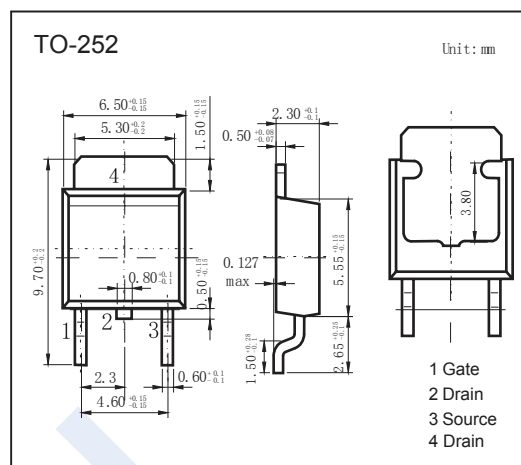
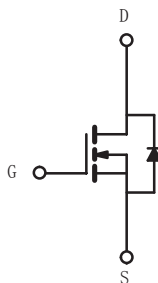


N-Channel MOSFET

NDT8N20

■ Features

- $V_{DS} = 200V, I_D = 8A$
- $R_{DS(ON)} < 300m\Omega$ @ $V_{GS} = 10V$ (Typ: $260m\Omega$)
- High density cell design for ultra low $R_{DS(on)}$
- Fully characterized avalanche voltage and current
- Low gate to drain charge to reduce switching losses

■ Absolute Maximum Ratings ($T_c = 25^\circ C$, 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	8	A
		5.6	
Pulsed Drain Current	I_{DM}	20	
Power Dissipation	P_D	55	W
Thermal Resistance Junction- to-Case (Note 2)	R_{thJC}	2.3	$^\circ C/W$
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to 150	

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■ Electrical Characteristics (Tc = 25°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250μA, V _{GS} =0V	200			V
Zero Gate Voltage Drain Current	I _{bss}	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		2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D = 4.5A			300	mΩ
Forward Transconductance	g _{fs}	V _{GS} =25V, I _D = 4.5A	3			S
Dynamic Characteristics (Note4)						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1MHz		540		pF
Output Capacitance	C _{oss}			90		
Reverse Transfer Capacitance	C _{rss}			35		
Switching Characteristics (Note 4)						
Turn-On DelayTime	t _{d(on)}	V _{DD} =100V, I _D = 4.5A, V _{GS} = 10V, R _{GEN} = 5Ω		6.4	25	ns
Turn-On Rise Time	t _r			11	70	
Turn-Off DelayTime	t _{d(off)}			20	80	
Turn-Off Fall Time	t _f			12	68	
Total Gate Charge	Q _g	V _{DS} =160V, I _D =4.5A, V _{GS} =10V		16	30	nC
Gate Source Charge	Q _{gs}			3.4	15	
Gate Drain Charge	Q _{gd}			5.1	21	
Drain-Source Diode Characteristics						
Diode Forward Current (Note 2)	I _s				8	A
Diode Forward Voltage (Note 3)	V _{SD}	I _F =8A, 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.

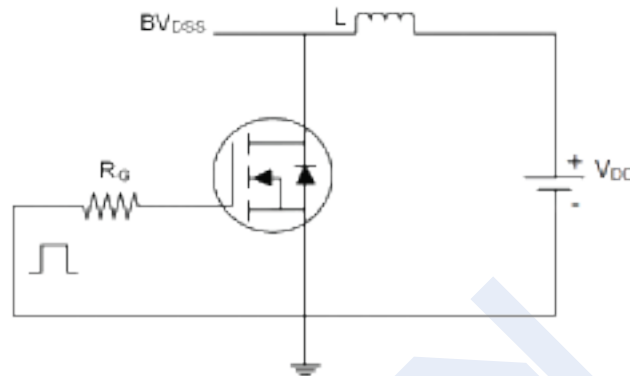
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

