

ANTREX Electronics

Electronic Components Sourcing Information

Product Reference Information

Part Number:	NTNS3164Nzt5G
Manufacturer:	onsemi
Package:	Please confirm with sales
Availability:	Please confirm with sales

Product Page:

<https://antrexco.com/product/details/onsemi/ntns3164nzt5g.html>

Request a Quote:

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Contact Information

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Website: <https://antrexco.com>

Quality & Trust

New & Original Components

Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

Secure sourcing support for OEM / EMS projects

Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

MOSFET – Single, N-Channel, Small Signal, SOT-883 (XDFN3), 1.0 x 0.6 x 0.4 mm

20 V, 361 mA

NTNS3164NZ

Features

- Single N-Channel MOSFET
- Ultra Low Profile SOT-883 (XDFN3) 1.0 x 0.6 x 0.4 mm for Extremely Thin Environments Such as Portable Electronics
- Low $R_{DS(on)}$ Solution in the Ultra Small 1.0 x 0.6 mm Package
- 1.5 V Gate Drive
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

Applications

- High Side Switch
- High Speed Interfacing
- Level Shift and Translate
- Optimized for Power Management in Ultra Portable Solutions

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

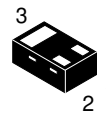
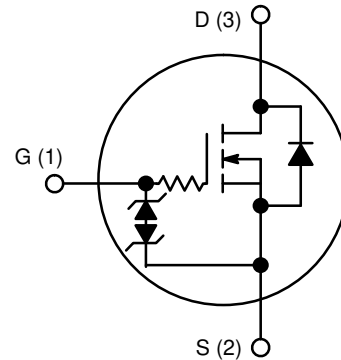
Parameter			Symbol	Value	Unit
Drain-to-Source Voltage			V _{DSS}	20	V
Gate-to-Source Voltage			V _{GS}	±8	V
Continuous Drain Current (Note 1)	Steady State	T _A = 25 °C	I _D	361	mA
		T _A = 85 °C		260	
	t ≤ 5 s	T _A = 25 °C		427	
Power Dissipation (Note 1)	Steady State	T _A = 25 °C	P _D	155	mW
	t ≤ 5 s			217	
Pulsed Drain Current	t _p = 10 μs		I _{DM}	1082	mA
Operating Junction and Storage Temperature			T _J , T _{STG}	−55 to 150	°C
Source Current (Body Diode) (Note 2)			I _S	129	mA
Lead Temperature for Soldering Purposes (1/8" from case for 10 s)			T _L	260	°C

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.

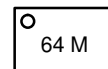
1. Surface-mounted on FR4 board using the minimum recommended pad size, or 2 mm², 1 oz Cu.
2. Pulse Test: pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

$V_{(BR)DSS}$	$R_{DS(on)} \text{ MAX}$	$I_D \text{ Max}$
20 V	0.7 Ω @ 4.5 V	361 mA
	1.0 Ω @ 2.5 V	
	2.0 Ω @ 1.8 V	
	4.0 Ω @ 1.5 V	

N-CHANNEL MOSFET



MARKING DIAGRAM



SOT-883 (XDFN3)
CASE 506CB

64 = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
NTNS3164NZT5G	SOT-883 (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 Specification Brochure, [BRD8011/D](#).

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Max	Unit
Junction-to-Ambient – Steady State (Note 3)	$R_{\theta JA}$	806	°C/W
Junction-to-Ambient – $t \leq 5$ s (Note 3)	$R_{\theta JA}$	575	

3. Surface-mounted on FR4 board using the minimum recommended pad size, or 2 mm², 1 oz Cu.

ELECTRICAL CHARACTERISTICS ($T_J = 25$ °C unless otherwise stated)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0$ V, $I_D = 250$ μ A	20			V
Drain-to-Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$	$I_D = 250$ μ A, ref to 25 °C		23		mV/°C
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS} = 0$ V, $V_{DS} = 20$ V, $T_J = 25$ °C			1	μ A
Gate-to-Source Leakage Current	I_{GSS}	$V_{DS} = 0$ V, $V_{GS} = \pm 5$ V			± 10	μ A

