

NPN Silicon General Purpose Amplifier Transistor

NST4617MX2

This NPN transistor is designed for general purpose amplifier applications. This device is housed in the X2DFN3 package which is designed for surface mount applications, where board space is at a premium.

Features

- High h_{FE} , 280 (typical)
- Low $V_{CE(sat)}$, < 0.5 V
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant*

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$)

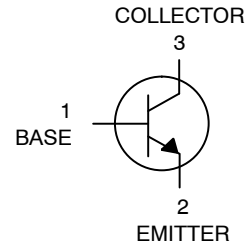
Rating	Symbol	Value	Unit
Collector-Base Voltage	$V_{(BR)CBO}$	50	Vdc
Collector-Emitter Voltage	$V_{(BR)CEO}$	50	Vdc
Emitter-Base Voltage	$V_{(BR)EBO}$	5.0	Vdc
Collector Current – Continuous	I_C	100	mAdc

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

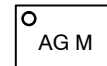
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Power Dissipation (Note 1) @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	166 1.39	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	722	$^\circ\text{C}/\text{W}$
Total Power Dissipation (Note 2) @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	700 5.99	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	167	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

1. Surface-mounted on FR4 board using a 0.6 mm^2 , 2 oz. Cu pad
2. Surface-mounted on FR4 board using a 100 mm^2 , 2 oz. Cu pad



MARKING DIAGRAM



AG = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
NST4617MX2T5G	X2DFN3 (Pb-Free)	8000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Characteristic	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage (I _C = 50 μAdc, I _E = 0)	V _{(BR)CBO}	50	-	-	Vdc
Collector-Emitter Breakdown Voltage (I _C = 1.0 mAdc, I _B = 0)	V _{(BR)CEO}	50	-	-	Vdc
Emitter-Base Breakdown Voltage (I _E = 50 μAdc, I _E = 0)	V _{(BR)EBO}	5.0	-	-	Vdc
Collector-Base Cutoff Current (V _{CB} = 30 Vdc, I _E = 0)	I _{CBO}	-	-	0.5	μA
Emitter-Base Cutoff Current (V _{EB} = 4.0 Vdc, I _B = 0)	I _{EBO}	-	-	0.5	μA
Collector-Emitter Saturation Voltage (Note 3) (I _C = 60 mAdc, I _B = 5.0 mAdc)	V _{CE(sat)}	-	0.08	0.4	Vdc
DC Current Gain (Note 3) (V _{CE} = 6.0 Vdc, I _C = 1.0 mAdc)	h _{FE}	120	280	560	-
Transition Frequency (V _{CE} = 12 Vdc, I _C = 2.0 mAdc, f = 30 MHz)	f _T	-	112	-	MHz
Output Capacitance (V _{CB} = 10 Vdc, I _C = 0 Adc, f = 1 MHz)	C _{OB}	-	1.7	-	pF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Pulse Test: Pulse Width ≤ 300 μs, D.C. ≤ 2%.

