瑞森半导体 REASUNOS

ID	R$_{DS}$(ON)(Typ)	VDSS
100A	7mΩ	100V

Applications:

- Load Switch
- PWM Applications
- Power Managment

Features:

- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability
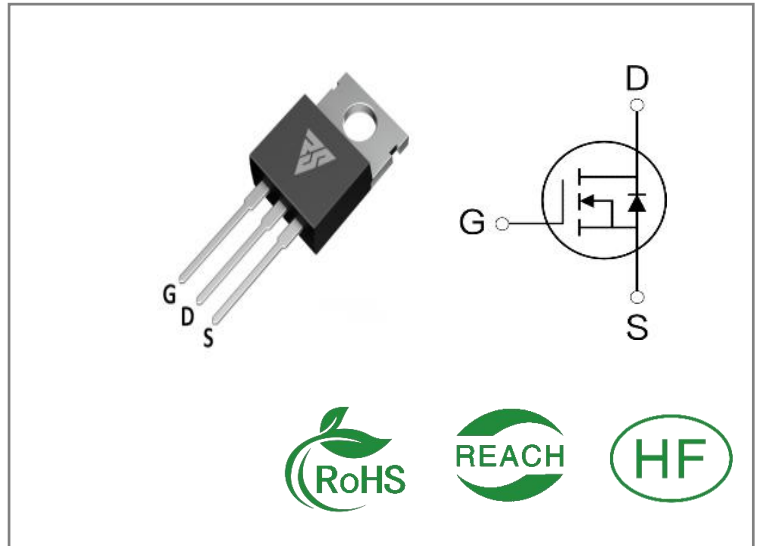
Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS100N100T	T0-220	RS100N100T	Tube	50 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RS100N100T	Units
VDSS	Drain-to-Source Voltage	100	V
ID	Continuous Drain Current TC=25℃	100	A
ID	Continuous Drain Current TC=100℃	60	
IDM	Pulsed Drain Current	400	
PD	Power Dissipation	93	W
VGS	Gate- to- Source Voltage	±20	V
EAS	Single Pulse Avalanche Engergy L = 0.5mH,VDS = 50V, RG = 25Ω, Tj = 25℃	105	mJ
TL TPKG	Maximum Temperature for Soldering Leads at 0.063in(1.6mm)from Case for 10 seconds Package Body for 10 seconds	300 260	℃
TJ and TSTG	Operating Junction and Storage Temperature Range	-55　to 150	

* Drain Current Limited by Maximum Junction Temperature
Caution: Stresses greater than those listed in the" Absolute Maximum Ratings" Table may cause permanent　damage to the device.

Thermal Resistance

Symbol	Parameter	RS100N100T	Units	Test Conditions
RθJC	Junction-to-Case	1.35	℃ / W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃
RθJA	Junction-to-Ambient	60		1 cubic foot chamber,free air.

OFF Characteristics TJ= 25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	100	--	--	V	VGS=0V,ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=100V,VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	VGS=20V ,VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-100		VGS=-20V ,VDS=0V

ON Characteristics TJ=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance	--	7	8.5	mΩ	VGS=10V,ID=20A
		--	9	11	mΩ	VGS=4.5V,ID=10A
VGS(TH)	Gate Threshold Voltage	2.0	--	4.0	V	VGS=VDS,ID=250μA

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	16	--	nS	VDS=50V ID=20A RG=3Ω VGS=10V
trise	Rise Time	--	6	--		
td(OFF)	Turn- OFF Delay Time	--	45	--		
tfall	Fall Time	--	22	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	2362	--	pF	VGS= 0V VDS=50V f=1MHz
Coss	Output Capacitance	--	743	--		
Crss	Reverse Transfer Capacitance	--	78	--		
Qg	Total Gate Charge	--	42	--	nC	VDS= 50V ID=20A VGS=10V
Qgs	Gate- to- Source Charge	--	13	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	10	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	100	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	400	A	
VSD	Diode Forward Voltage	--	--	1.2	V	IS=20A,VGS=0V
trr	Reverse Recovery Time	--	211	--	nS	VGS=0V IS=20A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	84	--	nC	

