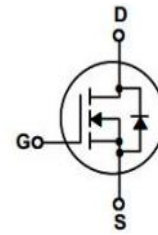
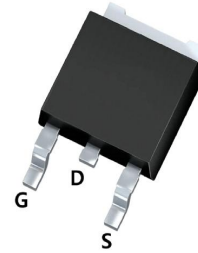




1.Features

- $R_{DS(ON)} \leq 0.28\Omega$ @ $V_{GS}=10V$, $I_D=7.5A$
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired
- Fast switching capability

TO-252



1. Gate
2. Drain
3. Source

2.Mechanical Data

- Case:Molded Plastic,TO-252;
- Epoxy:UL 94V-0 rate flame retardant
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking: marked on body.
- Mounting Position : Any.

3.Ordering Information

Part No.	Package	Marking
XNC65R280D	TO-252	XNC65R280D

4.Maximum Ratings and Electrical Characteristics

Rating at 25°C Cambient temperature unless otherwise specified

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltage		V _{DS}	650	V
Drain Current Continuous	T _C =25°C	I _D	15	A
	T _C =100°C		9.1	
Drain Current Pulsed(Note 1)		I _{DM}	60	A
Gate-Source Voltage		V _{GS}	±30	V
Power Dissipation (Note 1)	TC =25°C	P _D	1.34	W
			1.07	
Single Pulsed Avalanche Energy		E _{AS}	320	mJ
Avalanche Current (Note1)		I _{AR}	2.2	A
Peak Diode Recovery dv/dt		dv/dt	5	V/ns
Maximum Junction Temperature		T _J	150	°C
Storage Temperature Range		T _{stg}	-55 to +150	°C
Thermal Resistance, Junction-to-Case		R _{θJC}	0.93	°C/W
Thermal Resistance, Junction-to-Ambient		R _{θJA}	106	°C/W



Characteristics	Symbol	Test conditions	Min	TYP	Max	Unit
Off Characteristics						
Drain -Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V,I _D =250μA	650	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 650V,V _{GS} = 0V	-	-	1	uA
		V _{DS} = 520V,T _C = 125°C	-	10	-	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = 30V	-	-	100	nA
Gate-Source Leakage Current		V _{GS} = -30V	-	-	-100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS (th)}	V _{GS} = V _{DS} , I _D =250μA	2.5	-	4.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =7.5A	-	0.24	0.28	Ω
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =100V	-	1095	-	pF
Output Capacitance	C _{oss}	V _{GS} =0V	-	40	-	
Reverse Transfer Capacitance	C _{rss}	f=1.0MHZ	-	2.3	-	
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =400V, V _{GS} =10V R _G =25Ω; I _D =7.5A	-	19	-	ns
Turn-on Rise Time	t _r		-	41	-	
Turn-off Delay Time	t _{d(off)}		-	93	-	
Turn-off Fall Time	t _f		-	42	-	
Total Gate Charge	Q _g	V _{DS} =520V, V _{GS} =10A I _D =7.5A	-	27	-	nC
Gate-Source Charge	Q _{gs}		-	5.5	-	
Gate-Drain Charge	Q _{gd}		-	10.5	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	I _F =7.5A,V _{GS} =0V	-	0.85	-	V
Continuous Source Current	I _S		-	-	15	A
Pulsed Source Current	I _{SM}		-	-	60	
Reverse Recovery Time	T _{rr}	I _F =7.5A, V _R = 400 V,	-	401	-	ns
Reverse Recovery Charge	Q _{rr}	dI/dt=100A/μS	-	4	-	nC

Notes:

