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SEMICONDUCTOR TM

## NDS8434 Single P-Channel Enhancement Mode Field Effect Transistor

#### **General Description**

transients are needed.

Features

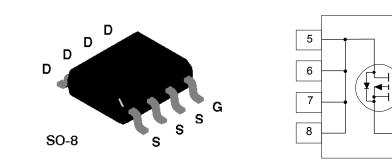
- These P-Channel enhancement mode power field effect -6.5A, -20V. R<sub>DS(ON)</sub> = 0.035Ω @ V<sub>GS</sub> = -4.5V  $R_{DS(ON)} = 0.05\Omega @ V_{GS} = -2.7V.$ transistors are produced using Fairchild's proprietary, high cell density, DMOS technology. This very high density process is
  - High density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

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#### Absolute Maximum Ratings T<sub>2</sub> = 25°C unless otherwise noted

especially tailored to minimize on-state resistance and provide

superior switching performance. These devices are particularly

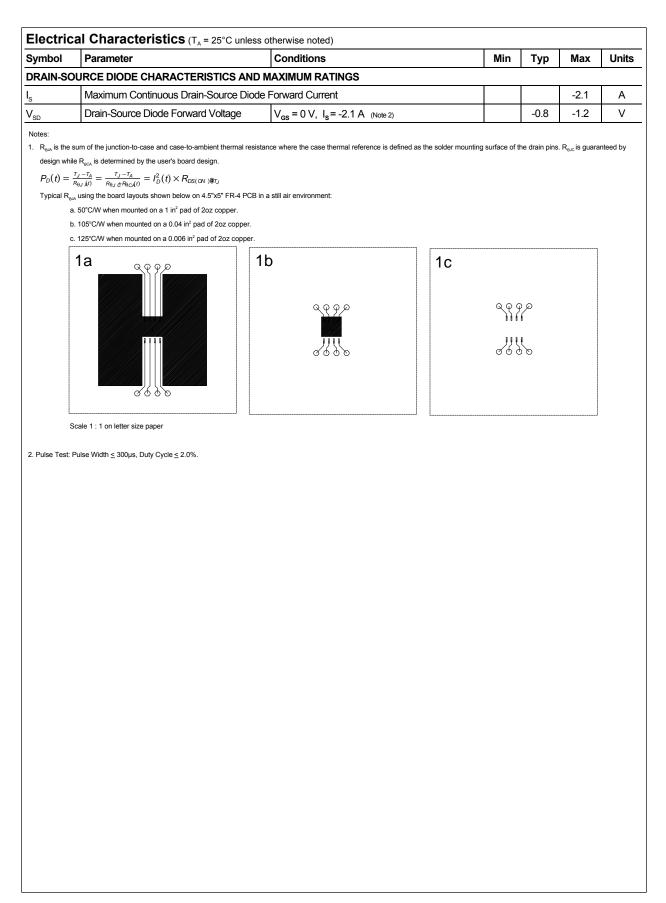
suited for low voltage applications such as notebook computer power management and other battery powered circuits where fast switching, low in-line power loss, and resistance to

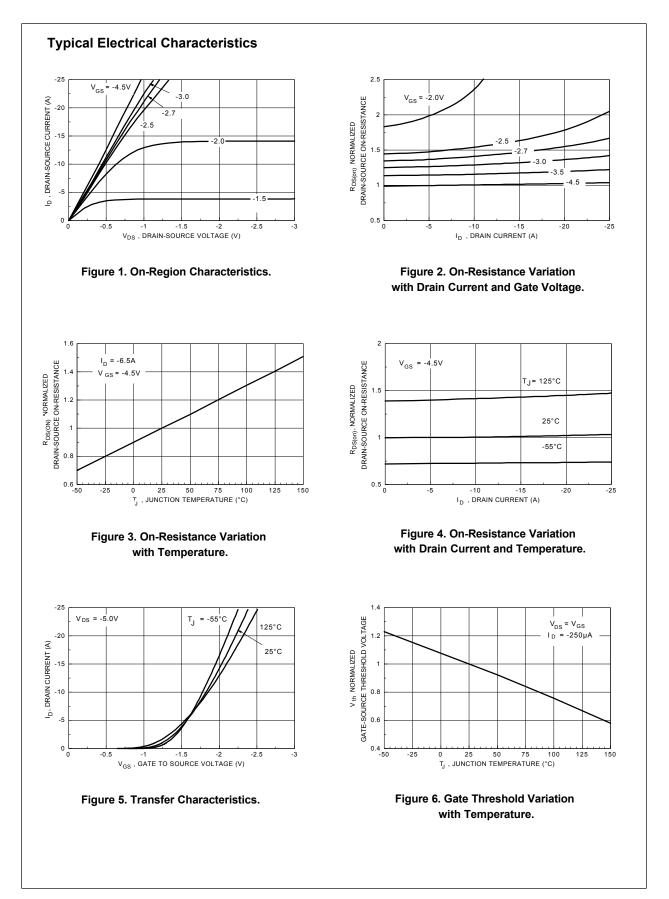
Symbol	Parameter		NDS8434	Units	
V <sub>DSS</sub>	Drain-Source Voltage		-20	V	
V <sub>GSS</sub>	Gate-Source Voltage		-8	V	
D	Drain Current - Continuous	(Note 1a)	-6.5	А	
	- Pulsed		-20		
P <sub>D</sub>	Maximum Power Dissipation	(Note 1a)	2.5	W	
		(Note 1b)	1.2		
		(Note 1c)	1		
Γ <sub>J</sub> ,T <sub>stg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

