

Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

[ON Semiconductor](#)
[NTF2955PT1G](#)

For any questions, you can email us directly:

sales@integrated-circuit.com

NTF2955, NTF2955P

Power MOSFET

-60 V, -2.6 A, Single P-Channel SOT-223

Features

- T MOS7 Design for low $R_{DS(on)}$
- Withstands High Energy in Avalanche and Commutation Modes
- Pb-Free Packages are Available

Applications

- Power Supplies
- PWM Motor Control
- Converters
- Power Management

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

Parameter		Symbol	Value	Unit	
Drain-to-Source Voltage		V_{DSS}	-60	V	
Gate-to-Source Voltage		V_{GS}	± 20	V	
Continuous Drain Current (Note 1)	Steady State	I_D	$T_A = 25^\circ\text{C}$	-2.6	A
			$T_A = 85^\circ\text{C}$	-2.0	
Power Dissipation (Note 1)	Steady State	P_D	2.3	W	
Continuous Drain Current (Note 2)	Steady State	I_D	$T_A = 25^\circ\text{C}$	-1.7	A
			$T_A = 85^\circ\text{C}$	-1.3	
Power Dissipation (Note 2)		P_D	1.0	W	
Pulsed Drain Current	$tp = 10 \mu\text{s}$	I_{DM}	-17	A	
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to 175	$^\circ\text{C}$	
Single Pulse Drain-to-Source Avalanche Energy ($V_{DD} = 25 \text{ V}, V_G = 10 \text{ V}, I_{PK} = 6.7 \text{ A}, L = 10 \text{ mH}, R_G = 25 \Omega$)		EAS	225	mJ	
Lead Temperature for Soldering Purposes (1/8" from case for 10 seconds)		T_L	260	$^\circ\text{C}$	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Max	Unit
Junction-to-Tab (Drain) - Steady State (Note 2)	$R_{\theta JC}$	14	$^\circ\text{C/W}$
Junction-to-Ambient - Steady State (Note 1)	$R_{\theta JA}$	65	
Junction-to-Ambient - Steady State (Note 2)	$R_{\theta JA}$	150	

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. When surface mounted to an FR4 board using 1 in. pad size (Cu. area = 1.127 in² [1 oz] including traces)
2. When surface mounted to an FR4 board using the minimum recommended pad size (Cu. area = 0.341 in²)

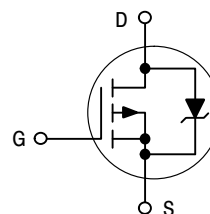


ON Semiconductor[®]

<http://onsemi.com>

$V_{(BR)DSS}$	$R_{DS(on)}$ TYP	I_D MAX
-60 V	145 m Ω @ -10 V	-2.6 A

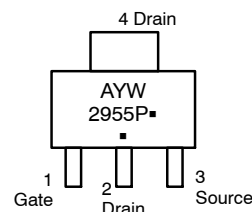
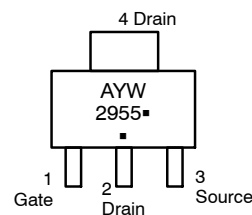
P-Channel



MARKING DIAGRAMS AND PIN ASSIGNMENT



**SOT-223
CASE 318E
STYLE 3**



- A = Assembly Location
- Y = Year
- W = Work Week
- = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping [†]
NTF2955T1	SOT-223	1000/Tape & Reel
NTF2955T1G	SOT-223 (Pb-Free)	1000/Tape & Reel
NTF2955PT1G	SOT-223 (Pb-Free)	1000/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.

NTF2955, NTF2955P

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
-----------	--------	----------------	-----	-----	-----	------

OFF CHARACTERISTICS

Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-60			V
Drain-to-Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$			66.4		mV/ $^\circ\text{C}$
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS} = 0\text{ V}, V_{DS} = -60\text{ V}$	$T_J = 25^\circ\text{C}$		-1.0	μA
			$T_J = 125^\circ\text{C}$		-50	
Gate-to-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA

ON CHARACTERISTICS (Note 3)

Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = -1.0\text{ mA}$	-2.0		-4.0	V
Drain-to-Source On Resistance	$R_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -0.75\text{ A}$		145	170	m Ω
		$V_{GS} = -10\text{ V}, I_D = -1.5\text{ A}$		150	180	
		$V_{GS} = -10\text{ V}, I_D = -2.4\text{ A}$		154	185	
Forward Transconductance	g_{FS}	$V_{GS} = -15\text{ V}, I_D = -0.75\text{ A}$		1.77		S