TYPICAL CHARACTERISTICS

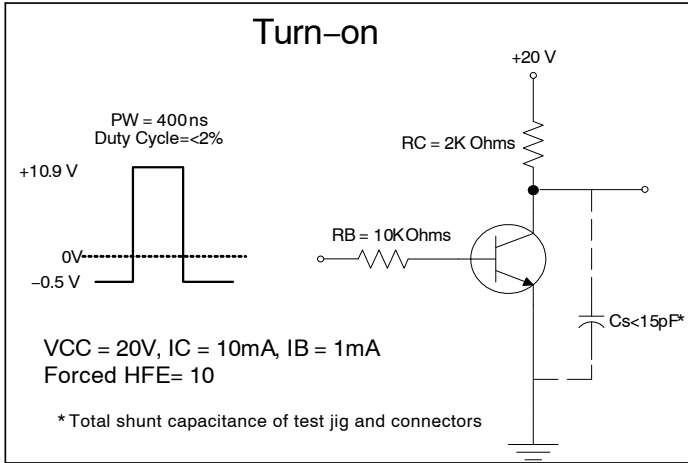


Figure 1. Delay and Rise Time Equivalent Test Circuit

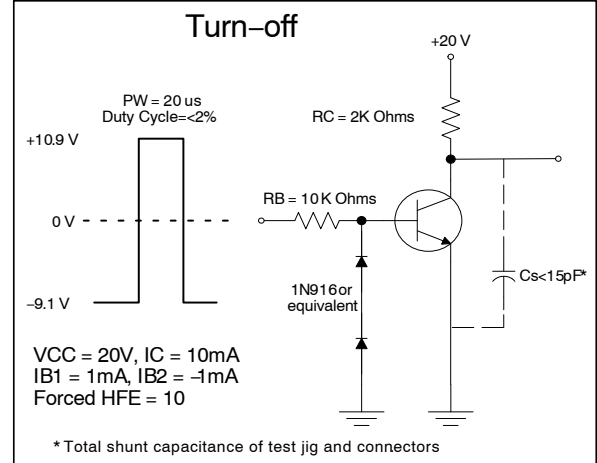


Figure 2. Storage and Fall Time Equivalent Test Circuit

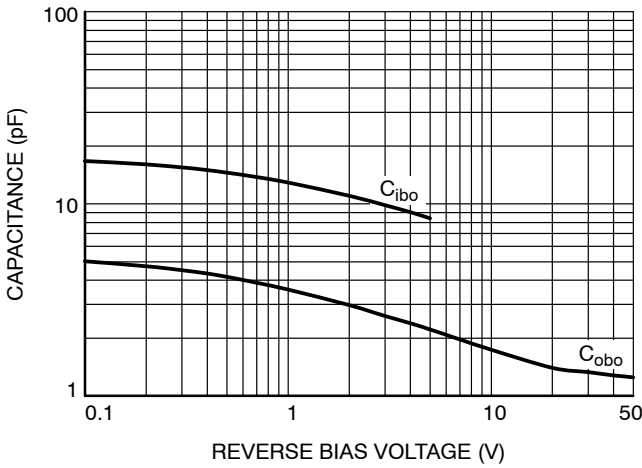


Figure 3. Capacitance

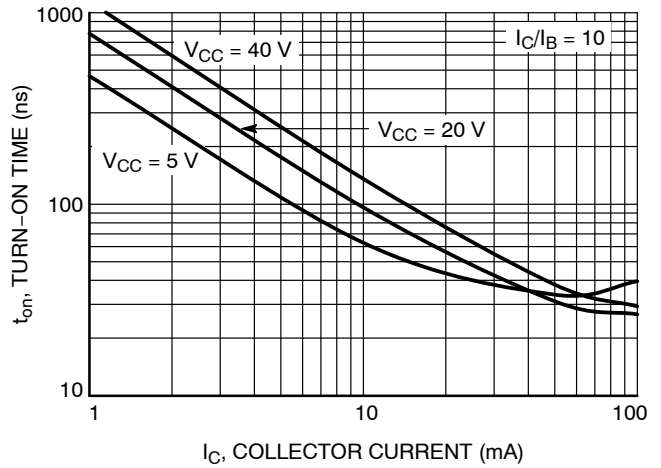


Figure 4. Turn-On Time

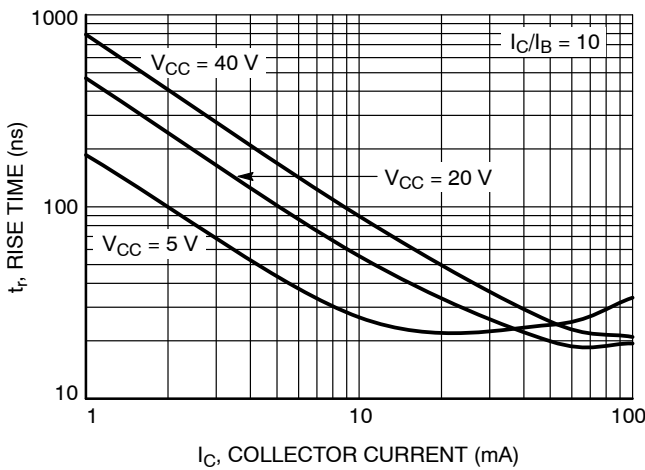


