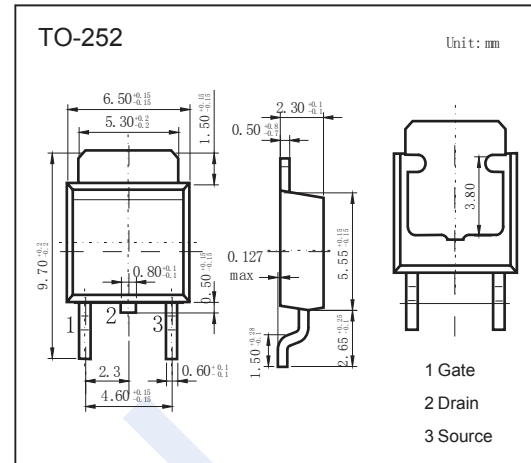
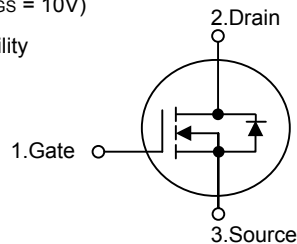


## N-Channel MOSFET

### NDT1N70

#### ■ Features

- $V_{DS} (V) = 700V$
- $I_D = 1.2 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 13.5 \Omega (V_{GS} = 10V)$
- Fast switching capability



#### ■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	700	V	
Gate-Source Voltage	$V_{GS}$	$\pm 30$		
Continuous Drain Current	$I_D$	1.2	A	
Pulsed Drain Current	$I_{DM}$	4.8		
Avalanche Current (Note.1)	$I_{AR}$	1.2		
Avalanche Energy	Single Pulsed (Note.2)	$E_{AS}$	50	mJ
	Repetitive (Note.1)	$E_{AR}$	4	
Peak Diode Recovery $dv/dt$ (Note.3)	$dv/dt$	4.5	V/ns	
Power Dissipation	$P_D$	3	W	
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	79	$^\circ C/W$	
Thermal Resistance.Junction- to-Case	$R_{thJC}$	29		
Junction Temperature	$T_J$	150	$^\circ C$	
Storage Temperature Range	$T_{stg}$	-55 to 150		

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

Note.2:  $L = 60mH$ ,  $I_{AS} = 1A$ ,  $V_{BD} = 50V$ ,  $R_G = 25\Omega$ , Starting  $T_J = 25^\circ C$

Note.3:  $I_{SD} \leq 1.2A$ ,  $di/dt \leq 200A/\mu s$ ,  $V_{DD} \leq BV_{DSS}$ , Starting  $T_J = 25^\circ C$

## N-Channel MOSFET

### NDT1N70

#### ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =250 μ A, V <sub>GS</sub> =0V	700			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =700V, V <sub>GS</sub> =0V			10	μ A
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±30V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μ A	2		4	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =0.6 A		9.3	13.5	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1MHz		120	150	pF
Output Capacitance	C <sub>oss</sub>			20	25	
Reverse Transfer Capacitance	C <sub>rss</sub>			3	4	
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =560V, I <sub>D</sub> =1.2A(Note.1,2)		5	6	nC
Gate Source Charge	Q <sub>gs</sub>			1		
Gate Drain Charge	Q <sub>gd</sub>			2.6		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>DS</sub> =350V, I <sub>D</sub> =1.2A, R <sub>G</sub> =50 Ω (Note.1,2)		5	20	ns
Turn-On Rise Time	t <sub>r</sub>			25	60	
Turn-Off DelayTime	t <sub>d(off)</sub>			7	25	
Turn-Off Fall Time	t <sub>f</sub>			25	60	
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 1.2A, di/dt= 100A/ μ s, V <sub>GS</sub> =0V		160		nC
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			0.3		
Maximum Body-Diode Continuous Current	I <sub>S</sub>				1.2	A
Pulsed Drain-Source Diode Forward Current	I <sub>SM</sub>				4.8	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1.2A, V <sub>GS</sub> =0V			1.4	V

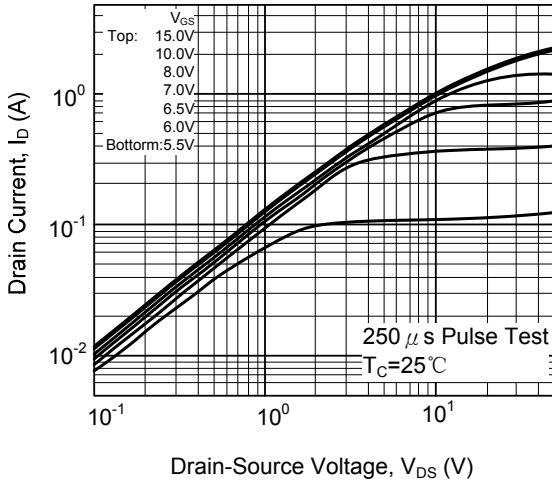
Note.1: Pulse Test: Pulse Width ≤300μs, Duty Cycle≤2%

Note.2: Essentially Independent of Operating Temperature

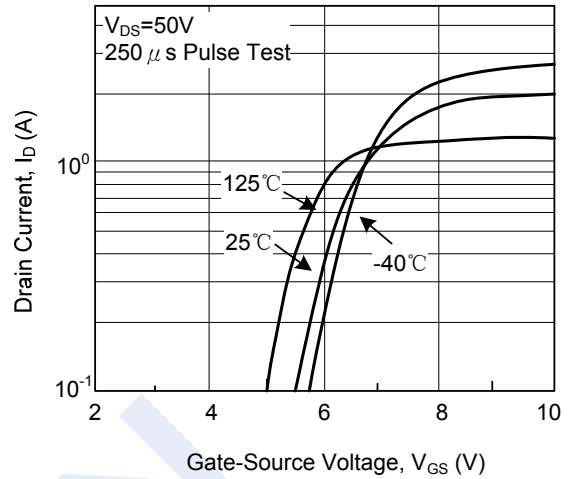
## N-Channel MOSFET NDT1N70

■ Typical Characteristics

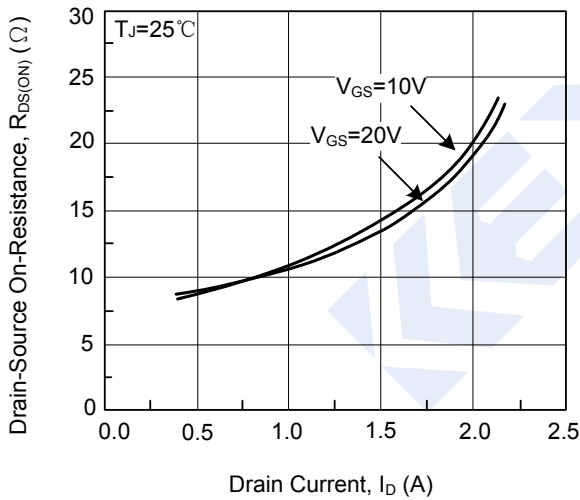
Output Characteristics



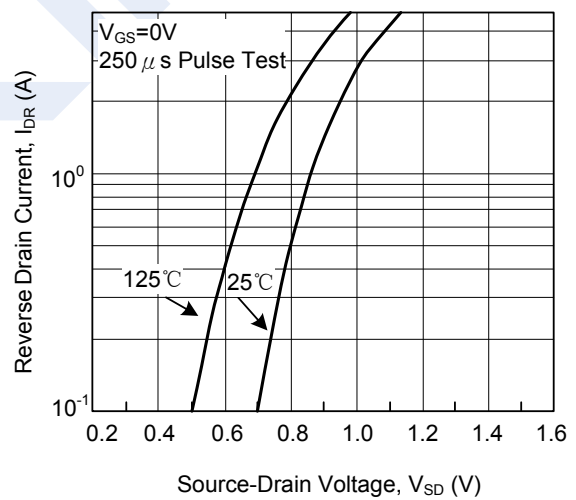
Transfer Characteristics



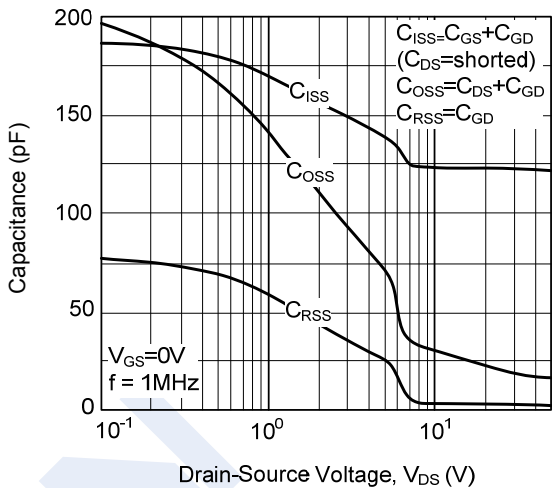
On-Resistance vs. Drain Current



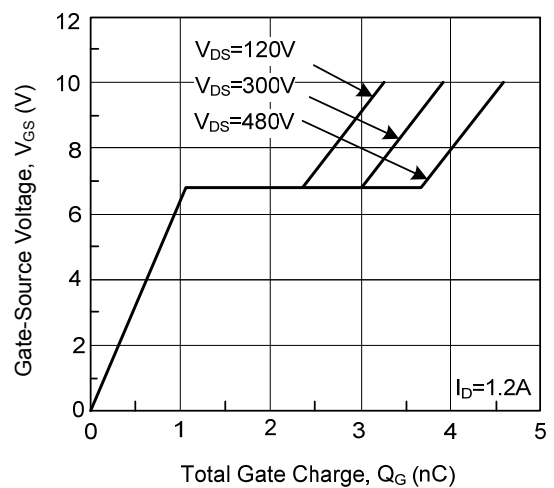
Source- Drain Diode Forward Voltage



