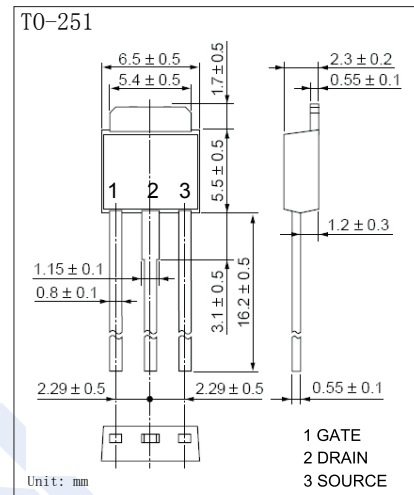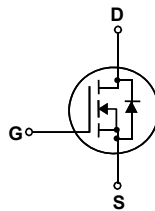# N-Channel Enhancement MOSFET
NDT6N70P

■ Features

● $V_{DS\,(V)}$ = 700V

● I_D = 4.8A (V_{GS} = 10V)

● $R_{DS(ON)}$ < 1.8 Ω (V_{GS} = 10V)

● Low gate charge (typical 16nC)

TO-251

1 GATE
2 DRAIN
3 SOURCE

Unit: mm

■ 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	4.8	A
	Tc=100℃		3.0	
Pulsed Drain Current (Note.1)		I_{DM}	20	
Avalanche Current (Note.1)		I_{AR}	4.8	
Repetitive Avalanche Energy (Note.1)		E_{AR}	9.5	mJ
Single Pulsed Avalanche Energy (Note.2)		E_{AS}	150	
Power Dissipation	Tc=25℃	P_D	95	W
	Derate above 25℃		0.76	W/℃
Peak Diode Recovery dv/dt (Note.3)		dv/dt	4.5	V/ns
Thermal Resistance.Junction- to-Ambient		R_{thJA}	110	℃/W
Thermal Resistance.Junction- to-Case		R_{thJC}	1.3	
Thermal Resistance.Case-to-Sink Typ		R_{thJS}	50	
Maximum lead Temperature for soldering purpose, 1/8 from case for 5 seconds		TL	300	℃
Junction Temperature		TJ	150	
Storage Temperature Range		Tstg	-55 to 150	

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

Note.2: L=8mH,I_{AS}=6.0A,V_{DD}=50V,R_G=25Ω,Starting T_J=25℃

Note.3; I_{SD}≤4.8A,di/dt≤200A/us,V_{DD}≤BV_{DSS},Starting T_J=25℃

N-Channel Enhancement MOSFET
NDT6N70P

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	$I_D=250\mu A$, $V_{GS}=0V$	700			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=700V$, $V_{GS}=0V$			1	μA
		$V_{DS}=560V$, $V_{GS}=0V$, Tc=125℃			10	
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V$, $V_{GS}=\pm30V$			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu A$	2.0		4.0	V
Static Drain-Source On-Resistance	$R_{DS(On)}$	$V_{GS}=10V$, $I_D=2.4A$		1.8	2.3	Ω
Input Capacitance	C_{iss}	$V_{GS}=0V$, $V_{DS}=25V$, f=1MHz		650		pF
Output Capacitance	C_{oss}			95		
Reverse Transfer Capacitance	C_{rss}			10		
Total Gate Charge	Q_g	$V_{GS}=10V$, $V_{DS}=560V$, $I_D=6.0A$ (Note.1)		16		nC
Gate Source Charge	Q_{gs}			4.5		
Gate Drain Charge	Q_{gd}			5.0		
Turn-On DelayTime	$t_{d(on)}$	$I_D=6.0A$, $V_{DS}=350V$, ,$R_{GEN}=25\Omega$ (Note.1)		30		ns
Turn-On Rise Time	t_r			40		
Turn-Off DelayTime	$t_{d(off)}$			80		
Turn-Off Fall Time	t_f			40		
Body Diode Reverse Recovery Time	t_{rr}	$I_S= 6.0A$, $dI/dt= 100A/\mu s$ $V_{GS}=0V$ (Note.1)		280		
Body Diode Reverse Recovery Charge	Q_{rr}			2.0		uC
Maximum Body-Diode Continuous Current	I_S	Maximum Continuous Drain-Source Diode Forward Current			4.8	A
Maximum Pullsed Drain-Source Current	I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current			20	
Diode Forward Voltage	V_{SD}	$I_S=4.8A$,$V_{GS}=0$			1.4	V