ON CHARACTERISTICS (Note 4)

Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}$, $I_D = 250$ μ A	0.4		1.0	V
Negative Threshold Temperature Coefficient	$V_{GS(TH)}/T_J$			1.8		mV/°C
Drain-to-Source On Resistance	$R_{DS(on)}$	$V_{GS} = 4.5$ V, $I_D = 200$ mA		0.5	0.7	Ω
		$V_{GS} = 2.5$ V, $I_D = 100$ mA		0.7	1.0	
		$V_{GS} = 1.8$ V, $I_D = 50$ mA		1.0	2.0	
		$V_{GS} = 1.5$ V, $I_D = 10$ mA		1.2	4.0	
Forward Transconductance	g_{FS}	$V_{DS} = 5$ V, $I_D = 200$ mA		1.26		S
Source-Drain Diode Voltage	V_{SD}	$V_{GS} = 0$ V, $I_S = 100$ mA		0.75	1.2	V

CHARGES & CAPACITANCES

Input Capacitance	C_{ISS}	$V_{GS} = 0$ V, freq = 1 MHz, $V_{DS} = 10$ V		24		pF
Output Capacitance	C_{OSS}			5.0		
Reverse Transfer Capacitance	C_{RSS}			3.4		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 4.5$ V, $V_{DS} = 10$ V; $I_D = 200$ mA		0.8		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.1		
Gate-to-Source Charge	Q_{GS}			0.2		
Gate-to-Drain Charge	Q_{GD}			0.1		

SWITCHING CHARACTERISTICS, $V_{GS} = 4.5$ V (Note 4)

Turn-On Delay Time	$t_{d(ON)}$	$V_{GS} = 4.5$ V, $V_{DD} = 10$ V, $I_D = 200$ mA, $R_G = 2$ Ω		10		ns
Rise Time	t_r			11		
Turn-Off Delay Time	$t_{d(OFF)}$			67		
Fall Time	t_f			31		

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.

