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RS85N150S

N-Channel Enhancement Mode MOSFET

Lead Free Package and Finish

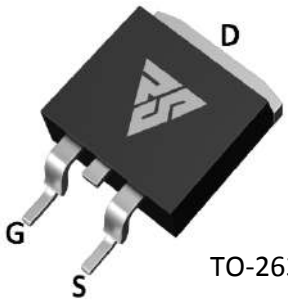
I_D	$R_{DS(ON)}$(Max.)	V_{DSS}
150A	3.4mΩ	85V

Applications:

- •BMSsystem
- •LCDMappliances
- •High power inverter system

Features:

- •V_{DS}=85V; ID=150A@ VGS=10V
- •$R_{DS(ON)}$<3.4mΩ @ V_{GS}=10V
- •SuperTrench
- •Surface-mounted package
- •High UIS and UIS 100% Test
- •RoHS Compliant



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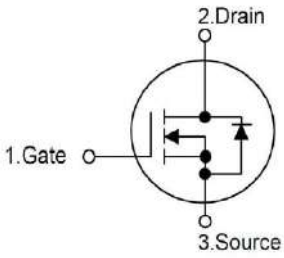

Not to Scale

Ordering Information

Part Number	Package	Marking
RS85N150S	TO-263	RS85N150S

Absolute Maximun Ratings Tc=25℃ unless otherwise specified

Symbol	Parameter	RS85N150S	Units
VDSS	Drain-to-Source Voltage	85	V
ID	Continuous Drain Current（Tc=25℃）	150	A
	Continuous Drain Current Tc=100℃	140	
IDM	Pulsed Drain Current (Note*1)	600	
PD	Power Dissipation（Tc=25℃）	310	W
VGS	Gate-to-Source Voltage	±20	V
EAS	Single Pulse Avalanche Engergy (Note*2)	750	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	RS85N150S	Units	Test Conditions
RθJC	Junction-to-Case	0.5	℃/W	Drain lead soldered to water cooled heatsink,PD adjusted for a peak junction temperature of +150℃.

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OFF Characteristics TJ=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain-to-source Breakdown Voltage	85	--	--	V	VGS=0V,ID=250μA
IDSS	Drain-to-Source Leakage Current	--	--	1	μA	VDS=85V,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	--	2.8	3.4	mΩ	VGS=10V,ID=75A
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	--	37	--	nS	VDS=43V ID=60A VGS=10V RL=4.7Ω RG=0.72Ω
trise	Rise Time	--	63	--		
td(OFF)	Turn-OFF Delay Time	--	78	--		
tfall	Fall Time	--	41	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	7447	--	pF	VGS=0V VDS=43V f=100KHz
Coss	Output Capacitance	--	1075	--		
Crss	Reverse Transfer Capacitance	--	43	--		
Qg	Total Gate Charge	--	130	--	nC	VDS=68V ID=60A VGS=10V
Qgs	Gate-to-Source Charge	--	40	--		
Qgd	Gate-to-Drain("Miller"）Charge	--	39	--		

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Source-Drain Diode Characteristics

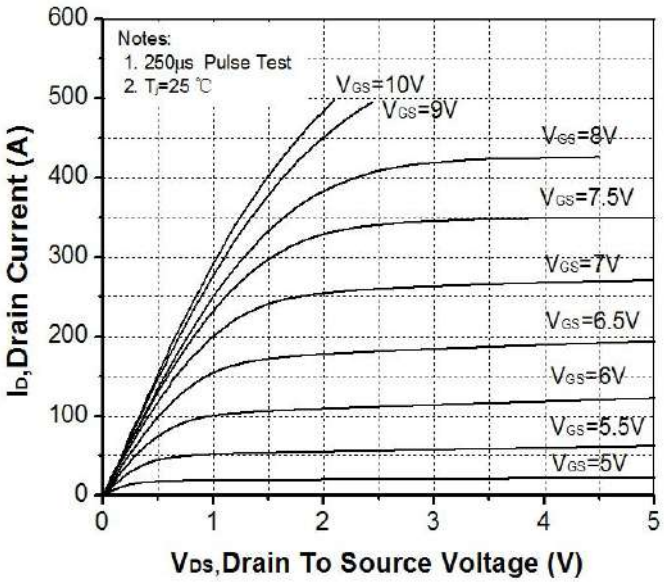
Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_{SD}	Source-Drain Current(Body Diode)	--	150	--	A	
I_{SDM}	Pulsed Source-Drain Current(Body Diode)		600	--	A	
V_{SD}	Diode Forward Voltage (Note*3)	--	--	1.4	V	IS=60A,VGS=0V
trr	Reverse Recovery Time (Note*3)	--	56	--	nS	VGS=0V I_F=60A,di/dt=100A/μs
Qrr	Reverse Recovery Charge (Note*3)	--	84	--	nC	