1. Limited by maximum junction temperature, maximum duty cycle is 0.75

2. $T_J = 25^\circ C, V_{DD} = 50V, V_G = 10V, R_G = 25\Omega$



5. Rating And Characteristic Curves

Fig.1 Output Characteristics

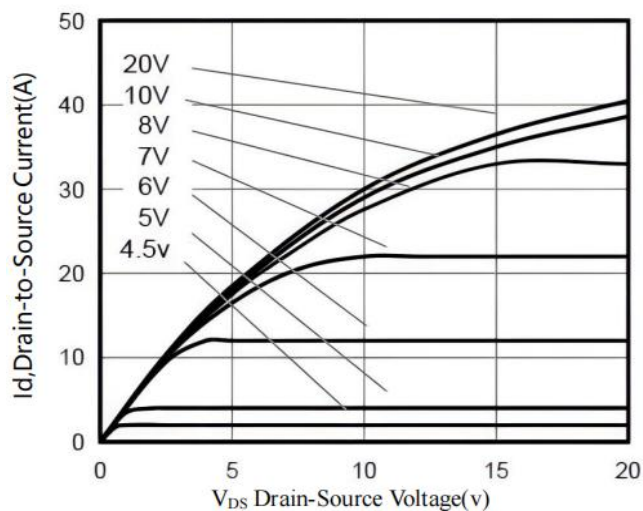


Fig.2 Typical Transfer Characteristics

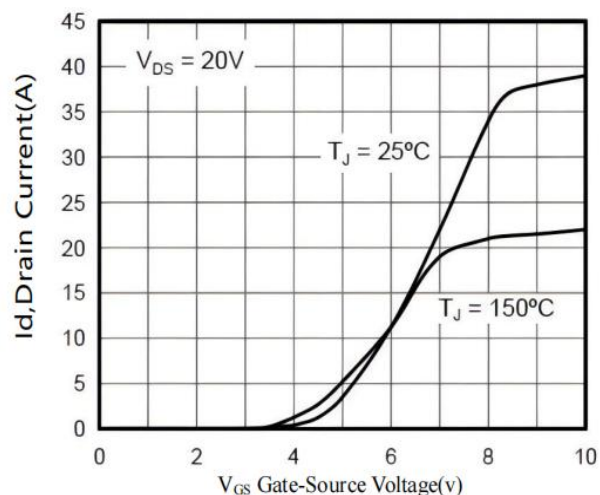


