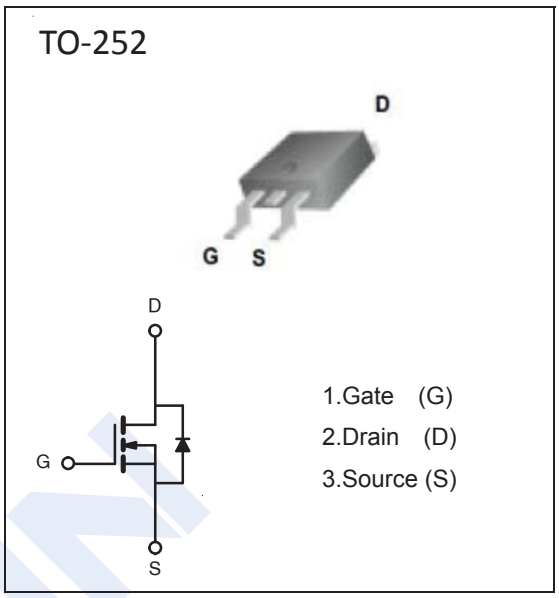
N-Channel MOSFET

NDT5N20



■ Features

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Qg=12nC (Typ.).
- BV_{DSS}=200V,I_D=5A
- $R_{DS(on)}$: 0.58Ω (Max) @V_G=10V
- 100% Avalanche Tested

■ Absolute Maximum Ratings (T_A = 25℃, unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	5	A
Pulsed Drain Current (Note 1)	I_{DM}	20	
Power Dissipation	P_D	30	W
Thermal Resistance.Junction- to-Ambient (Note 2)	R_{thJA}	4.17	℃/W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 to 150	℃

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■ Electrical Characteristics (T_A = 25℃, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V	200			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=200V, V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	1.2		2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=2A			580	mΩ
Forward Transconductance	g_{FS}	V_{DS}=15V, I_D=2A		8		S
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		580		pF
Output Capacitance	C_{oss}			90		
Reverse Transfer Capacitance	C_{rss}			3		
Switching Characteristics (Note 4)						
Turn-On DelayTime	$t_{d(on)}$	V_{DD}=100V,R_L=15Ω V_{GS}=10V,R_G=2.5Ω		10		ns
Turn-On Rise Time	t_r			12		
Turn-Off DelayTime	$t_{d(off)}$			15		
Turn-Off Fall Time	t_f			15		
Total Gate Charge	Q_g	V_{DS}=100V, I_D=2A, V_{GS}=10V		12		nC
Gate Source Charge	Q_{gs}			2.5		
Gate Drain Charge	Q_{gd}			3.8		
Drain-Source Diode Characteristics						
Diode Forward Current (Note 2)	I_S				5	A
Diode Forward Voltage (Note 3)	V_{SD}	I_S=2A,V_{GS}=0V			1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤10 sec.
3. Pulse Test: Pulse Width ≤ 300 μs , Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production.

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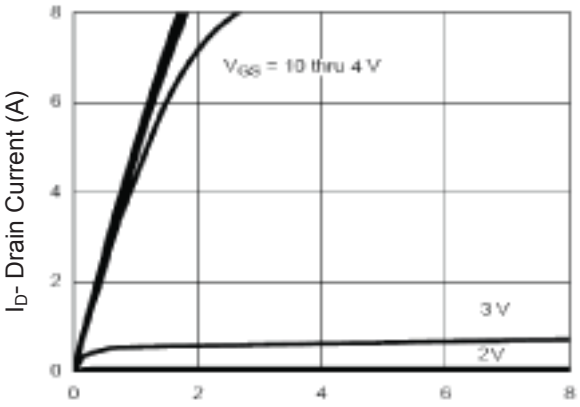
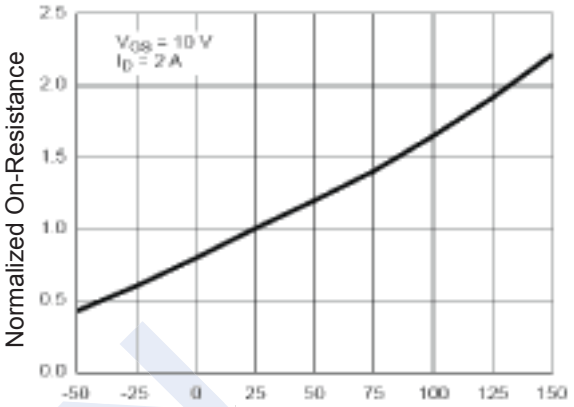
■ Typical Characteristics