Figure 5. Rise Time

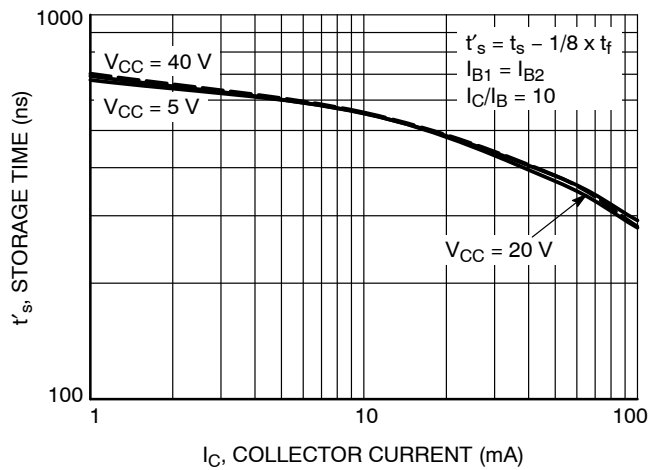


Figure 6. Storage Time

TYPICAL CHARACTERISTICS

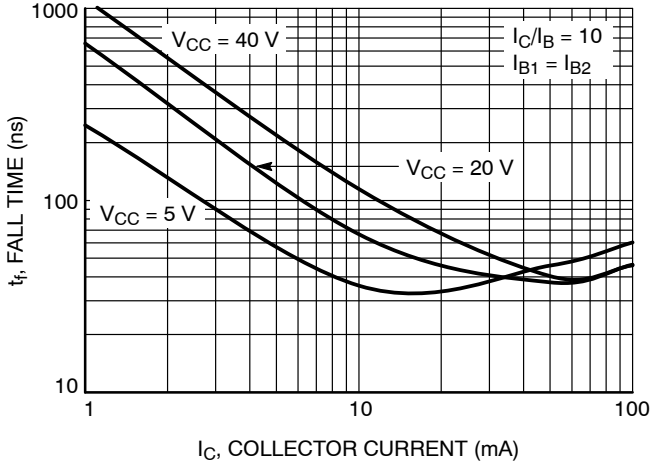


Figure 7. Fall Time

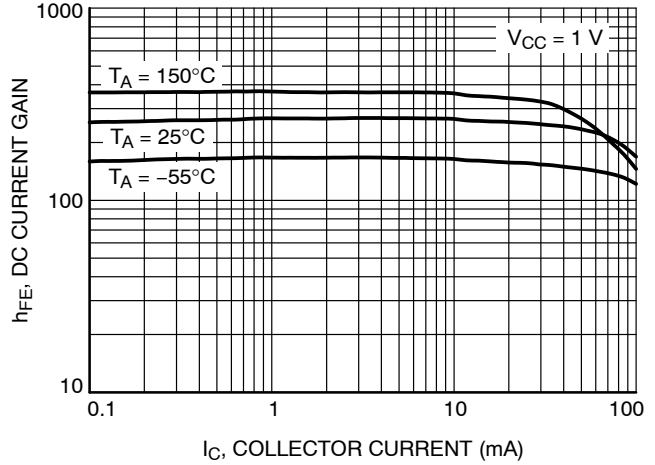


Figure 8. DC Current Gain

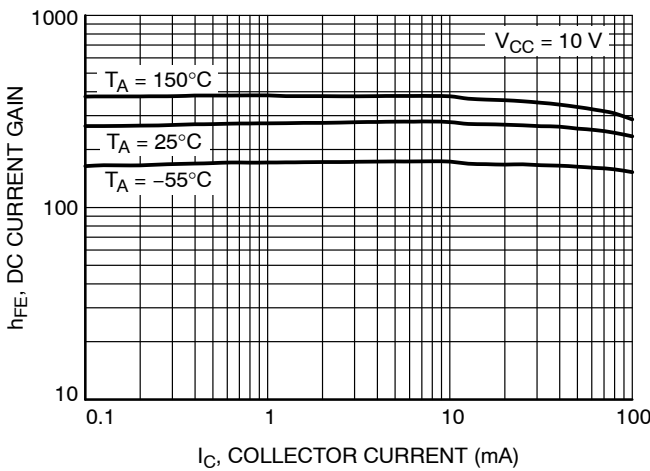


Figure 9. DC Current Gain

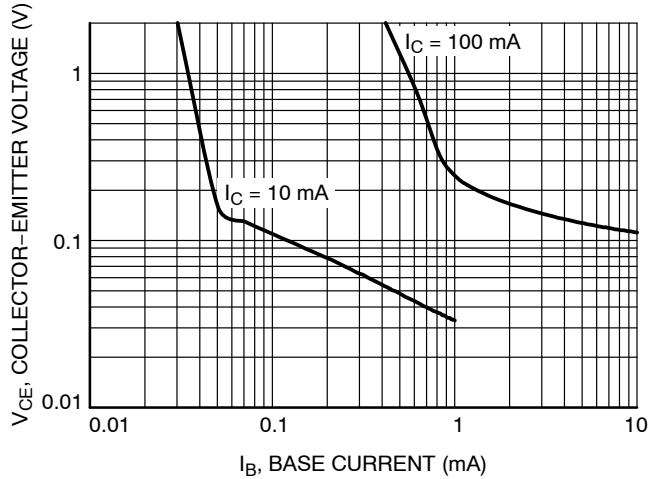


Figure 10. Collector Saturation Region

