General Purpose Transistors

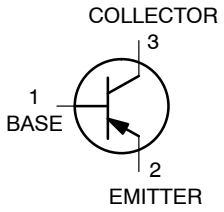
PNP, 65 V, 100 mA

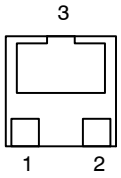
NST856MTWFT

The NST856MTWFT is designed for general purpose amplifier applications. It is housed in an ultra−compact DFN1010−3 with wettable flanks, recommended for the automotive industry's optical inspection methods. The transistor is ideal for low−power surface mount applications where board space and reliability are at a premium.

Features

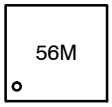
- Wettable Flank Package for Optimal Automated Optical Inspection (AOI)
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant





XDFNW3
CASE 521AC

MARKING DIAGRAM



56 = Specific Device Code
M = Month Code

MAXIMUM RATINGS (T_A = 25°C)

Rating	Symbol	Max	Unit
Collector−Emitter Voltage	V_{CEO}	−65	Vdc
Collector−Base Voltage	V_{CBO}	−80	Vdc
Emitter−Base Voltage	V_{EBO}	−5.0	Vdc
Collector Current − Continuous	I_C	−100	mA
Collector Current − Peak	I_{CM}	200	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
Thermal Resistance Junction−to−Ambient (Note 1)	$R_{\theta JA}$	191	°C/W
Total Power Dissipation per Device @T_A = 25°C (Note 1)	P_D	650	mW
Junction and Storage Temperature Range	T_J, T_{stg}	−65 to +150	°C

1. Per JESD51−7 with standard PCB footprint and 2 oz. Cu.

ORDERING INFORMATION

Device	Package	Shipping†
NST856MTWFTBG	XDFNW3 (Pb−Free)	3000 / Tape & Reel
NSVT856MTWFTBG	XDFNW3 (Pb−Free)	3000 / 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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector – Emitter Breakdown Voltage (I_C = −10 mA)	$V_{(BR)CEO}$	−65	–	–	V
Collector – Emitter Breakdown Voltage (I_C = −10 μA, V_{EB} = 0)	$V_{(BR)CES}$	−80	–	–	V
Collector – Base Breakdown Voltage (I_C = −10 μA)	$V_{(BR)CBO}$	−80	–	–	V
Emitter – Base Breakdown Voltage (I_E = −0.1 μA, I_C = 0)	$V_{(BR)EBO}$	−5.0	–	–	V
Collector Cutoff Current (V_{CB} = −30 V) (V_{CB} = −30 V, T_A = 150°C)	I_{CBO}	 – –	 – –	 −15.0 −5.0	 nA μA
Emitter – Base Cutoff Current (V_{BE} = −6 V, I_C = 0)	I_{EBO}	–	–	−0.1	μA
ON CHARACTERISTICS					
DC Current Gain (Note 2) (I_C = −10 μA, V_{CE} = −5.0 V) (I_C = −2.0 mA, V_{CE} = −5.0 V)	h_{FE}	 – 220	 150 290	 – 450	
Collector – Emitter Saturation Voltage (Note 2) (I_C = −10 mA, I_B = −0.5 mA) (I_C = −100 mA, I_B = −5.0 mA)	$V_{CE(sat)}$	 – –	 – –	 −0.25 −0.60	V
Base – Emitter Saturation Voltage (Note 2) (I_C = −10 mA, I_B = −0.5 mA) (I_C = −100 mA, I_B = −5.0 mA)	$V_{BE(sat)}$	 – –	 −0.7 −0.9	 – –	V
Base – Emitter Turn−on Voltage (Note 2) (I_C = −2.0 mA, V_{CE} = −5.0 V) (I_C = −10 mA, V_{CE} = −5.0 V)	$V_{BE(on)}$	 −0.6 –	 – –	 −0.75 −0.82	V
SMALL− SIGNAL CHARACTERISTICS					
Transition Frequency (I_C = −10 mA, V_{CE} = −5.0 V, f = 100 MHz)	f_T	100	–	–	MHz
Output Capacitance (V_{CB} = −10 V, f = 1.0 MHz)	C_{obo}	–	1.8	4.0	pF
Noise Figure (I_C = −0.2 mA, V_{CE} = −5.0 Vdc, R_S = 2.0 kΩ, f = 1.0 kHz, BW = 200 Hz)	NF	–	1.0	–	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.