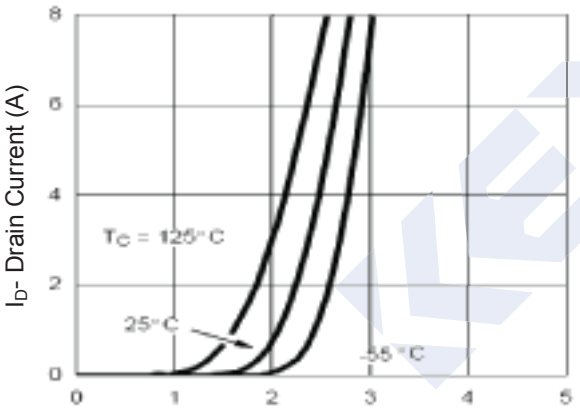
Vds Drain-Source Voltage (V)

Figure 1 Output Characteristics



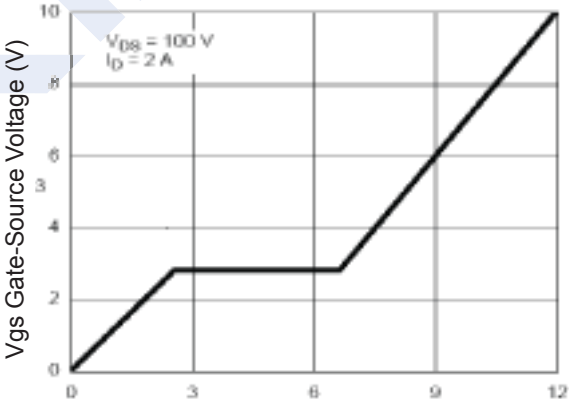
T_J-Junction Temperature(℃)

Figure 4 Rdson-JunctionTemperature



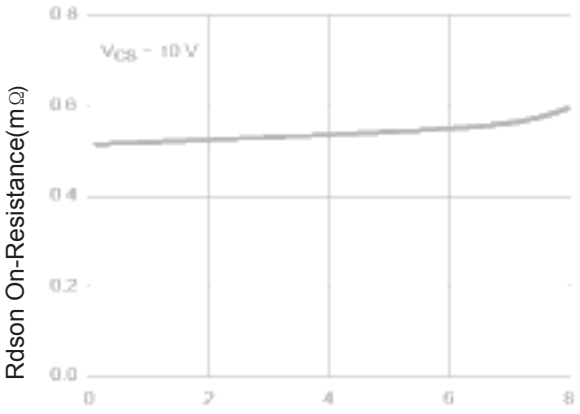
Vgs Gate-Source Voltage (V)

Figure 2 Transfer Characteristics



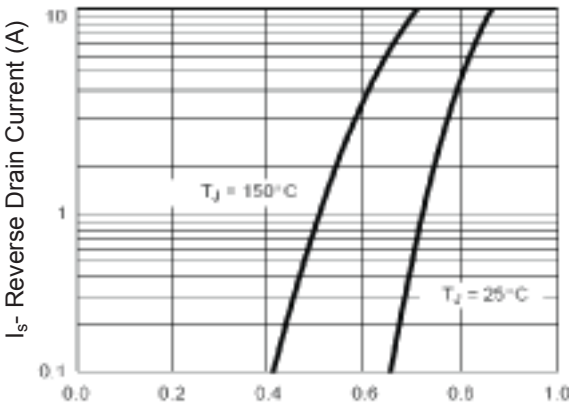
Qg Gate Charge (nC)