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

N-Channel Enhancement MOSFET
NDT6N70P

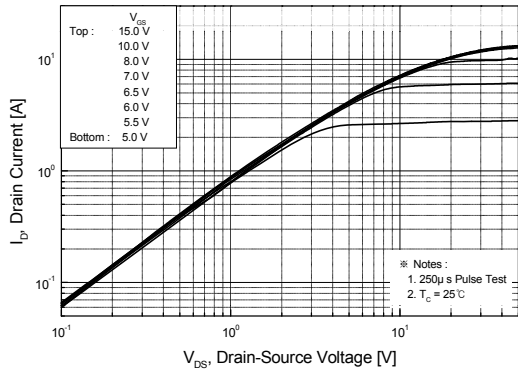■ Typical Characterisitics

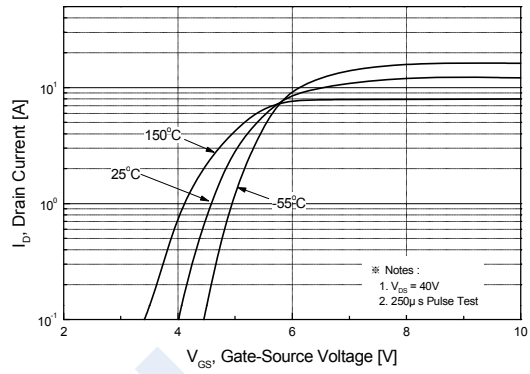Figure 1. On-Region Characteristics
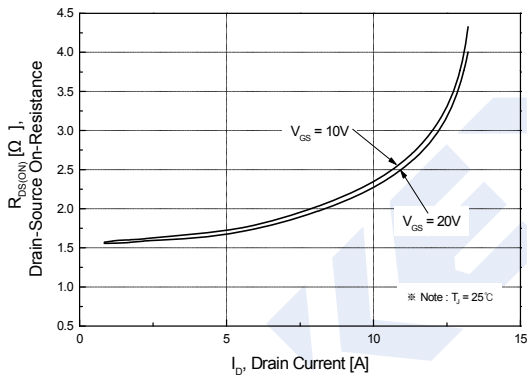

Figure 2. Transfer Characteirstics

Figure 3. On-Resistance Variation vs
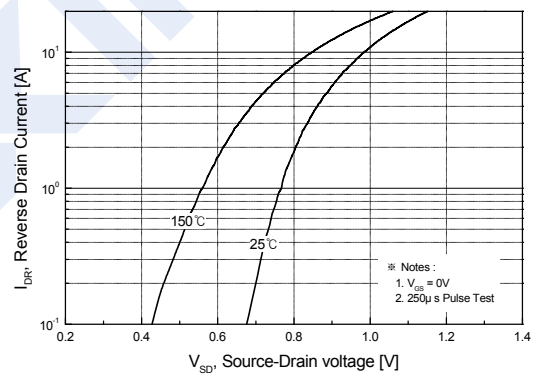Drain Current and Gate Voltage

Figure 4. Body Diode Forward Voltage
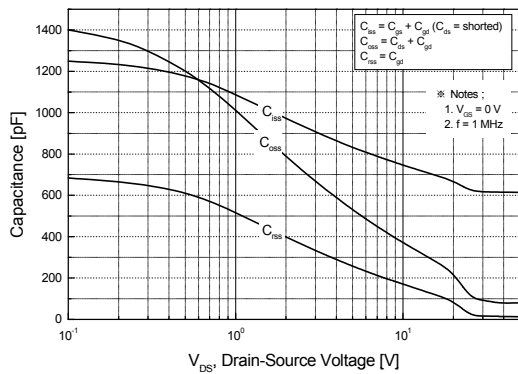Variation with Source Current
and Temperature

