



# NDFP03N150C

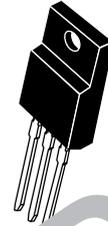
## N-Channel Power MOSFET 1500V, 2.5A, 10.5Ω, TO-220F-3FS

ON Semiconductor®

<http://onsemi.com>

### Features

- On-resistance  $R_{DS(on)}=8\Omega(\text{typ.})$
- Input Capacitance  $C_{iss}=650\text{pF}(\text{typ.})$
- 10V drive



TO-220F-3FS

### Specifications

#### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Rating	Unit
Drain to Source Voltage	$V_{DS}$		1500	V
Gate to Source Voltage	$V_{GS}$		$\pm 30$	V
Drain Current (DC)	$I_D$		2.5	A
Drain Current (DC) Limited by Package	$I_{DL}$		2	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle = 1%	5	A
Allowable Power Dissipation	$P_D$		3	W
		$T_c=25^\circ\text{C}$	32	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		20	mJ
Avalanche Current *2	$I_{AS}$		2	A

\*1  $V_{DD}=50\text{V}$ ,  $L=10\text{mH}$ ,  $I_{AV}=2\text{A}$  (Fig. 1)

\*2  $L \leq 10\text{mH}$ , Single Pulse

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.

#### Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DS}$	$I_D=10\text{mA}$ , $V_{GS}=0\text{V}$	1500			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=1200\text{V}$ , $V_{GS}=0\text{V}$			1	mA
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30\text{V}$ , $V_{DS}=0\text{V}$			$\pm 100$	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	2		4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=20\text{V}$ , $I_D=1\text{A}$		1.9		S
Static Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D=1\text{A}$ , $V_{GS}=10\text{V}$		8	10.5	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=30\text{V}$ , $f=1\text{MHz}$		650		pF
Output Capacitance	$C_{oss}$				70	pF
Reverse Transfer Capacitance	$C_{rss}$				20	pF
Turn-ON Delay Time	$t_{d(on)}$		See Fig.2		15	
Rise Time	$t_r$				20	ns
Turn-OFF Delay Time	$t_{d(off)}$				148	ns
Fall Time	$t_f$				44	ns

