

General Purpose Transistors

PNP Silicon

NST857AMX2, NST857BMX2

Features

- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

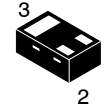
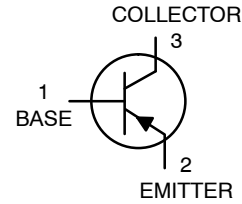
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-45	V
Collector-Base Voltage	V_{CBO}	-50	V
Emitter-Base Voltage	V_{EBO}	-5.0	V
Collector Current – Continuous	I_C	-100	mA

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

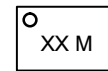
Characteristic	Symbol	Max	Unit
Total Power Dissipation (Note 1) @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	166 1.39	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	722	$^\circ\text{C/W}$
Total Power Dissipation (Note 2) @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	640 5.41	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	185	$^\circ\text{C/W}$
Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

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



X2DFN3 (1.0 x 0.6 mm)
CASE 714AC

MARKING DIAGRAM



XX = Specific Device Code
M = Date Code

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 8 of this data sheet.

NST857AMX2, NST857BMX2

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage ($I_C = -10\text{ mA}$)	$V_{(BR)CEO}$	-45	–	–	V
Collector–Emitter Breakdown Voltage ($I_C = -10\text{ }\mu\text{A}$, $V_{EB} = 0$)	$V_{(BR)CES}$	-50	–	–	V
Collector–Base Breakdown Voltage ($I_C = -10\text{ }\mu\text{A}$)	$V_{(BR)CBO}$	-50	–	–	V
Emitter–Base Breakdown Voltage ($I_E = -1.0\text{ }\mu\text{A}$)	$V_{(BR)EBO}$	-5.0	–	–	V
Collector Cutoff Current ($V_{CB} = -30\text{ V}$) ($V_{CB} = -30\text{ V}$, $T_A = 150^\circ\text{C}$)	I_{CBO}	–	–	-15 -4.0	nA μA

ON CHARACTERISTICS

DC Current Gain ($I_C = -100\text{ }\mu\text{A}$, $V_{CE} = -1.0\text{ V}$)	NST857A NST857B	h_{FE}	–	180 270	–	–
($I_C = -2.0\text{ mA}$, $V_{CE} = -5.0\text{ V}$)	NST857A NST857B		125 220	180 290	250 475	
Collector–Emitter Saturation Voltage ($I_C = -10\text{ mA}$, $I_B = -0.5\text{ mA}$) ($I_C = -100\text{ mA}$, $I_B = -5.0\text{ mA}$)		$V_{CE(sat)}$	– –	– –	-0.3 -0.65	V
Base–Emitter Saturation Voltage ($I_C = -10\text{ mA}$, $I_B = -0.5\text{ mA}$) ($I_C = -100\text{ mA}$, $I_B = -5.0\text{ mA}$)		$V_{BE(sat)}$	– –	-0.7 -0.9	– –	V
Base–Emitter On Voltage ($I_C = -2.0\text{ mA}$, $V_{CE} = -5.0\text{ V}$) ($I_C = -10\text{ mA}$, $V_{CE} = -5.0\text{ V}$)		$V_{BE(on)}$	-0.6 –	– –	-0.75 -0.82	V

SMALL–SIGNAL CHARACTERISTICS

Current–Gain–Bandwidth Product ($I_C = -10\text{ mA}$, $V_{CE} = -5.0\text{ Vdc}$, $f = 100\text{ MHz}$)		f_T	100	–	–	MHz
Output Capacitance ($V_{CB} = -10\text{ V}$, $f = 1.0\text{ MHz}$)		C_{ob}	–	–	4.5	pF
Noise Figure ($I_C = -0.2\text{ mA}$, $V_{CE} = -5.0\text{ Vdc}$, $R_S = 2.0\text{ k}\Omega$, $f = 1.0\text{ kHz}$, $BW = 200\text{ Hz}$) NST857A NST857B		NF	– –	– –	10 4.0	dB

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.