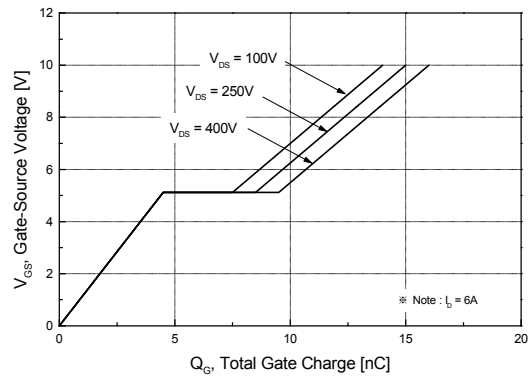Figure 5. Capacitance Characteristics

Figure 6. Gate Charge Characteristics

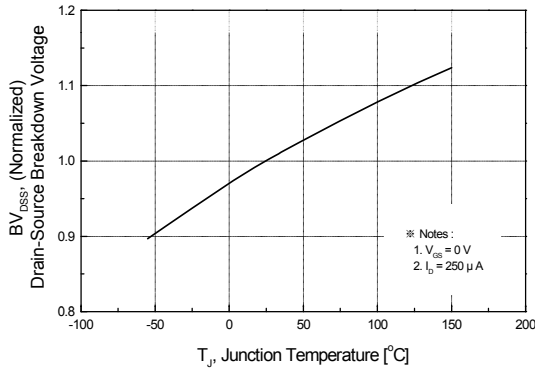# N-Channel Enhancement MOSFET
NDT6N70P

■ Typical Characterisitics

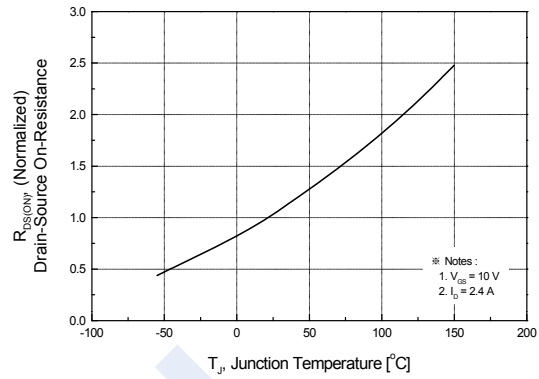Figure 7. Breakdown Voltage Variation
vs Temperature

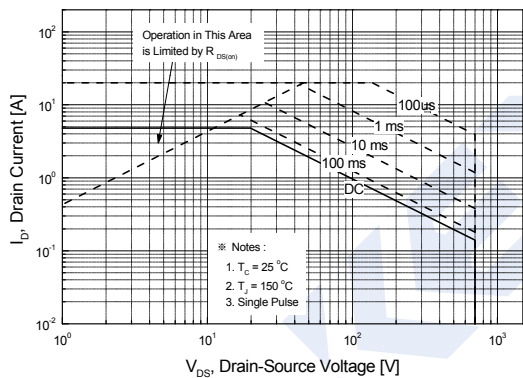Figure 8. On-Resistance Variation
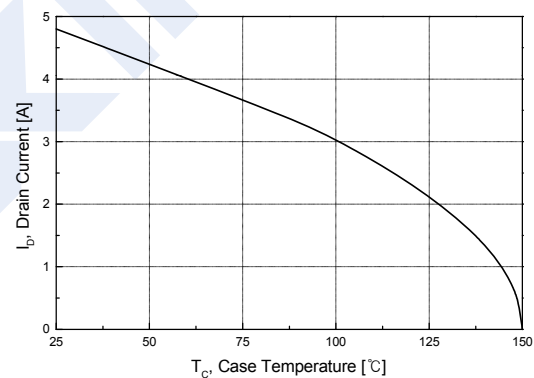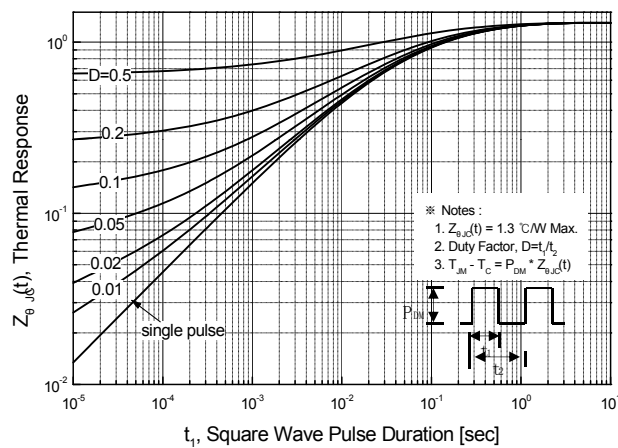vs Temperature

Figure 9. Maximum Safe Operating Area

Figure 10. Maximum Drain Current
vs Case Temperature

Figure 10. Maximum Drain Current
vs Case Temperature

KEXIN