Fig.3 On-Resistance versus Drain Current

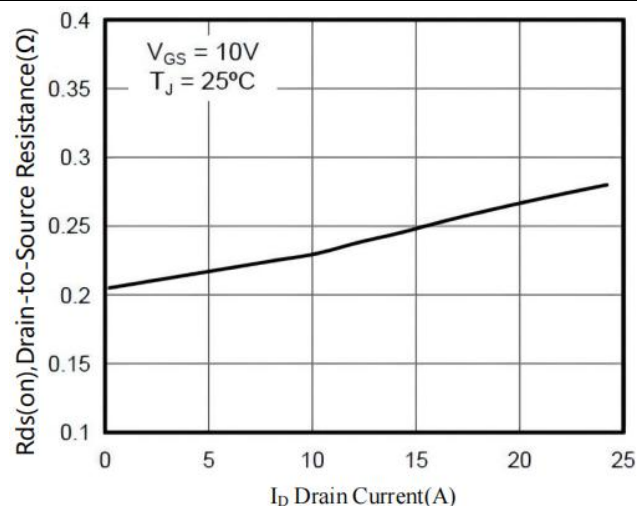


Fig.4 Diode forward voltage versus Current

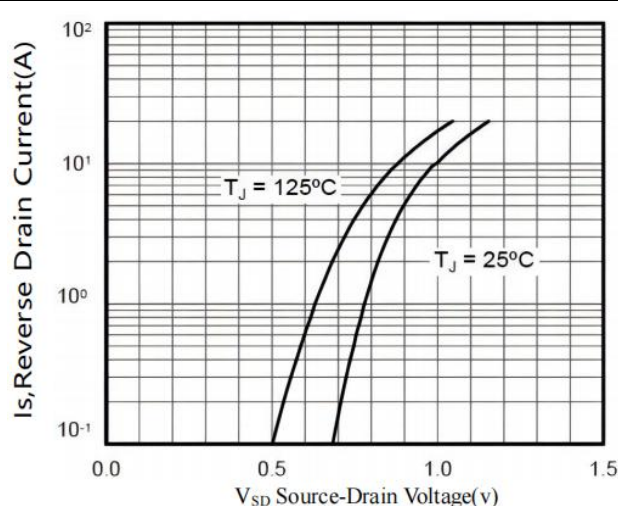


Fig.5 Typical Capacitance versus V_{DS}

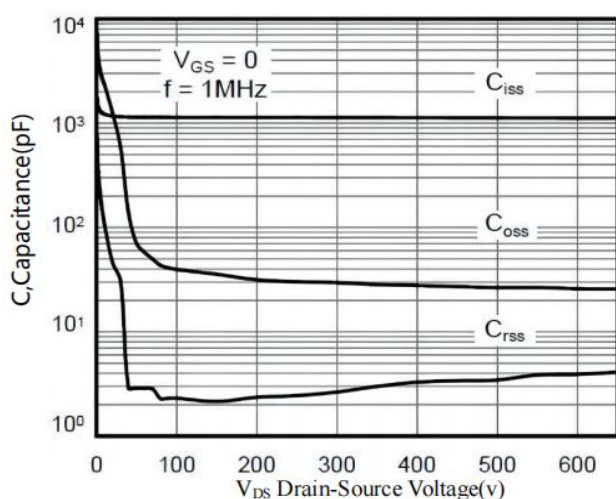


Fig.6 Typical Gate Charge versus V_{GS}

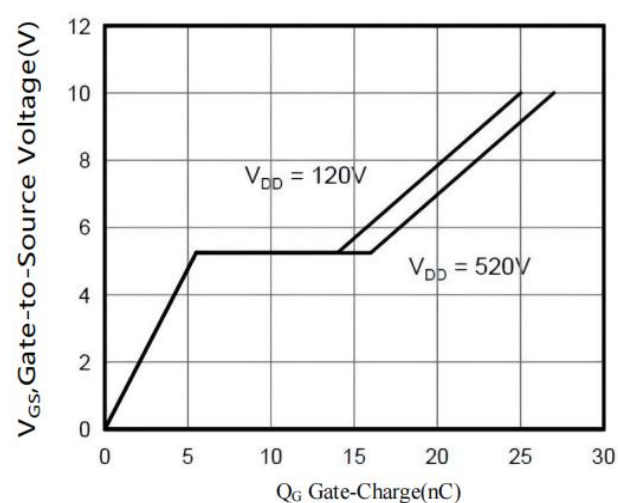