Notes:

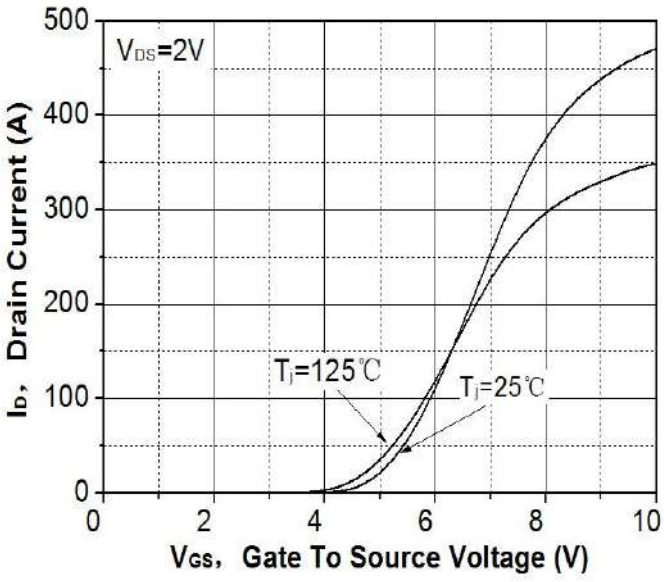
*1.Repetitive Rating: Pulse width limited by maximum junction temperature
*2.E_{AS} condition:T_J=25℃,L=0.5mH,I_{AS}=55A
*3.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 1.5%, R_G=25Ω, Starting T_J=25℃

Typical Feature curve

On-state characteristics



Transfer Characteristics



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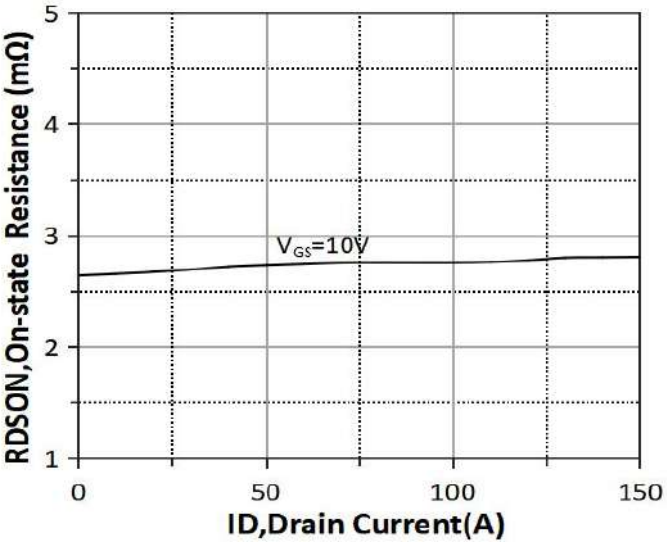
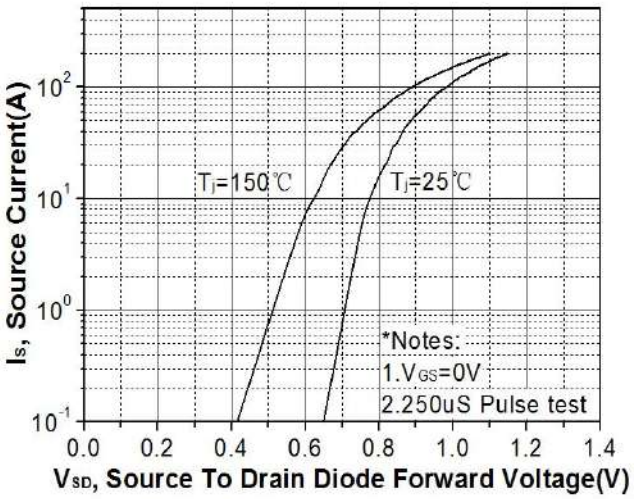
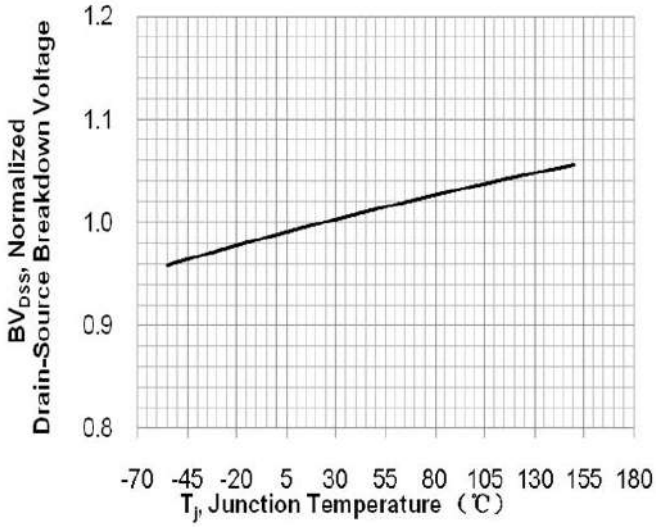
On-resistance variation vs.drain current and gate voltage