Notes:
* 1. Repetitive rating, pulse width limited by maximum junction temperature.
* 2. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1.5%

Typical Feature Curve
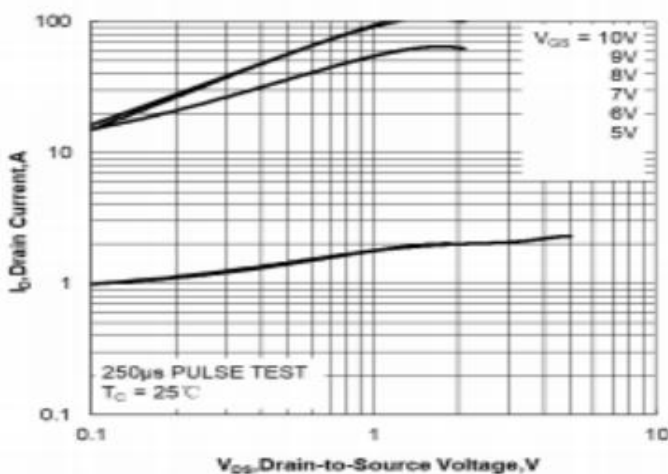
Figure 1. Output Characteristics
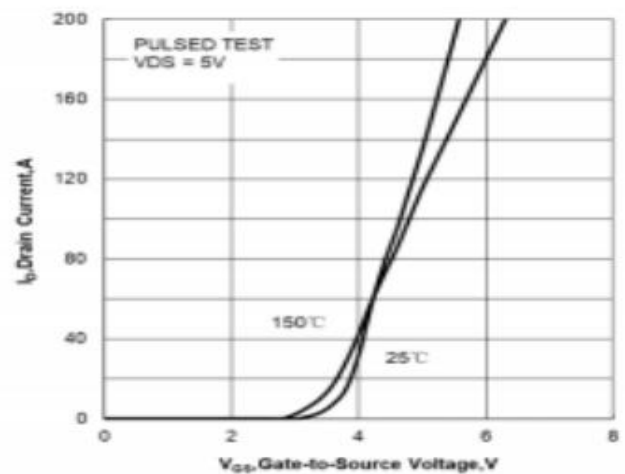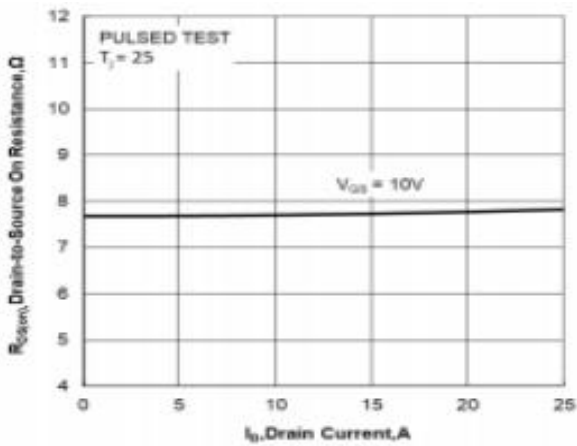
Figure 2. Transfer Characteristics

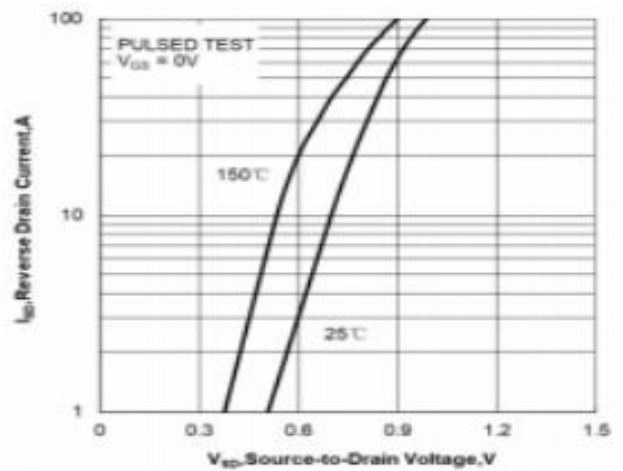Figure 3. Drain-to-Source On Resistance vs Drain Current

