

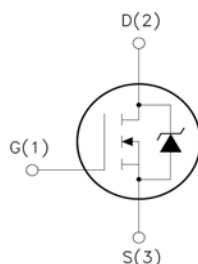
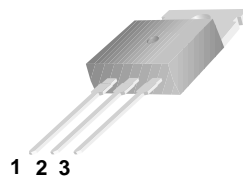
XXW100N12

120V N-Channel MOSFET

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Qg= 130nC (Typ.).
- BVDSS=120V, I_D=100A
- R_{DS(on)} : 9.0mΩ (Max) @V_G=10V
- 100% Avalanche Tested

TO-220 



- 1.Gate (G)
- 2.Drain (D)
- 3.Source (S)

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit	
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage	125	V	
V _{GSS}	Gate-Source Voltage	±25		
T _J	Maximum Junction Temperature	175	°C	
T _{STG}	Storage Temperature Range	-55 to 175	°C	
I _S	Diode Continuous Forward Current	T _C =25°C	130	A
Mounted on Large Heat Sink				
I _{DM}	Pulsed Drain Current *	T _C =25°C	410**	A
I _D	Continuous Drain Current	T _C =25°C	100	A
		T _C =100°C	93	
P _D	Maximum Power Dissipation	T _C =25°C	278	W
		T _C =100°C	139	
R _{θJC}	Thermal Resistance-Junction to Case	0.54	°C/W	
R _{θJA}	Thermal Resistance-Junction to Ambient	62.5		
Avalanche Ratings				
E _{AS}	Avalanche Energy, Single Pulsed	L=0.5mH	720***	mJ

Note : * Repetitive rating ; pulse width limited by junction temperature

** Drain current is limited by junction temperature

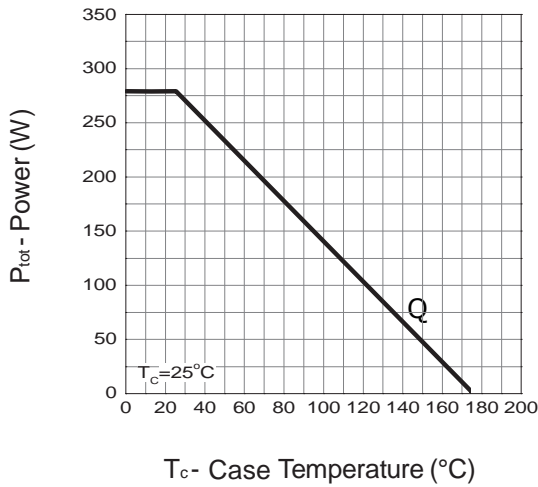
*** VD=90V

Electrical Characteristics ($T_C = 25^\circ\text{C}$ Unless Otherwise Noted)

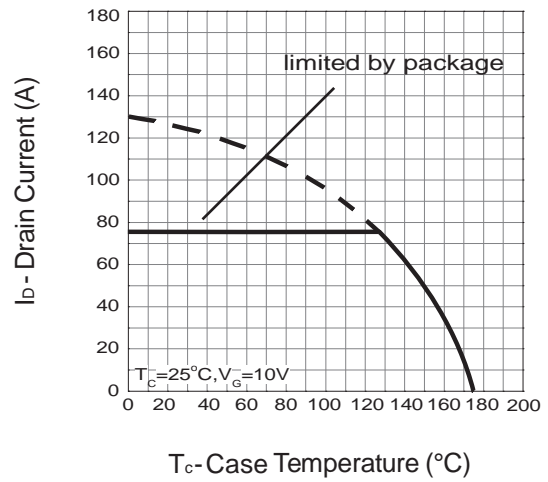
Symbol	Parameter	Test Conditions				Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	125	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=125V, V_{GS}=0V$ $T_J=85^\circ\text{C}$	-	-	1	μA
			-	-	10	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2.0	3.0	4.0	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0V$	-	-	± 100	nA
$R_{DS(ON)^*}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=65A$	-	7.7	9.0	m Ω
Diode Characteristics						
V_{SD}^*	Diode Forward Voltage	$I_{SD}=65A, V_{GS}=0V$	-	0.8	1	V
t_{rr}	Reverse Recovery Time	$I_{SD}=65A, di_{SD}/dt=100A/\mu s$	-	65	-	ns
Q_{rr}	Reverse Recovery Charge		-	103	-	nC
Dynamic Characteristics						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	-	1.9	-	Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=25V,$ Frequency=1.0MHz	-	5896	-	pF
C_{oss}	Output Capacitance		-	940	-	
C_{rss}	Reverse Transfer Capacitance		-	432	-	
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=62.5V, R_G=6\Omega,$ $I_{DS}=65A, V_{GS}=10V,$	-	23	-	ns
T_r	Turn-on Rise Time		-	39	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	86	-	
T_f	Turn-off Fall Time		-	46	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	$V_{DS}=100V, V_{GS}=10V,$ $I_{DS}=65A$	-	130	-	nC
Q_{gs}	Gate-Source Charge		-	25	-	
Q_{gd}	Gate-Drain Charge		-	42	-	