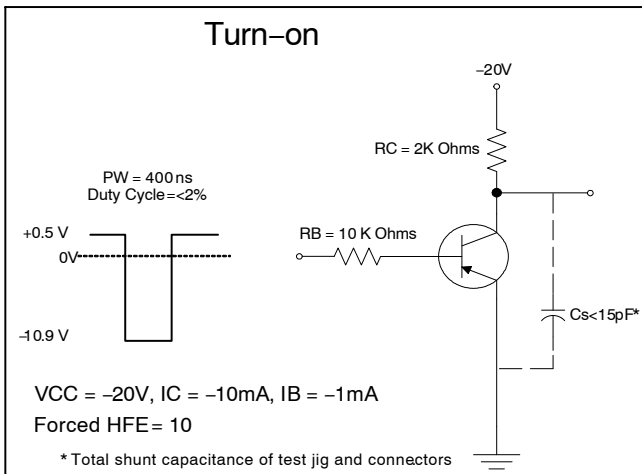


Figure 1. Delay and Rise Time Equivalent Test Circuit

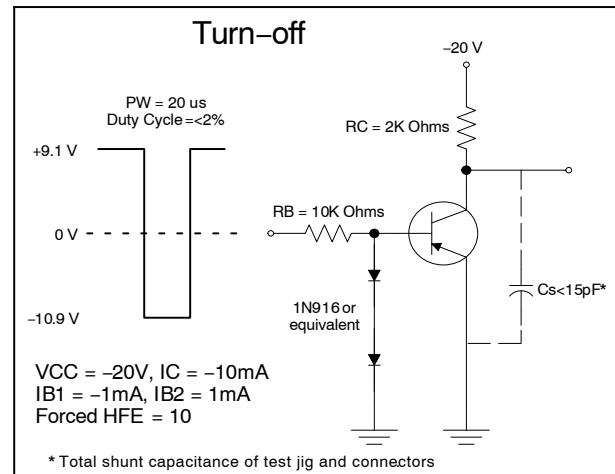


Figure 2. Storage and Fall Time Equivalent Test Circuit

TYPICAL CHARACTERISTICS – NST857AMX2

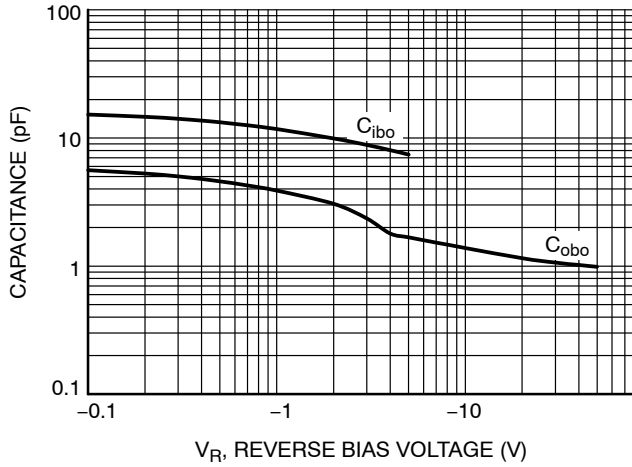


Figure 3. Capacitance

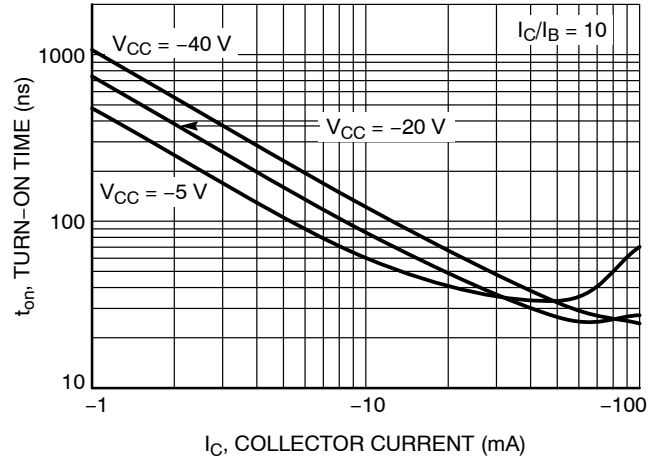


Figure 4. Turn-On Time

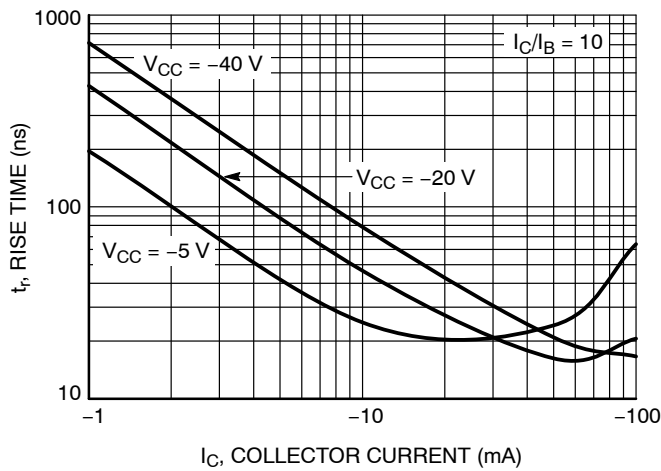


Figure 5. Rise Time