Figure 4. Body Diode Forward Voltage vs Source Current and Temperature
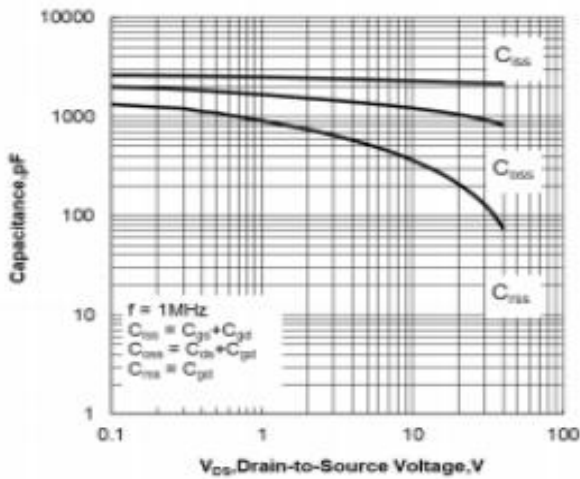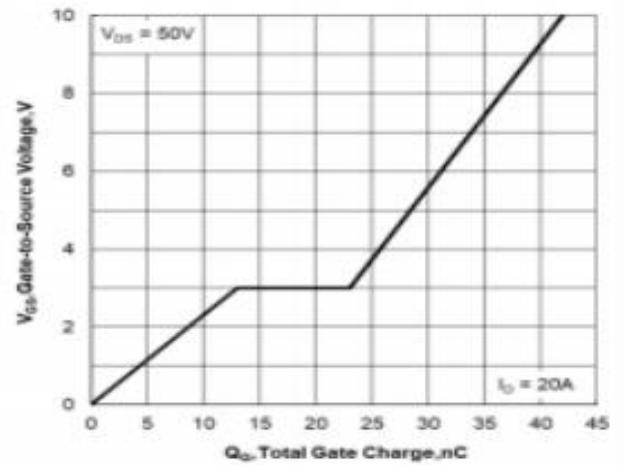

Figure 5. Capacitance Characteristics
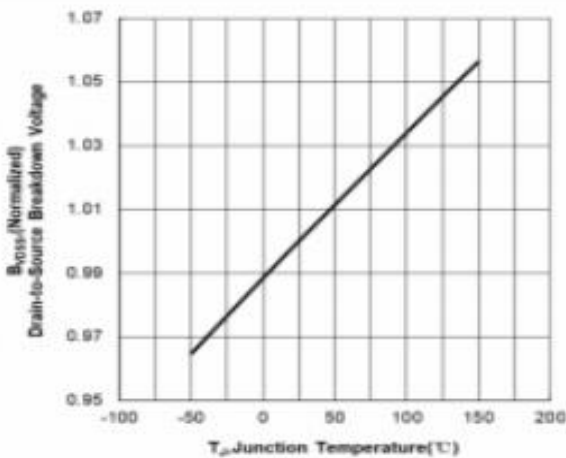

Figure 6. Gate Charge Characteristics

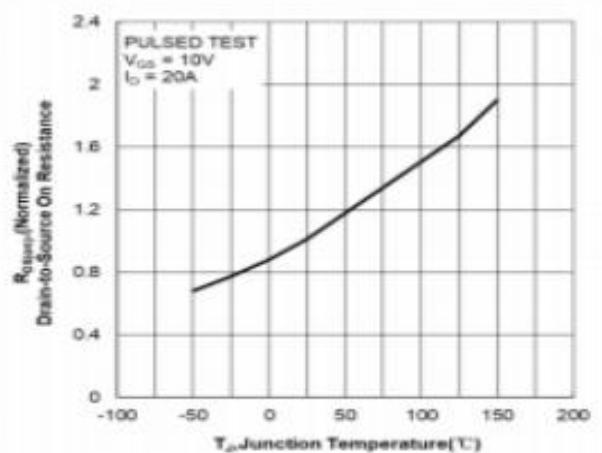Figure 7. Normalized Breakdown Voltage vs Junction Temperature

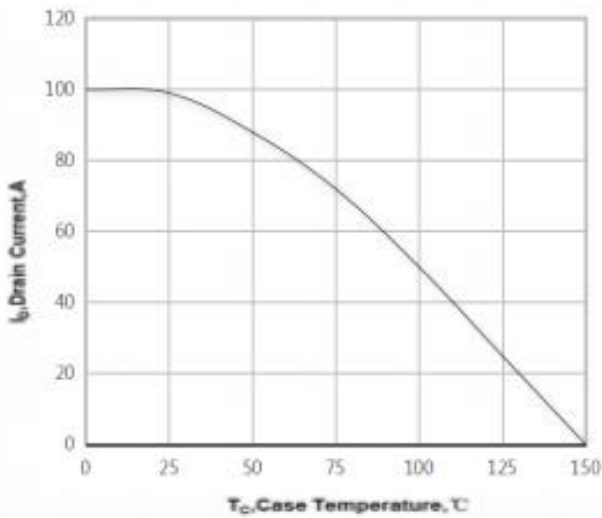

Figure 8. Normalized On Resistancevs Junction Temperature

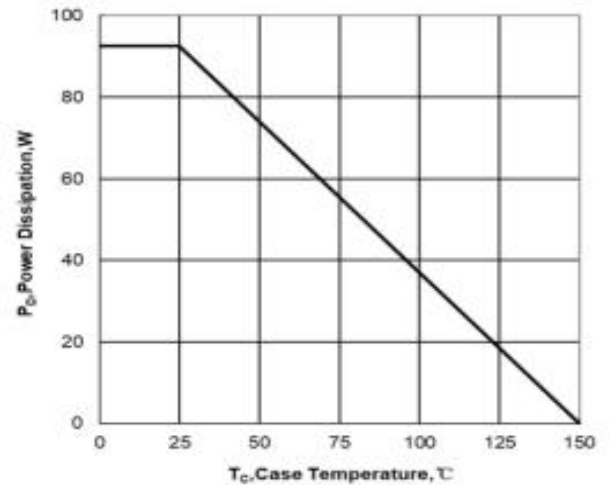Figure 9. Maximum Continuous Drain Current vs Case Temperature
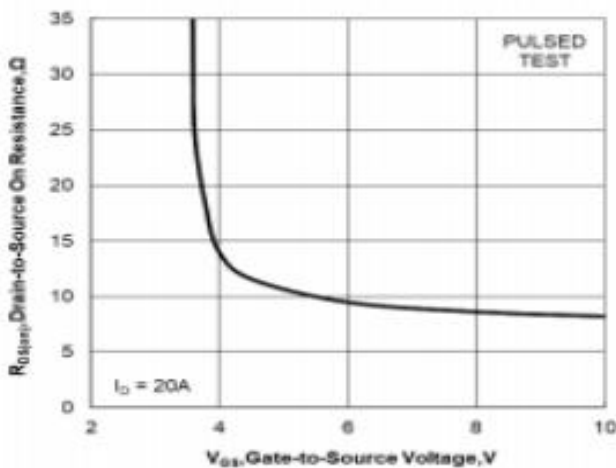