 Note * : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

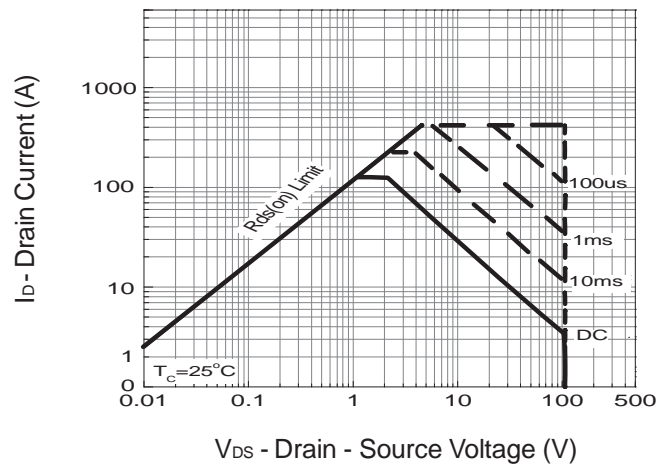
Power Dissipation



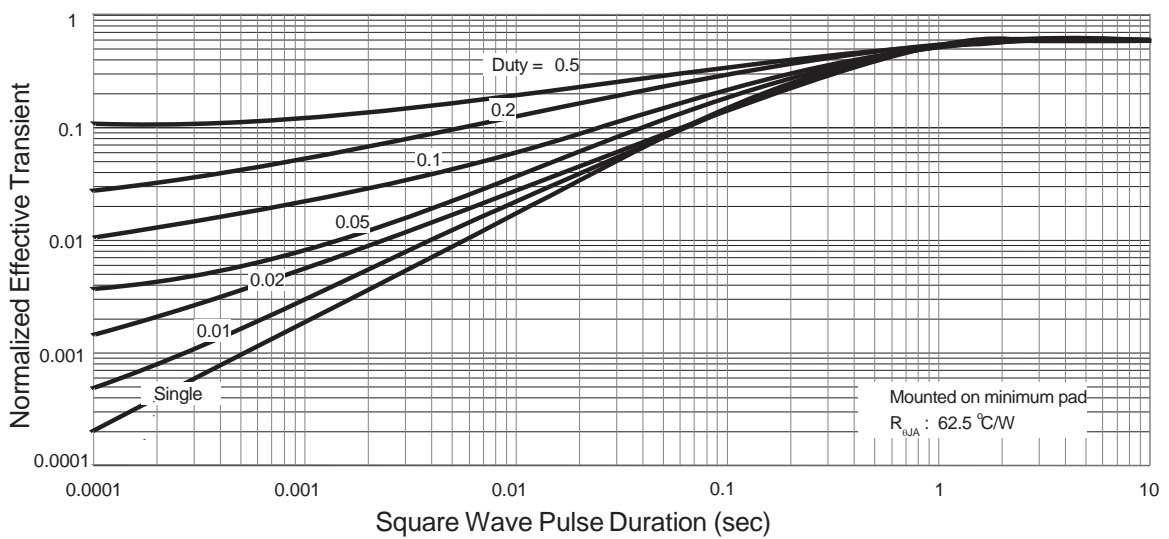
Drain Current



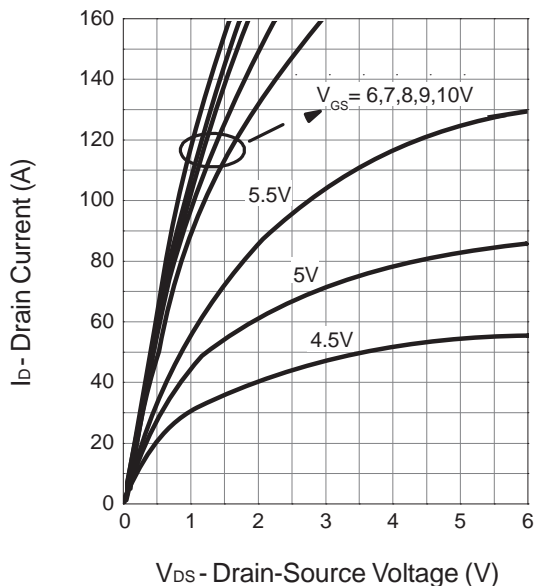