4. Switching characteristics are independent of operating junction temperatures



TYPICAL CHARACTERISTICS

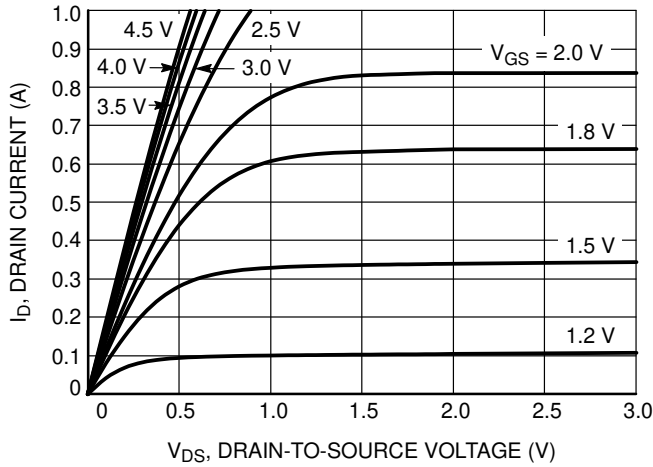


Figure 1. On-Region Characteristics

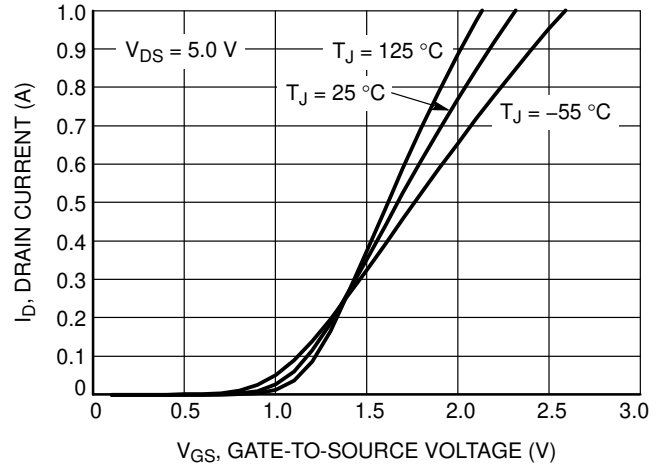


Figure 2. Transfer Characteristics

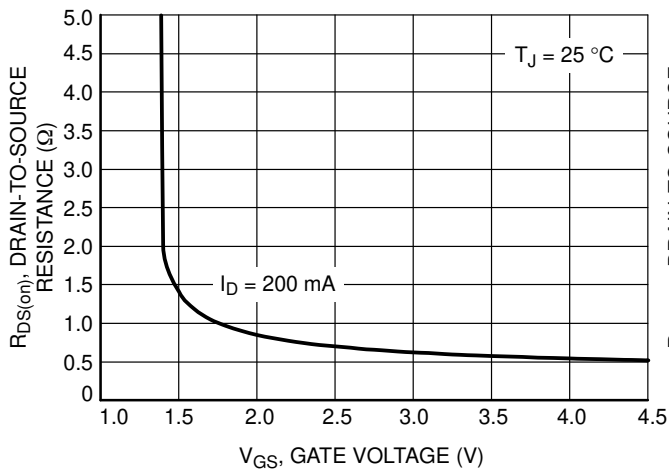


Figure 3. On-Resistance vs. Gate-to-Source Voltage

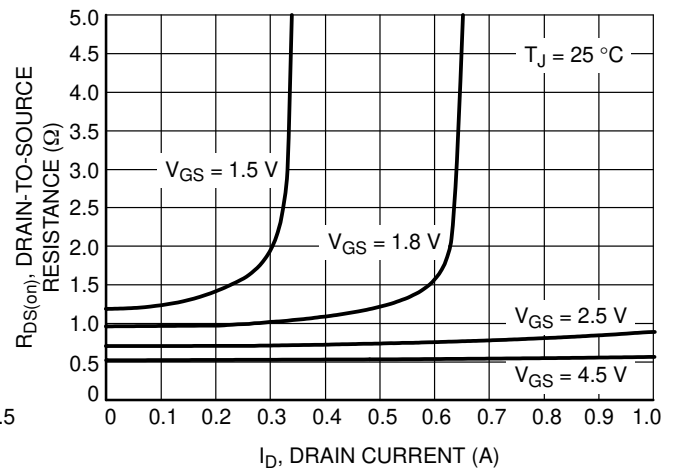


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

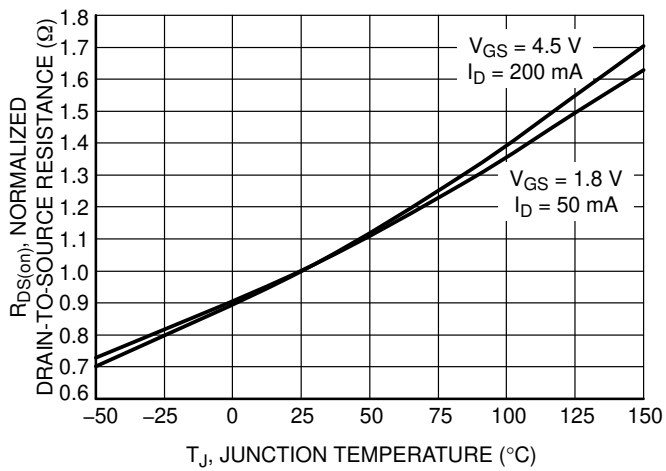


Figure 5. On-Resistance Variation with Temperature

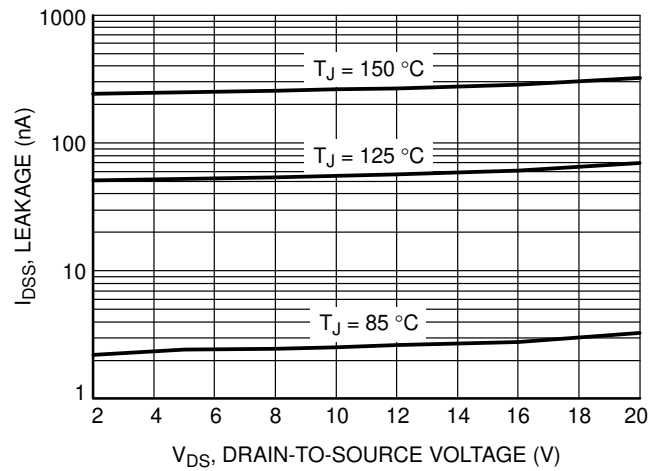