CHARGES AND CAPACITANCES

Input Capacitance	C_{ISS}	$V_{GS} = 0\text{ V}, f = 1.0\text{ MHz}, V_{DS} = 25\text{ V}$		492		pF
Output Capacitance	C_{OSS}			165		
Reverse Transfer Capacitance	C_{RSS}			50		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 10\text{ V}, V_{DS} = 30\text{ V}, I_D = 1.5\text{ A}$		14.3		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.2		
Gate-to-Source Charge	Q_{GS}			2.3		
Gate-to-Drain Charge	Q_{GD}			5.2		

SWITCHING CHARACTERISTICS (Note 4)

Turn-On Delay Time	$t_{d(ON)}$	$V_{GS} = 10\text{ V}, V_{DD} = 25\text{ V}, I_D = 1.5\text{ A}, R_G = 9.1\ \Omega, R_L = 25\ \Omega$		11		ns
Rise Time	t_r			7.6		
Turn-Off Delay Time	$t_{d(OFF)}$			65		
Fall Time	t_f			38		

DRAIN-SOURCE DIODE CHARACTERISTICS

Forward Diode Voltage	V_{SD}	$V_{GS} = 0\text{ V}, I_S = 1.5\text{ A}$		$T_J = 25^\circ\text{C}$	-1.10	-1.30	V
			$T_J = 125^\circ\text{C}$		-0.9		
Reverse Recovery Time	t_{RR}	$V_{GS} = 0\text{ V}, di_S/dt = 100\text{ A}/\mu\text{s}, I_S = 1.5\text{ A}$			36		ns
Charge Time	t_a				20		
Discharge Time	t_b				16		
Reverse Recovery Charge	Q_{RR}				0.139		

 3. Pulse Test: pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.

4. Switching characteristics are independent of operating junction temperatures.

NTF2955, NTF2955P

TYPICAL PERFORMANCE CURVES ($T_J = 25^\circ\text{C}$ unless otherwise noted)