Safe Operation Area



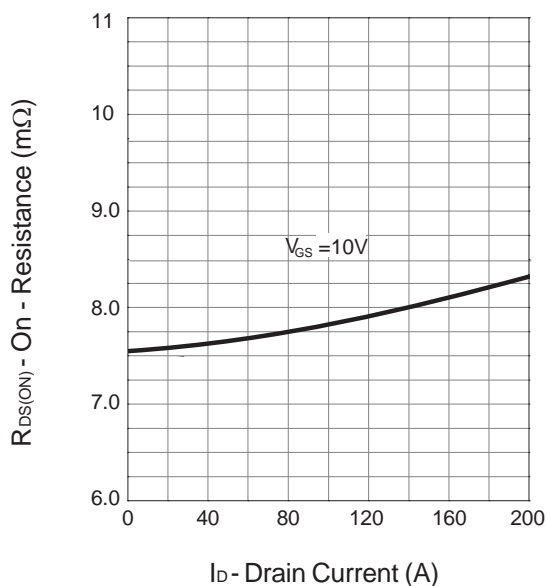
Thermal Transient Impedance



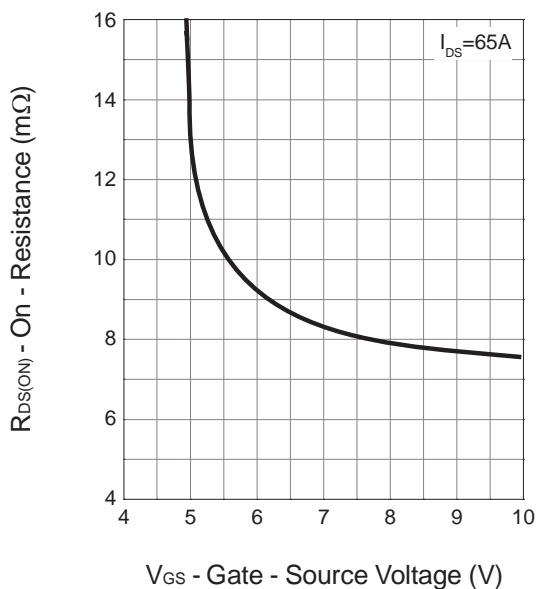
Output Characteristics



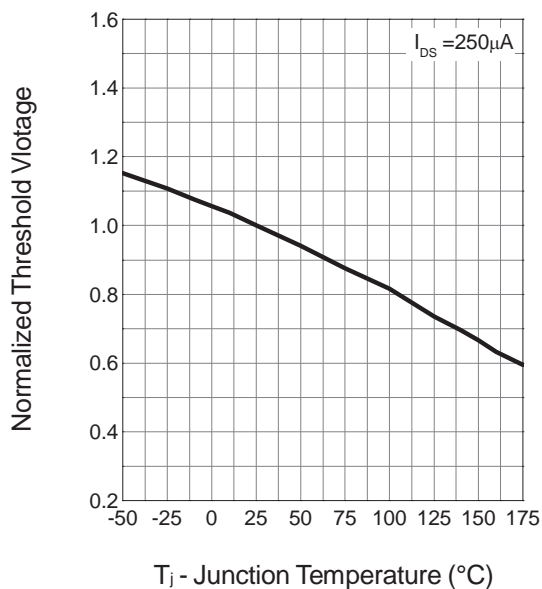
Drain-Source On Resistance