4. Guaranteed by design, not subject to production

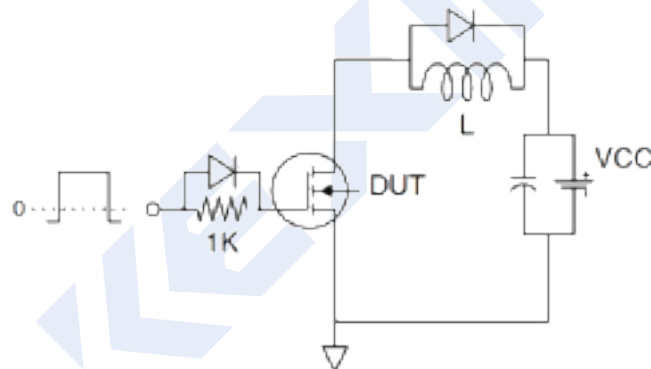
N-Channel MOSFET

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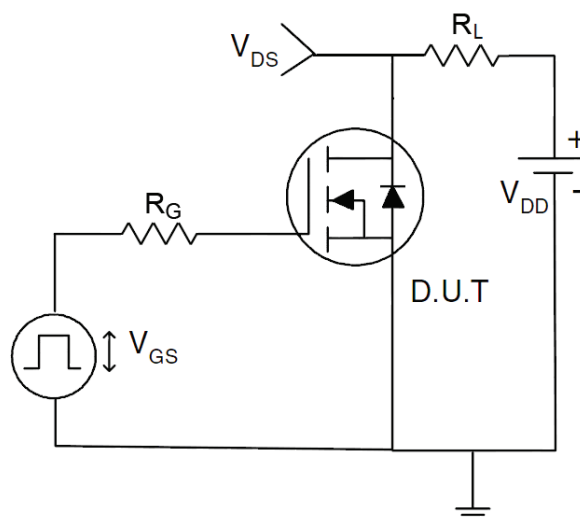
■ Test Circuit

1) E_{AS} test Circuit

2) Gate charge test Circuit



3) Switch Time Test Circuit



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■ Typical Characteristics

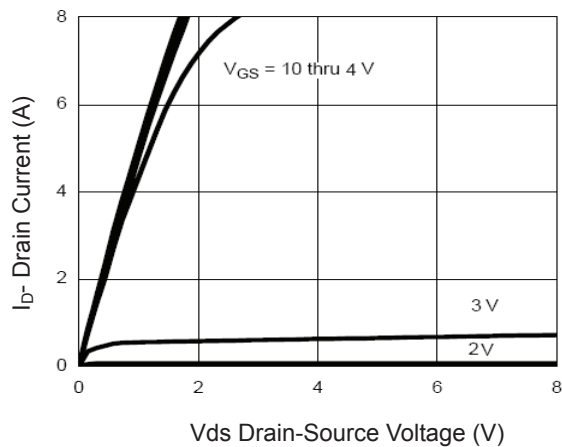


Figure 1 Output Characteristics

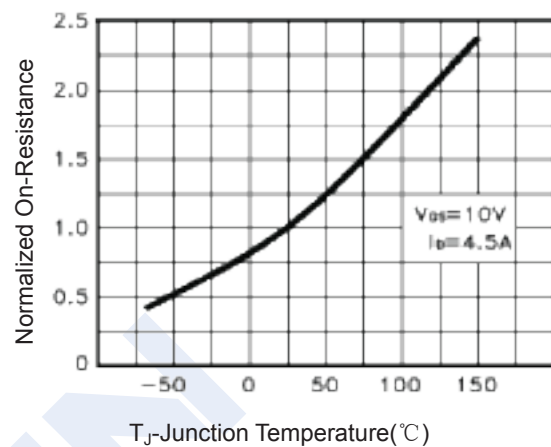
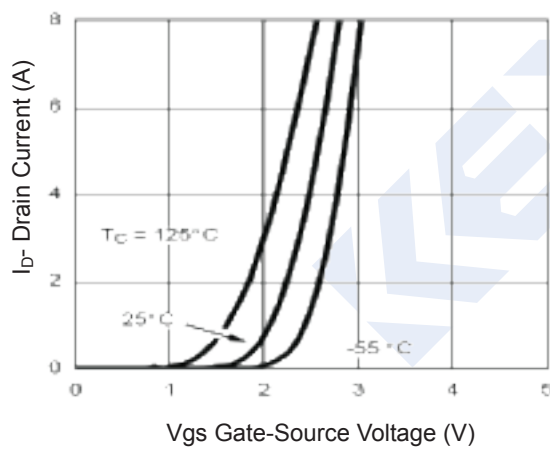
Figure 4 $R_{DS(on)}$ -Junction Temperature

