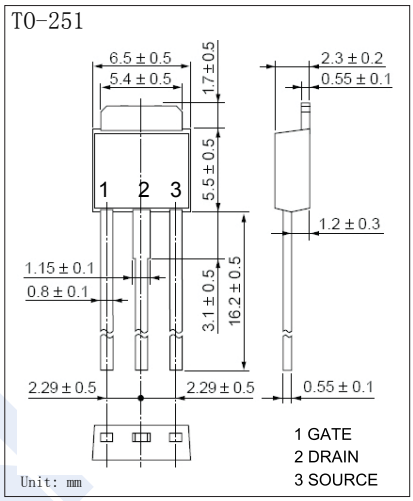
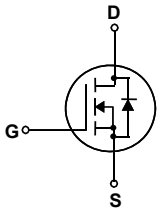
N-Channel Enhancement MOSFET

NDT5N70P



■ Features

- $V_{DS\ (V)}$ = 700V
- I_D = 5.0 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 1.8Ω (V_{GS} = 10V)
- High Current, High Speed Switching



■ 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	Tc=25℃	I_D	5.0	A
	Tc=100℃		3.15	
Pulsed Drain Current (Note1)		I_{DM}	20	
Repetitive Pulse Avalanche Energy (Note2)		E_{AR}	11.2	mJ
Single Pulse Avalanche Energy (Note2)		E_{AS}	186	mJ
Peak Diode Recovery dv/dt (Note3)		dv/dt	4.5	V/ns
Power Dissipation	Tc=25℃	P_D	112	W
	Derate above 25℃		0.89	W/℃
Thermal Resistance.Junction- to-Ambient (Note1)		R_{thJA}	110	℃/W
Thermal Resistance.Junction- to-Case (Note1)		R_{thJC}	1.12	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Note.1 Pulse width is based on R θJC & R θJA and the maximum allowed junction temperature of 150°C

Note.2 L=13.8mH, I_{AS}=5.0A, V_{DD}=50V, R_g =25Ω, Starting T_J=25°C

Note.3 I_{SD} ≤5.0A, di/dt≤200A/us, V_{DD}≤BV_{dss}, Rg =25Ω,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			1	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=2.5A		1.48	1.8	Ω
Forward Transconductance	g_{FS}	V_{DS}=30V, I_D=2.5A		7		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		893		pF
Output Capacitance	C_{oss}			8.8		
Reverse Transfer Capacitance	C_{rss}			95		
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=560V, I_D=6.0A		18.4		nC
Gate Source Charge	Q_{gs}			3.5		
Gate Drain Charge	Q_{gd}			7		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DS}=350V, I_D=6.0A,R_G=25Ω		15.2		ns
Turn-On Rise Time	t_r			23.3		
Turn-Off DelayTime	$t_{d(off)}$			48		
Turn-Off Fall Time	t_f			40		
Body Diode Reverse Recovery Time	t_{rr}	I_F= 6.0A, dI/dt= 100A/μs		311		
Body Diode Reverse Recovery Charge	Q_{rr}			2.5		nC
Maximum Body-Diode Continuous Current	I_S				5.0	A
Diode Forward Voltage	V_{SD}	I_S=5.0A,V_{GS}=0V			1.4	V