Figure 6. Drain-to-Source Leakage Current vs. Voltage

TYPICAL CHARACTERISTICS

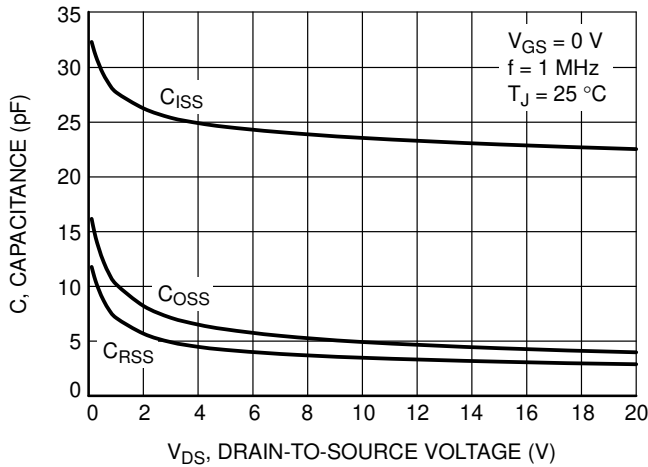


Figure 7. Capacitance Variation

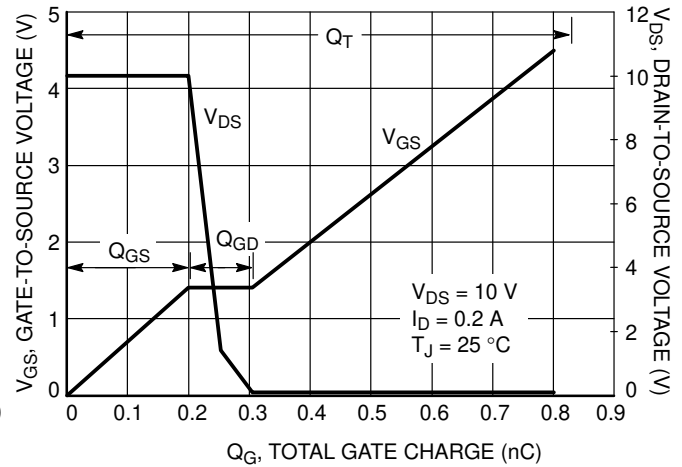


Figure 8. Gate-to-Source and Drain-to-Source Voltage vs. Total Charge

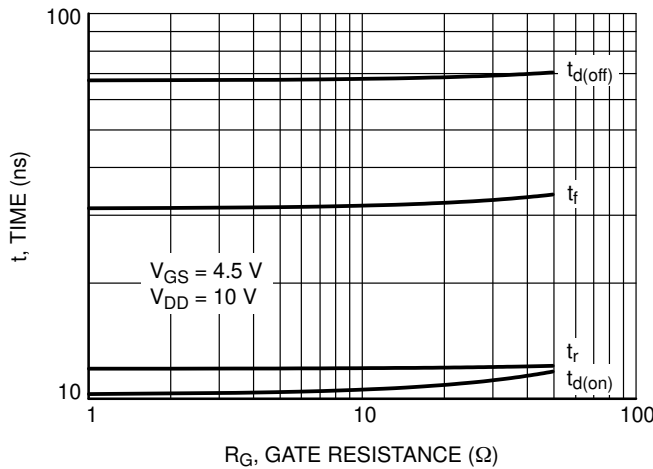


Figure 9. Resistive Switching Time Variation vs. Gate Resistance

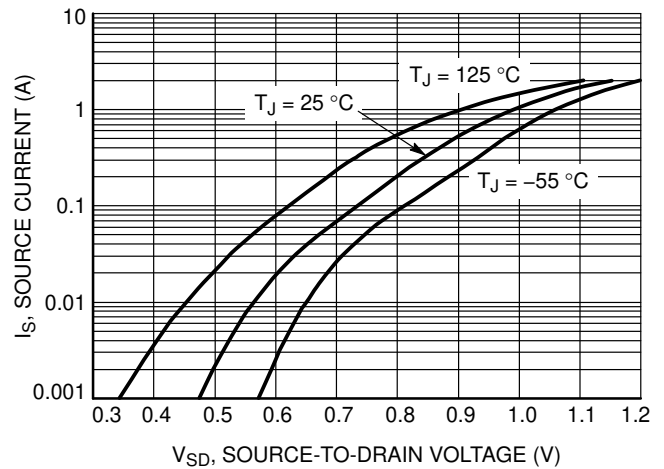


Figure 10. Diode Forward Voltage vs. Current

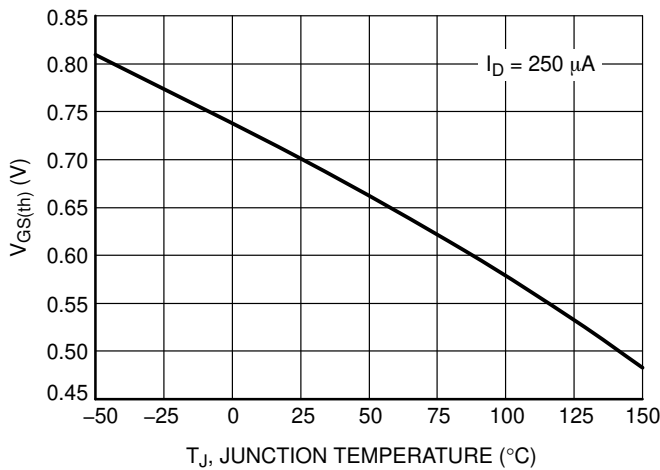


Figure 11. Threshold Voltage

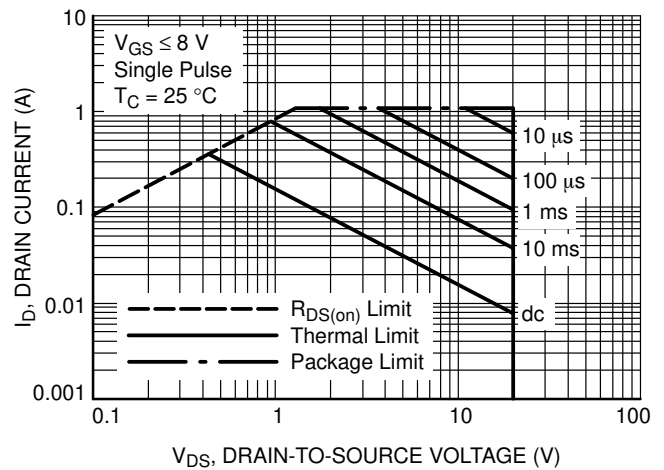