Figure 2 Transfer Characteristics

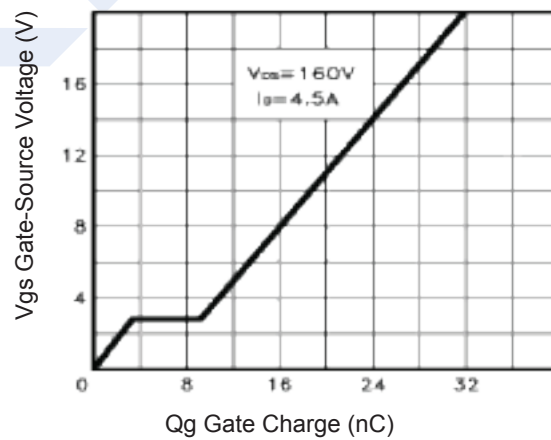


Figure 5 Gate Charge

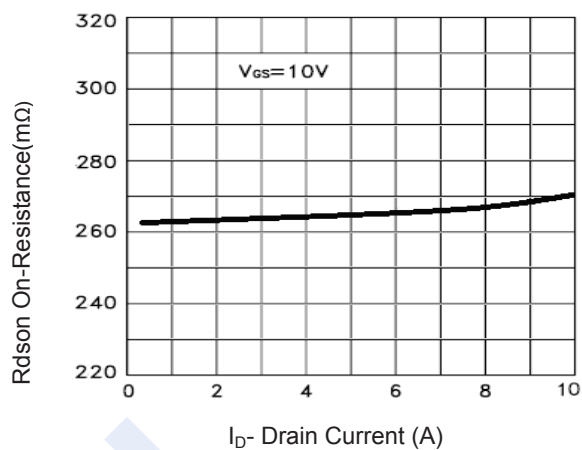
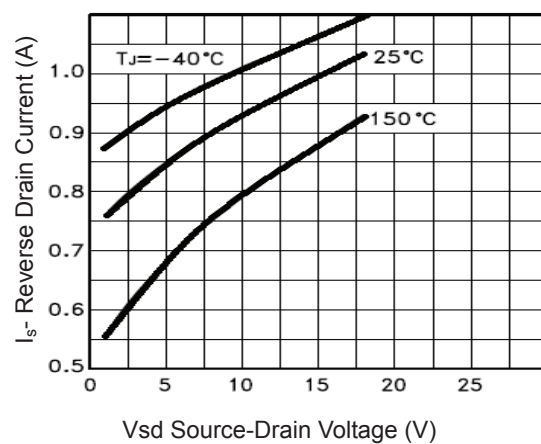
Figure 3 $R_{DS(on)}$ - Drain Current

Figure 6 Source- Drain Diode Forward

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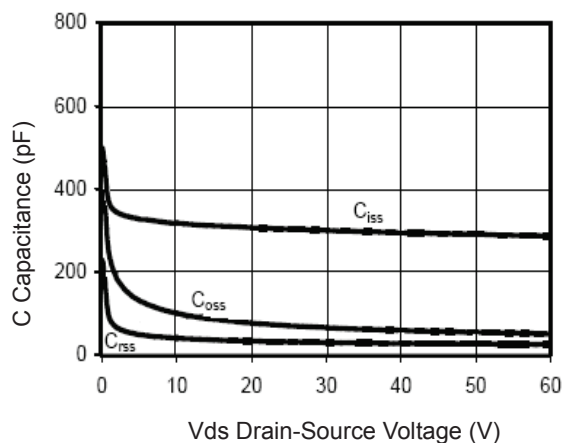