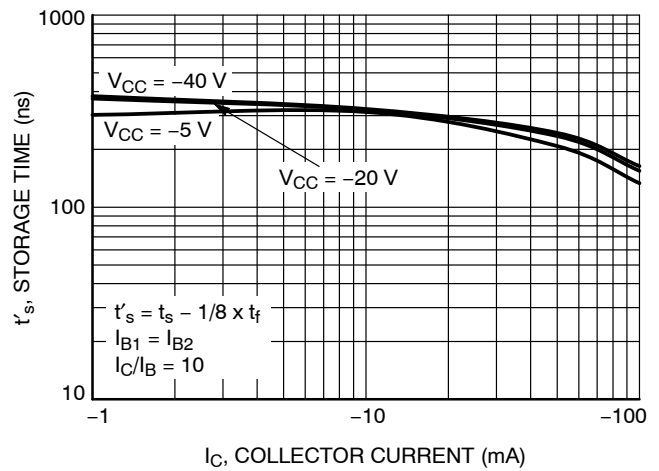


Figure 6. Storage Time

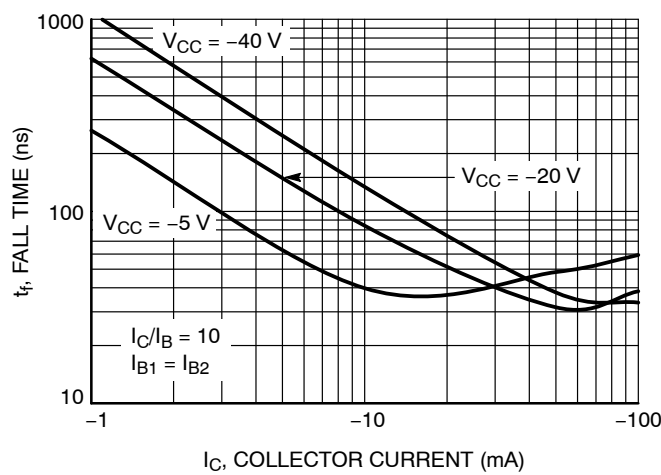


Figure 7. Fall Time

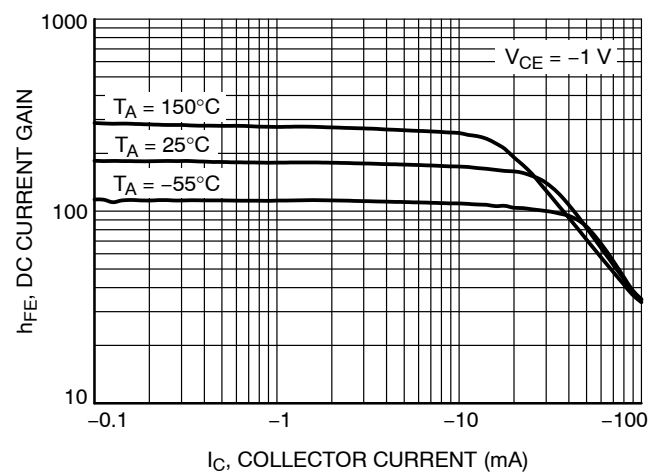


Figure 8. DC Current Gain

TYPICAL CHARACTERISTICS – NST857AMX2

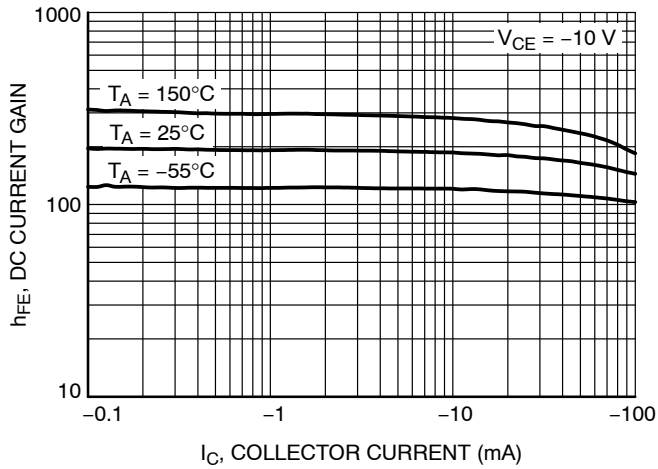


Figure 9. DC Current Gain

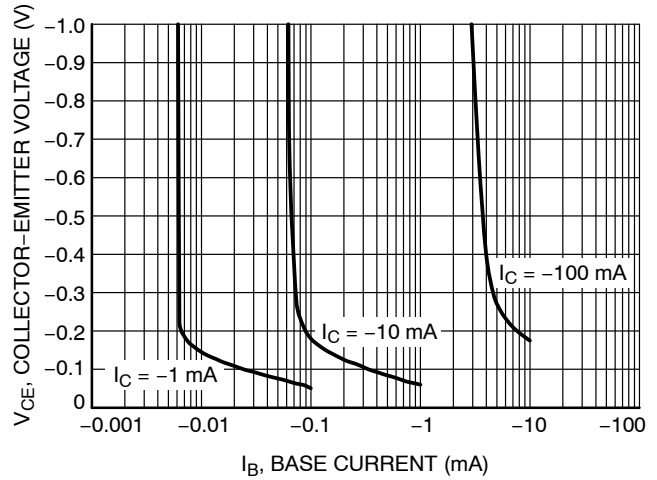


Figure 10. Collector Saturation Region

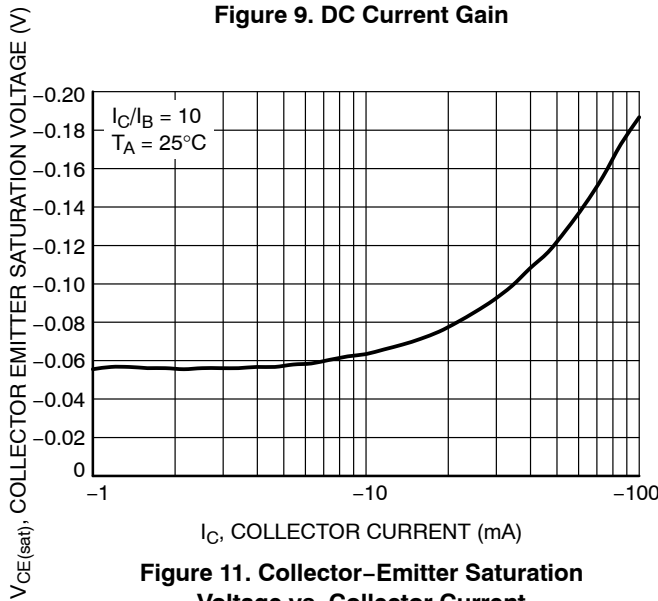