2. Pulse Condition: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

TYPICAL CHARACTERISTICS

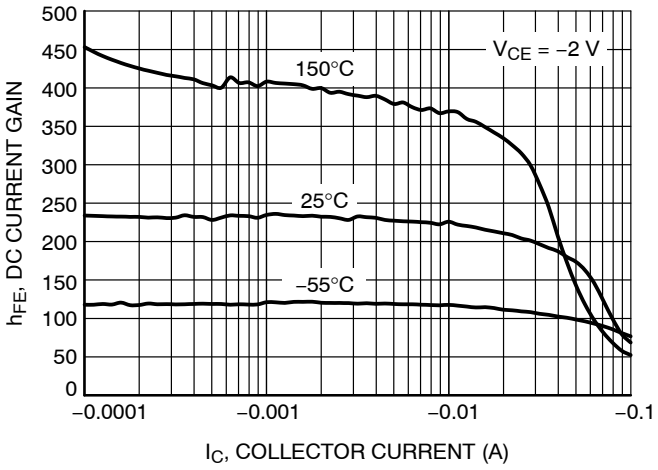


Figure 1. DC Current Gain

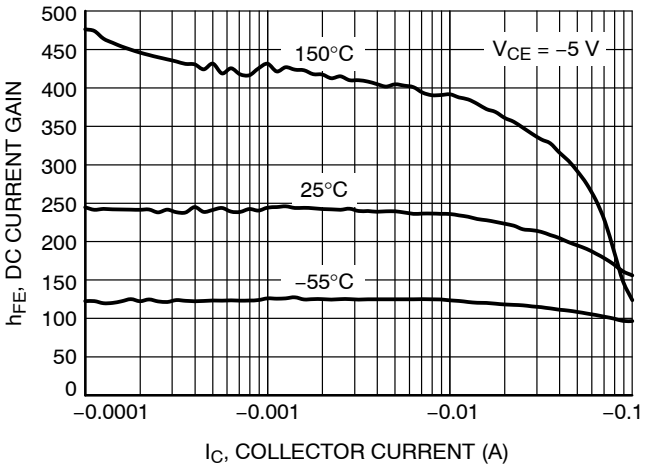


Figure 2. DC Current Gain

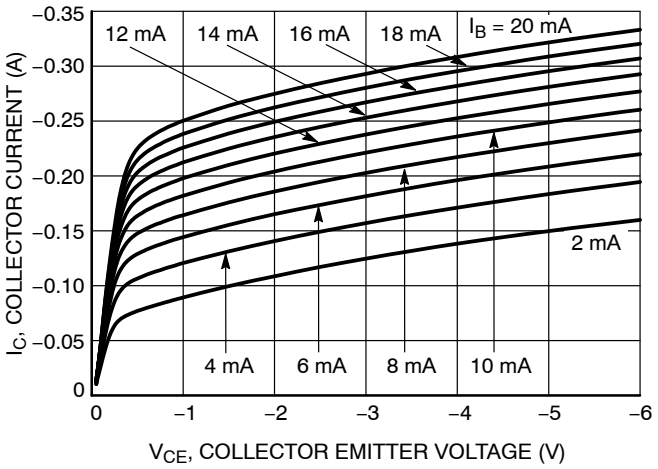


Figure 3. Collector Current as a Function of Collector Emitter Voltage

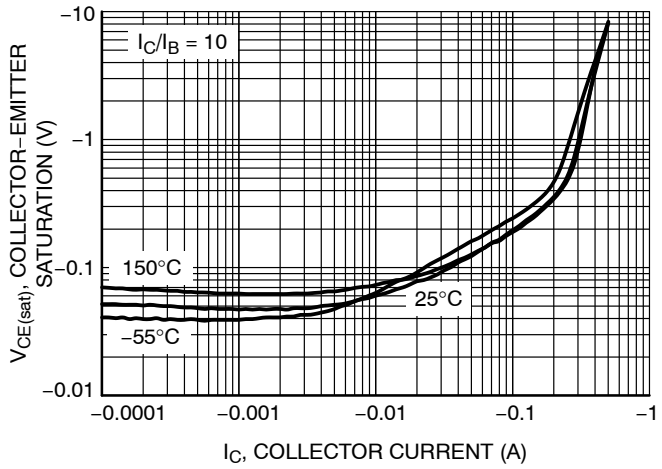


Figure 4. Collector−Emitter Saturation Voltage

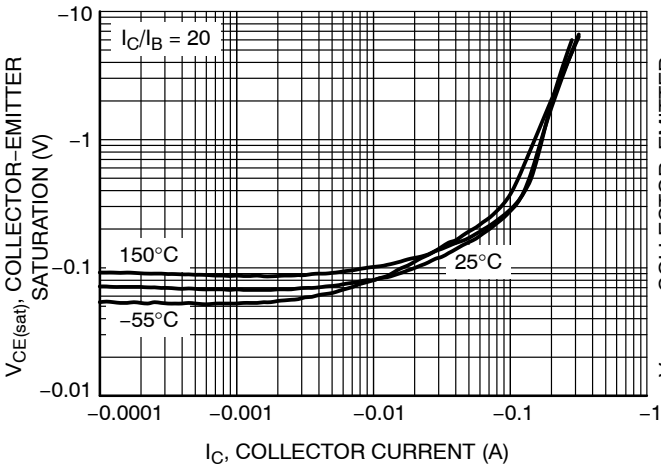


Figure 5. Collector−Emitter Saturation Voltage

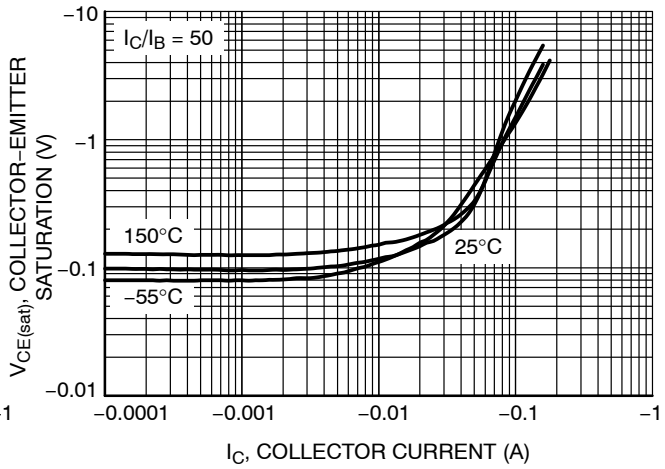


Figure 6. Collector−Emitter Saturation Voltage

TYPICAL CHARACTERISTICS

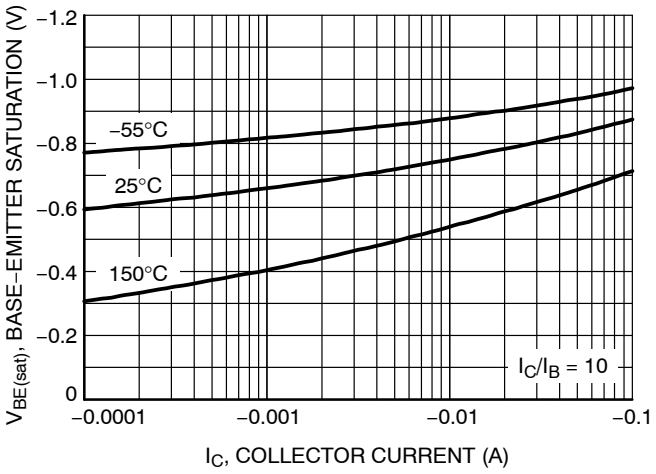


