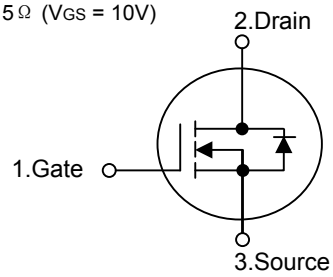
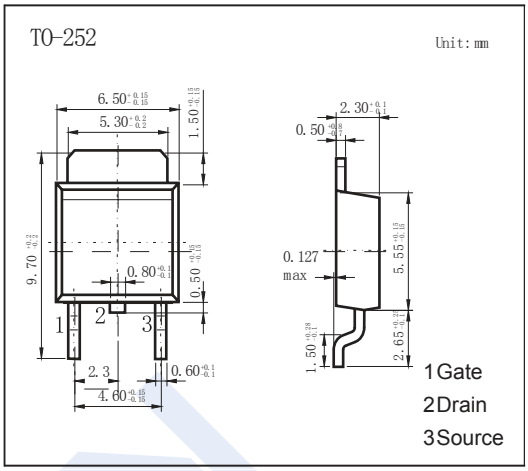
N-Channel Enhancement MOSFET

NDT4N70

■ Features

- $V_{DS\ (V)}$ = 700V
- I_D = 4.2 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 2.15Ω (V_{GS} = 10V)





■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	700	V
Gate-Source Voltage	V_{GS}	±30	
Continuous Drain Current	I_D	4.2	A
Pulsed Drain Current (Note1)	I_{DM}	17.6	
Avalanche Current (Note1)	I_{AR}	4.2	
Repetitive Pulse Avalanche Energy (Note1)	E_{AR}	10.6	mJ
Single Pulse Avalanche Energy (Note2)	E_{AS}	260	mJ
Peak Diode Recovery dv/dt (Note3)	dv/dt	4.5	V/ns
Power Dissipation	P_D	49	W
Thermal Resistance.Junction- to-Ambient	R_{thJA}	110	℃/W
Thermal Resistance.Junction- to-Case	R_{thJC}	2.55	
Junction Temperature	T_J	150	℃
Operating Temperature	T_{opr}	-55 to 150	
Storage Temperature Range	T_{stg}	-55 to 150	

Note.1 Repetitive Rating : Pulse width limited by maximum junction temperature

Note.2 L=26.9mH, I_{AS}=4.2A, V_{DD}=50V, R_g =25Ω, Starting T_J=25°C

Note.3 I_{SD} ≤4.2A, di/dt≤200A/us, V_{DD}≤BV_{dss}, Starting T_J=25°C

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	700			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=700V, V_{GS}=0V			10	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±30V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	2		4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=4.2A			2.15	Ω
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		330	670	pF
Output Capacitance	C_{oss}			70	90	
Reverse Transfer Capacitance	C_{rss}			8	11	
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=560V, I_D=4.2A (Note1,2)		25	20	nC
Gate Source Charge	Q_{gs}			3.4		
Gate Drain Charge	Q_{gd}			7.1		
Turn-On DelayTime	$t_{d(on)}$	V_{DS}=350V, I_D=4.2A,R_G=25Ω (Note1,2)		13	35	ns
Turn-On Rise Time	t_r			45	100	
Turn-Off DelayTime	$t_{d(off)}$			25	60	
Turn-Off Fall Time	t_f			35	80	
Body Diode Reverse Recovery Time	t_{rr}	I_F= 4.2A, di/dt= 100A/μs,V_{GS}=0V		250		
Body Diode Reverse Recovery Charge	Q_{rr}			1.5		uC
Drain-Source Diode Forward Current	I_{SM}				17.6	A
Maximum Body-Diode Continuous Current	I_S				4.2	
Diode Forward Voltage	V_{SD}	I_S=4.2A,V_{GS}=0V			1.4	V

Note.1: Pulse Test: Pulse width≤300μs, Duty cycle≤2%

Note.2: Essentially independent of operating temperature

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■ Typical Characterisitics