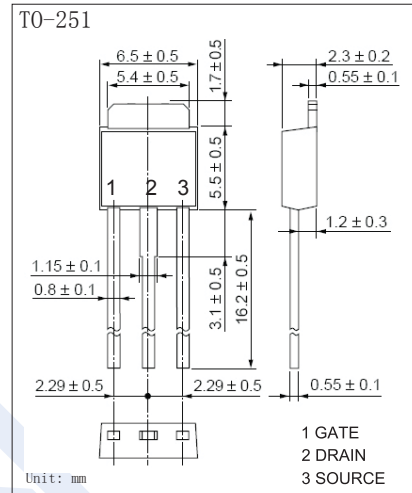
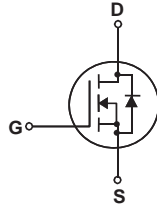


N-Channel Enhancement MOSFET

NDT4N65P (KDT4N65P)

■ Features

- $V_{DS} = 650V$
- $I_D = 4.0 A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 3 \Omega$ ($V_{GS} = 10V$)



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

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	650	V	
Gate-Source Voltage	V_{GS}	± 30		
Continuous Drain Current	I_D	$T_a = 25^\circ C$	A	
		$T_a = 100^\circ C$		2.4
Pulsed Drain Current (*a)	I_{DM}	12	A	
Avalanche Current (*a)	I_{AR}	4.5		
Power Dissipation	P_D	$T_a = 25^\circ C$	58	W
		Derate above $25^\circ C$	0.46	W/ $^\circ C$
Single Pulsed Avalanche Energy (*b)	EAS	210	mJ	
Repetitive Avalanche Energy (*a)	EAR	5.8		
Peak Diode Recovery dv/dt (*c)	dv/dt	4.5	V/ns	
Thermal Resistance.Junction- to-Ambient	R_{thJA}	110	$^\circ C/W$	
Thermal Resistance.Junction- to-Case	R_{thJC}	2.16		
Thermal Resistance.Case-to-Sink Typ	R_{thJS}	50		
Maximum lead Temperature for soldering purpose, 1/8 from case for 5 seconds	TL	300	$^\circ C$	
Junction Temperature	T_J	150		
Storage Temperature Range	T_{stg}	-55 to 150		

Notes:

- Repetitive Rating :Pulse width limited by maximum junction temperature
- $I_{AS} = 4.5A, V_{DD} = 50V, R_G = 25\Omega, \text{Starting } T_J = 25^\circ C$
- $I_{SD} \leq 4.5A, di/dt \leq 200A/us, V_{DD} \leq BV_{DSS}, \text{Starting } T_J = 25^\circ C$

N-Channel Enhancement MOSFET

NDT4N65P (KDT4N65P)

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250 μ A, V _{GS} =0V	650			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V			1	μ A
		V _{DS} =520V, V _{GS} =0V, Ta=125°C			10	
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 =250 μ A	2.0		4.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =1.5A		2.5	3.0	Ω
Forward Transconductance	g _{FS}	V _{DS} =40V, I _D =1.5A (*a)		4.7		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1MHz		560		pF
Output Capacitance	C _{oss}			55		
Reverse Transfer Capacitance	C _{rss}			7		
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =480V, I _D =4.5A (*a/b)		16		nC
Gate Source Charge	Q _{gs}			2.5		
Gate Drain Charge	Q _{gd}			6.5		
Turn-On DelayTime	t _{d(on)}	I _D =4.5A, V _{DS} =300V, R _{GEN} =25 Ω (*a/b)		10		ns
Turn-On Rise Time	t _r			40		
Turn-Off DelayTime	t _{d(off)}			40		
Turn-Off Fall Time	t _f			50		
Body Diode Reverse Recovery Time	t _{rr}	I _F = 4.5A, di/dt= 100A/μ s V _{GS} =0V (*a)		300		uC
Body Diode Reverse Recovery Charge	Q _{rr}			2.0		
Maximum Body-Diode Continuous Current	I _S				4.0	A
Maximum Pulsed Drain-Source Current	I _{SM}				12	
Diode Forward Voltage	V _{SD}	I _S =4.0A, V _{GS} =0V			1.4	V

Notes:

- a. Pulse Test: Pulse width ≤ 300 μs, Duty cycle ≤ 2%
b. Essentially independent of operating temperature

N-Channel Enhancement MOSFET NDT4N65P (KDT4N65P)

■ Typical Characteristics

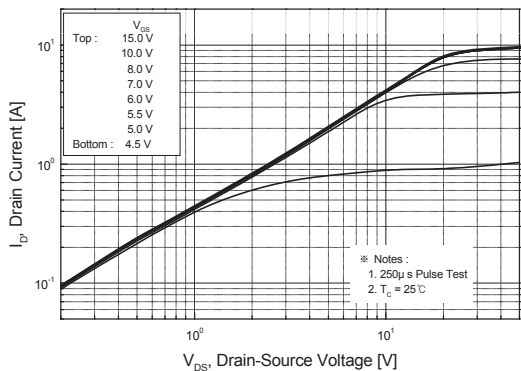


Figure 1. On-Region Characteristics

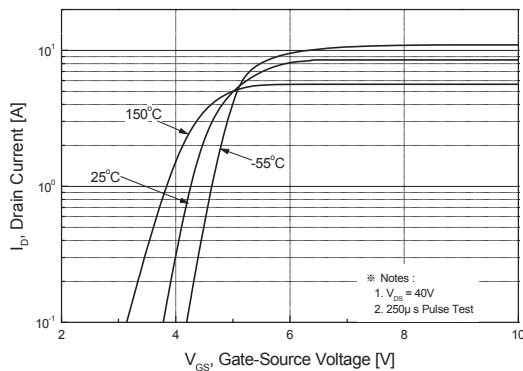


Figure 2. Transfer Characteristics

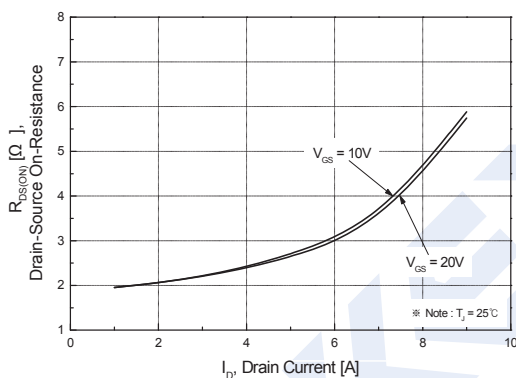


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

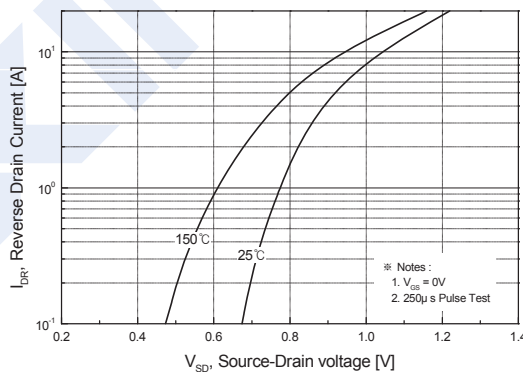


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

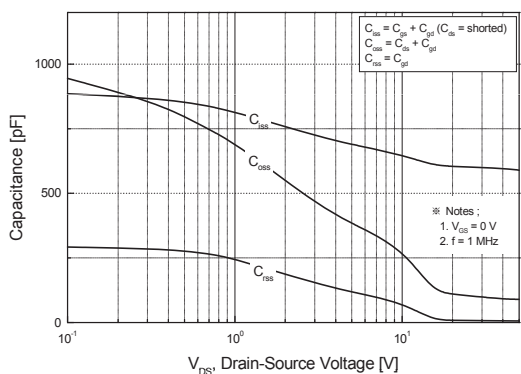


Figure 5. Capacitance Characteristics

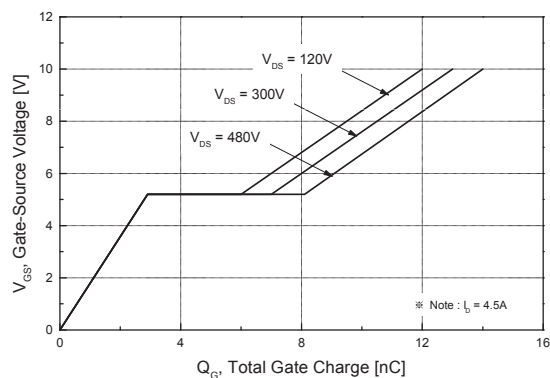


Figure 6. Gate Charge Characteristics

N-Channel Enhancement MOSFET NDT4N65P (KDT4N65P)

■ Typical Characteristics

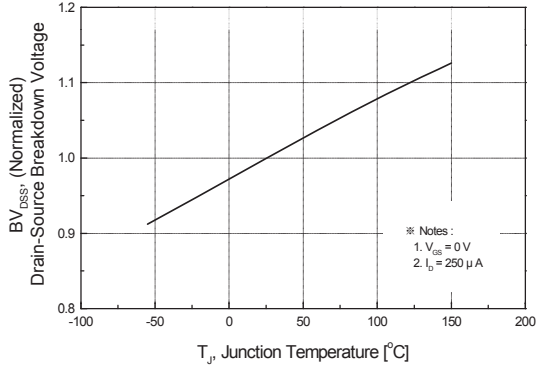


Figure 7. Breakdown Voltage Variation vs Temperature

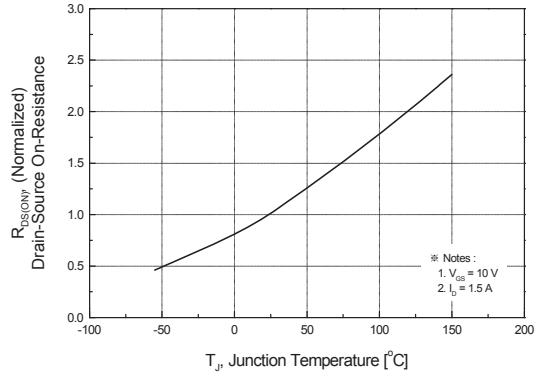


Figure 8. On-Resistance Variation vs Temperature

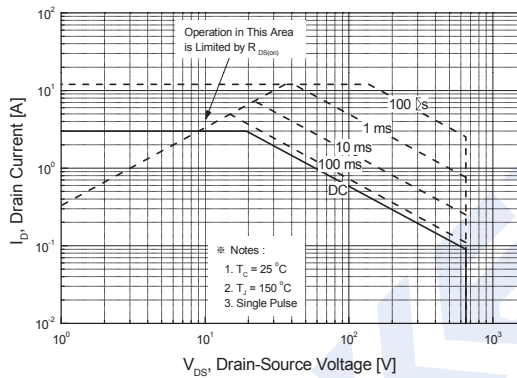


Figure 9. Maximum Safe Operating Area

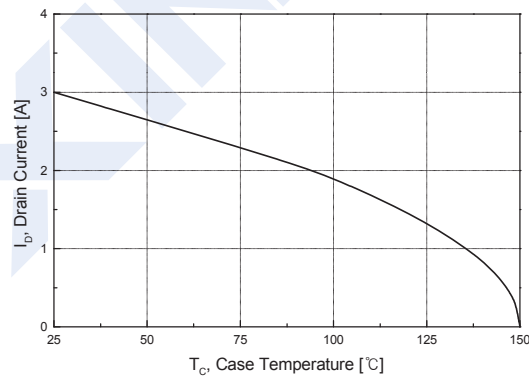


Figure 10. Maximum Drain Current vs Case Temperature

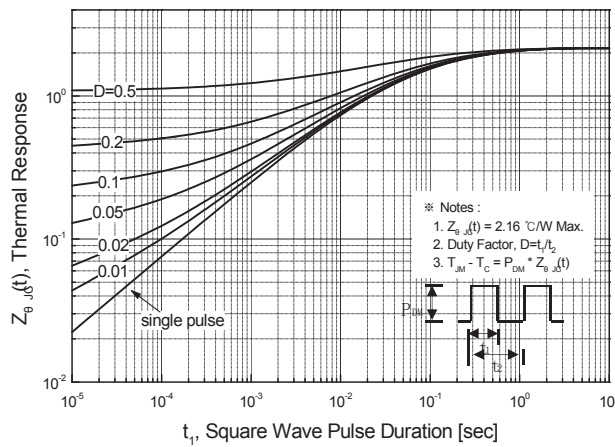


Figure 11. Transient Thermal Response Curve