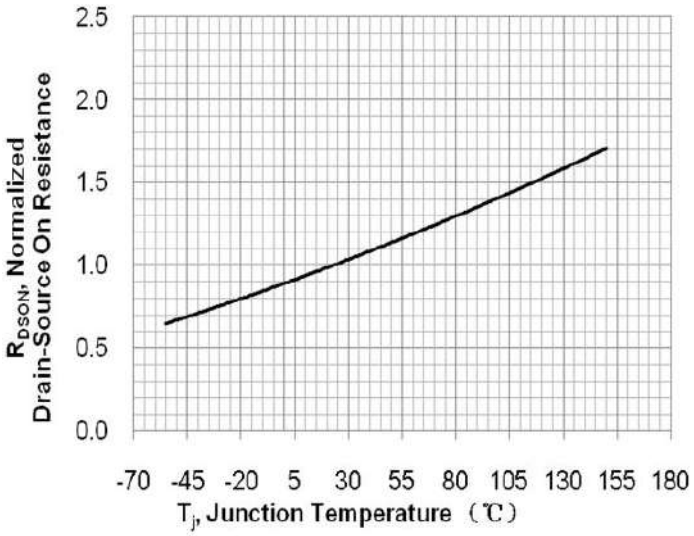
On-state current vs.diode forward voltage



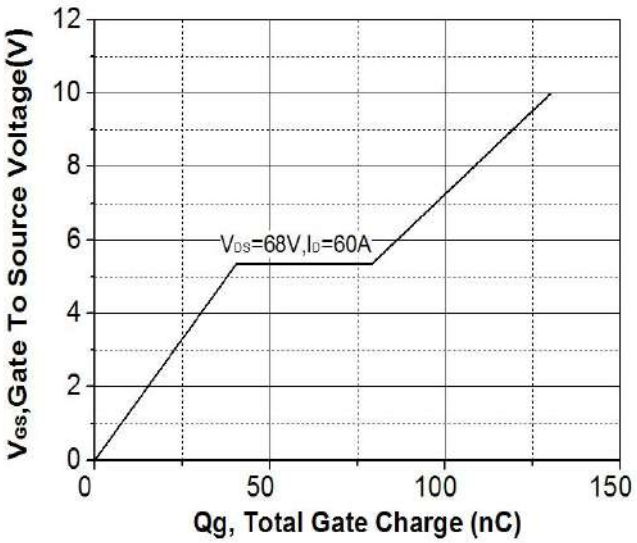
Breakdown voltage variation vs. junction temperature



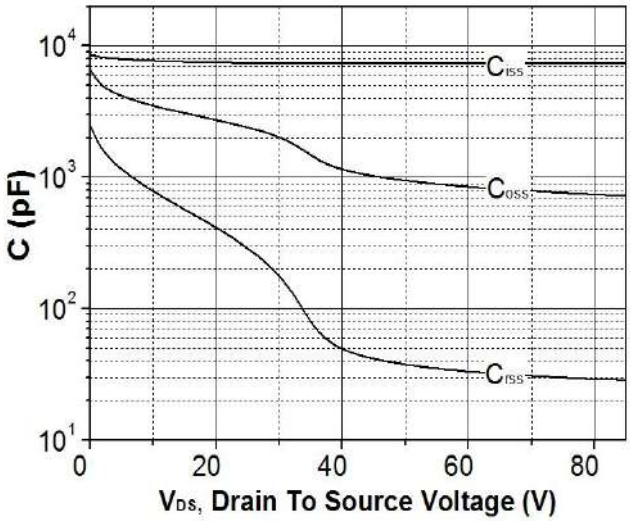
On-resistance variation vs.junction temperature



