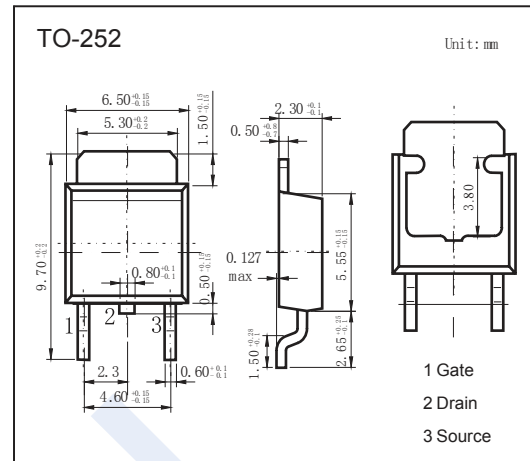


N-Channel MOSFET

NDT4N60

■ Features

- $V_{DS}(V) = 600V$
- $I_D = 3.9 A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 1.2 \Omega$ ($V_{GS} = 10V$)
- Low effective output capacitance



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	± 30	
Continuous Drain Current	I_D	3.9	A
		2.5	
Pulsed Drain Current	I_{DM}	11.7	
Avalanche Current	I_{AR}	3.9	
Single Pulsed Avalanche Energy (Note.1)	E_{AS}	128	mJ
Repetitive Avalanche Energy	E_{AR}	5	
Peak Diode Recovery dv/dt	dv/dt	4.5	V/ns
Power Dissipation - Derate above $25^\circ C$	P_D	50	W
		0.4	W/ $^\circ C$
Thermal Resistance.Junction- to-Ambient	R_{thJA}	83	$^\circ C/W$
Thermal Resistance.Junction- to-Case	R_{thJC}	2.5	
Maximum Lead Temperature for Soldering Purpose	T_L	300	$^\circ C$
Junction Temperature	T_J	150	
Storage Temperature Range	T_{stg}	-55 to 150	

Note.1: $I_{AS} = 1.9A$, $V_{DD} = 50V$, $R_G = 25\Omega$, Starting $T_J = 25^\circ C$

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250 μA, V _{GS} =0V, T _J =25°C	600			V
		I _D =250 μA, V _{GS} =0V, T _J =150°C		650		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =600V, V _{GS} =0V			1	μA
		V _{DS} =480V, V _{GS} =0V, T _C =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 μA	3		5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =2 A		1	1.2	Ω
Forward Transconductance	g _{FS}	V _{DS} =40V, I _D =2 A		3.2		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1MHz		415	540	pF
Output Capacitance	C _{oss}			210	275	
Reverse Transfer Capacitance	C _{rss}			19.5		
Output Capacitance	C _{oss}	V _{DS} = 480V, V _{GS} = 0V, f = 1MHz		12	16	pF
Effective Output Capacitance	C _{oss,eff}	V _{DS} = 0V to 400V, V _{GS} = 0V		32		
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =480V, I _D =3.9A		12.8	16.6	
Gate Source Charge	Q _{gs}			2.4		nC
Gate Drain Charge	Q _{gd}			7.1		
Turn-On DelayTime	t _{d(on)}	V _{DS} =300V, I _D =3.9A, R _G =25 Ω (Note.1)		16	45	ns
Turn-On Rise Time	t _r			45	100	
Turn-Off DelayTime	t _{d(off)}			36	85	
Turn-Off Fall Time	t _f			30	70	
Body Diode Reverse Recovery Time	t _{rr}	I _F = 3.9A, di/dt= 100A/ μ s, V _{GS} =0 (Note.1)		277		nC
Body Diode Reverse Recovery Charge	Q _{rr}			2.07		
Maximum Body-Diode Continuous Current	I _S				3.9	A
Pulsed Drain-Source Diode Forward Current	I _{SM}				11.7	
Diode Forward Voltage	V _{SD}	I _S =3.9A, V _{GS} =0V			1.4	V

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

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■ Typical Characteristics

Figure 1. On-Region Characteristics

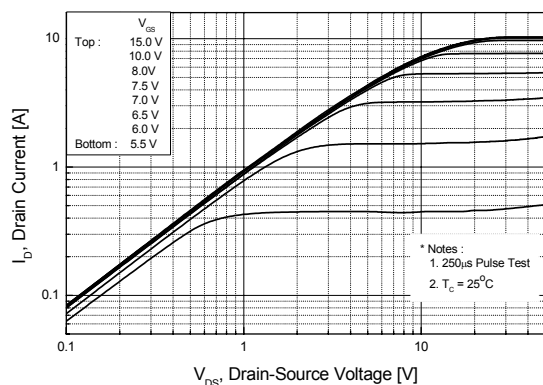


Figure 2. Transfer Characteristics

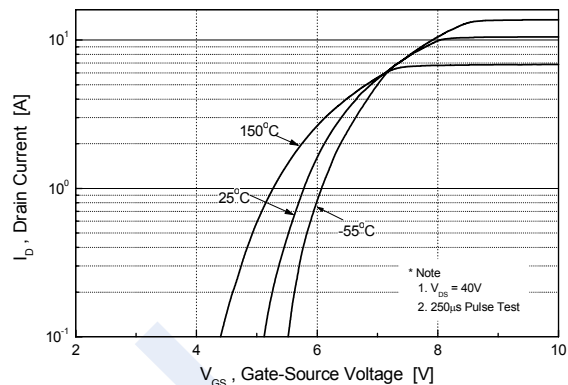


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

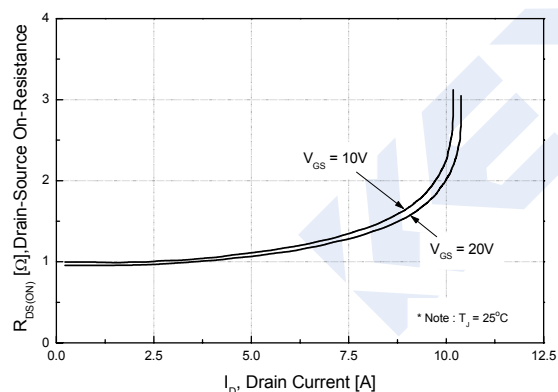


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

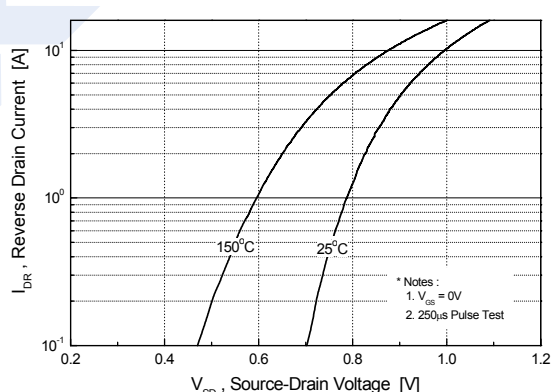


Figure 5. Capacitance Characteristics

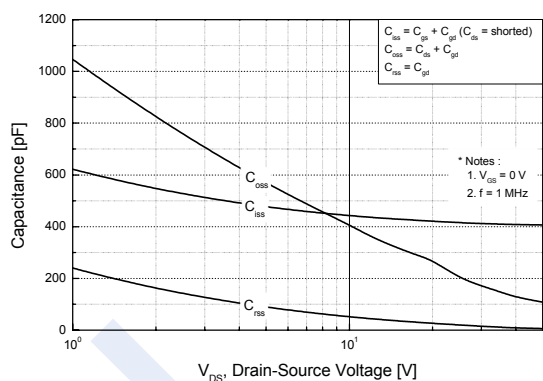
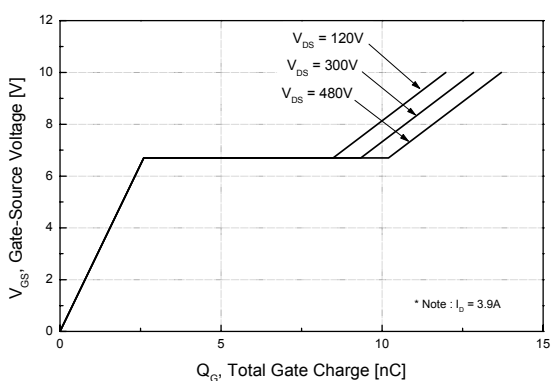


Figure 6. Gate Charge Characteristics



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■ Typical Characteristics

Figure 7. Breakdown Voltage Variation vs. Temperature

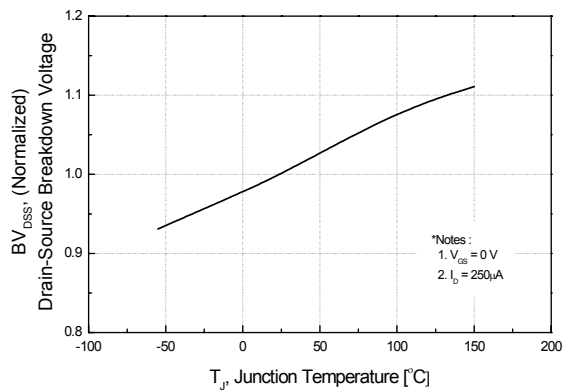


Figure 8. On-Resistance Variation vs. Temperature

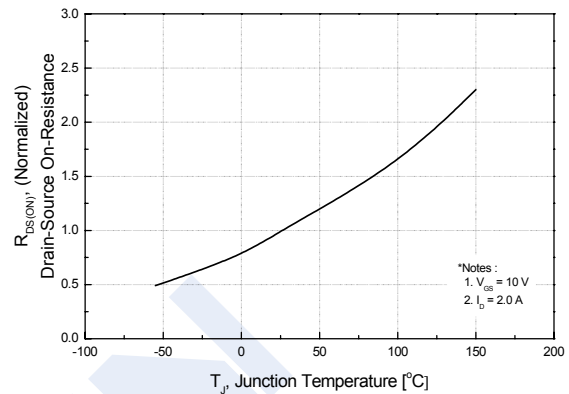


Figure 9. Maximum Safe Operating Area

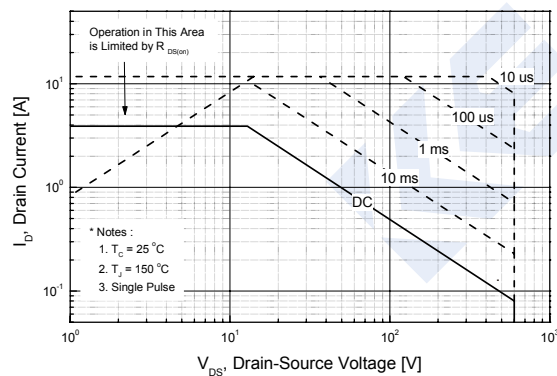


Figure 10. Maximum Drain Current vs. Case Temperature

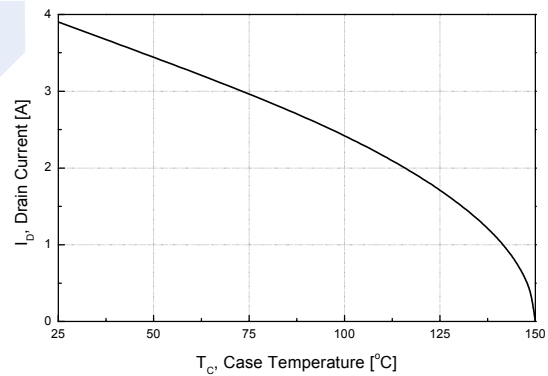


Figure 11-1. Transient Thermal Response Curve

