

Is Now Part of



ON Semiconductor®

To learn more about ON Semiconductor, please visit our website at <u>www.onsemi.com</u>

ON Semiconductor and the ON Semiconductor logo are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. Buyer is responsible for its products and applications using ON Semiconductor dates sheds, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor dates sheds 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. ON Semiconductor does not convey any license under its patent rights of others. ON Semiconductor products are not designed, intended, or authorized for use on similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor and its officers, employees, subsidiaries, affliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out or i, directly or indirectly, any lay bed ON Semiconductor and its officers, employees, ween if such claim alleges that ON Semiconductor was negligent regarding the d



SEMICONDUCTOR TM

NDS8434 Single P-Channel Enhancement Mode Field Effect Transistor

General Description

transients are needed.

Features

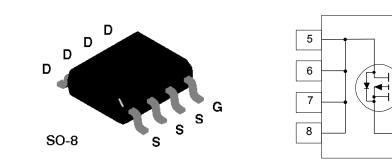
- These P-Channel enhancement mode power field effect -6.5A, -20V. R_{DS(ON)} = 0.035Ω @ V_{GS} = -4.5V $R_{DS(ON)} = 0.05\Omega @ V_{GS} = -2.7V.$ transistors are produced using Fairchild's proprietary, high cell density, DMOS technology. This very high density process is
 - High density cell design for extremely low R_{DS(ON)}.
 - High power and current handling capability in a widely used surface mount package.

4

3

2

1



Absolute Maximum Ratings T₂ = 25°C unless otherwise noted

especially tailored to minimize on-state resistance and provide

superior switching performance. These devices are particularly

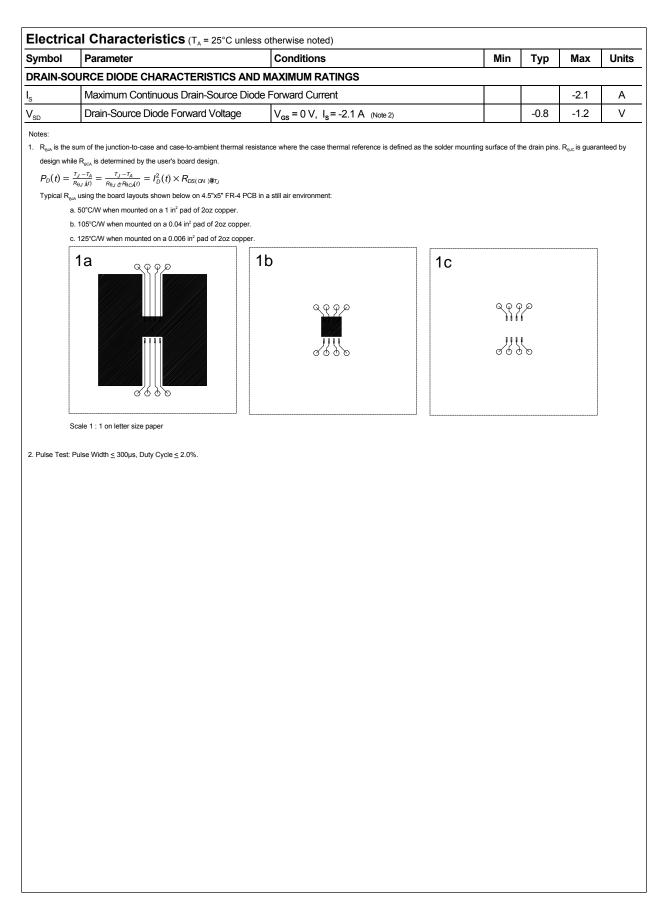
suited for low voltage applications such as notebook computer power management and other battery powered circuits where fast switching, low in-line power loss, and resistance to