Figure 7. Base−Emitter Saturation Voltage

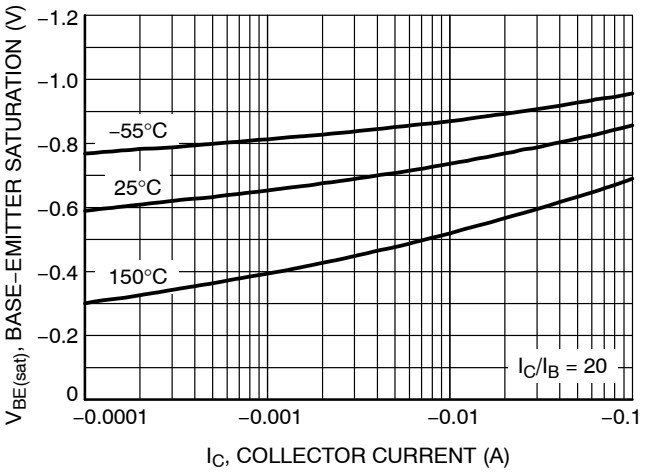


Figure 8. Base−Emitter Saturation Voltage

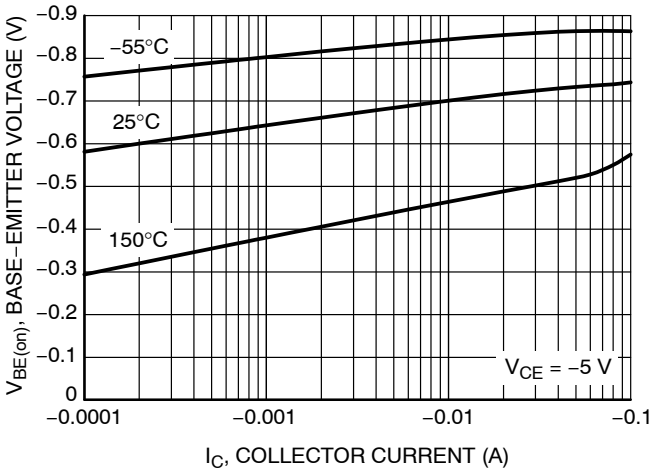


Figure 9. Base−Emitter “ON” Voltage

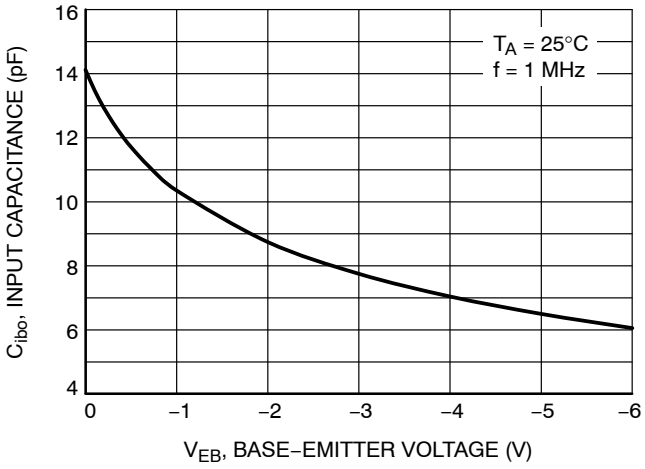


Figure 10. Input Capacitance

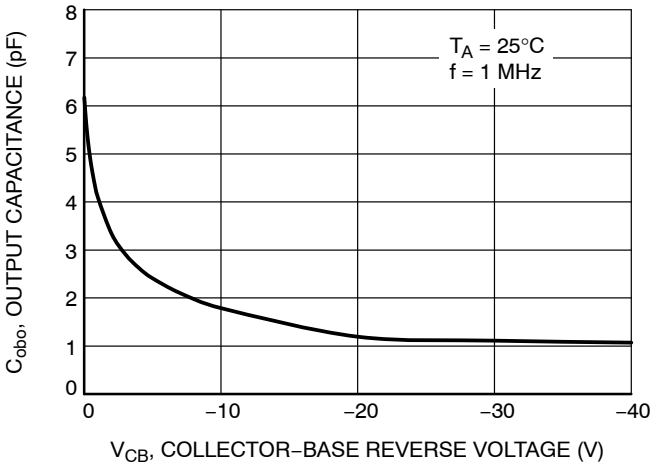


