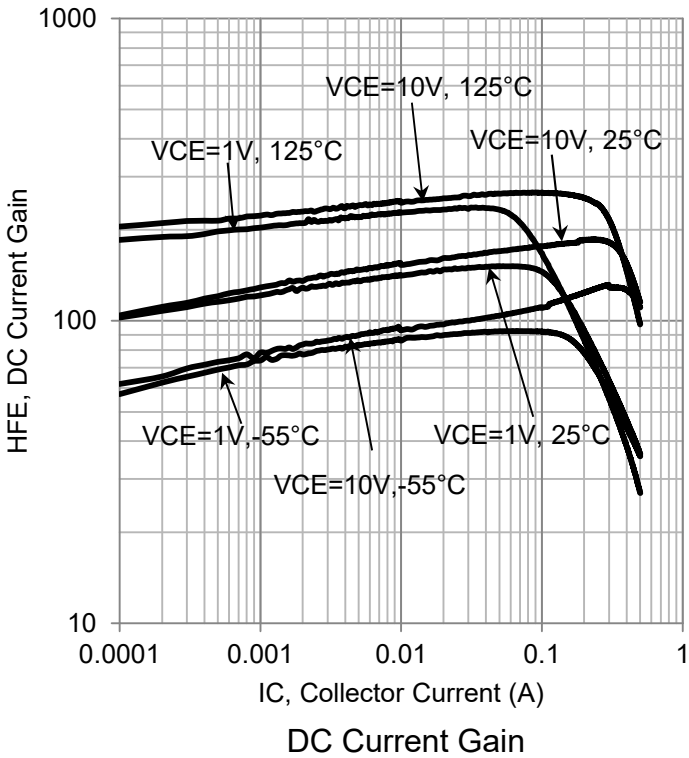
Current–Gain — Bandwidth Product (IC = 20mAdc, VCE= 20Vdc, f = 100MHz)	fT	300	-	-	MHz
Output Capacitance (VCB = 5.0 Vdc, IE = 0, f = 1.0 MHz)	Cobo	-	-	8	pF
Input Capacitance (VEB = 0.5 Vdc, IC = 0, f = 1.0 MHz)	Cibo	-	-	25	pF

**SWITCHING CHARACTERISTICS**

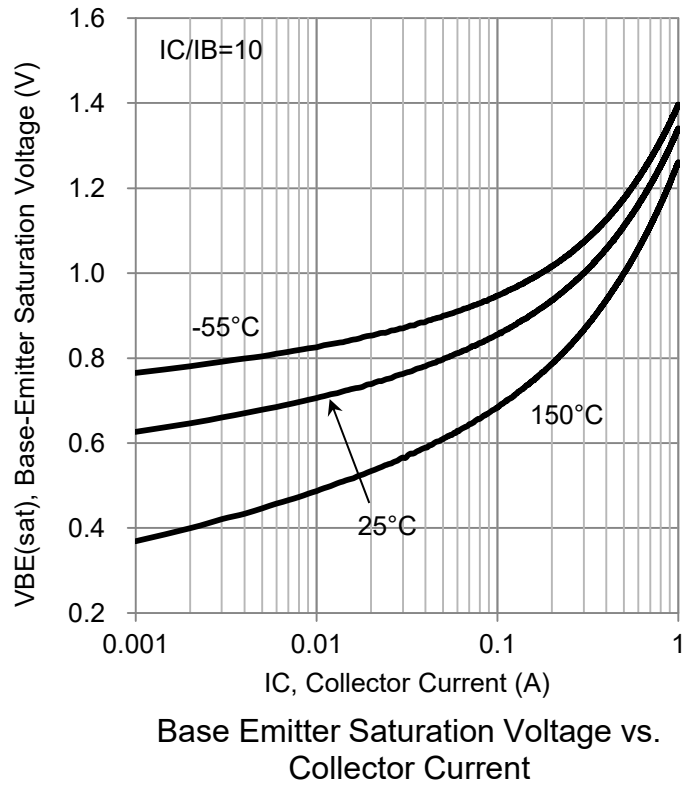
Delay Time	(VCC = 30 Vdc, VEB=-0.5Vdc, IC = 150mAdc, IB1 = 15 mAdc)	td	-	-	10	ns
Rise Time		tr	-	-	25	
Storage Time	(VCC = 30 Vdc, IC = 150 mAdc, IB1 = IB2 = 15 mAdc)	ts	-	-	225	
Fall Time		tf	-	-	60	