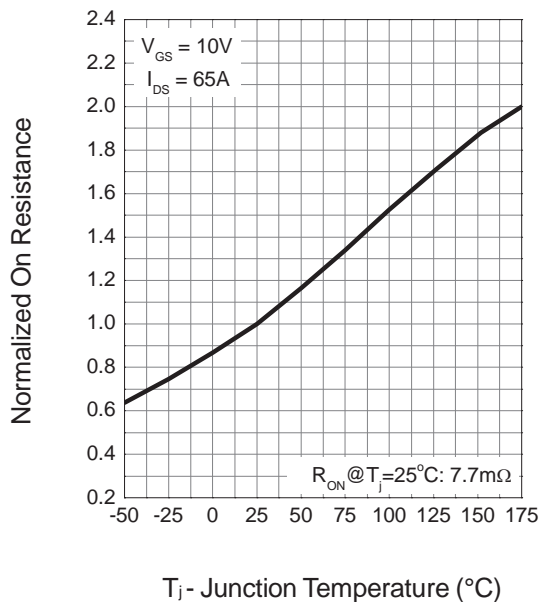
Drain-Source On Resistance



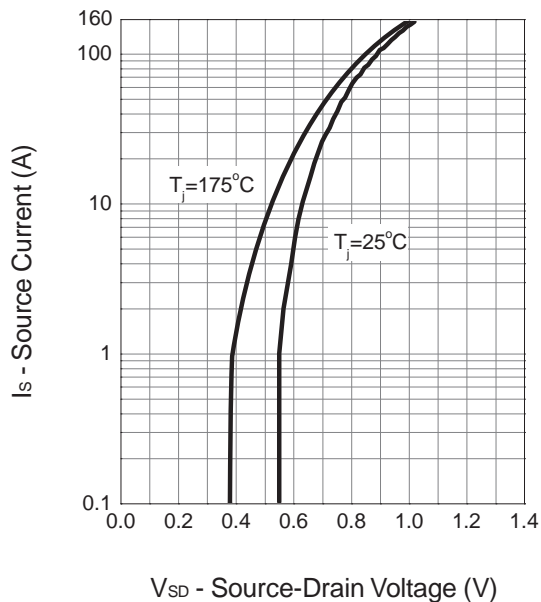
Gate Threshold Voltage



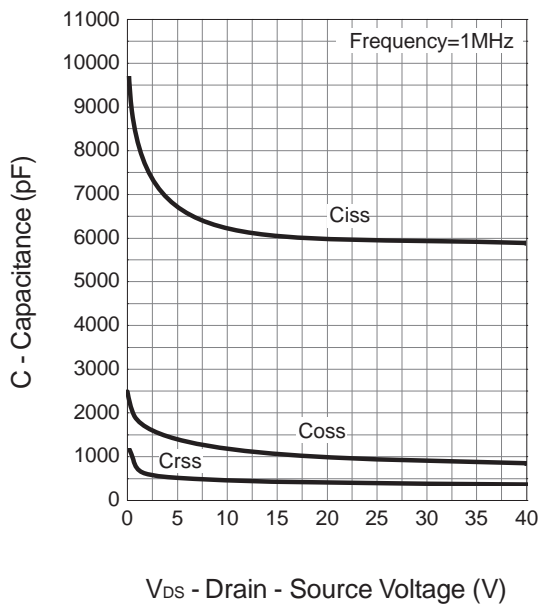
Drain-Source On Resistance



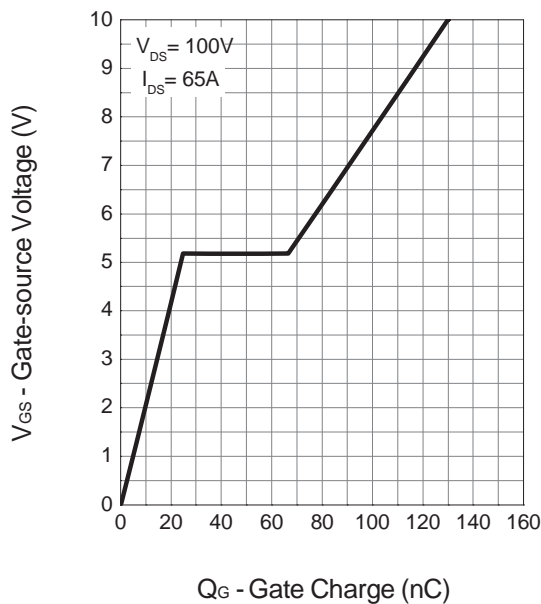