Gate charge characteristics



Capacitance characteristics



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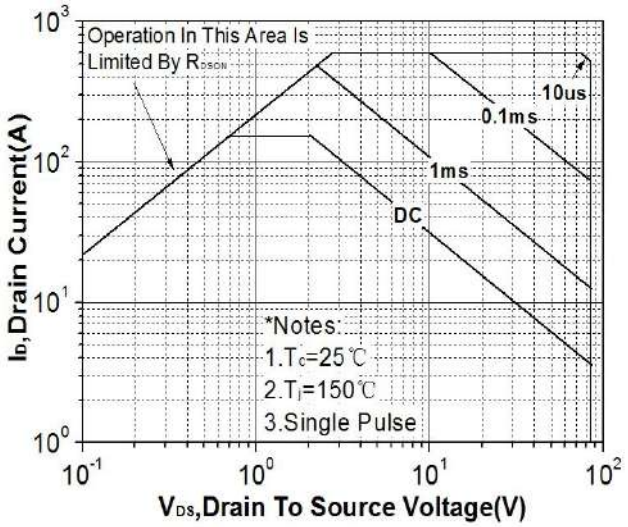
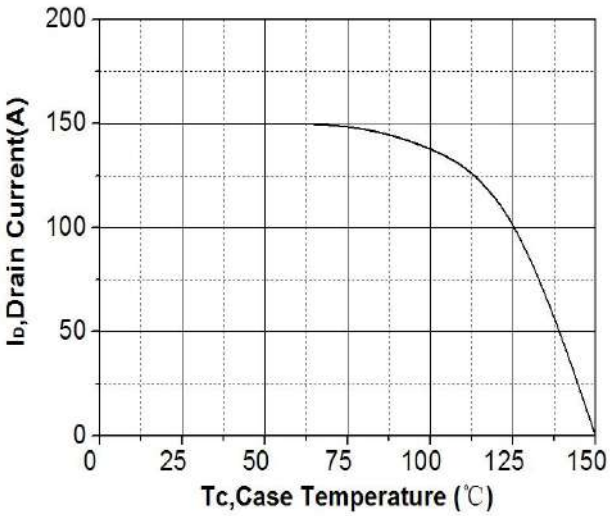
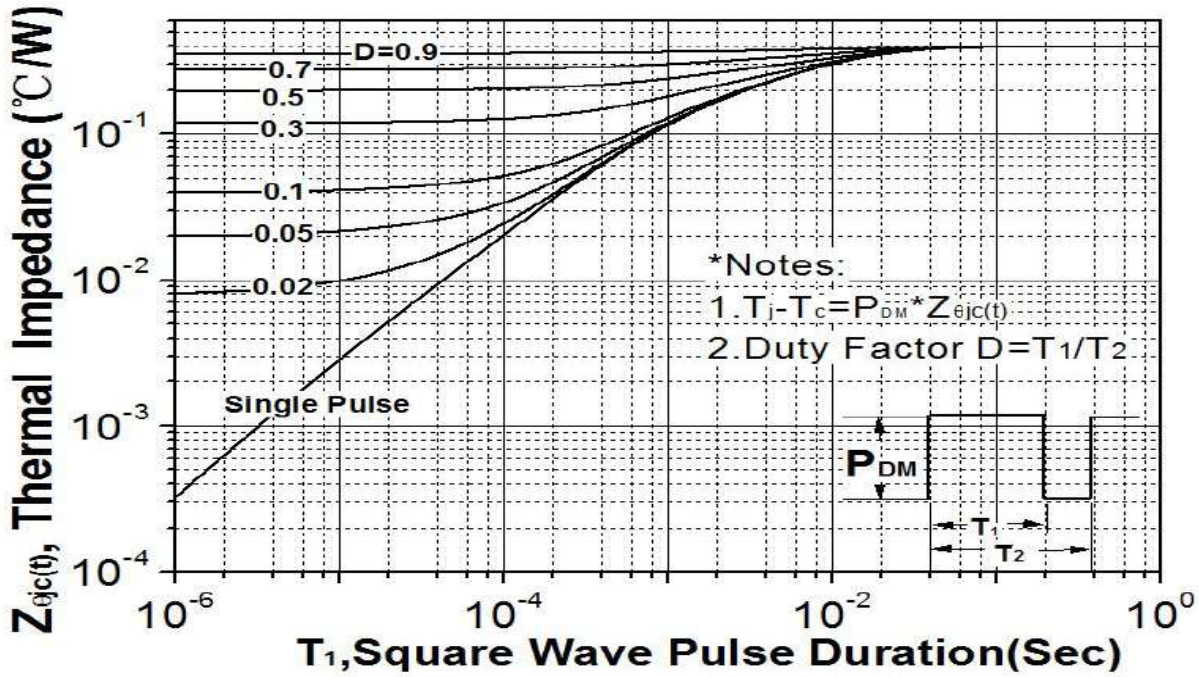
Maximum safe operating area