**6.ELECTRICAL CHARACTERISTICS CURVES**



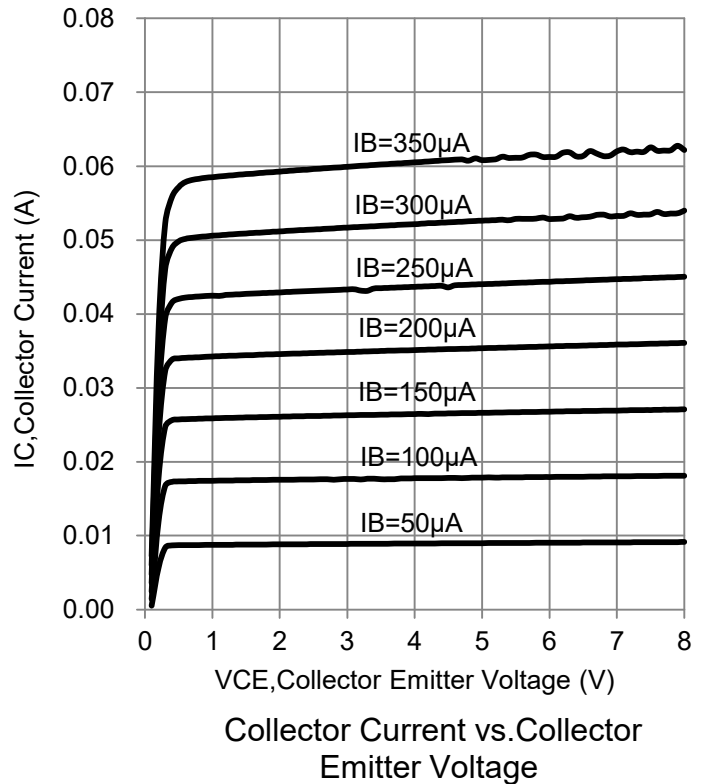
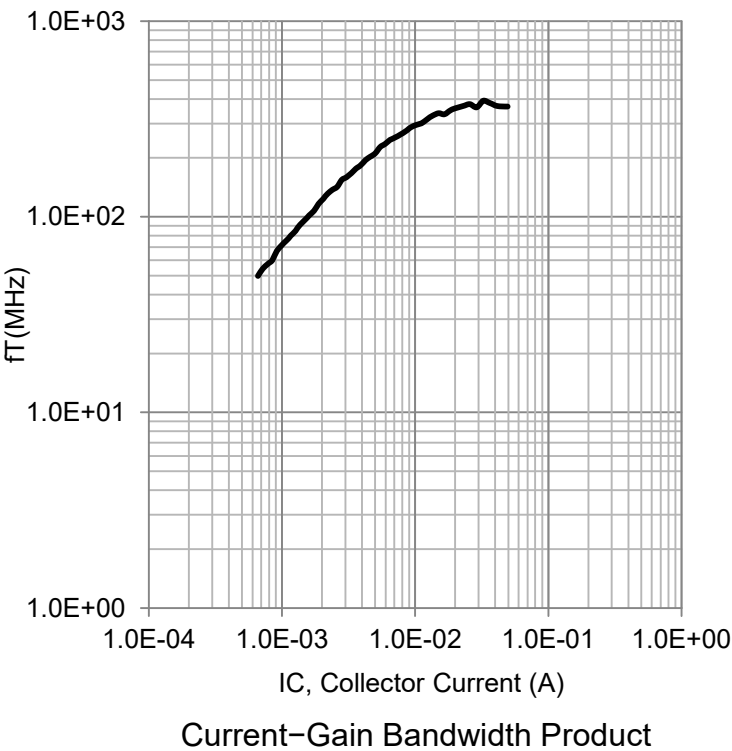
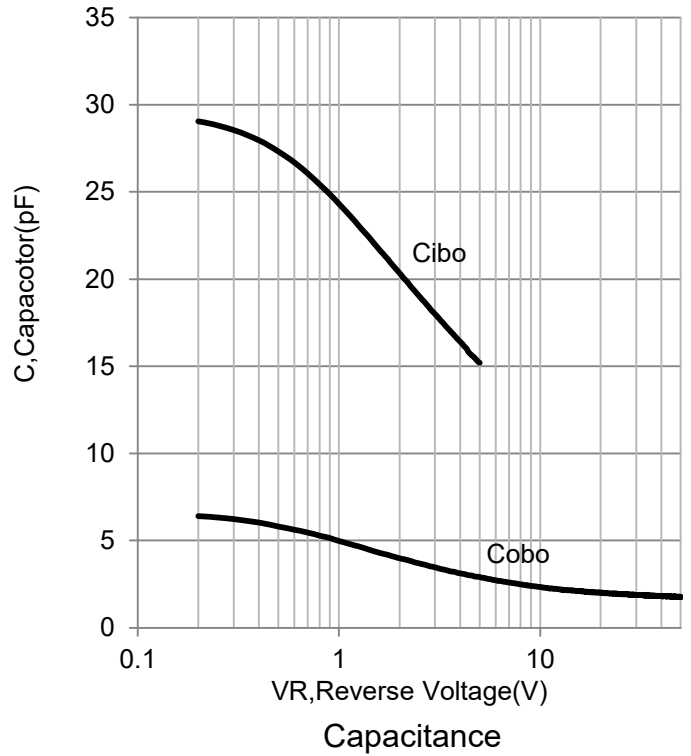
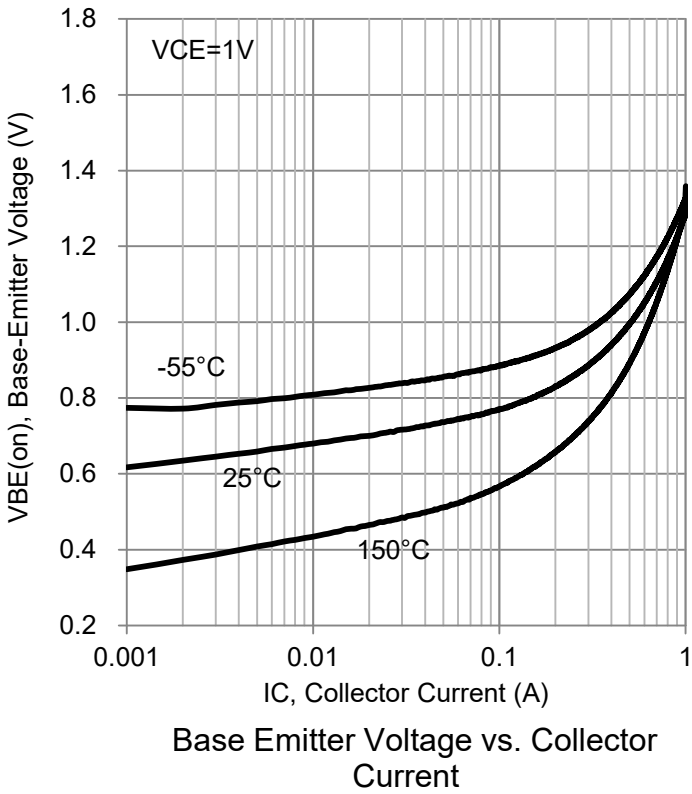
Collector Emitter Saturation Voltage vs. Collector Current