Figure 12. Maximum Rated Forward Biased Safe Operating Area

NTNS3164NZ

TYPICAL CHARACTERISTICS

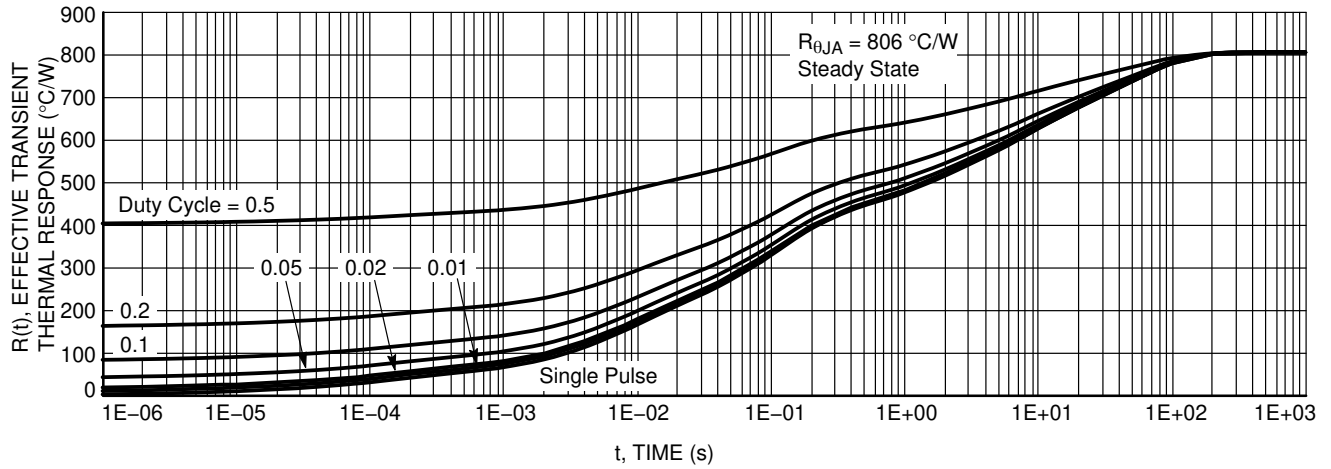


Figure 13. FET Thermal Response

NTNS3164NZ

REVISION HISTORY

Revision	Description of Changes	Date
1	Rebranded the document to onsemi format.	11/25/2025

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.



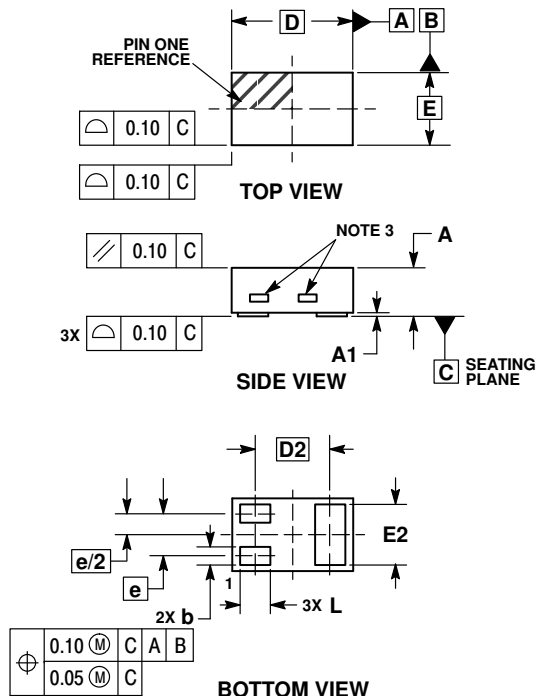


SOT-883 (XDFN3), 1.0x0.6, 0.35P

CASE 506CB
ISSUE A

DATE 30 MAR 2012

SCALE 8:1

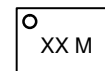


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. EXPOSED COPPER ALLOWED AS SHOWN.

MILLIMETERS		
DIM	MIN	MAX
A	0.340	0.440
A1	0.000	0.030
b	0.075	0.200
D	0.950	1.075
D2	0.620 BSC	
e	0.350 BSC	
E	0.550	0.675
E2	0.425	0.550
L	0.170	0.300

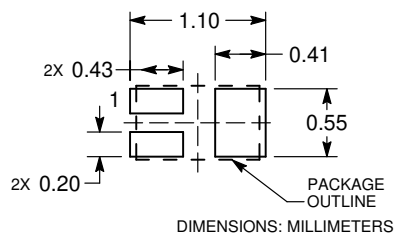
GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G", may or not be present.

RECOMMENDED SOLDER FOOTPRINT*



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

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DESCRIPTION:	SOT-883 (XDFN3), 1.0X0.6, 0.35P	PAGE 1 OF 1

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