



THE DATASHEET OF NDFP03N150CG





NDFP03N150C

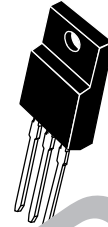
N-Channel Power MOSFET 1500V, 2.5A, 10.5Ω, TO-220F-3FS

ON Semiconductor®

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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}		± 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}	$V_{GS}=\pm 30\text{V}$, $V_{DS}=0\text{V}$			± 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	Ω
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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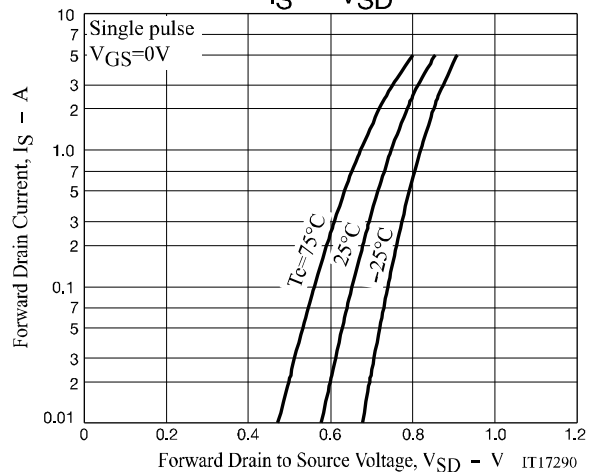
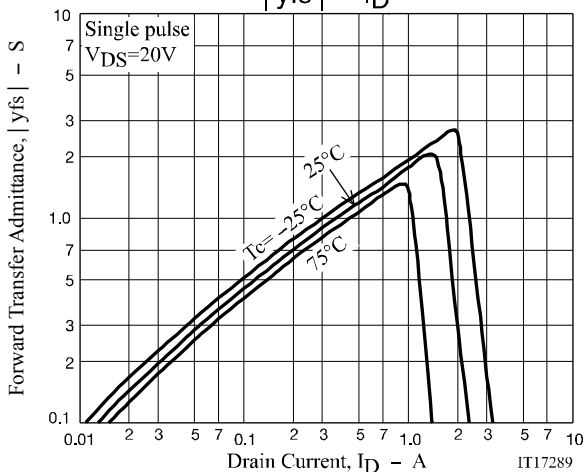
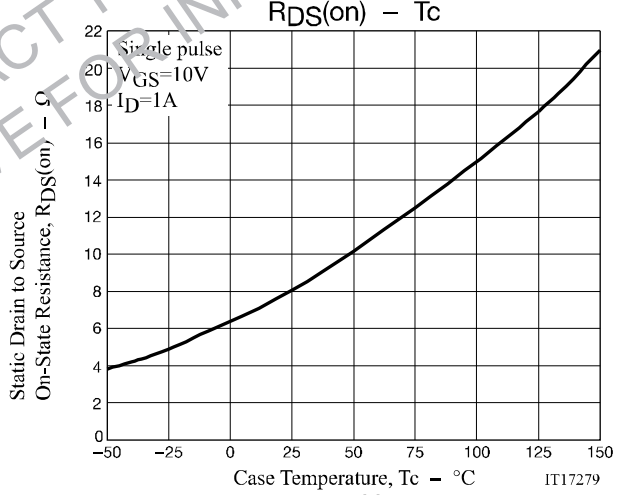
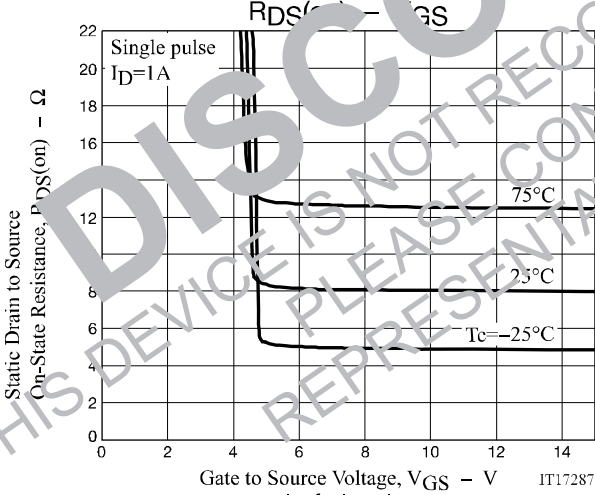
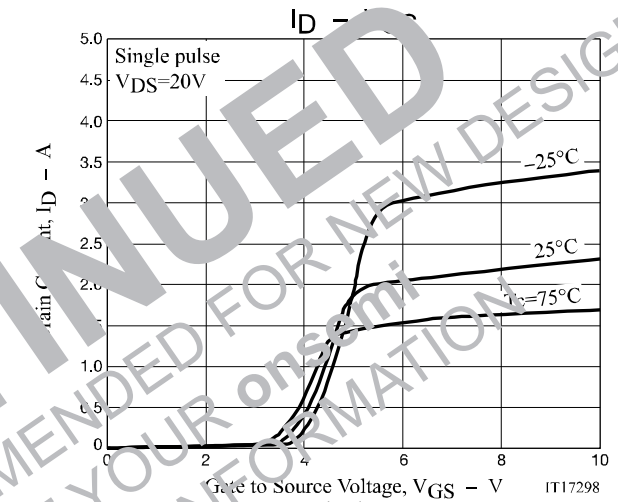
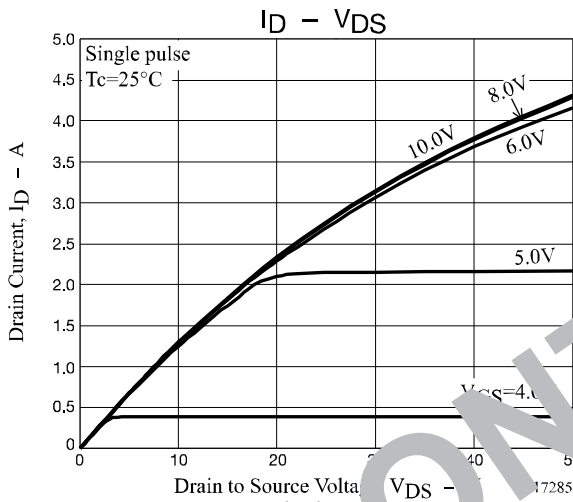
ORDERING INFORMATION