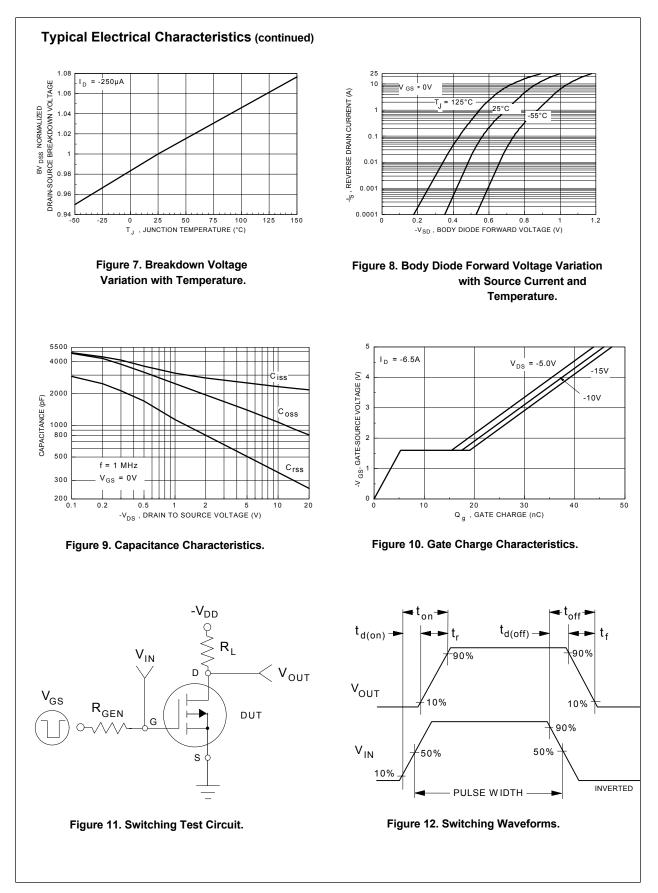
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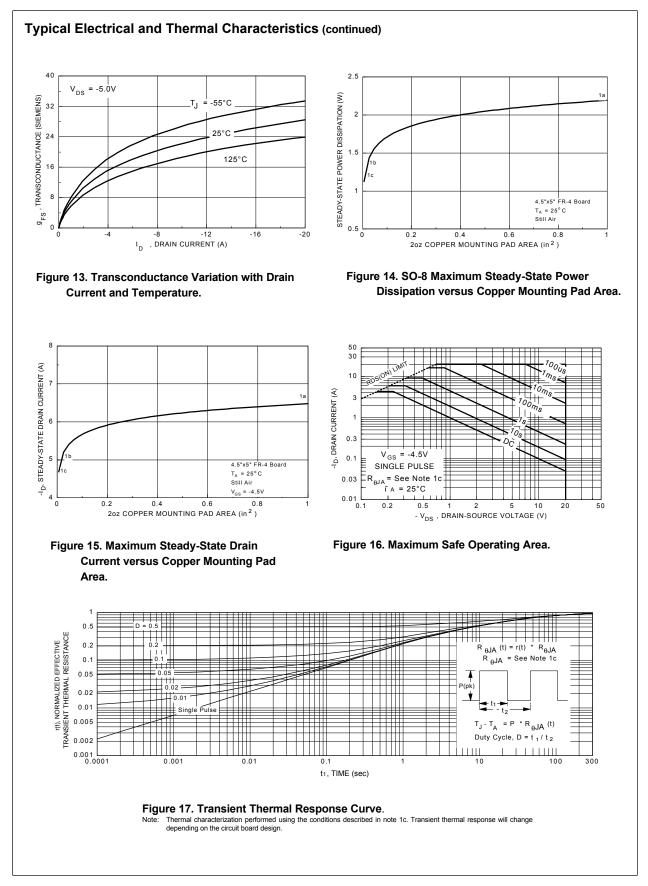
June 1996

Symbol	Parameter	Conditions		Min	Тур	Max	Units
OFF CHA	RACTERISTICS	·		•	•		
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>gs</sub> = 0 V, I <sub>p</sub> = -250 μA		-20			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = -16 V, V <sub>GS</sub> = 0 V				-1	μA
			T <sub>J</sub> = 55°C			-10	μA
GSSF	Gate - Body Leakage, Forward	V <sub>GS</sub> = 8 V, V <sub>DS</sub> = 0 V	·			100	nA
GSSR	Gate - Body Leakage, Reverse	V <sub>GS</sub> = -8 V, V <sub>DS</sub> = 0 V				-100	nA
ON CHAR	ACTERISTICS (Note 2)						•
/ <sub>GS(th)</sub>	Gate Threshold Voltage	$V_{\text{DS}} = V_{\text{GS}}, I_{\text{D}} = -250 \mu\text{A}$		-0.4	-0.7	-1	V
			T <sub>J</sub> = 125°C	-0.3	-0.45	-0.8	1
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	$V_{gg} = -4.5 V, I_{p} = -6.5 A$			0.026	0.035	Ω
			T <sub>J</sub> = 125°C		0.037	0.07	]
		V <sub>gs</sub> = -2.7 V, I <sub>p</sub> = -5.5 A			0.036	0.05	1
I <sub>D(on)</sub>	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 <sub>FS</sub>	Forward Transconductance	$V_{DS} = -10 \text{ V}, I_{D} = -6.5 \text{ A}$			18		S
DYNAMIC	CHARACTERISTICS			-			
2 <sub>iss</sub>	Input Capacitance	$V_{DS} = -10 V, V_{GS} = 0 V,$			2330		pF
C <sub>oss</sub>	Output Capacitance	f = 1.0 MHz			1070		pF
C <sub>rss</sub>	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 <sup>و</sup>	Total Gate Charge	$V_{DS} = -5 V,$ $I_{D} = -6.5 A, V_{GS} = -4.5 V$			40	80	nC
ک <sub>gs</sub>	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









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