Source-Drain Diode Forward



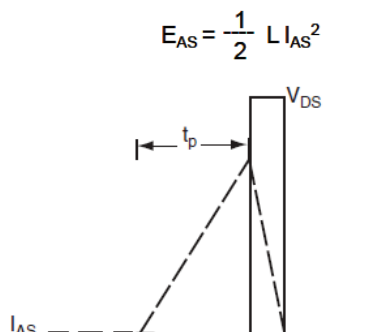
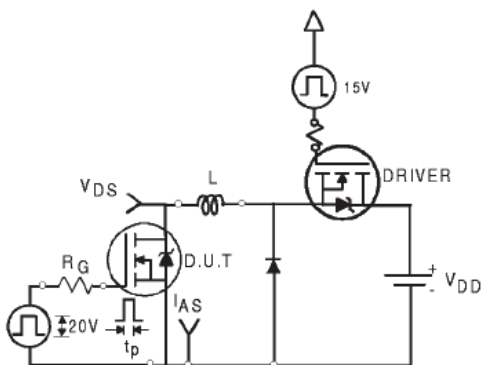
Capacitance



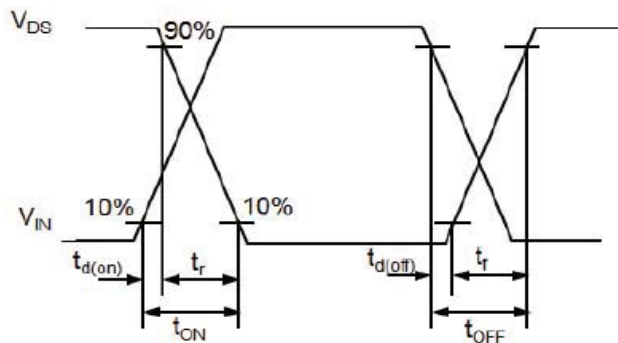
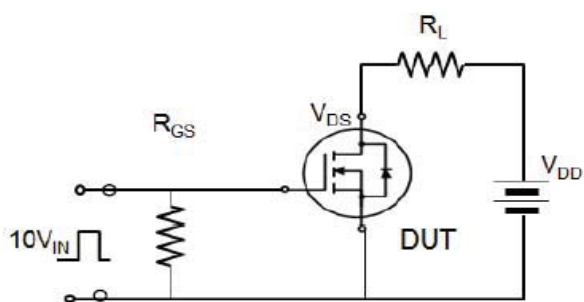
Gate Charge