Figure 10. Maximum Power Dissipation vs Case Temperature

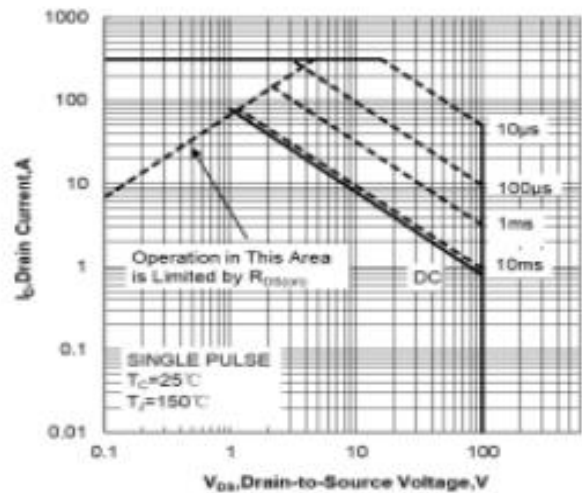Figure11. Drain-to-Source On Resistancevs Gate Voltage and Drain Current
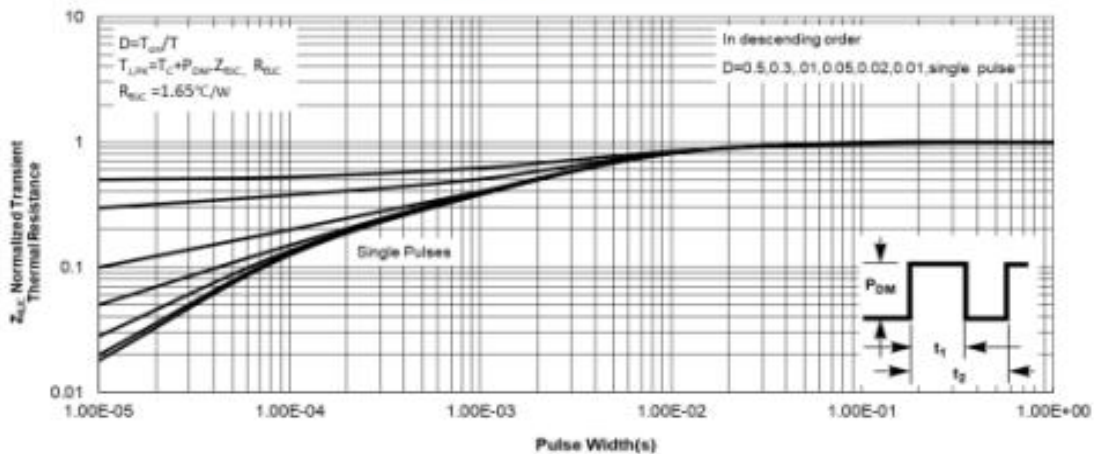

Figure 12. Maximum Safe Operating Area

Figure 13. Maximum Effective Transient Thermal Impedance, Junction-to-Case
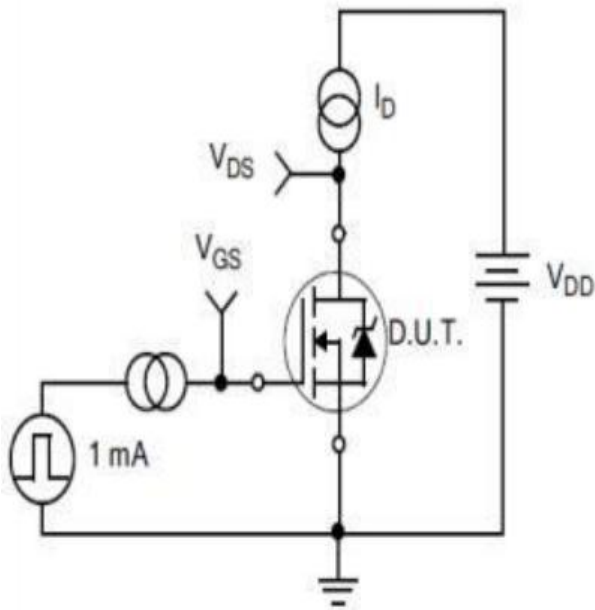
Test ircuits and Waveforms
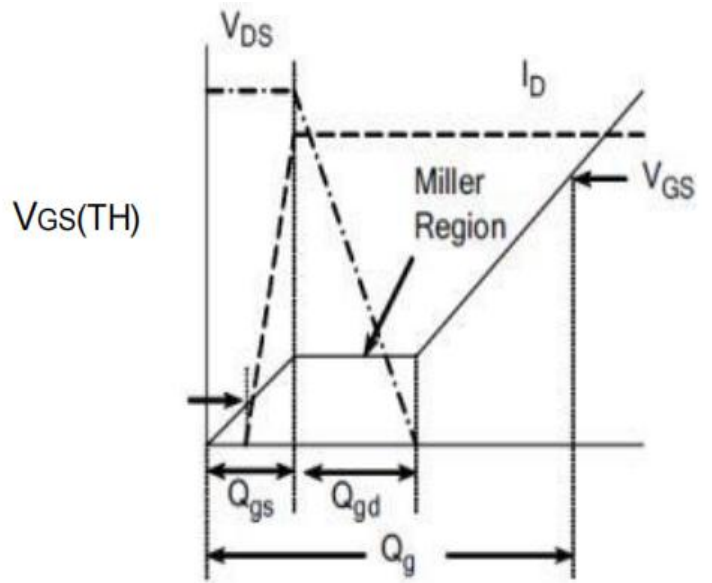

Figure A.
Gate Charge Test Circuit
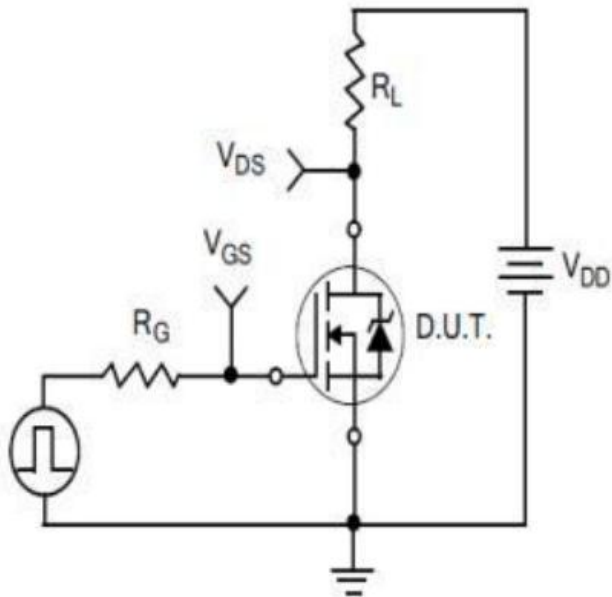

Figure B.
Gate Charge Waveform

Figure C.
Resistive Switching Test Circuit
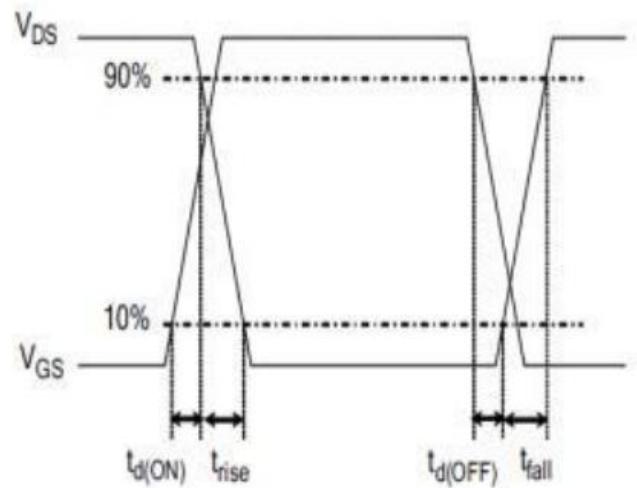
Figure D.
Resistive Switching Waveforms