Figure 11. Collector-Emitter Saturation Voltage vs. Collector Current

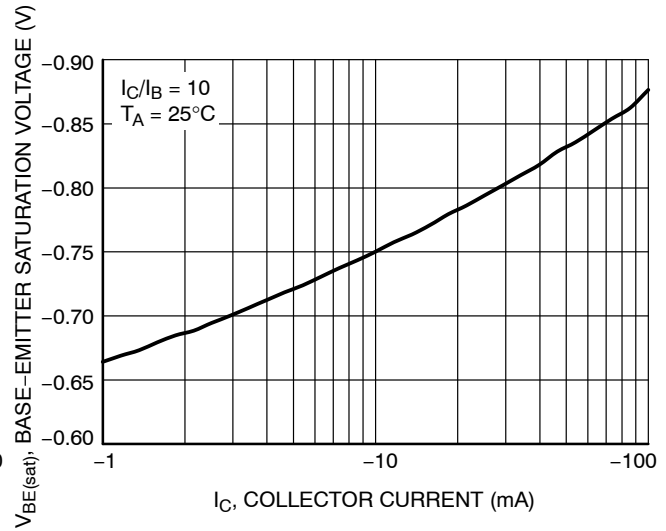


Figure 12. Base-Emitter Saturation Voltage vs. Collector Current

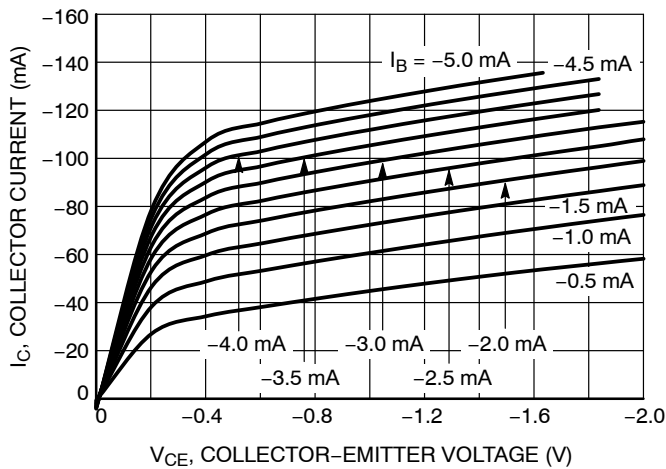


Figure 13. Collector Current vs. Collector-Emitter Voltage

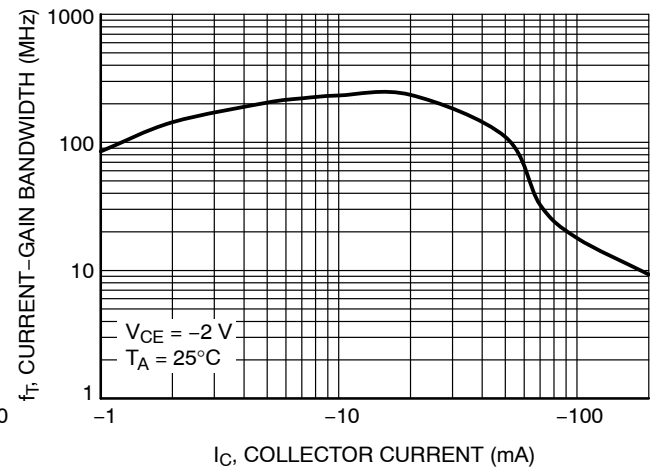


Figure 14. Current Gain Bandwidth vs. Collector Current

TYPICAL CHARACTERISTICS – NST857AMX2