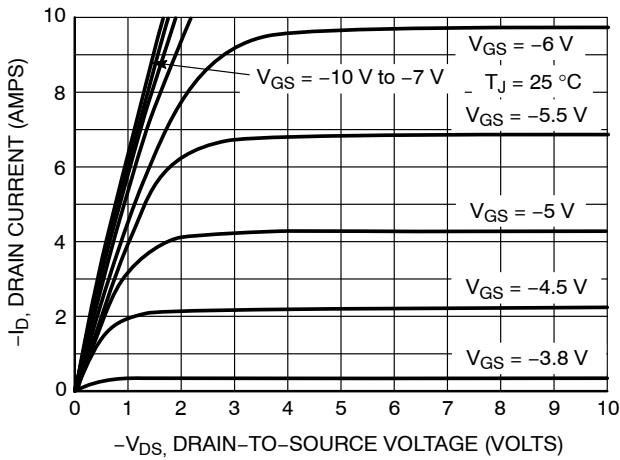


Figure 1. On-Region Characteristics

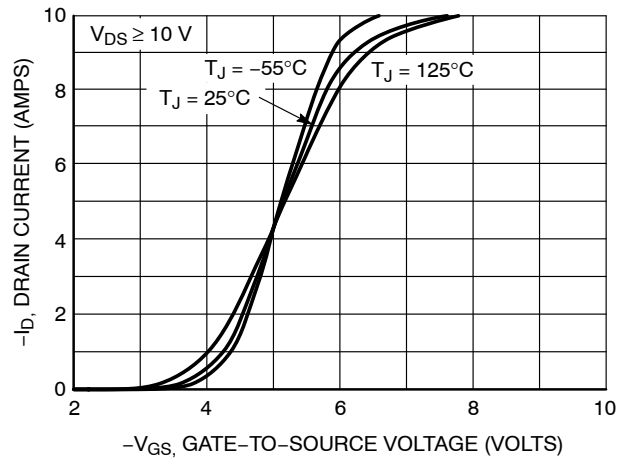


Figure 2. Transfer Characteristics

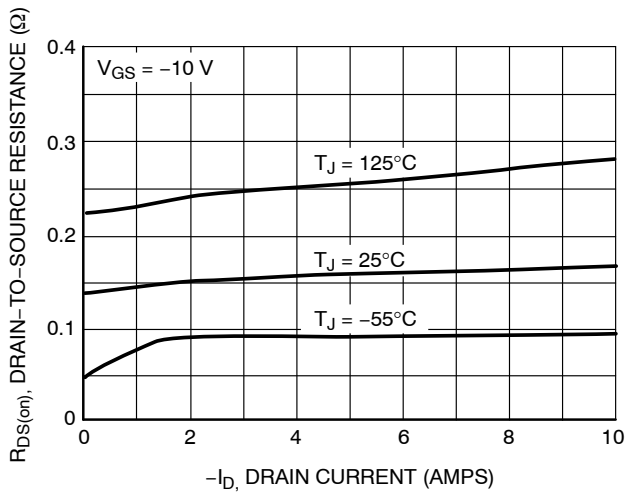


Figure 3. On-Resistance versus Drain Current and Temperature

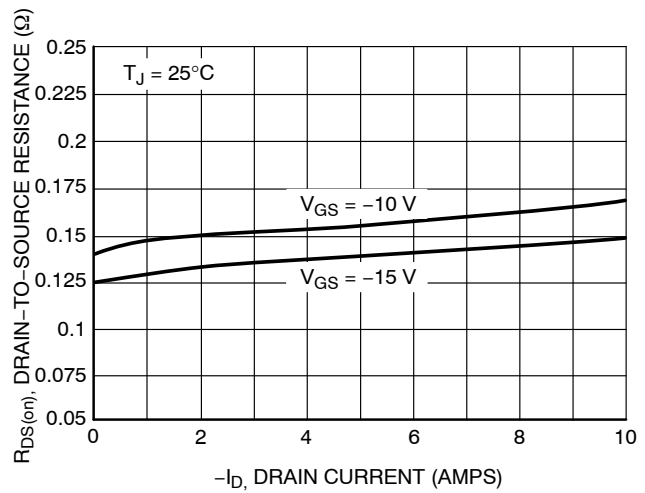


Figure 4. On-Resistance versus Drain Current and Gate Voltage

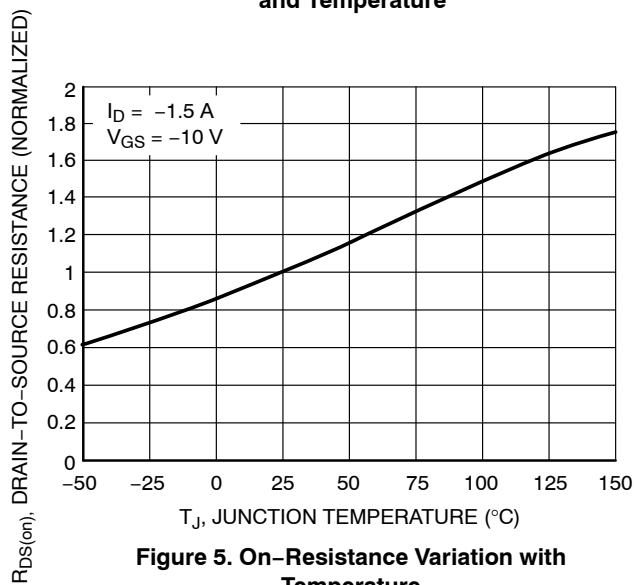


Figure 5. On-Resistance Variation with Temperature

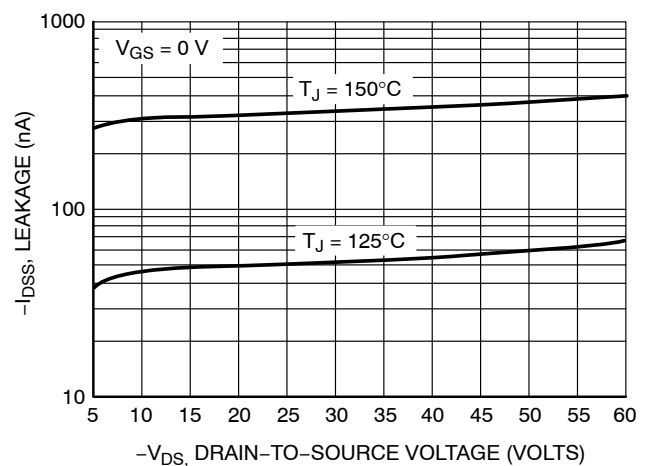


Figure 6. Drain-to-Source Leakage Current versus Voltage

NTF2955, NTF2955P

TYPICAL PERFORMANCE CURVES ($T_J = 25^\circ\text{C}$ unless otherwise noted)