Test ircuits and Waveforms

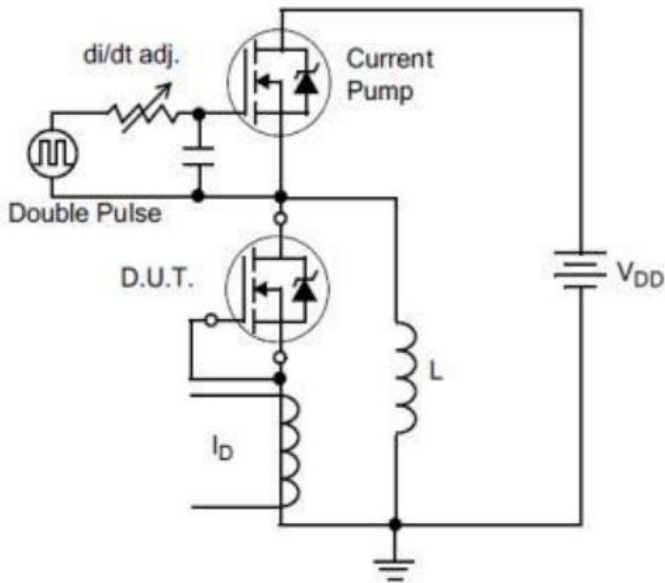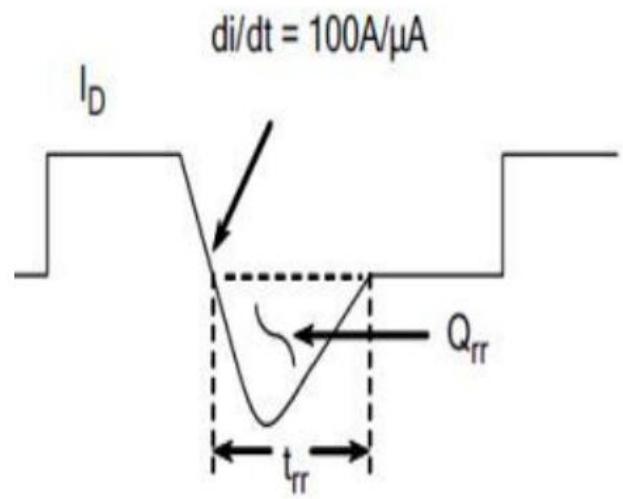Figure E.Diode Reverse Recovery
Test Circuit