Fig.7 BV_{DSS} Variation with Temperature

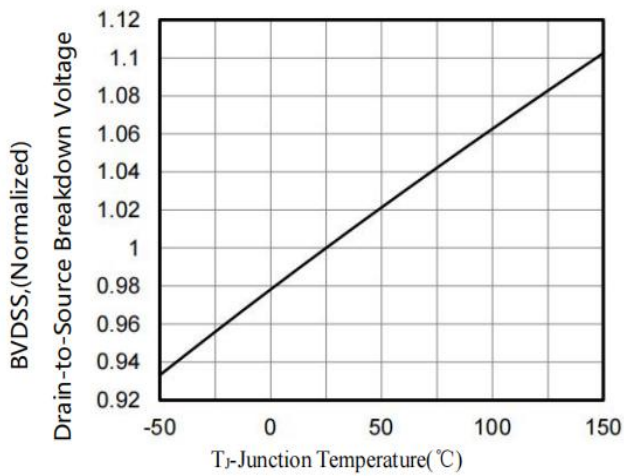


Fig.8 Gate Charge

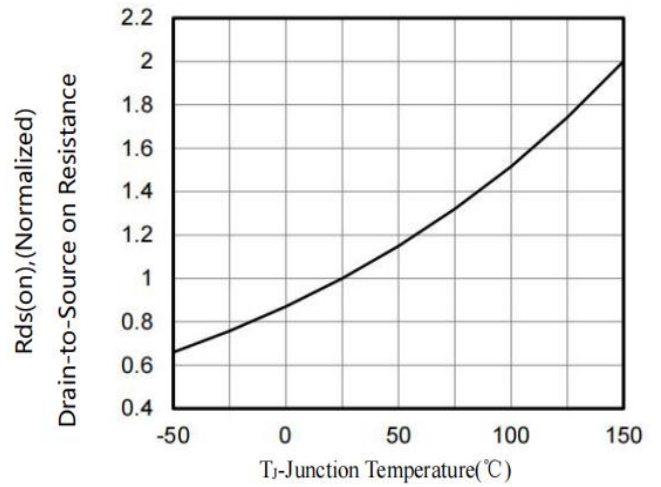


Fig.9 Maximum Safe Operating Area

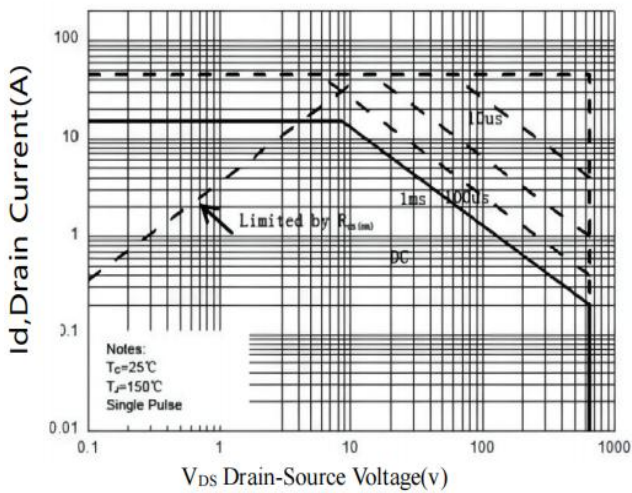
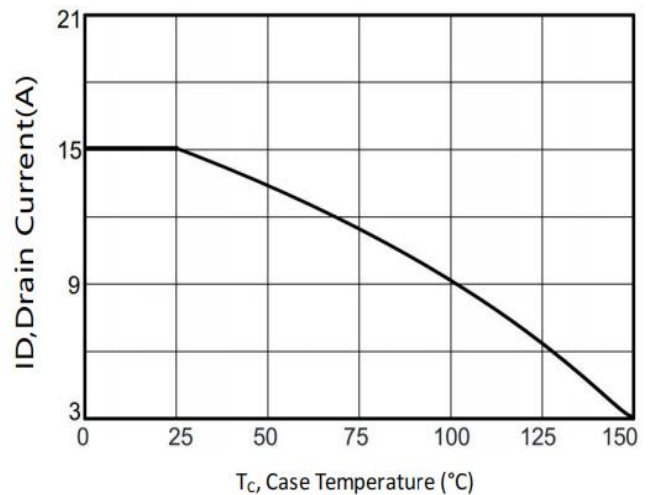


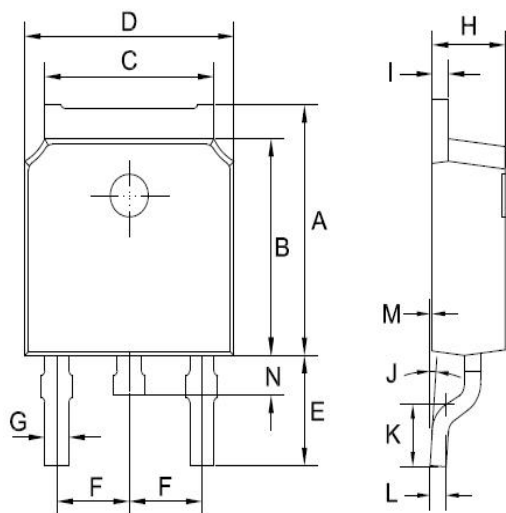
Fig.9 Fig.10 Drain Current versus Case Temperature