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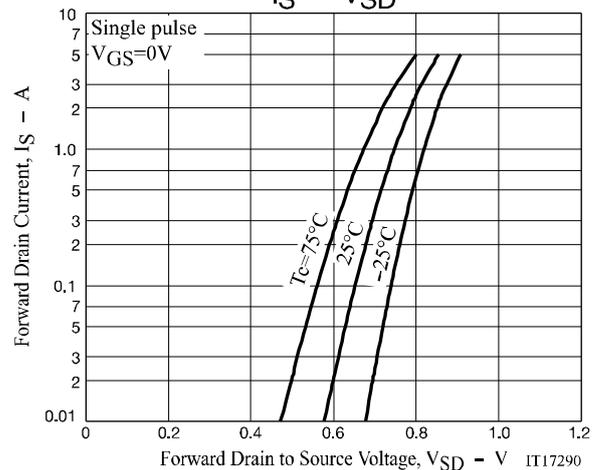
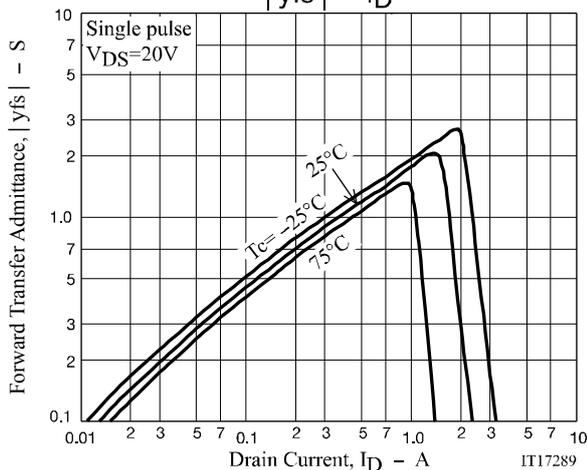
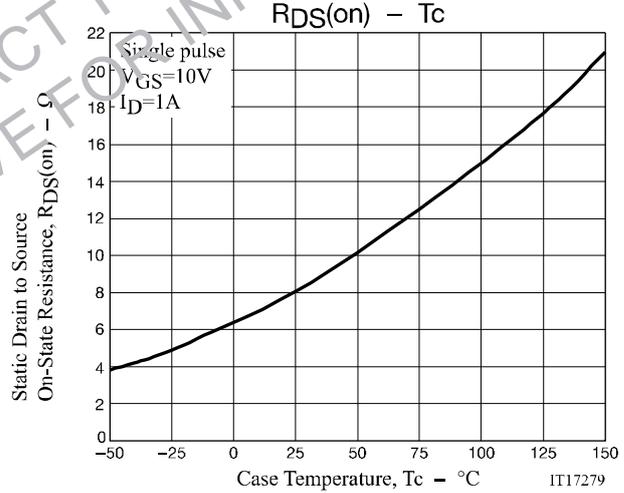
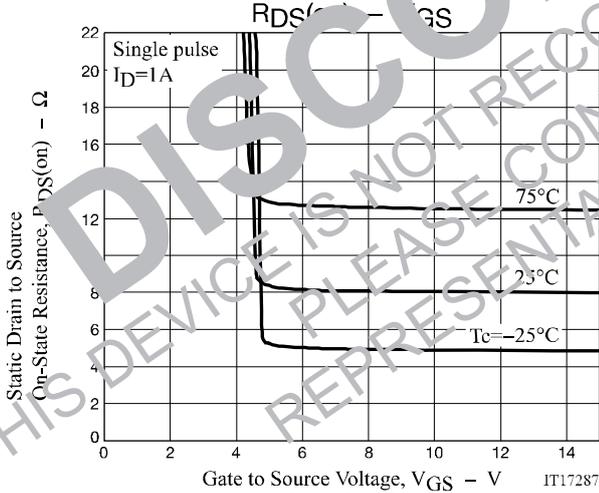
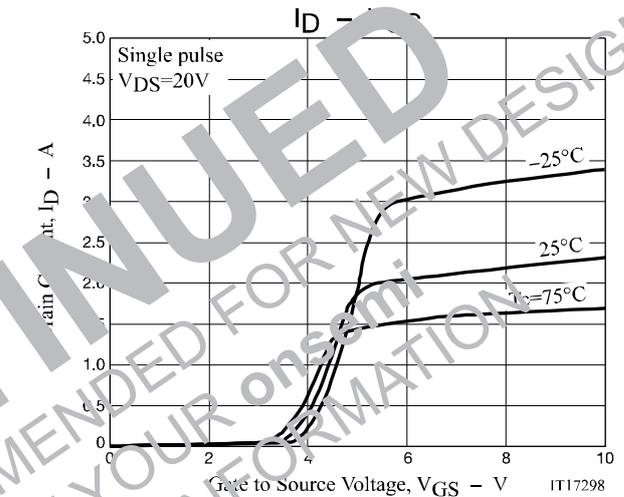
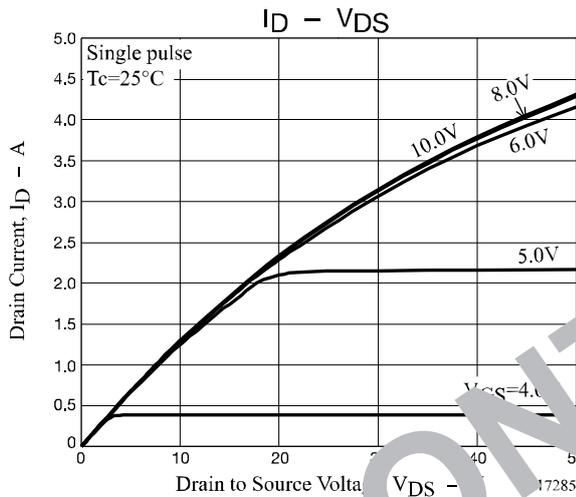
### ORDERING INFORMATION

See detailed ordering and shipping information on page 4 of this data sheet.