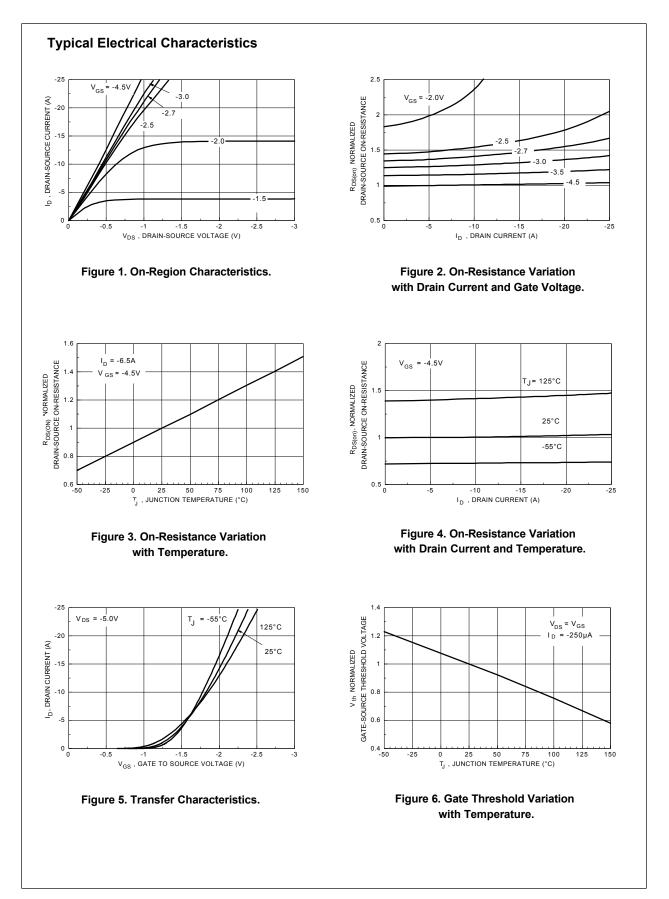
Symbol	Parameter		NDS8434	Units	
V _{DSS}	Drain-Source Voltage		-20	V	
V _{GSS}	Gate-Source Voltage		-8	V	
D	Drain Current - Continuous	(Note 1a)	-6.5	А	
	- Pulsed		-20		
P _D	Maximum Power Dissipation	(Note 1a)	2.5	W	
		(Note 1b)	1.2		
		(Note 1c)	1		
Γ _J ,T _{stg}	Operating and Storage Temperature Range		-55 to 150	C°	
THERMA	L CHARACTERISTICS				
R _{øja}	Thermal Resistance, Junction-to-Ambient	(Note 1a)	50	°C/W	
۲ _{өлс}	Thermal Resistance, Junction-to-Case	(Note 1)	25	°C/W	

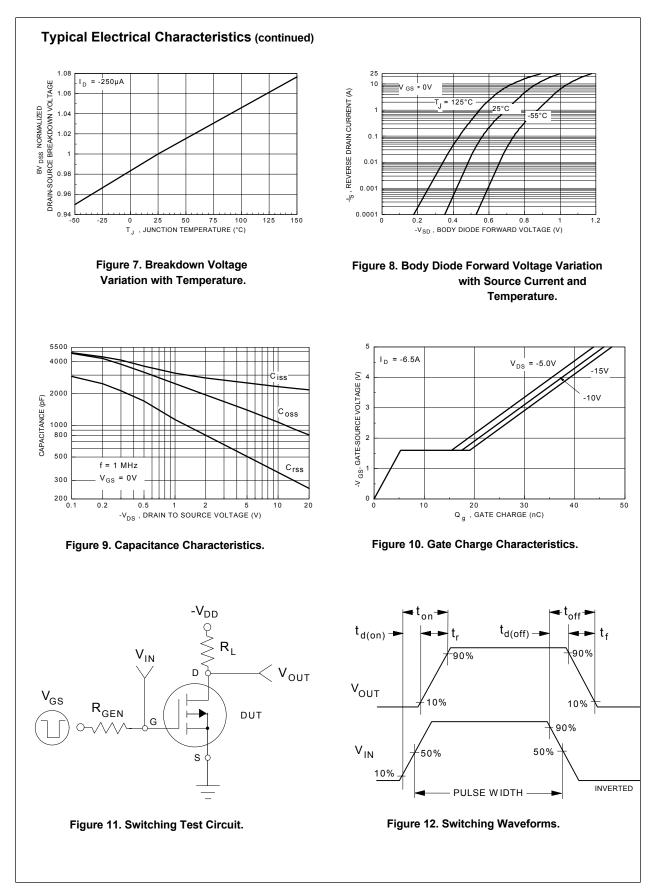
© 1997 Fairchild Semiconductor Corporation

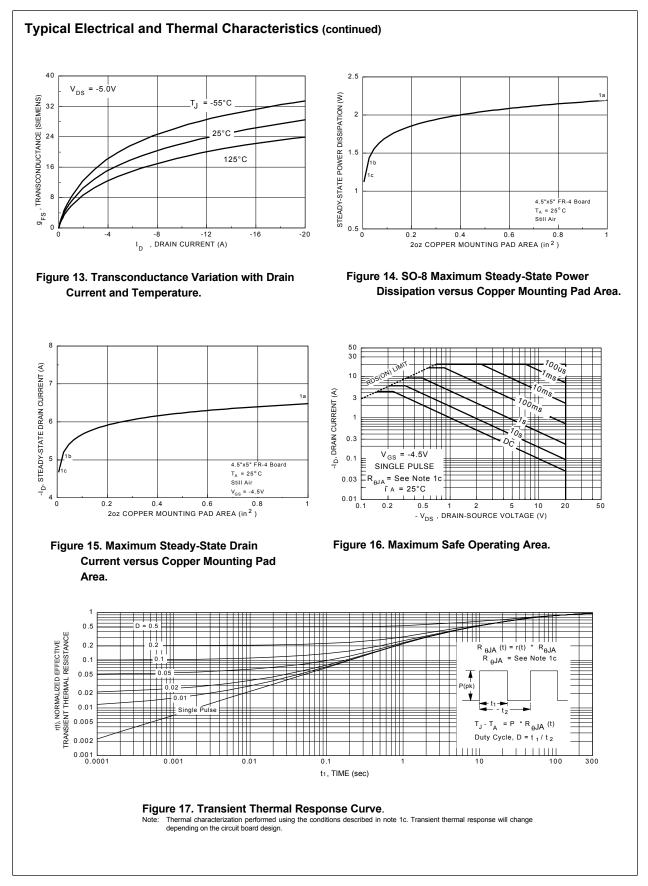
June 1996

Symbol	Parameter	Conditions		Min	Тур	Max	Units
OFF CHA	RACTERISTICS	·		•	•		
BV _{DSS}	Drain-Source Breakdown Voltage	V _{gs} = 0 V, I _p = -250 μA		-20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -16 V, V _{GS} = 0 V				-1	μA
			T _J = 55°C			-10	μA
GSSF	Gate - Body Leakage, Forward	V _{GS} = 8 V, V _{DS} = 0 V	·			100	nA
GSSR	Gate - Body Leakage, Reverse	V _{GS} = -8 V, V _{DS} = 0 V				-100	nA
ON CHAR	ACTERISTICS (Note 2)						•
/ _{GS(th)}	Gate Threshold Voltage	$V_{\text{DS}} = V_{\text{GS}}, I_{\text{D}} = -250 \mu\text{A}$		-0.4	-0.7	-1	V
			T _J = 125°C	-0.3	-0.45	-0.8	1
R _{DS(ON)}	Static Drain-Source On-Resistance	$V_{gg} = -4.5 V, I_{p} = -6.5 A$			0.026	0.035	Ω
			T _J = 125°C		0.037	0.07]
		V _{gs} = -2.7 V, I _p = -5.5 A			0.036	0.05	1
I _{D(on)}	On-State Drain Current	$V_{GS} = -4.5 V, V_{DS} = -5 V$		-15			Α
		V_{GS} = -2.7 V, V_{DS} = -5 V		-10			
J _{FS}	Forward Transconductance	$V_{DS} = -10 \text{ V}, I_{D} = -6.5 \text{ A}$			18		S
DYNAMIC	CHARACTERISTICS			-			
2 _{iss}	Input Capacitance	$V_{DS} = -10 V, V_{GS} = 0 V,$			2330		pF
C _{oss}	Output Capacitance	f = 1.0 MHz			1070		pF
C _{rss}	Reverse Transfer Capacitance				360		pF
SWITCHIN	IG CHARACTERISTICS (Note 2)						
D(on)	Turn - On Delay Time	$V_{DD} = -6 \text{ V}, \text{ I}_{D} = -1 \text{ A},$ $V_{GEN} = -4.5 \text{ V}, \text{ R}_{GEN} = 6 \Omega$			20	40	ns
	Turn - On Rise Time				38	80	ns
D(off)	Turn - Off Delay Time				169	300	ns
	Turn - Off Fall Time				63	120	ns
ک ^و	Total Gate Charge	$V_{DS} = -5 V,$ $I_{D} = -6.5 A, V_{GS} = -4.5 V$			40	80	nC
ک _{gs}	Gate-Source Charge	$I_{\rm D} = -6.5 \text{ A}, V_{\rm GS} = -4.5 \text{ V}$			5.3		nC
\mathbf{Q}_{gd}	Gate-Drain Charge				11		nC









TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACExTM CoolFETTM CROSSVOLTTM E²CMOSTM FACTTM FACT Quiet SeriesTM FAST[®] FAST[®] FASTrTM GTOTM HiSeCTM ISOPLANAR[™] MICROWIRE[™] POP[™] PowerTrench[™] QFET[™] QS[™] Quiet Series[™] SuperSOT[™]-3 SuperSOT[™]-6 SuperSOT[™]-8

TinyLogic™ UHC™ VCX™

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user. 2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition			
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.			
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.			
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.			
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.			

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at <u>www.onsemi.com/site/pdf/Patent-Marking.pdf</u>. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor has against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death ass

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor 19521 E. 32nd Pkwy, Aurora, Colorado 80011 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: 81-3-5817-1050 ON Semiconductor Website: www.onsemi.com

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

For additional information, please contact your local Sales Representative

© Semiconductor Components Industries, LLC