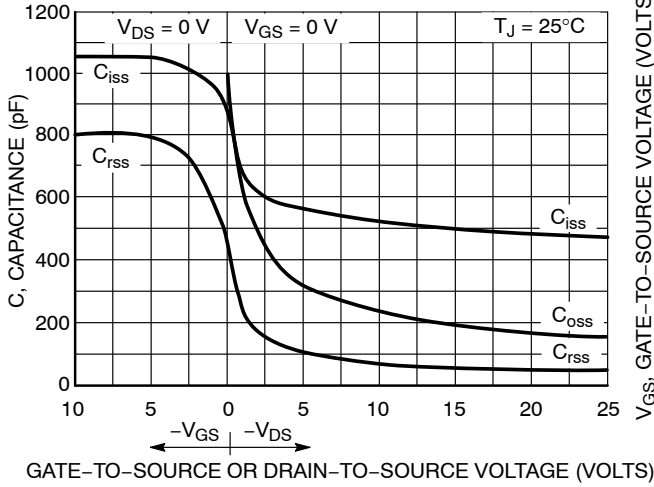


Figure 7. Capacitance Variation

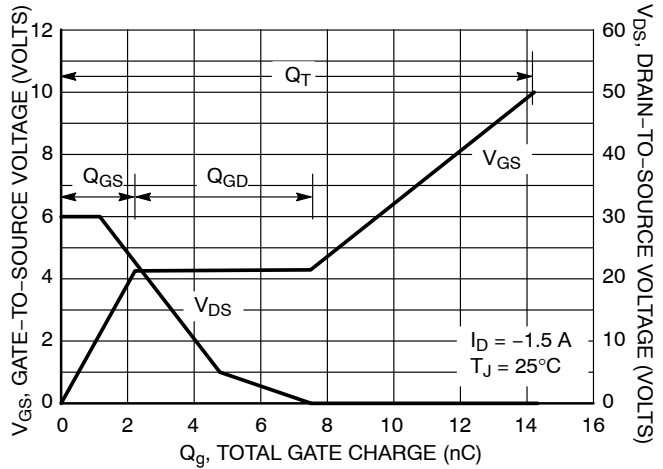


Figure 8. Gate-to-Source and Drain-to-Source Voltage versus Total Charge

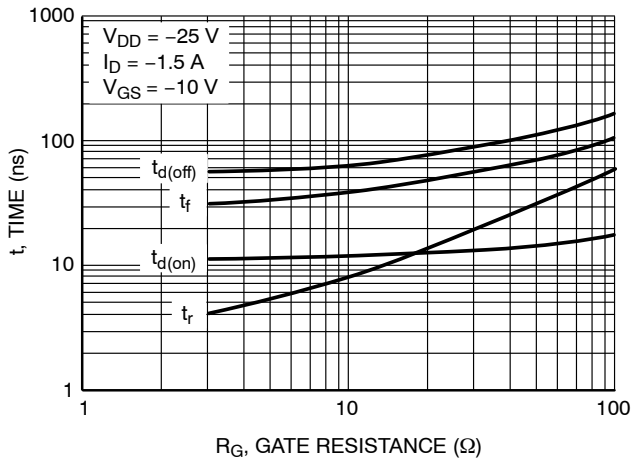


Figure 9. Resistive Switching Time Variation versus Gate Resistance

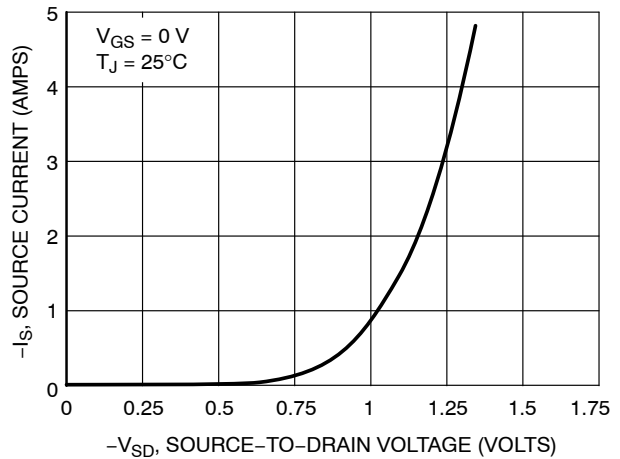


Figure 10. Diode Forward Voltage versus Current

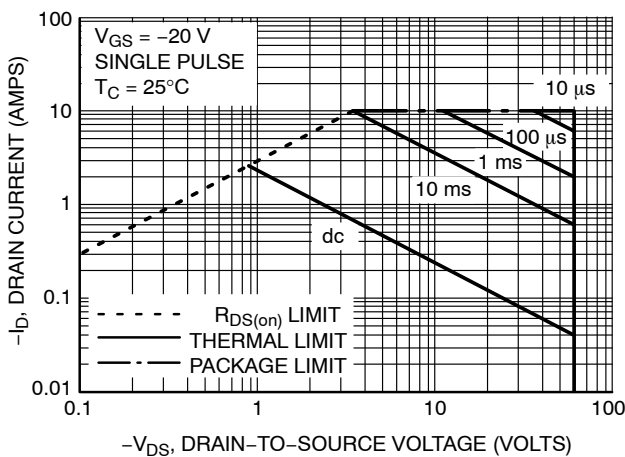


Figure 11. Maximum Rated Forward Biased Safe Operating Area

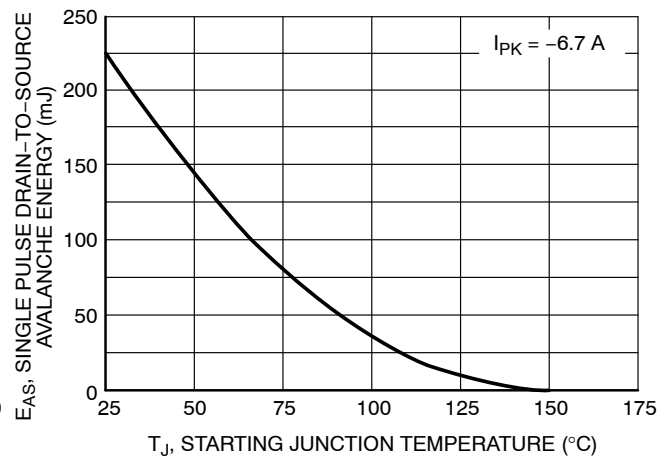


Figure 12. Maximum Avalanche Energy versus Starting Junction Temperature

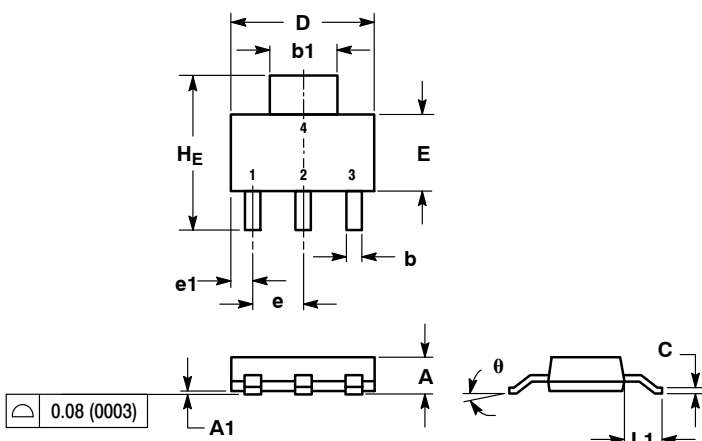
NTF2955, NTF2955P

PACKAGE DIMENSIONS

SOT-223 (TO-261)

CASE 318E-04

ISSUE M



NOTES:

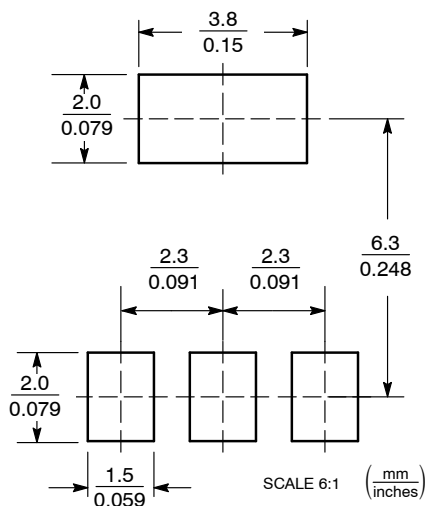
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.50	1.63	1.75	0.060	0.064	0.068
A1	0.02	0.06	0.10	0.001	0.002	0.004
b	0.60	0.75	0.89	0.024	0.030	0.035
b1	2.90	3.06	3.20	0.115	0.121	0.126
c	0.24	0.29	0.35	0.009	0.012	0.014
D	6.30	6.50	6.70	0.249	0.256	0.263
E	3.30	3.50	3.70	0.130	0.138	0.145
e	2.20	2.30	2.40	0.087	0.091	0.094
e1	0.85	0.94	1.05	0.033	0.037	0.041
L1	1.50	1.75	2.00	0.060	0.069	0.078
HE	6.70	7.00	7.30	0.264	0.276	0.287
θ	0°	-	10°	0°	-	10°

STYLE 3:

- PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

SOLDERING FOOTPRINT*



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

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada

Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910

Japan Customer Focus Center
Phone: 81-3-5773-3850

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative