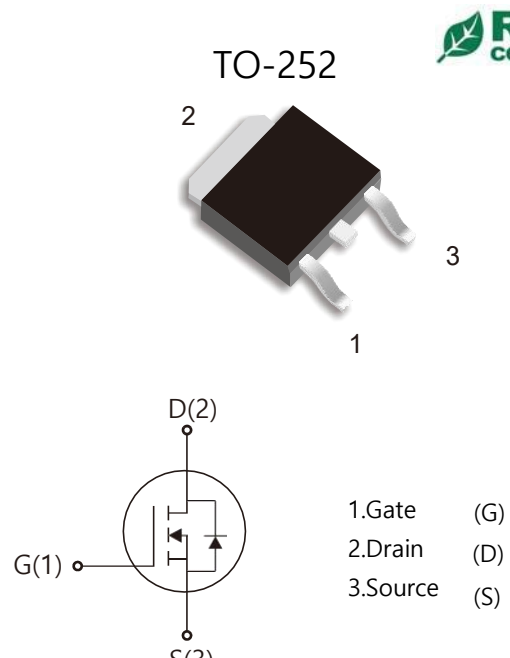


XXW4N65

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Qg=15nC(Typ.).
- V_{DSS}=650V, I_D=4A
- R_{DS(on)} : 2.7Ω (Max) @V_G=10V
- 100% Avalanche Tested



TO-252

RoHS COMPLIANT

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

Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	650	V
I _D	Drain Current	T _j =25°C	4
		T _j =100°C	3.0
V _{GSS}	Gate-Source Voltage	±30	V
E _{AS}	Single Pulse Avalanche Energy (note1)	150	mJ
I _{DM}	Pulsed Drain Current (note2)	20	A
P _D	Power Dissipation (T _j =25°C)	22	W
T _j	Junction Temperature(Max)	150	°C
T _{stg}	Storage Temperature	-55~+150	°C
dv/dt	MOSFET dv/dt ruggedness,V _{DS} =0V...480V	50	V/nS

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJC}	Thermal Resistance Junction to Case	-	1.79	°C/W
R _{θJA}	Thermal Resistance Junction to Ambient	-	62.5	°C/W

Electrical Characteristics (Ta=25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0	650	-	-	V
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temperature Coefficient	I _D =250μA, Reference to 25°C	-	0.6	-	V/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =650V, V _{GS} =0V	-	-	10	μA
		V _{DS} =560V, T _J =125°C	-	-	100	
I _{GSSF}	Gate-body leakage Current, Forward	V _{GS} =+30V, V _{DS} =0V	-	-	100	nA
I _{GSSR}	Gate-body leakage Current, Reverse	V _{GS} =-30V, V _{DS} =0V	-	-	-100	
On Characteristics						
V _{GS(TH)}	Gate Threshold Voltage	I _D =250μA, V _{DS} =V _{GS}	3	-	4.5	V
R _{DS(ON)}	Static Drain-Source On-Resistance	I _D =2.0A, V _{GS} =10V	-	2.4	2.7	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0, f=1.0MHz	-	520	-	pF
C _{oss}	Output Capacitance		-	70	-	
C _{rss}	Reverse Transfer Capacitance		-	8	-	
Switching Characteristics						
T _{d(on)}	Turn-On Delay Time	V _{DD} =325V, I _D =4A R _G =25Ω (Note 3,4)	-	13	35	nS
T _r	Turn-on Rise Time		-	45	100	
T _{d(off)}	Turn-Off Delay Time		-	25	60	
T _f	Turn-Off Rise Time		-	35	80	
Q _g	Total Gate Charge	V _{DS} =560V, V _{GS} =10V, I _D =4A (Note3,4)	-	15	20	nC
Q _{gs}	Gate-Source Charge		-	3.4	-	
Q _{gd}	Gate-Drain Charge		-	7.1	-	
Drain-Source Diode Characteristics and Maximum Ratings						
I _s	Max. Diode Forward Current	-	-	-	4	A
I _{SM}	Max. Pulsed Forward Current	-	-	-	20	
V _{SD}	Diode Forward Voltage	I _D =10A	-	-	1.4	V
T _{rr}	Reverse Recovery Time	I _S =4A, V _{GS} =0V diF/dt=100A/μs	-	250	-	nS
Q _{rr}	Reverse Recovery Charge	(Note3)	-	1.5	-	μC

- Notes : 1, L=0.5mH, I_{AS}= 4A, V_{DD}=50V, R_G=25Ω, Starting T_J =25°C
 2, Repetitive Rating : Pulse width limited by maximum junction temperature
 3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
 4, Essentially Independent of Operating Temperature

■ TEST CIRCUITS AND WAVEFORMS

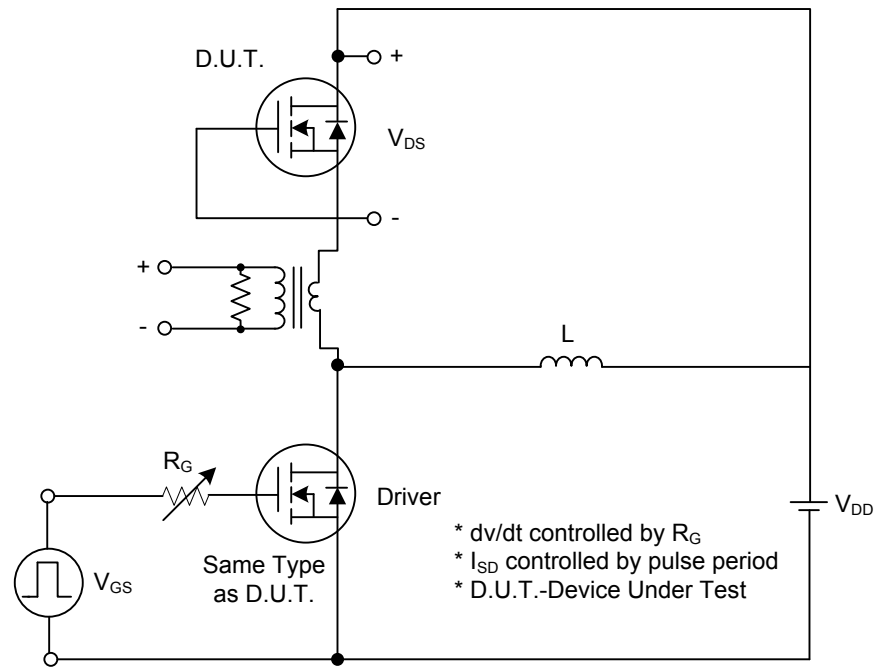


Fig. 1A Peak Diode Recovery dv/dt Test Circuit

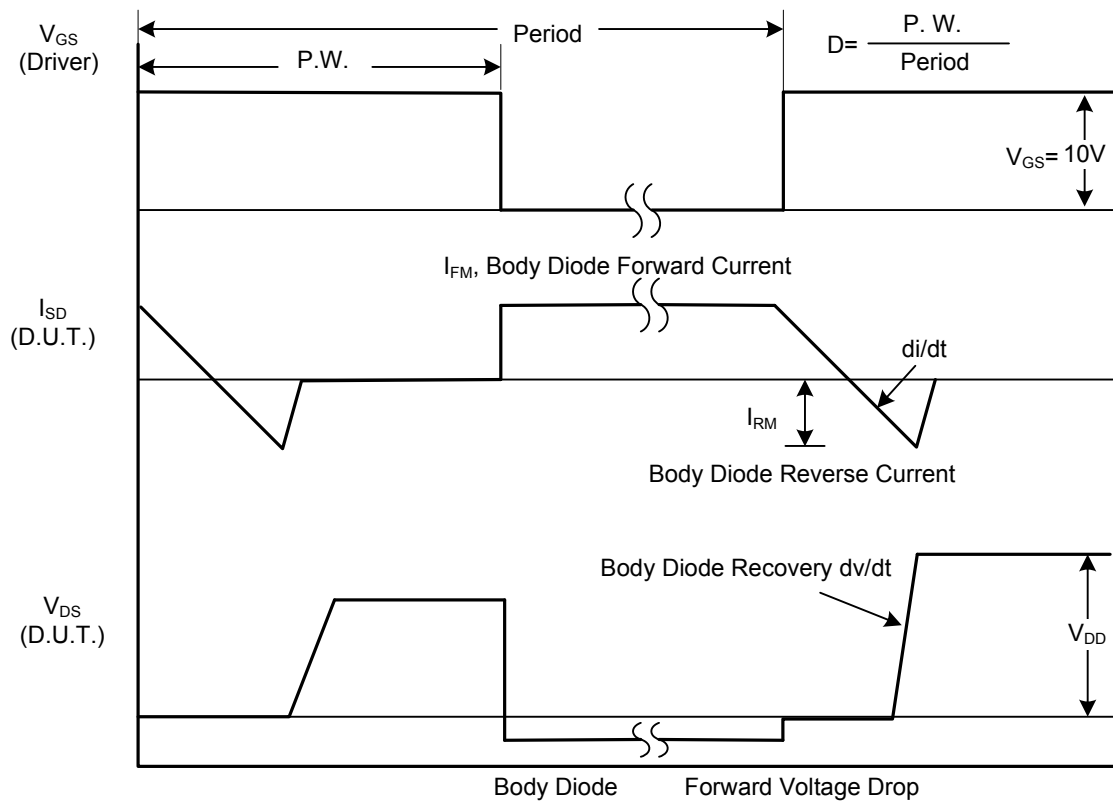


Fig. 1B Peak Diode Recovery dv/dt Waveforms

■ TEST CIRCUITS AND WAVEFORMS(Cont.)

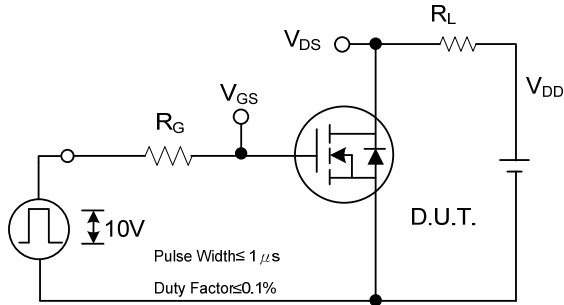


Fig. 2A Switching Test Circuit

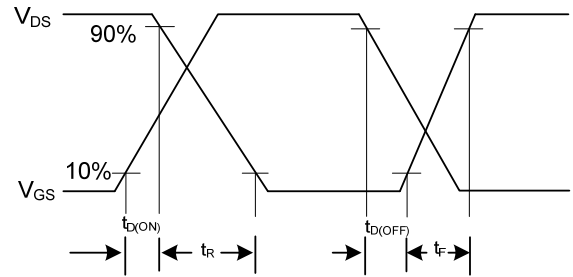


Fig. 2B Switching Waveforms

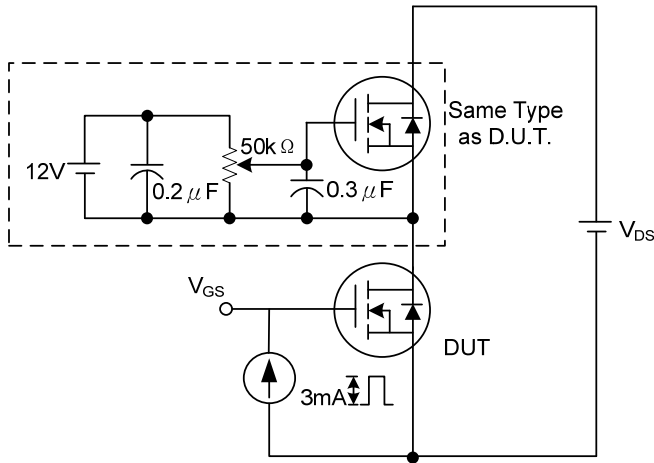


Fig. 3A Gate Charge Test Circuit

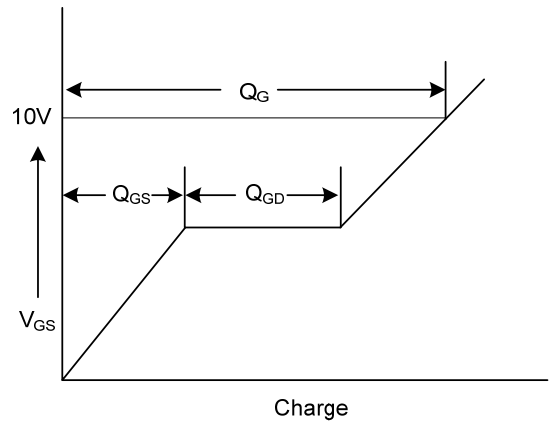


Fig. 3B Gate Charge Waveform

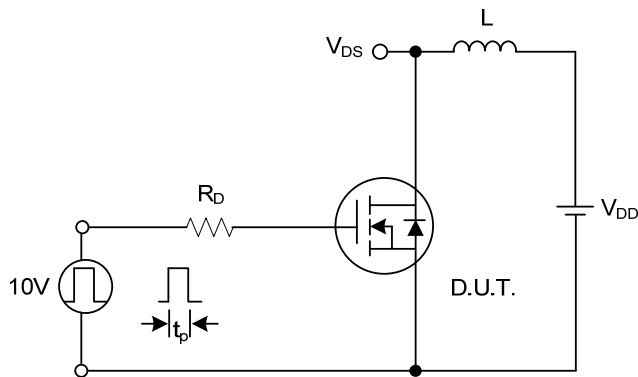


Fig. 4A Unclamped Inductive Switching Test Circuit

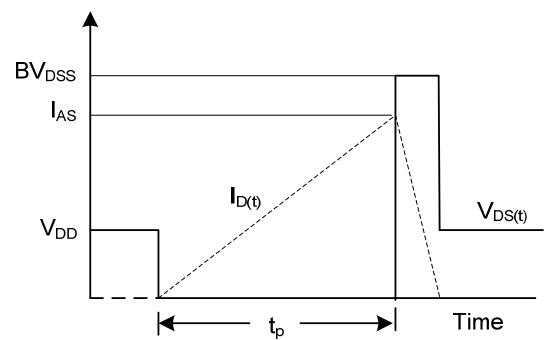
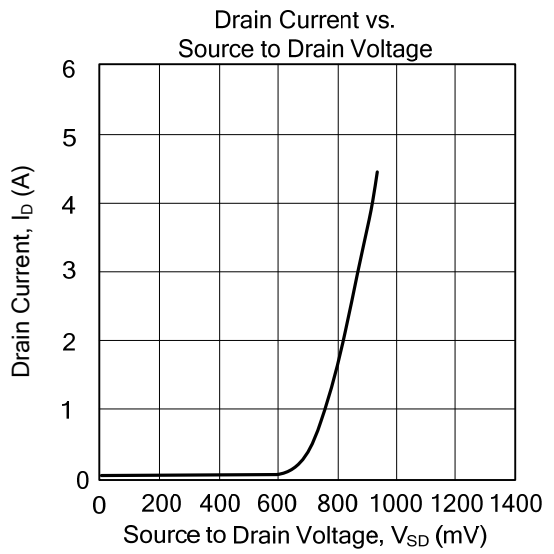
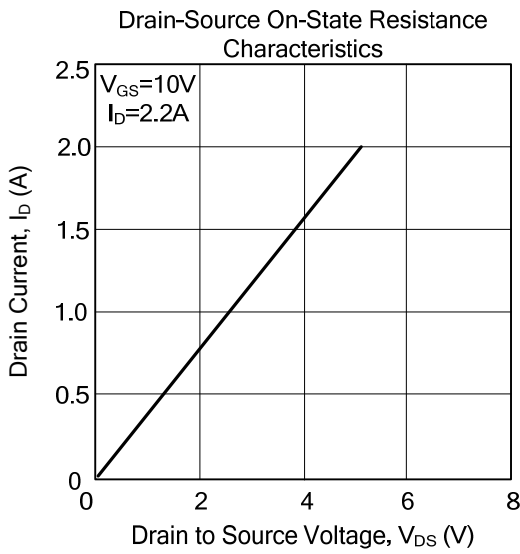
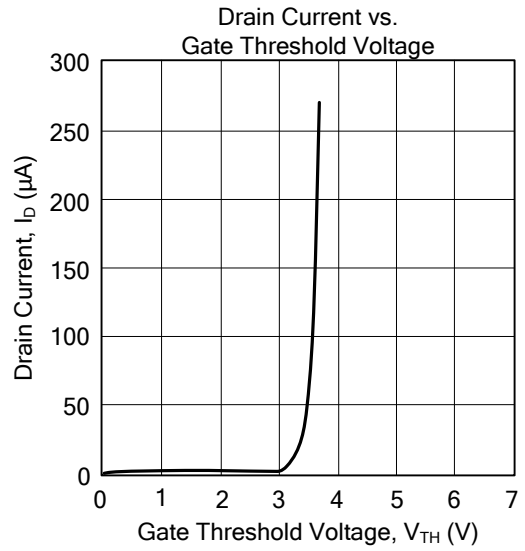
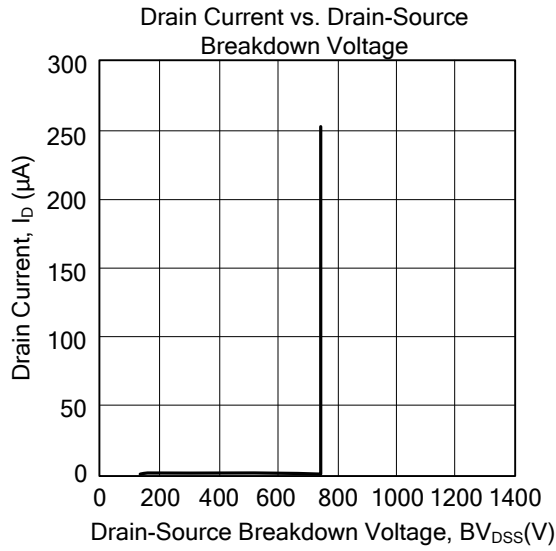