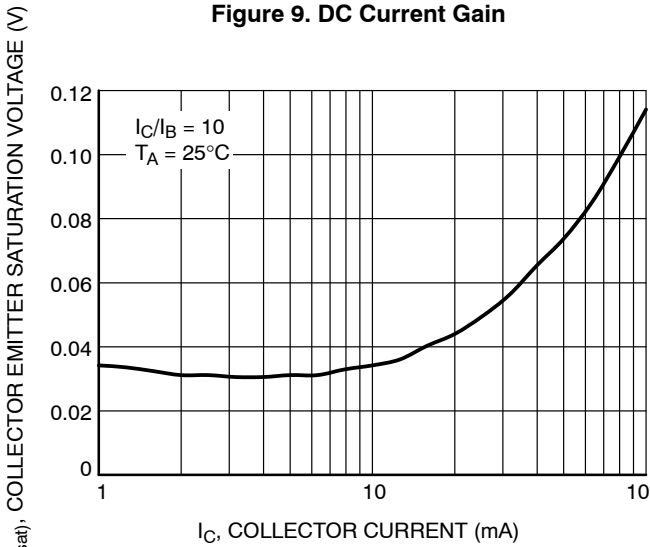


Figure 11. Collector-Emitter Saturation Voltage vs. Collector Current

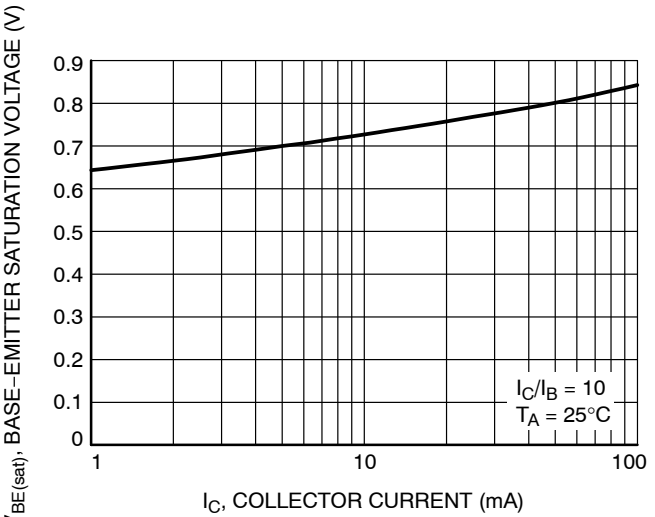


Figure 12. Base-Emitter Saturation Voltage vs. Collector Current

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TYPICAL CHARACTERISTICS

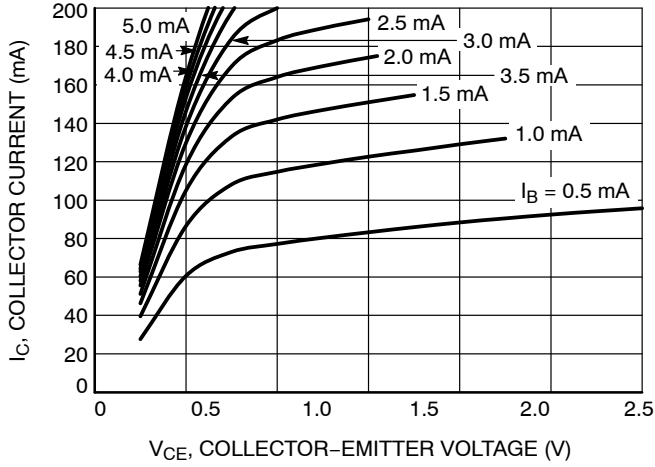


Figure 13. Collector Current vs. Collector-Emitter Voltage