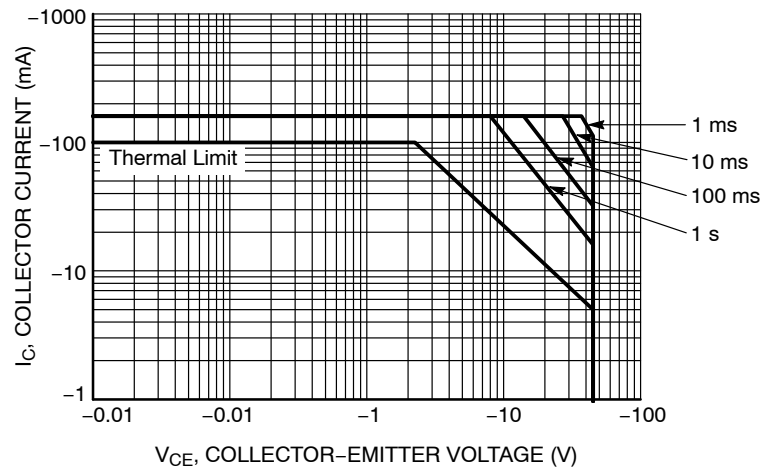


Figure 15. Safe Operating Area

TYPICAL CHARACTERISTICS – NST857BMX2

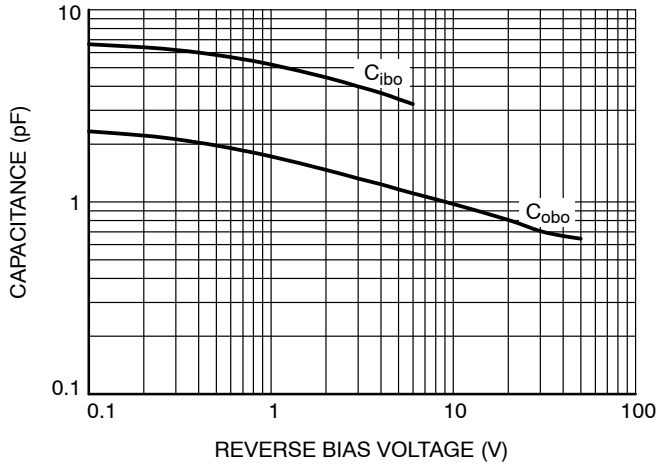


Figure 16. Capacitance

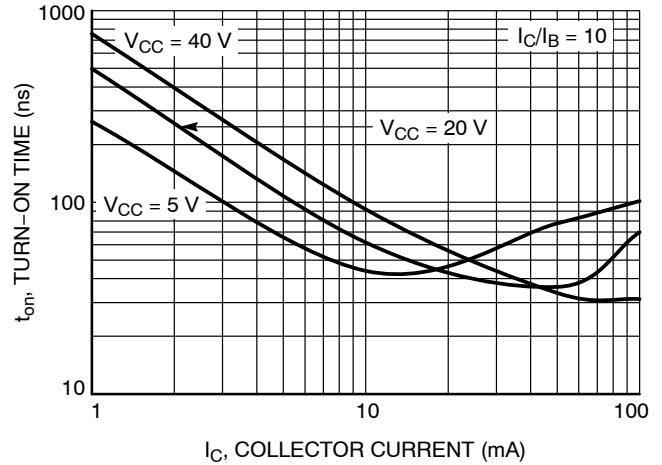


Figure 17. Turn-On Time

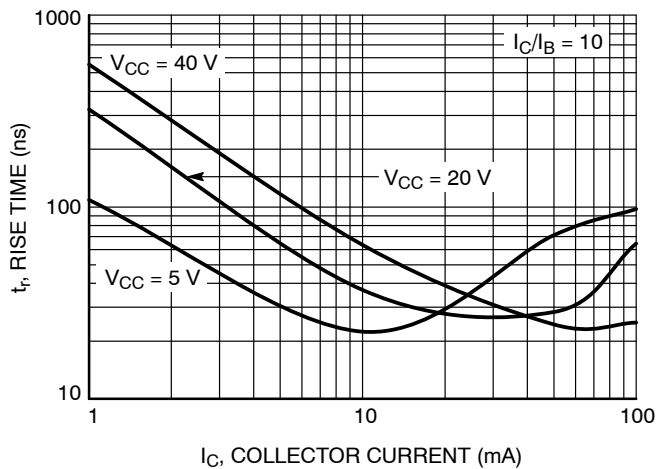


Figure 18. Rise Time

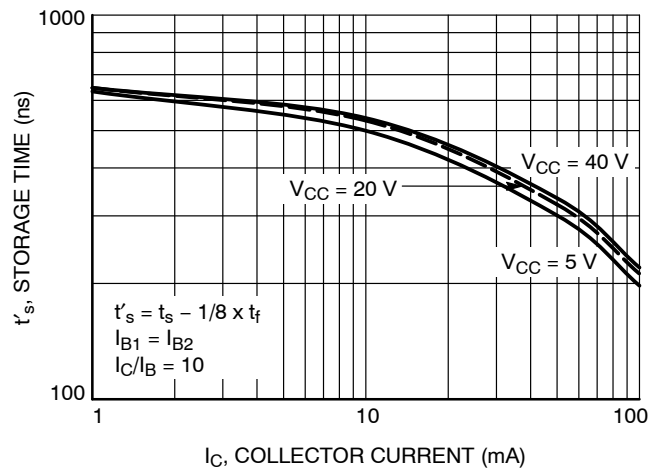


Figure 19. Storage Time

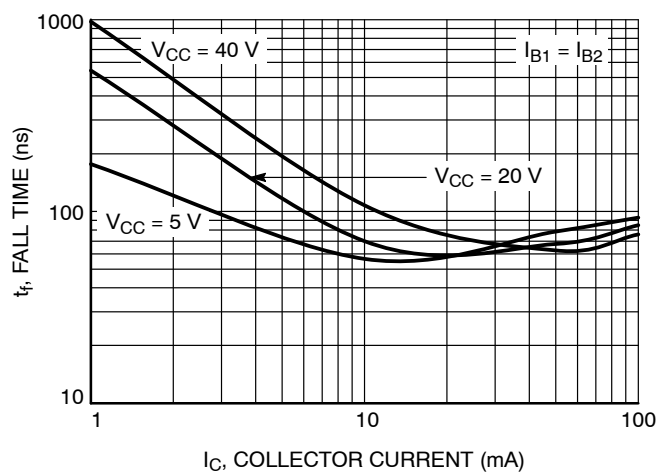


Figure 20. Fall Time