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

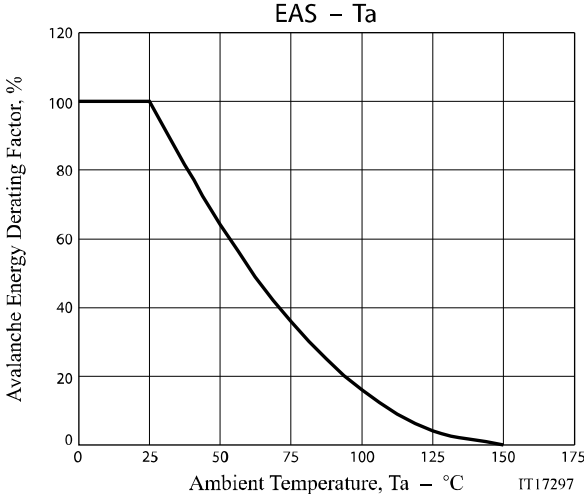
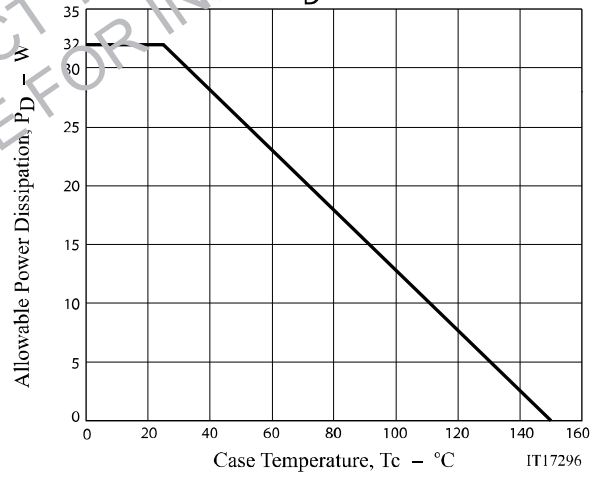
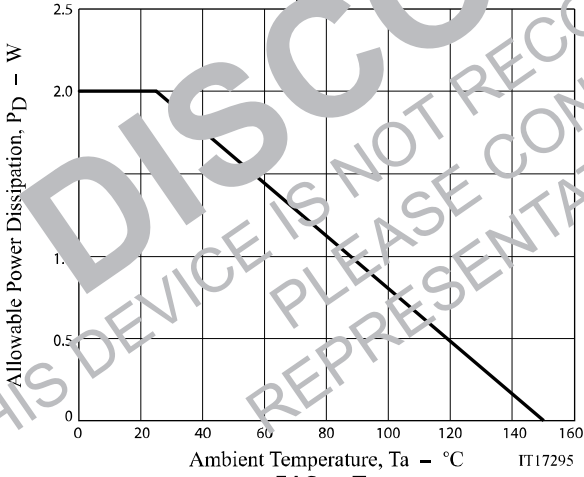
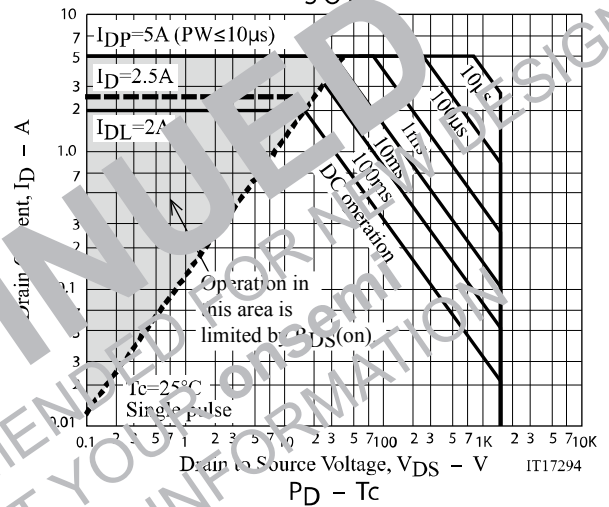
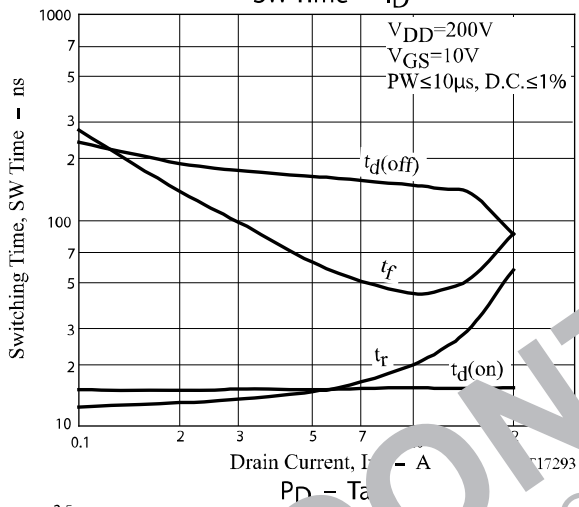
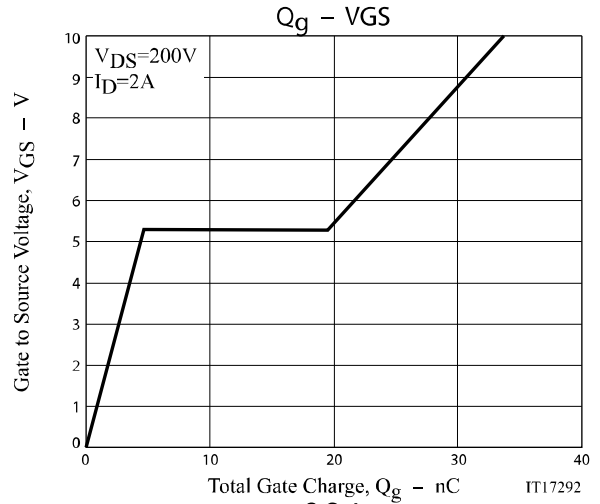
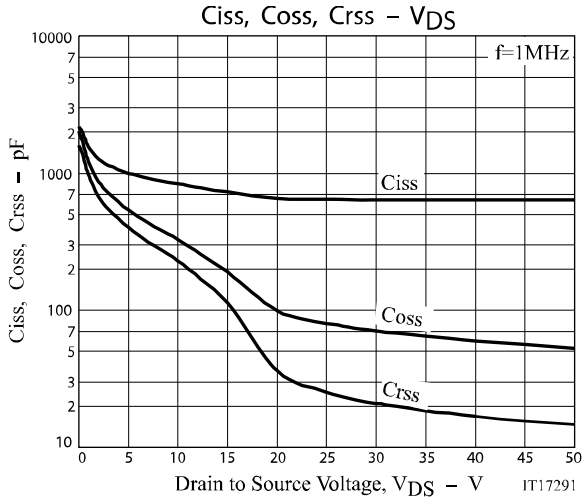
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Total Gate Charge	Qg	V _{DS} =200V, V _{GS} =10V, I _D =2A	34		nC
Gate to Source Charge	Qgs		4.7		nC
Gate to Drain "Miller" Charge	Qgd		15		nC
Diode Forward Voltage	V _{SD}	I _S =2A, V _{GS} =0V	0.78	1.5	V
Reverse Recovery Time	t _{rr}	See Fig.3	300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