Fig. 4B Unclamped Inductive Switching Waveforms

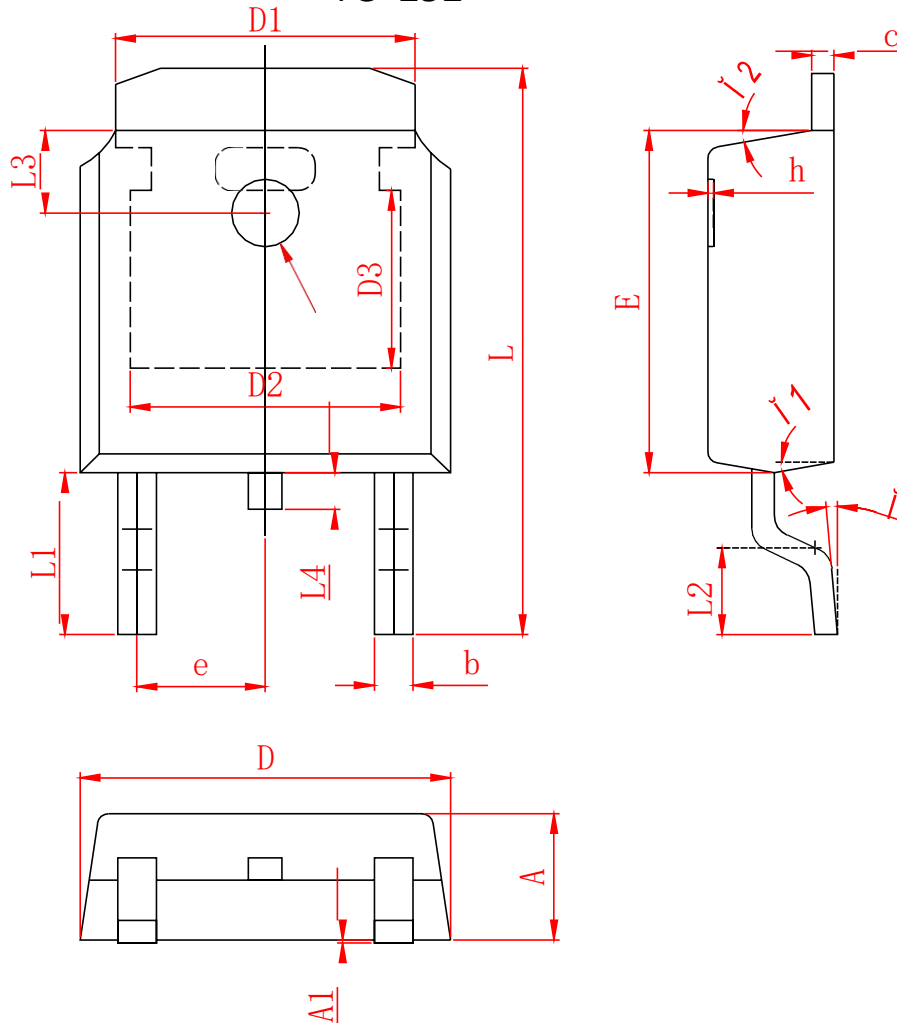
■ TYPICAL CHARACTERISTICS



Package Dimension

TO-252

Unit: mm



SYMBOL	MILLIMETER		SYMBOL	MILLIMETER	
	MIN	MAX		MIN	MAX
A	2.200	2.400	h	0.000	0.200
A1	0.000	0.127	L	9.900	10.30
b	0.640	0.740	L1	2.888\ RE	
c	0.460	0.580	L2	1.400	1.700
D	6.500	6.700	L3	1.600\ RE	
D1	5.334\ RE		L4	0.600	1.000
D2	4.826\ RE		∅	1.100	1.300
D3	3.166\ RE		◎	e	e
E	6.000	6.200	◎	e7<3	
e	2.286\ TY		◎	e7<3	