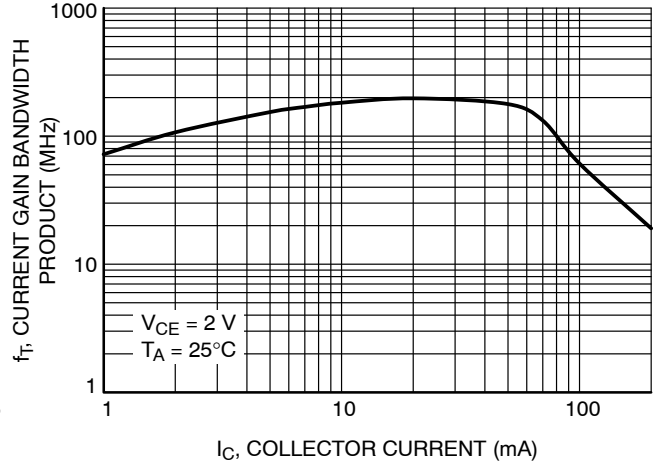


Figure 14. Current Gain Bandwidth vs. Collector Current

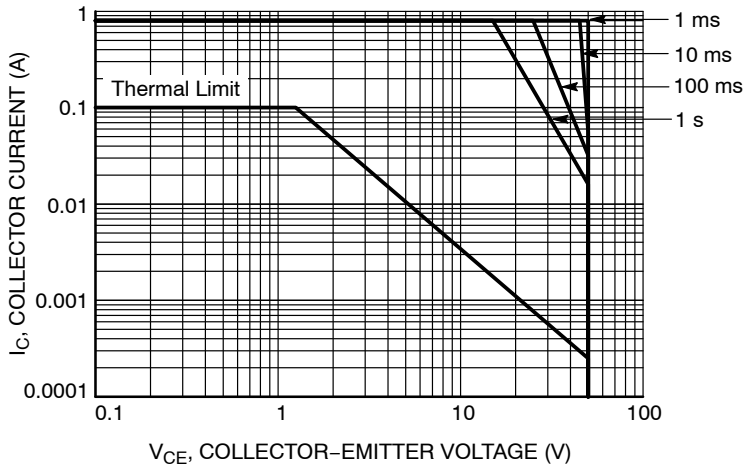
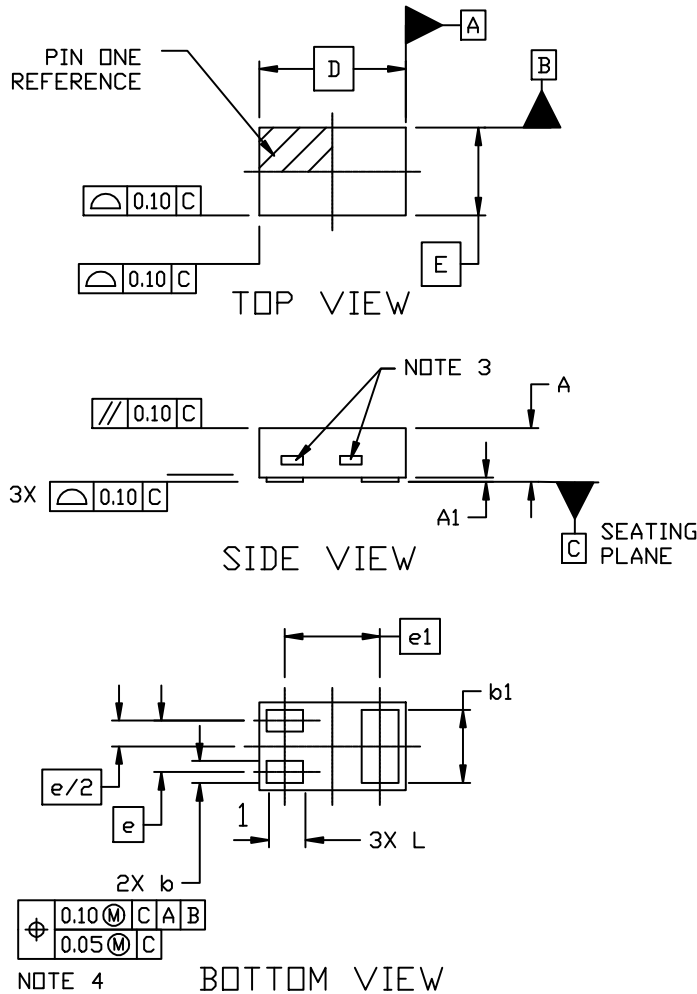


Figure 15. Safe Operating Area

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PACKAGE DIMENSIONS

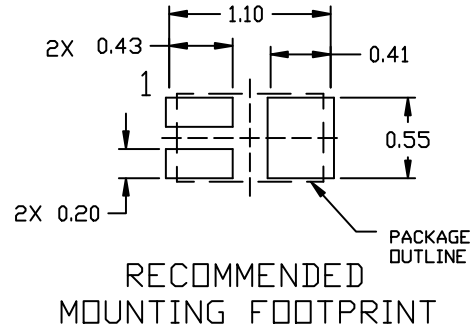
X2DFN3 1.0x0.6, 0.35P
CASE 714AC
ISSUE A



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. EXPOSED COPPER ALLOWED AS SHOWN.
4. ALL PAD LOCATIONS CONTROLLED WITH THIS POSITIONAL TOLERANCE.

DIM	MILLIMETERS		
	MIN.	MAX.	MAX.
A	0.34	0.37	0.40
A1	0.00	---	0.05
b	0.10	0.15	0.20
b1	0.45	0.50	0.55
D	0.95	1.00	1.05
E	0.55	0.60	0.65
e	0.35 BSC		
e1	0.65 BSC		
L	0.20	0.25	0.30



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