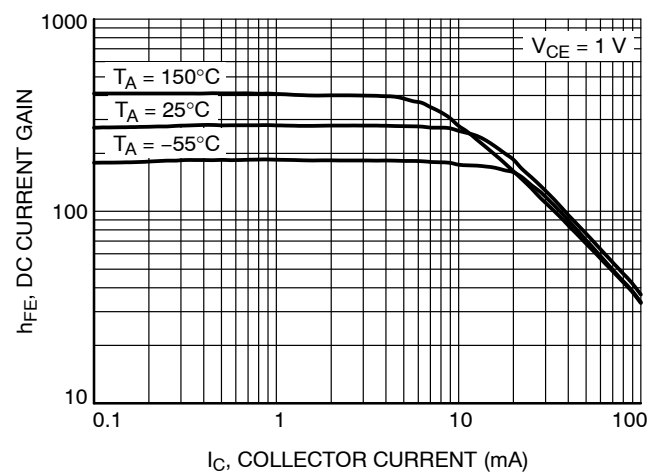


Figure 21. DC Current Gain

TYPICAL CHARACTERISTICS – NST857BMX2

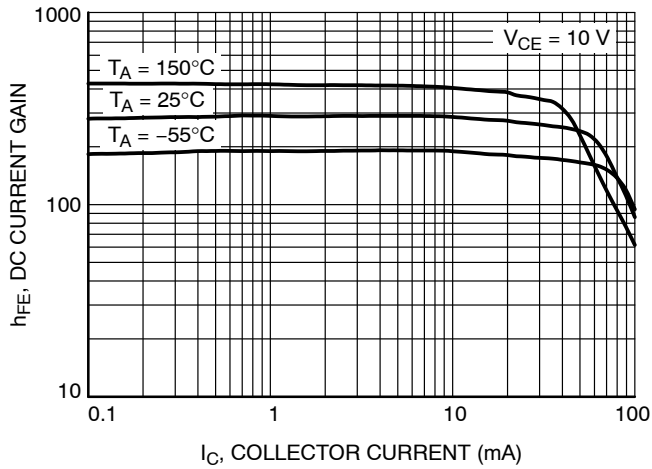


Figure 22. DC Current Gain

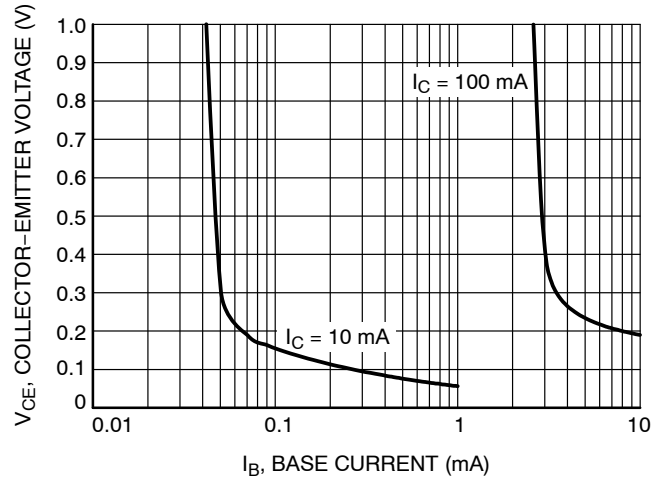


Figure 23. Collector Saturation Region

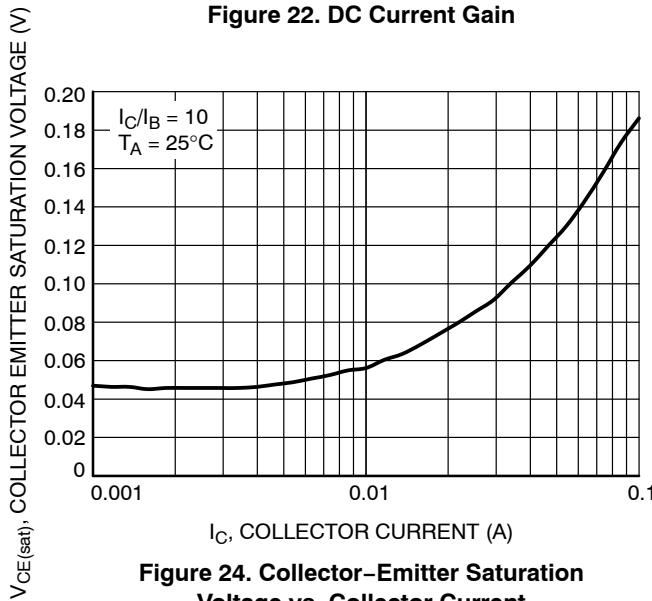


Figure 24. Collector-Emitter Saturation Voltage vs. Collector Current

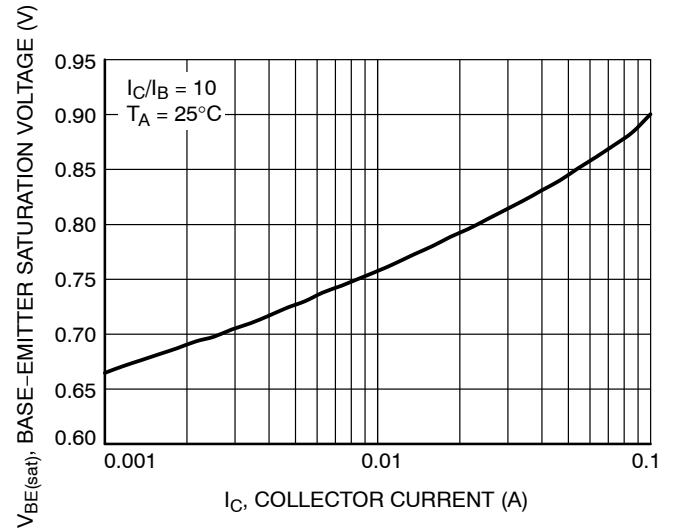