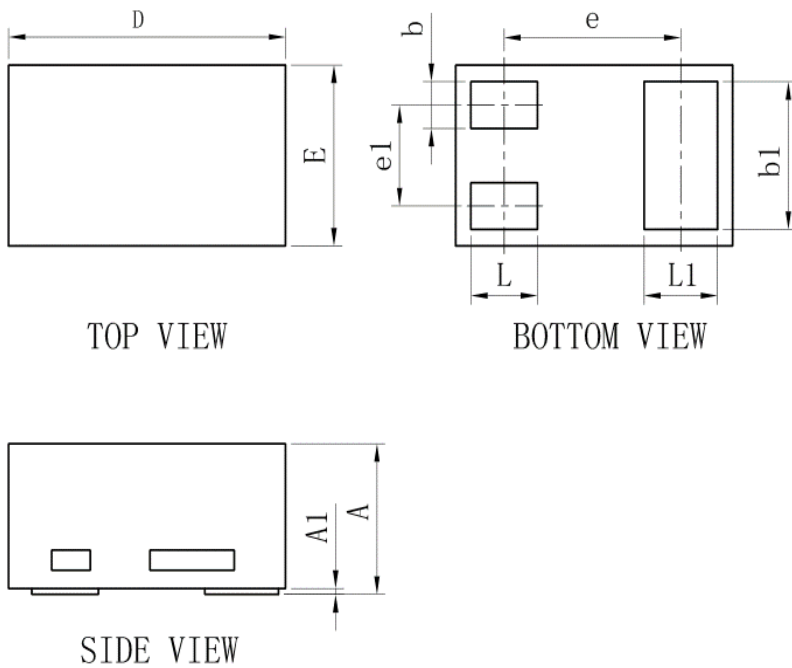
Base Emitter Saturation Voltage vs. Collector Current



6.ELECTRICAL CHARACTERISTICS CURVES(Con.)

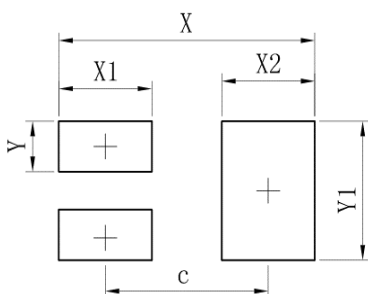


**7.OUTLINE AND DIMENSIONS**



DFN1006-3L			
DIM	MIN	TYP	MAX
D	0.95	1.00	1.05
E	0.55	0.60	0.65
e	-	0.64	-
e1	-	0.34	-
L	0.19	0.24	0.29
L1	0.22	0.27	0.32
b	0.10	0.15	0.20
b1	0.44	0.49	0.54
A	0.43	0.48	0.53
A1	0	-	0.05
All Dimensions in mm			

**8.SOLDERING FOOTPRINT**



Dimensions	(mm)
c	0.70
X	1.10
X1	0.40
X2	0.40
Y	0.20
Y1	0.55