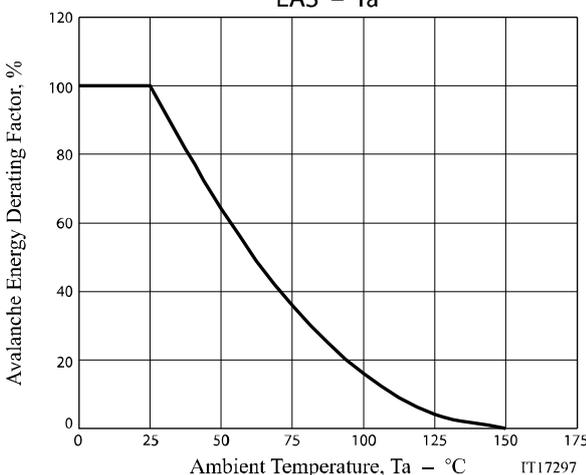
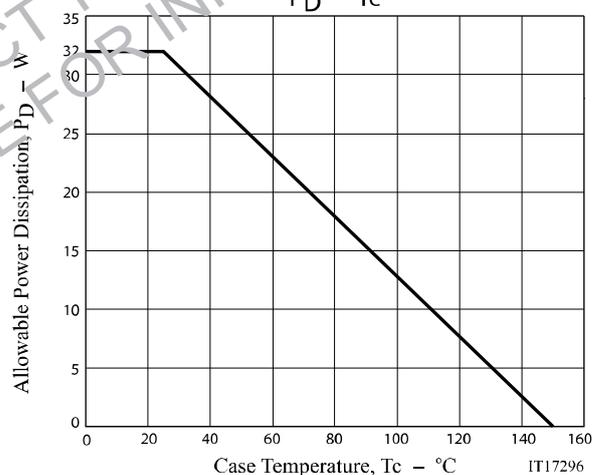
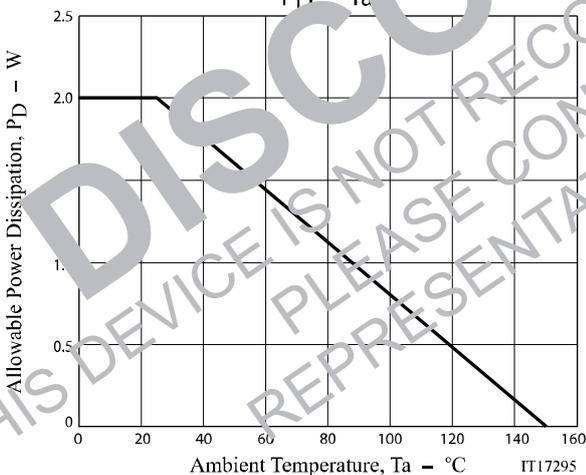
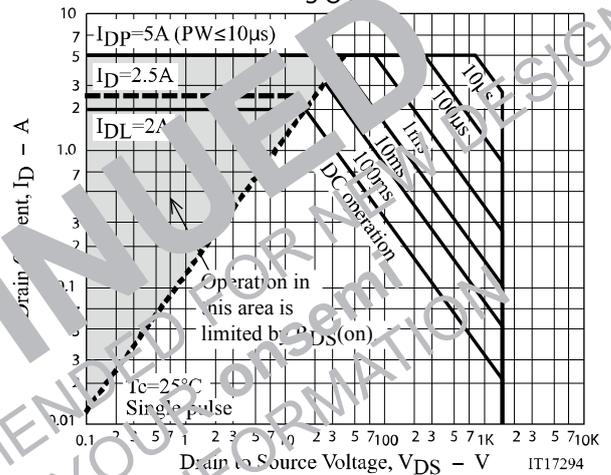
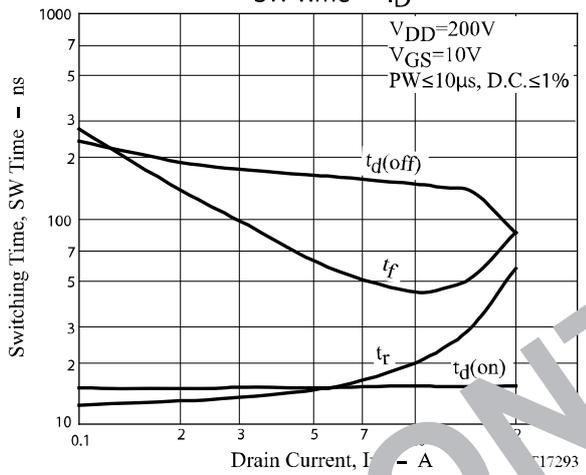
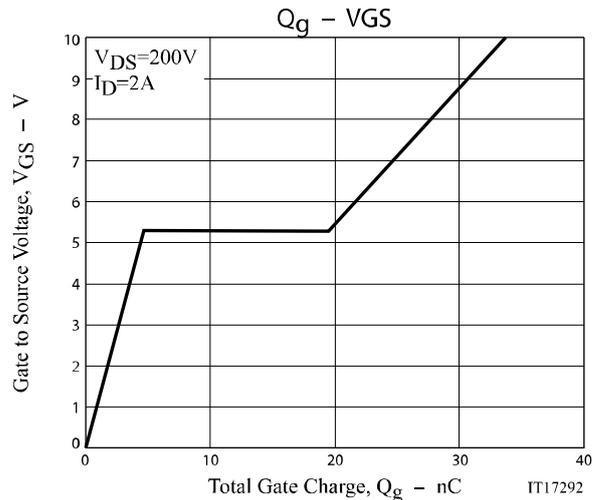
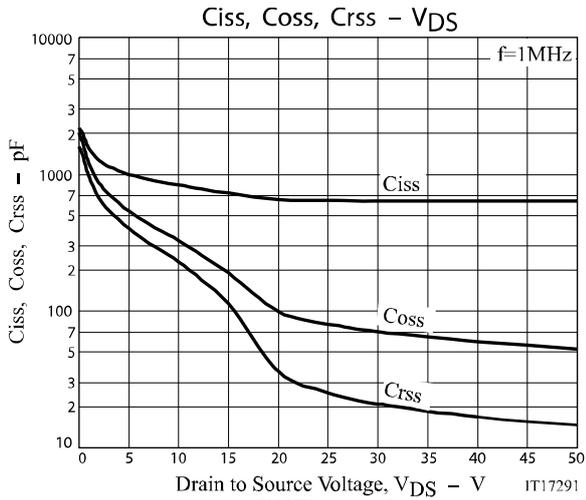
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Total Gate Charge	Qg	V <sub>DS</sub> =200V, V <sub>GS</sub> =10V, I <sub>D</sub> =2A	34		nC
Gate to Source Charge	Qgs		4.7		nC
Gate to Drain "Miller" Charge	Qgd		15		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =2A, V <sub>GS</sub> =0V	0.78	1.5	V
Reverse Recovery Time	t <sub>rr</sub>	See Fig.3	300		ns
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>S</sub> =2A, V <sub>GS</sub> =0V, di/dt=100A/μs	1900		nC