Figure 25. Base-Emitter Saturation Voltage vs. Collector Current

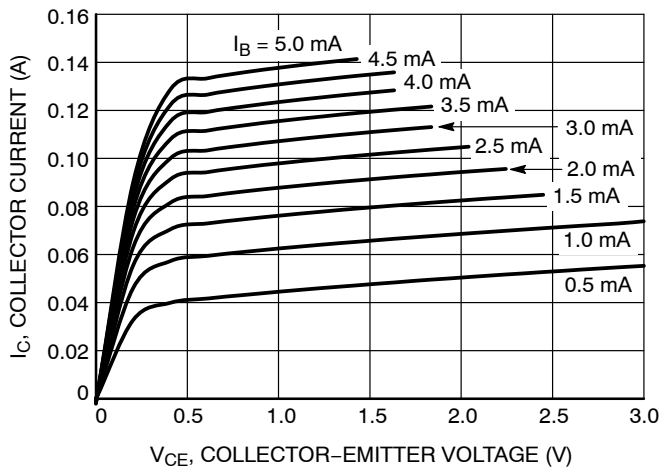


Figure 26. Collector Current vs. Collector-Emitter Voltage

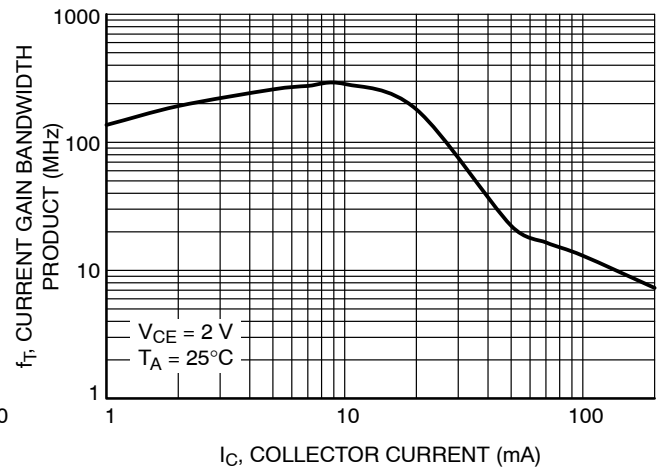


Figure 27. Current Gain Bandwidth vs. Collector Current

NST857AMX2, NST857BMX2

TYPICAL CHARACTERISTICS – NST857BMX2

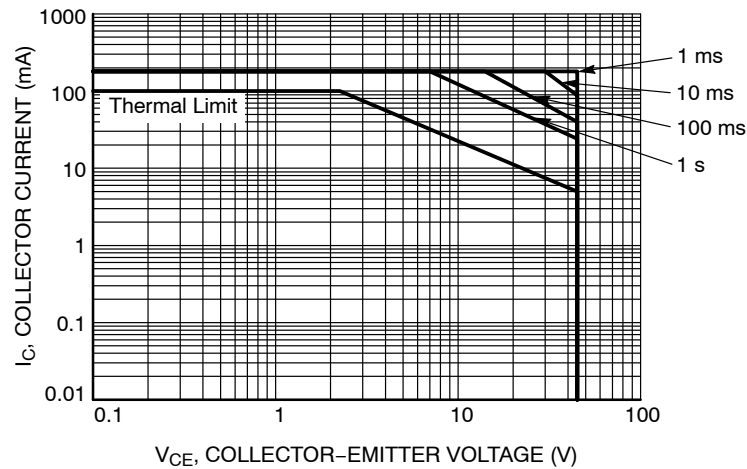


Figure 28. Safe Operating Area

ORDERING INFORMATION