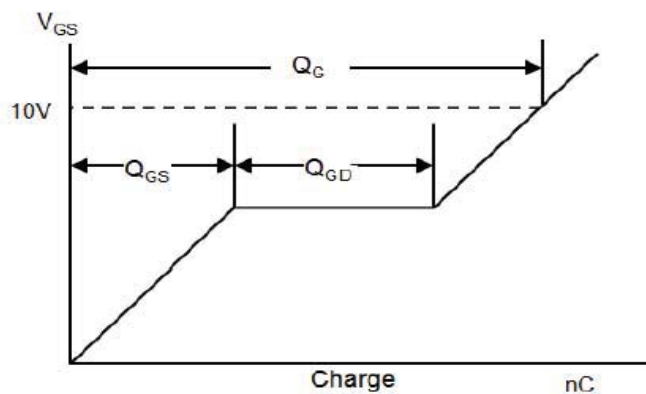
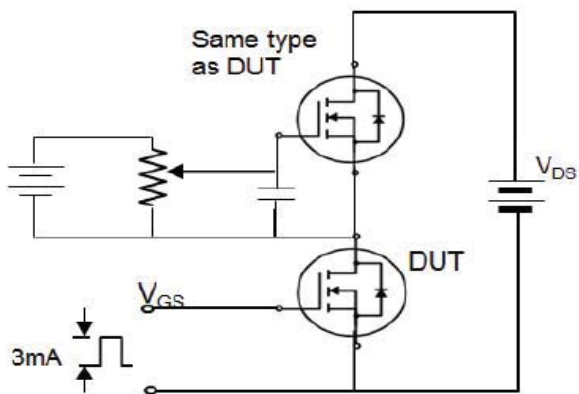
Avalanche Test Circuit



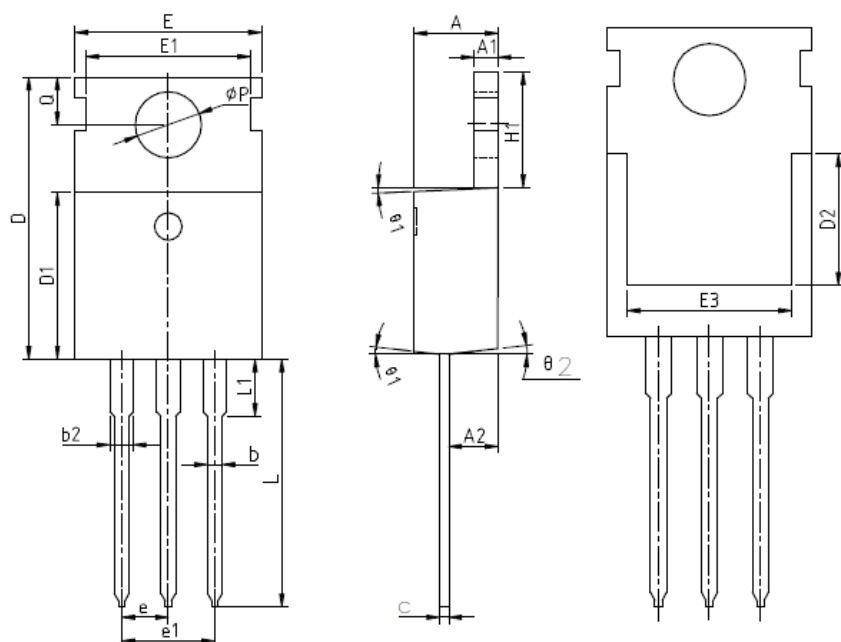
Switching Time Test Circuit



Gate Charge Test Circuit



Package Dimension

TO-220


SYMBOL	MIN	NOM	MAX
A	4.27	4.57	4.87
A1	1.15	1.30	1.45
A2	2.10	2.40	2.70
b	0.70	0.80	1.00
b2	1.17	1.27	1.50
c	0.40	0.50	0.65
D	15.10	15.60	16.10
D1	8.80	9.10	9.40
D2	5.70	6.70	7.00
E	9.70	10.00	10.30
E1	-	8.70	-
E2	9.65	10.00	10.35
E3	7.00	8.00	8.40
e	2.54 BSC		
e1	5.08 BSC		
H1	6.00	6.50	6.85
L	12.75	13.50	13.90
L1	-	3.10	3.40
ΦP	3.45	3.60	3.75
Q	2.60	2.80	3.00
θ 1	4°	7°	10°
θ 2	0	3°	6°