Capacitance vs. Drain-Source Voltage



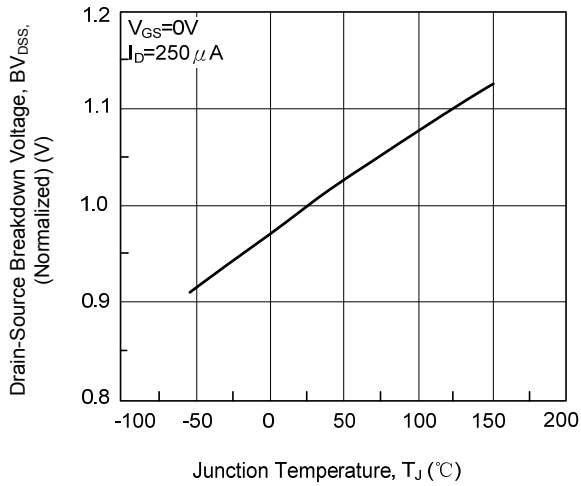
Gate Charge vs. Gate-Source Voltage



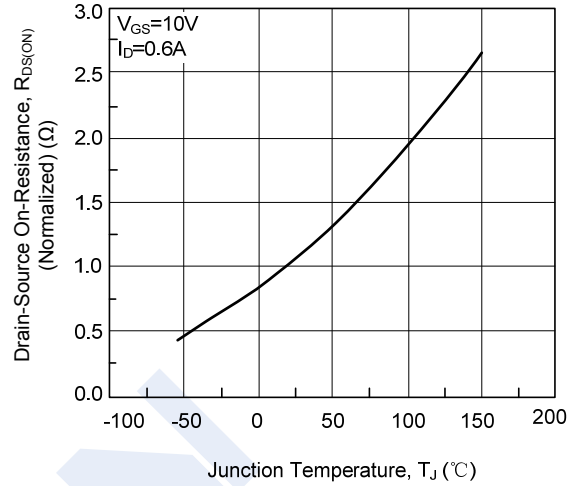
## N-Channel MOSFET NDT1N70

■ Typical Characteristics

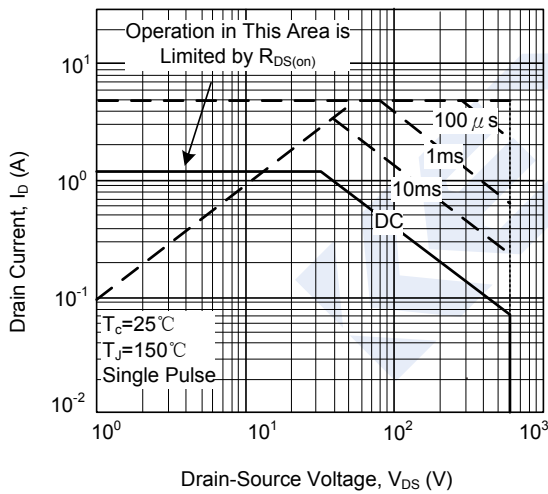
Breakdown Voltage vs. Temperature



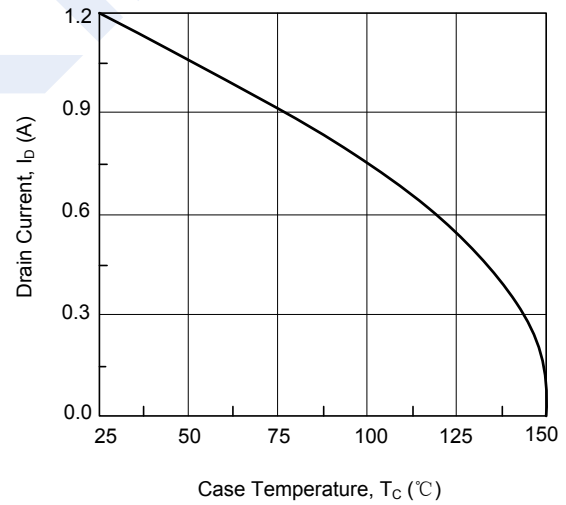
On-Resistance vs. Temperature



Max. Safe Operating Area



Max. Drain Current vs. Case Temperature



Thermal Response