Device	Marking	Package	Shipping†
NST857AMX2T5G	AC	X2DFN3 (1.0 x 0.6 mm)	8,000 / Tape & Reel
NST857BMX2T5G	AJ		

†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.

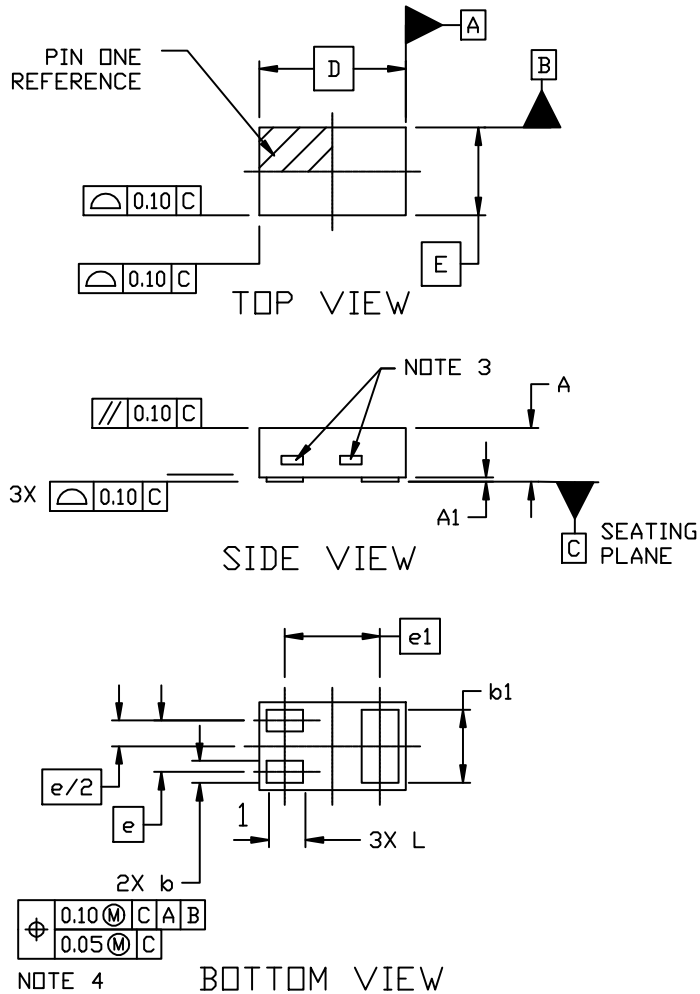
NST857AMX2, NST857BMX2

PACKAGE DIMENSIONS

X2DFN3 1.0x0.6, 0.35P

CASE 714AC

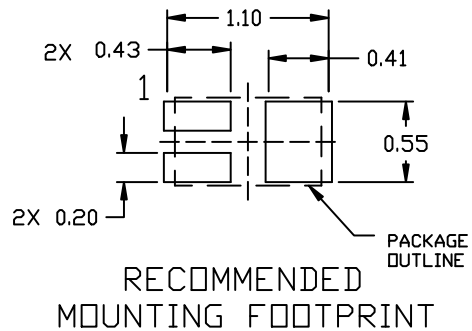
ISSUE A



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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