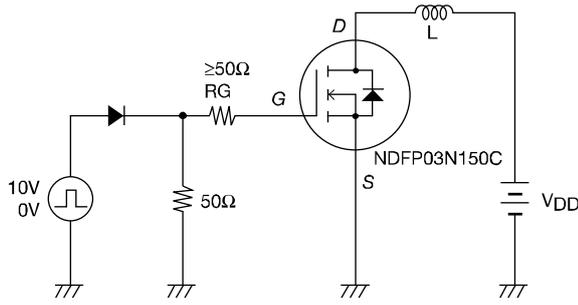
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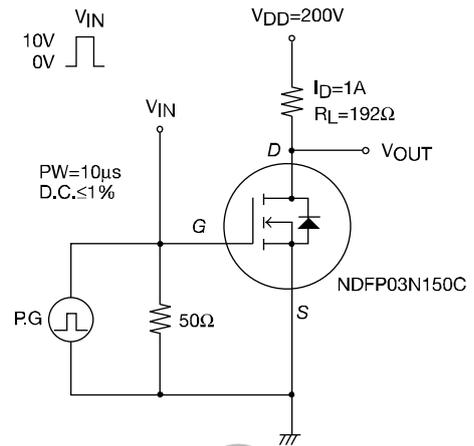


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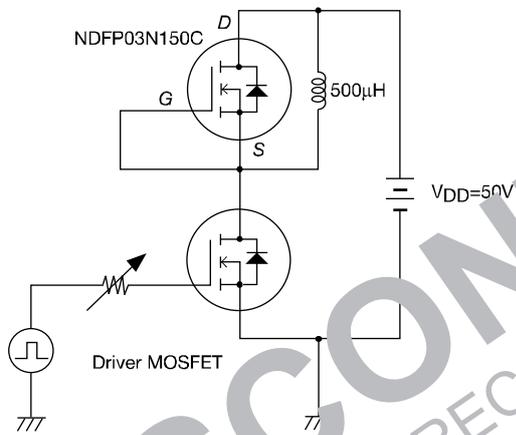
**Fig.1 Unclamped Inductive Switching Test Circuit**



**Fig.2 Switching Time Test Circuit**



**Fig.3 Reverse Recovery Time Test Circuit**



DISCONTINUED

THIS DEVICE IS NOT RECOMMENDED FOR NEW DESIGN

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Note on usage : Since the NDFP03N150C is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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