NDFP03N150C



NDFP03N150C

Package Dimensions

NDFP03N150CG

TO-220F-3FS

CASE 221AM

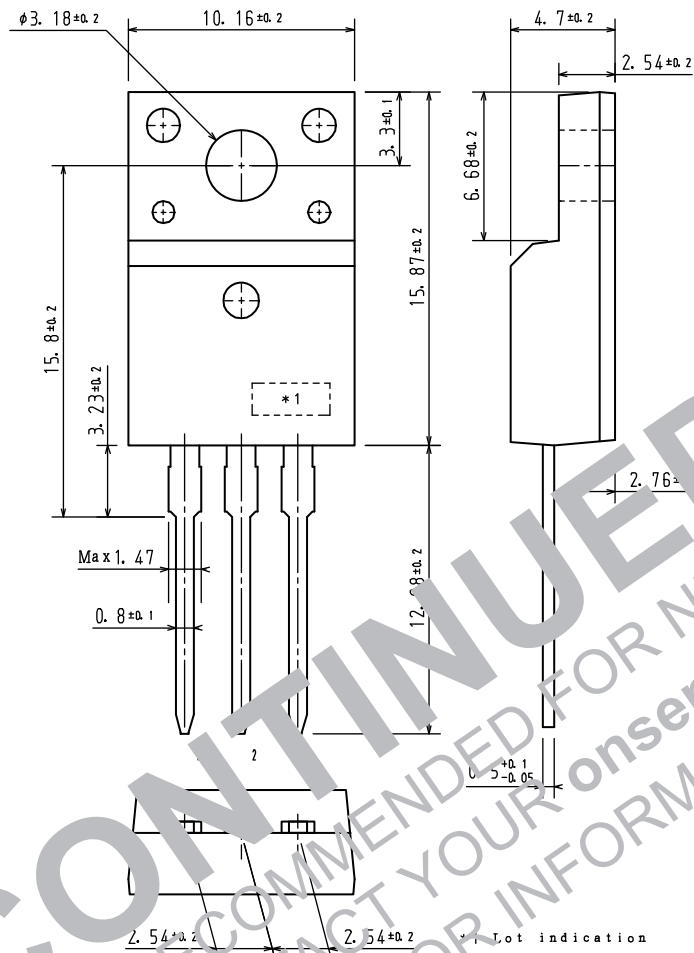
ISSUE O

Unit : mm

1: Gate

2: Drain

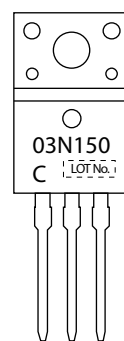
3: Source



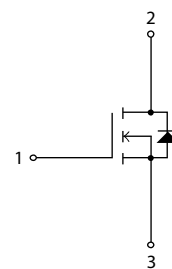
Ordering & Package Information

Device	Package	Shipping	note
NDFP03N150CG	TO-220F-3FS SC-67	50 pcs. / tube	Pb-Free

Marking



Electrical Connection



NDFP03N150C

Fig.1 Unclamped Inductive Switching Test Circuit

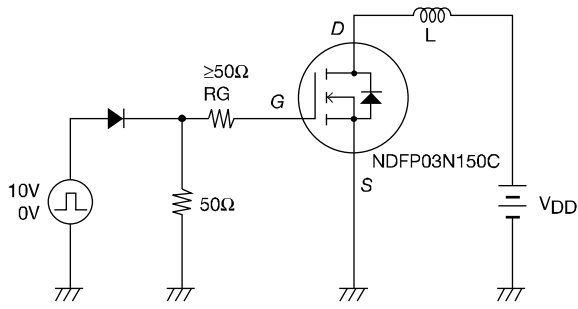


Fig.2 Switching Time Test Circuit

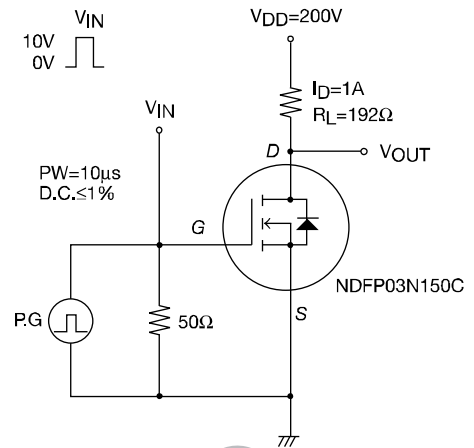
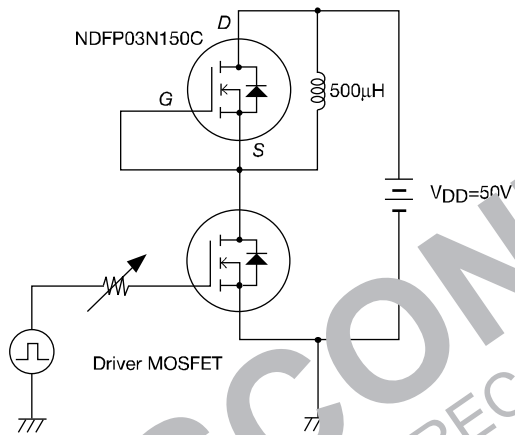


Fig.3 Reverse Recovery Time Test Circuit



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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