Figure 7 Capacitance vs Vds

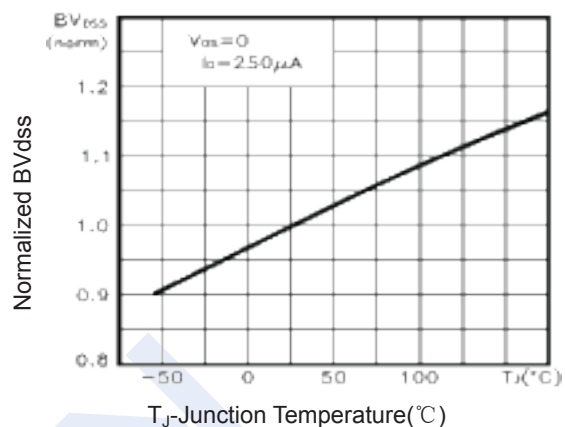
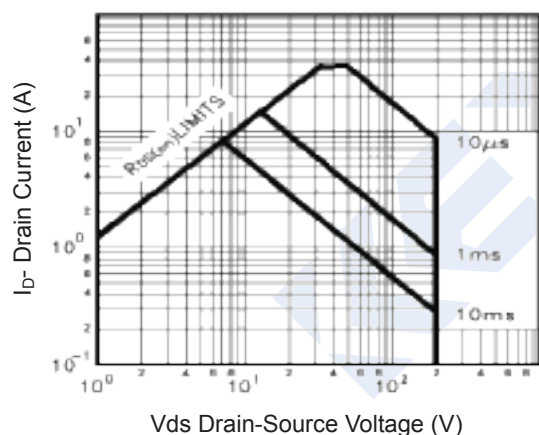
Figure 9 BV_{DSS} vs Junction Temperature

Figure 8 Safe Operation Area

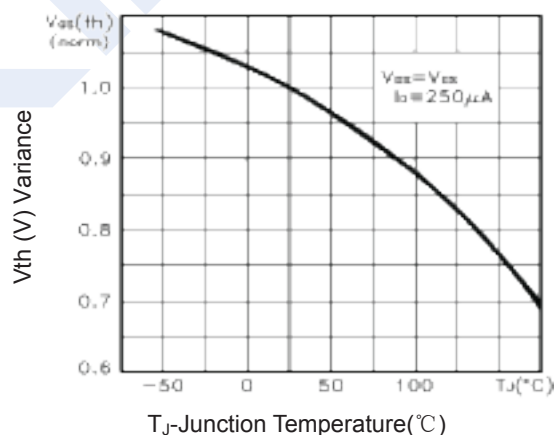
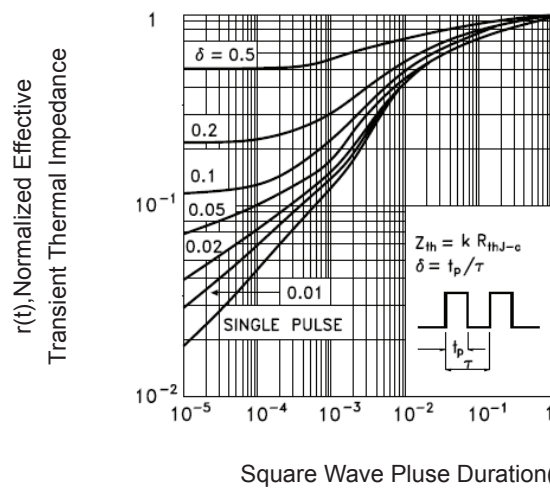
Figure 10 $V_{GS(th)}$ vs Junction Temperature

Figure 11 Normalized Maximum Transient Thermal Impedance