6.Dimensions

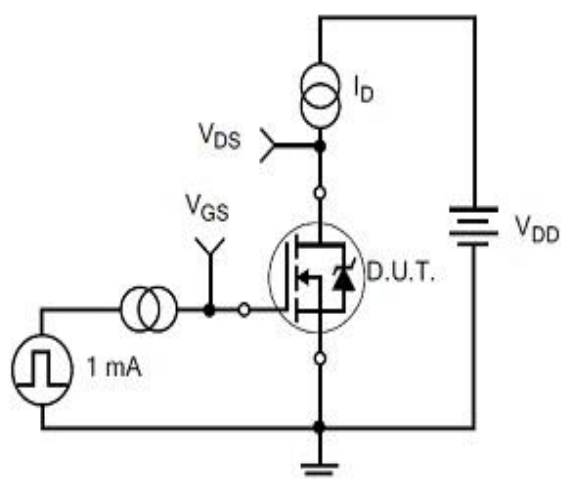
TO-252 Mechanical Drawing



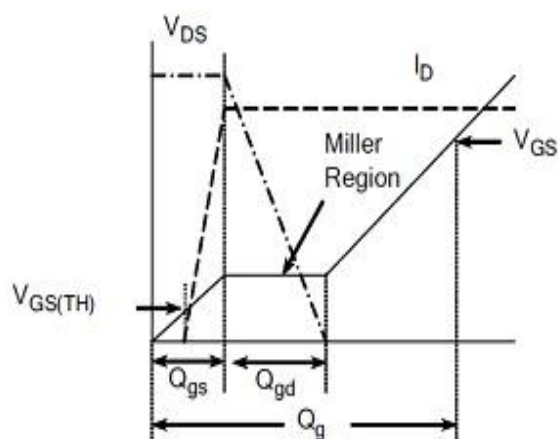
Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.270	0.285	6.85	7.25
B	0.232	0.248	5.90	6.30
C	0.202	0.218	5.13	5.53
D	0.252	0.268	6.40	6.80
E	0.114	0.130	2.90	3.30
F	0.086	0.094	2.19	2.39
G	0.018	0.033	0.45	0.85
H	0.087	0.094	2.20	2.40
I	0.016	0.024	0.41	0.61
J	0°	8°	0°	8°
K	0.057	0.073	1.45	1.85
L	0.016	0.024	0.41	0.61
M	0.000	0.005	0.00	0.12
N	0.024	0.039	0.60	1.00