Figure 5 Gate Charge



I_D- Drain Current (A)

Figure 3 Rdson- Drain Current



Vsd Source-Drain Voltage (V)

Figure 6 Source- Drain Diode Forward

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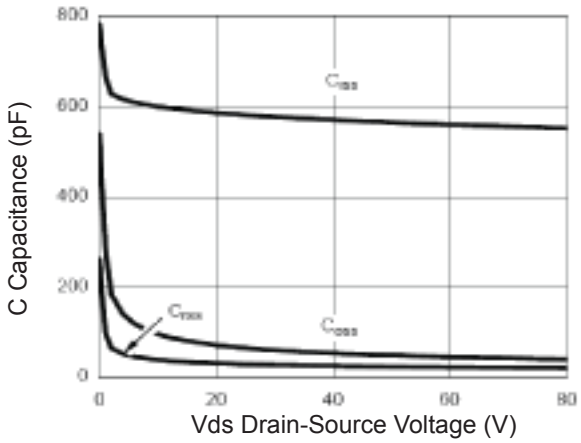

Figure 7 Capacitance vs Vds

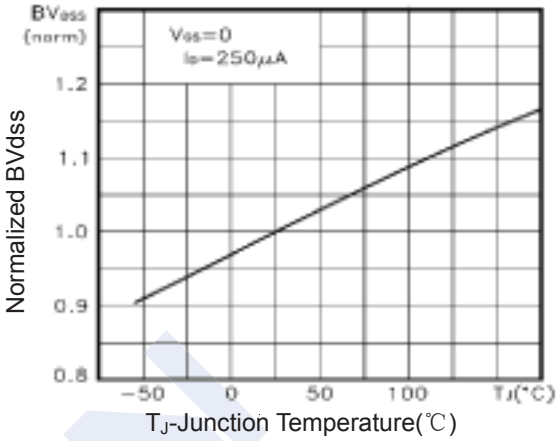

Figure 9 BV_{DSS} vs Junction Temperature

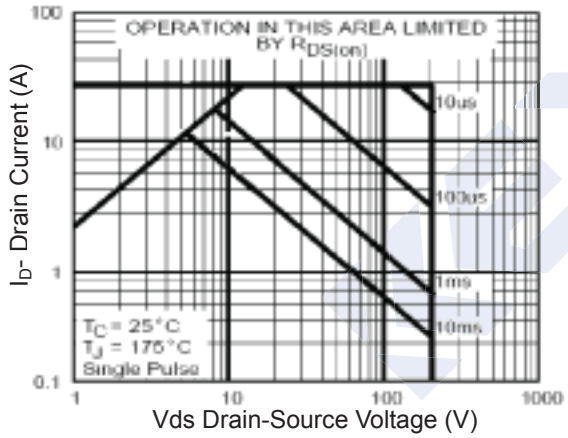