Figure 11. Output Capacitance

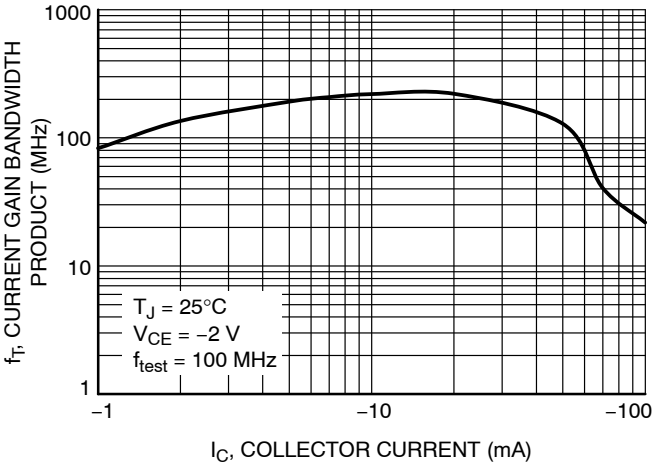


Figure 12. f_T, Current Gain Bandwidth Product

TYPICAL CHARACTERISTICS

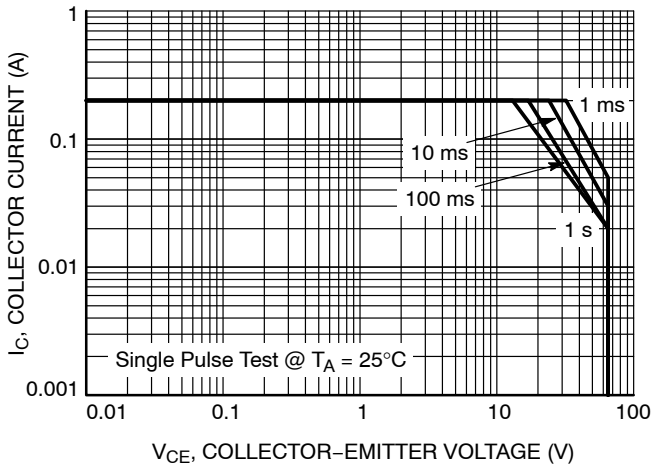


Figure 13. Safe Operating Area

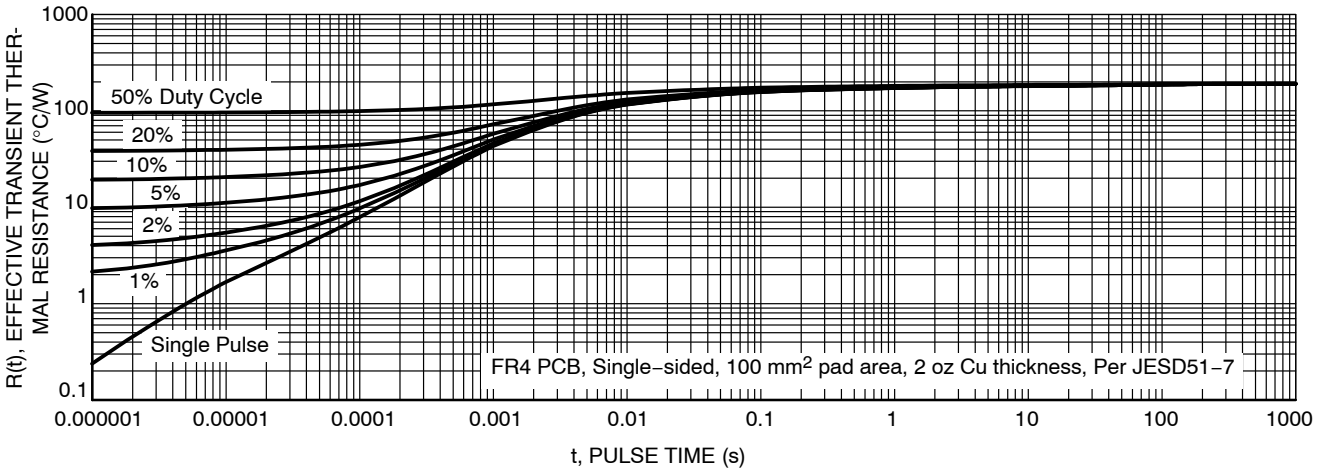
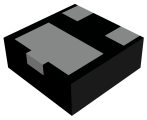
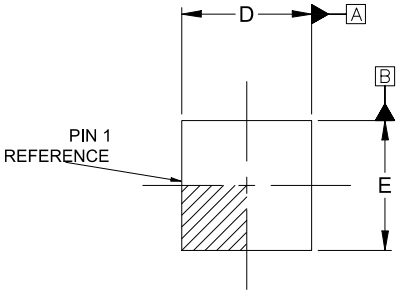