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■ Typical Characterisitics

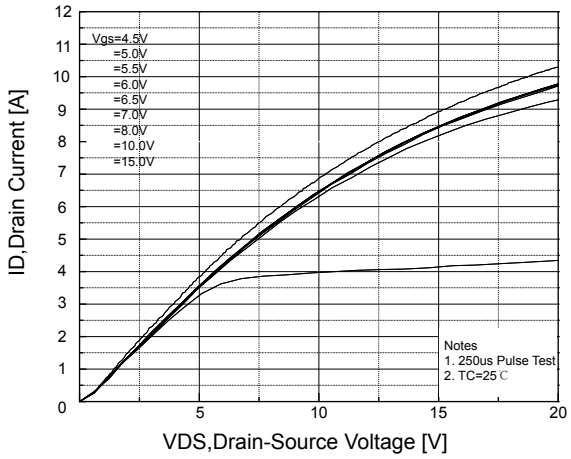

Fig.1 On-Region Characteristics

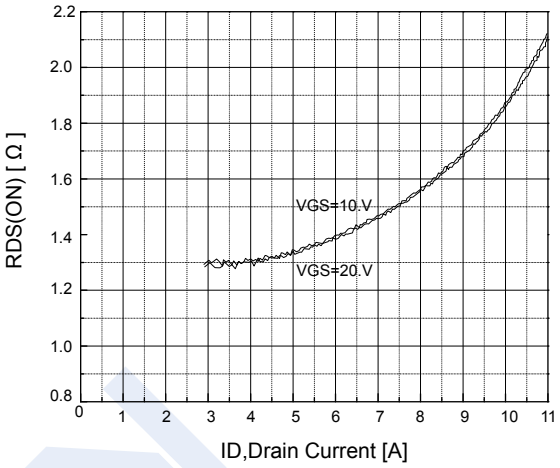

Fig.2 On-Resistance Variation with Drain Current and Gate Voltage

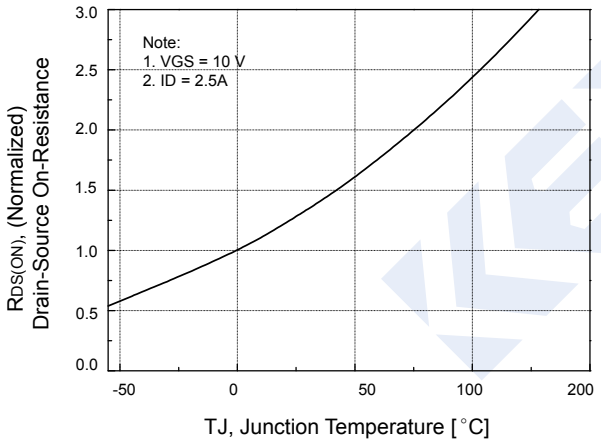

Fig.3 On-Resistance Variation with Temperature

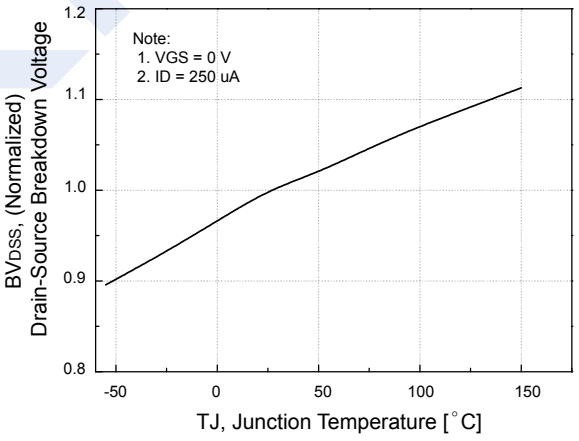

Fig.4 Breakdown Voltage Variation vs. Temperature

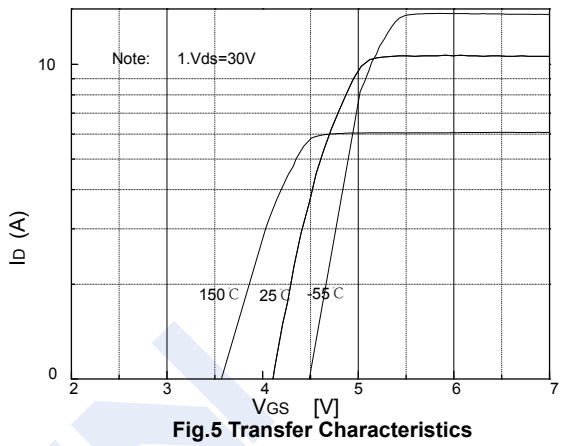

Fig.5 Transfer Characteristics

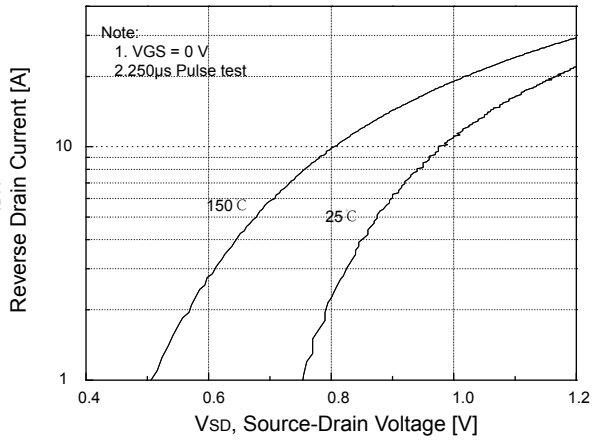

Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature

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■ Typical Characterisitics

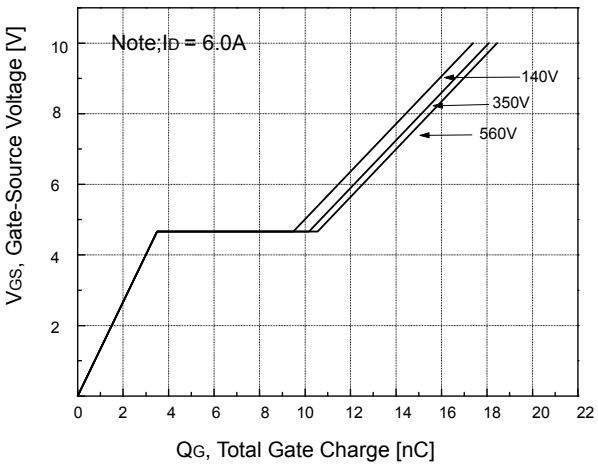

Fig.7 Gate Charge Characteristics

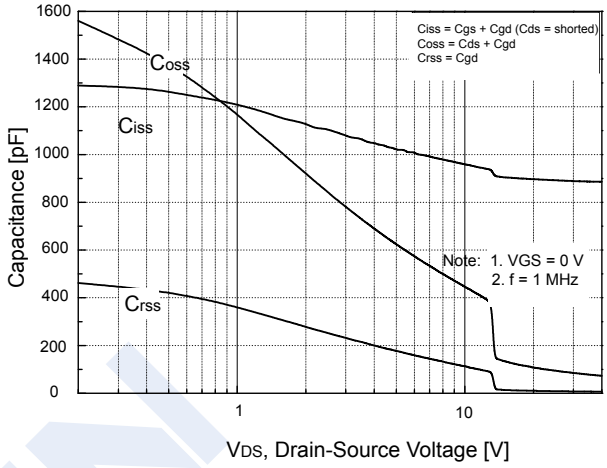

Fig.8 Capacitance Characteristics

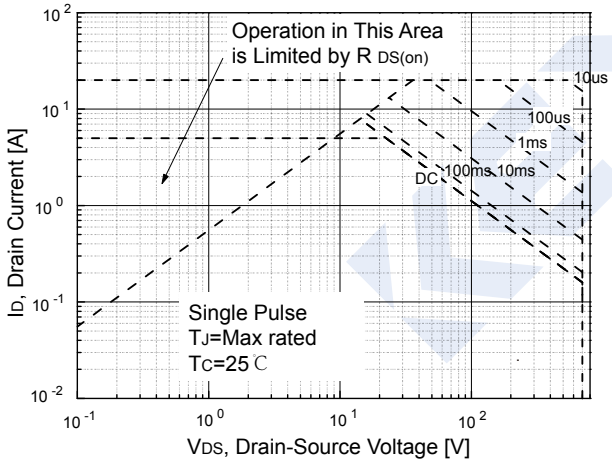

Fig.9 Maximum Safe Operating Area

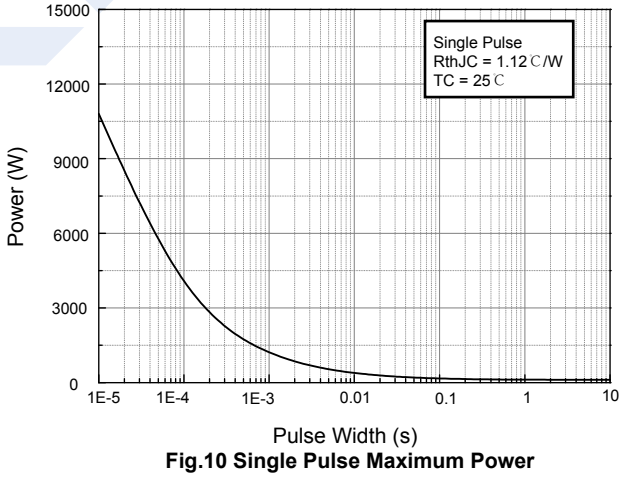

Fig.10 Single Pulse Maximum Power Dissipation

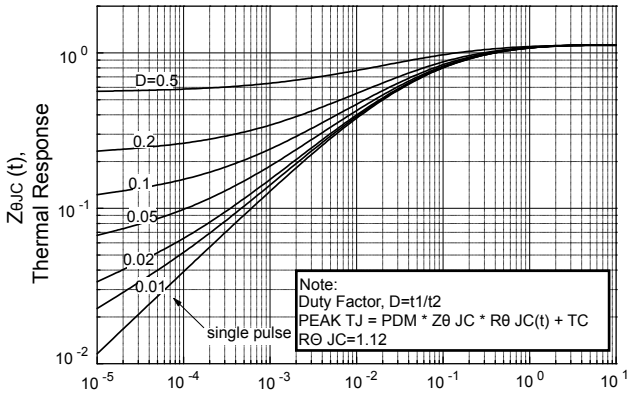

Fig.11 Transient Thermal Response Curve

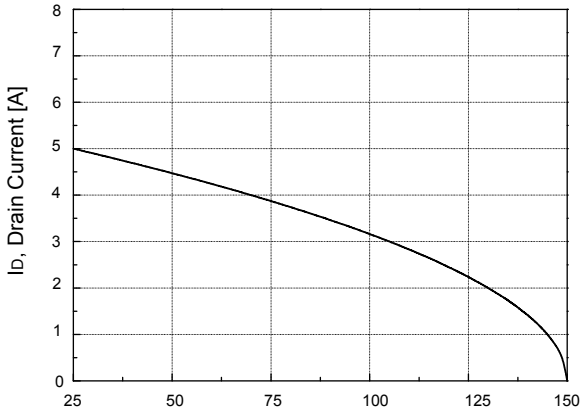

Fig.15 Maximum Drain Current vs. Case Temperature