$$di/dt = 100A/\mu A$$
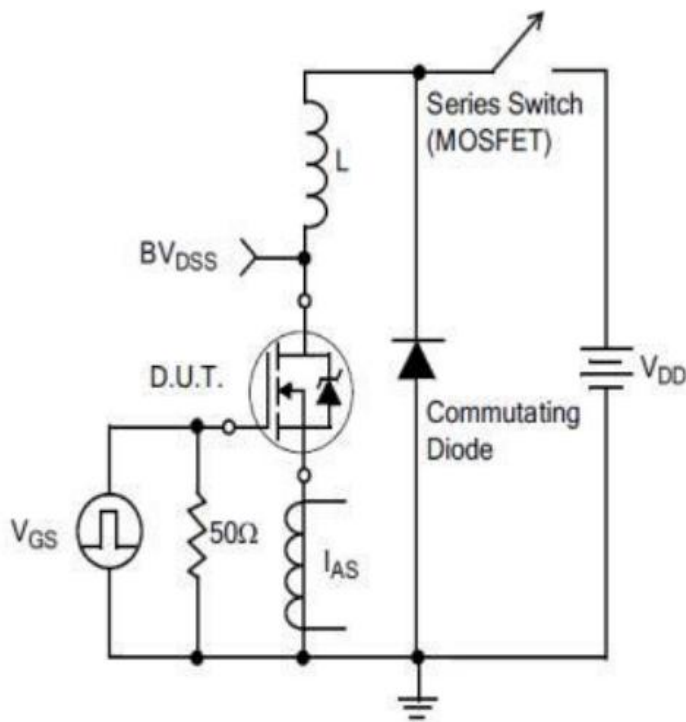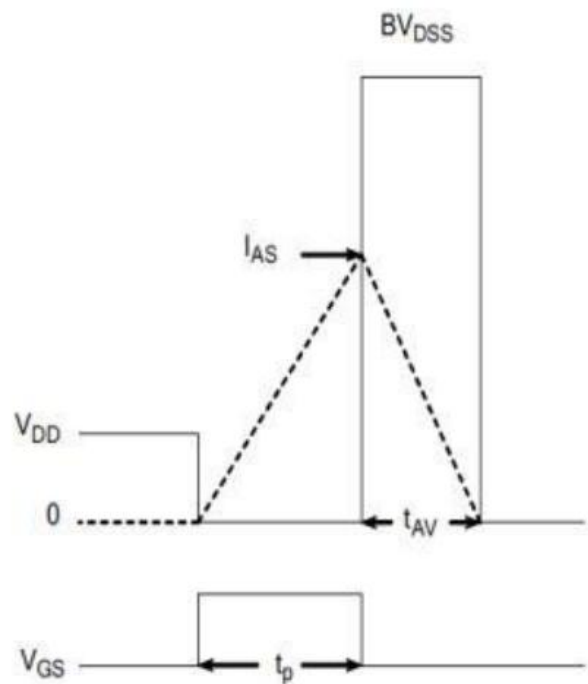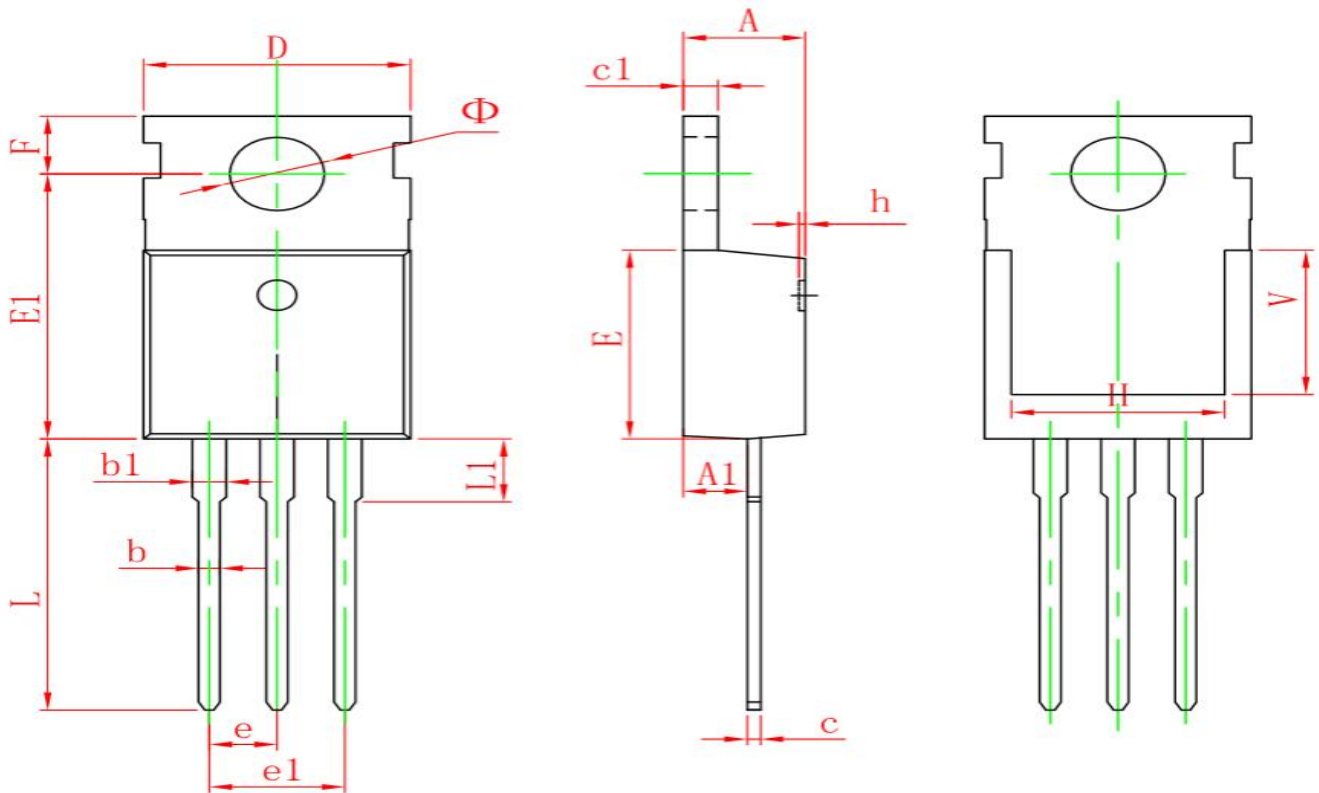
Figure F.Diode Reverse Recovery
Waveform

Figure G.Unclamped Inductive
Switching Test Circuit

$$E_{AS} = \frac{I_{AS}^2 L}{2}$$

Figure H.Unclamped Inductive
Switching Waveforms

Package outline drawing(TO-220 Unit: mm)

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150

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