Figure 14. Thermal Resistance

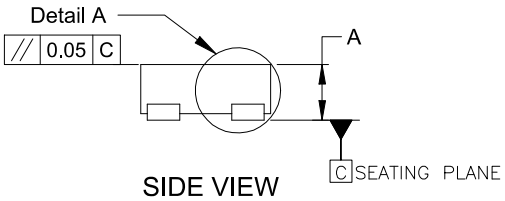


XDFNW3 1.00x1.00x0.38 0.65P
CASE 521AC
ISSUE B

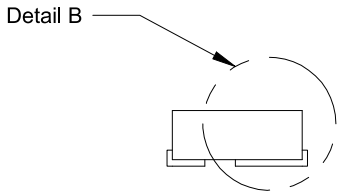
DATE 07 MAY 2024



TOP VIEW



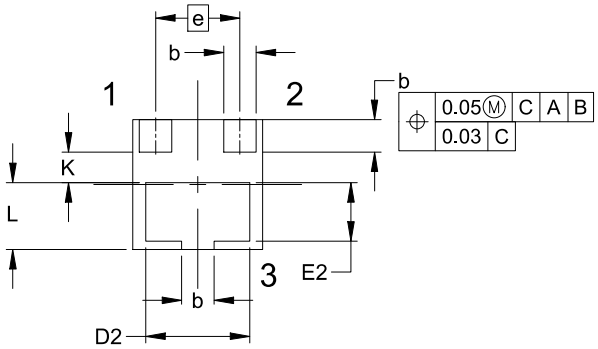
SIDE VIEW



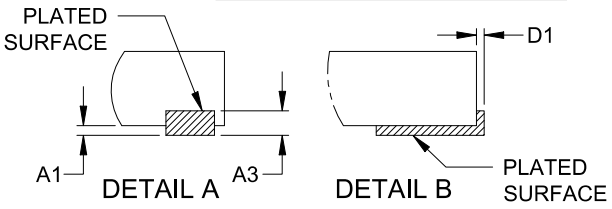
END VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS

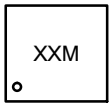
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.32	0.38	0.44
A1	0.00	---	0.04
A3		0.125 REF	
b	0.20	0.25	0.30
D	0.90	1.00	1.10
D1	0.00	---	0.04
D2	0.75	0.80	0.85
E	0.90	1.00	1.10
E2	0.40	0.45	0.50
e		0.65 BSC	
L	0.465	0.515	0.565
K		0.23 REF	



BOTTOM VIEW

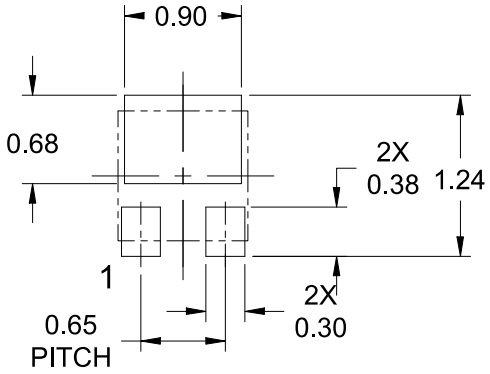


GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Month Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.



RECOMMENDED MOUNTING FOOTPRINT*

* For additional information on our Pb-Free strategy and soldering details, please download the ONSEMI Soldering and Mounting Techniques Reference Manual, S●LDERRM/D.

DOCUMENT NUMBER:	**98AON11341H**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped “CONTROLLED COPY” in red.	
DESCRIPTION:	**XDFNW3 1.00x1.00x0.38 0.65P**		**PAGE 1 OF 1**

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