Figure 8 Safe Operation Area

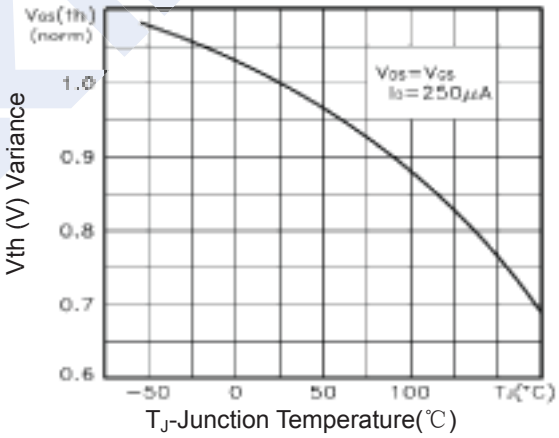

Figure 10 $V_{GS(th)}$ vs Junction Temperature

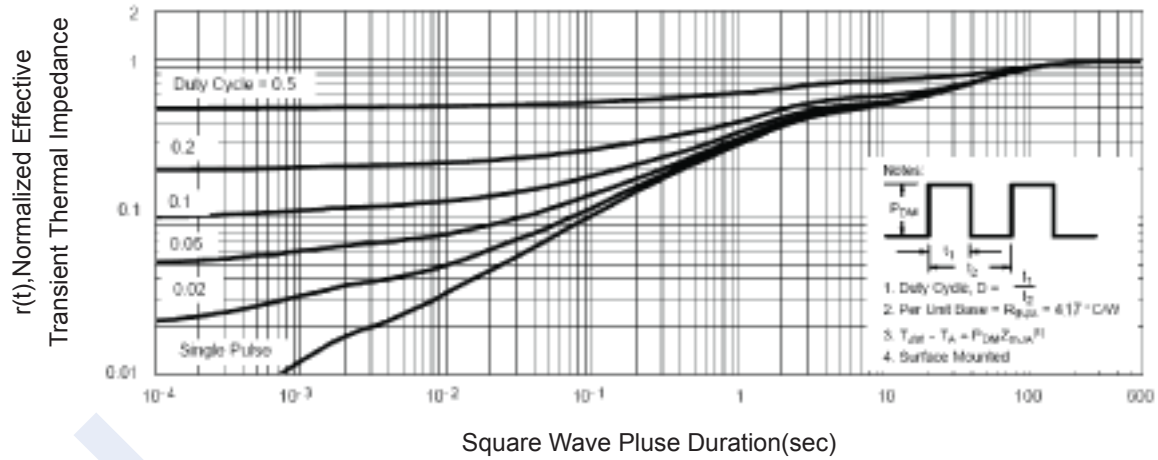

Figure 11 Normalized Maximum Transient Thermal Impedance

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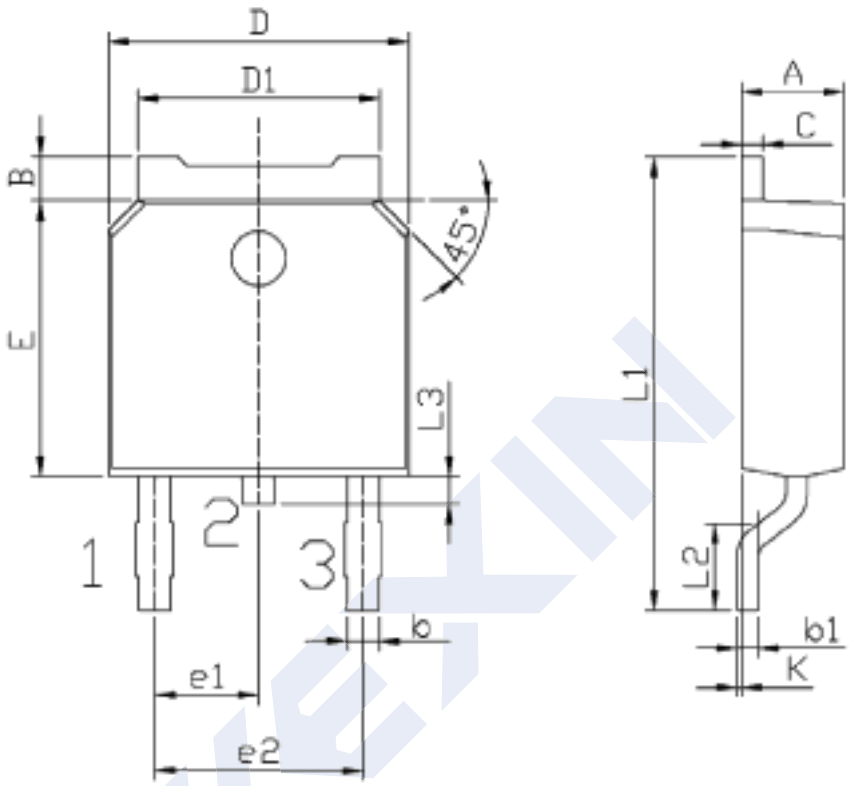
■ Package Dimension



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.20	5.40	K	0.00	0.10