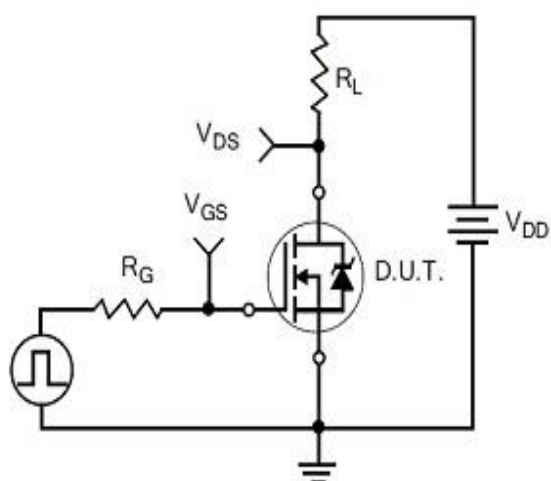
7. Test circuits



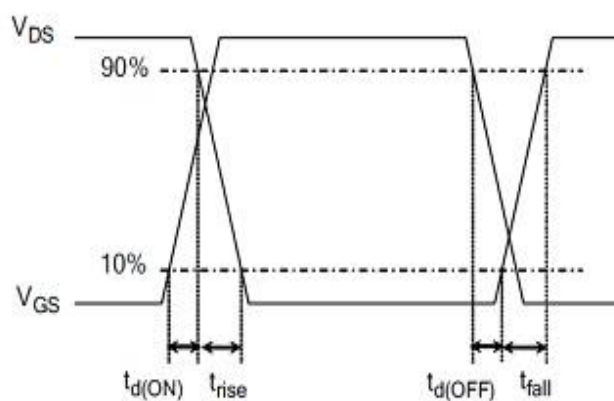
Gate Charge Test Circuit



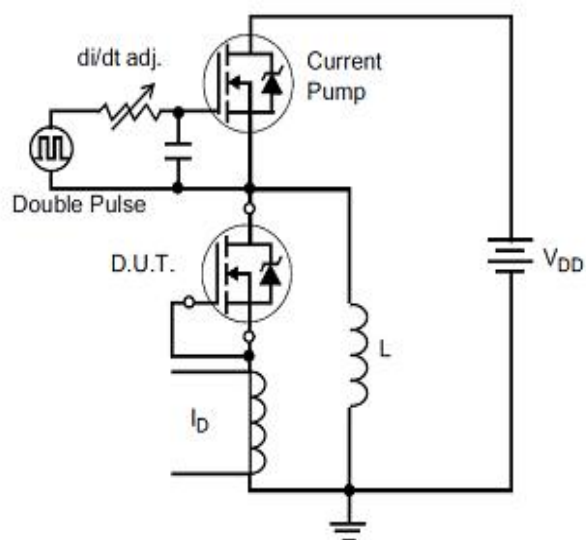
Gate Charge Waveform



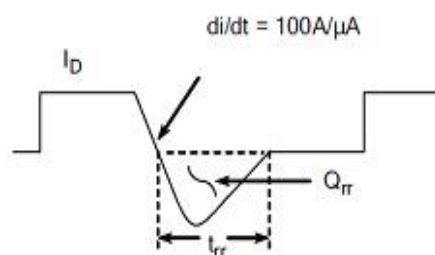
Resistive Switching Test Circuit



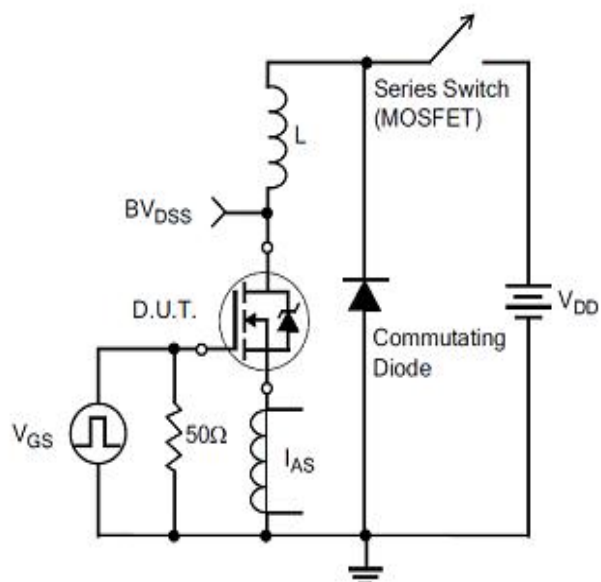
Resistive Switching Waveforms



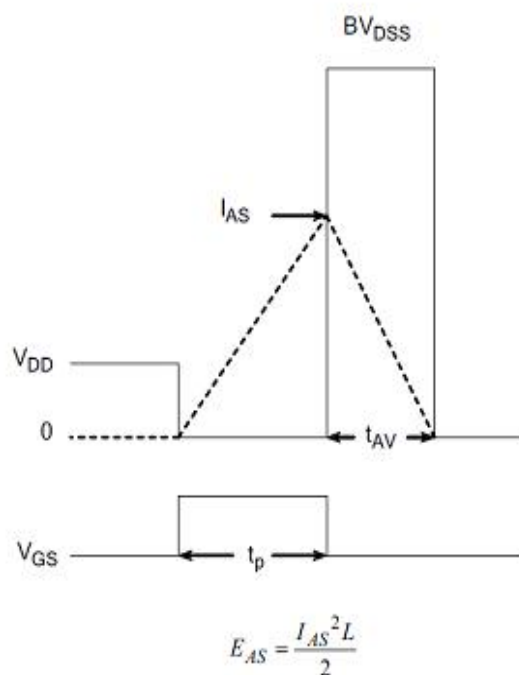
Diode Reverse Recovery Test Circuit



Diode Reverse Recovery Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms



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