Maximum drain current vs.case temperature



Transient thermal responsec urve



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Test Circuits and Waveforms

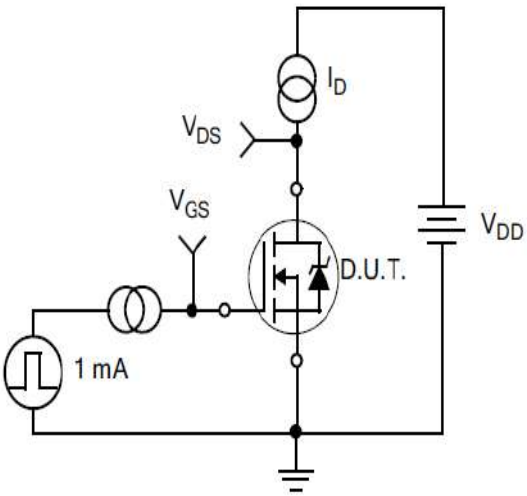

Figure A.
Gate Charge Test Circuit

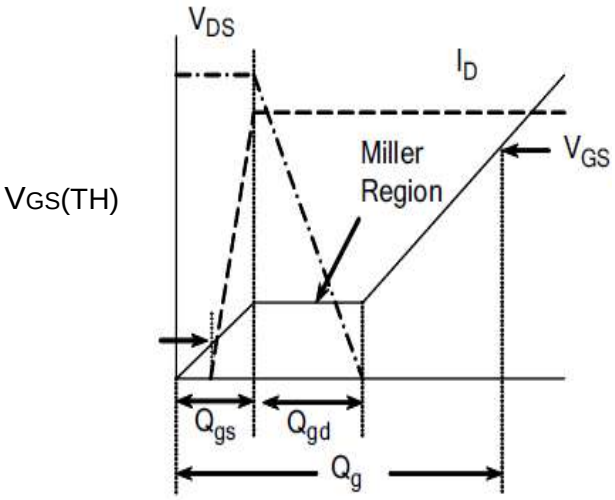

Figure B.
Gate Charge Waveform

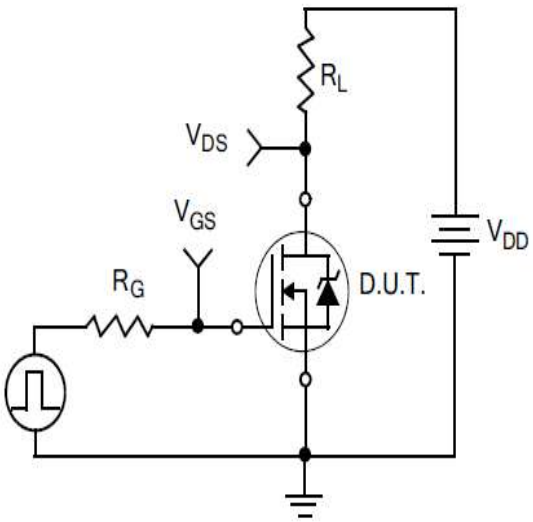

Figure C.
Resistive Switching Test Circuit

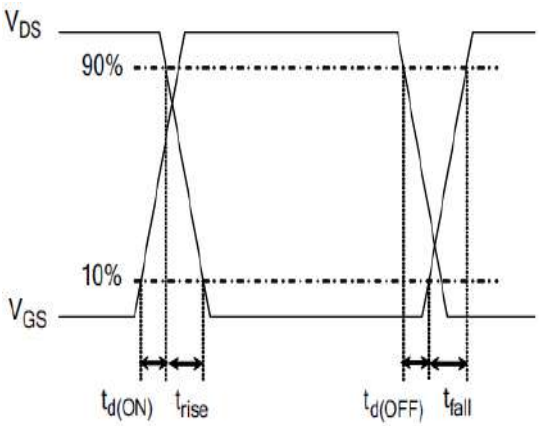

Figure D.
Resistive Switching Waveforms

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Test Circuits and Waveforms

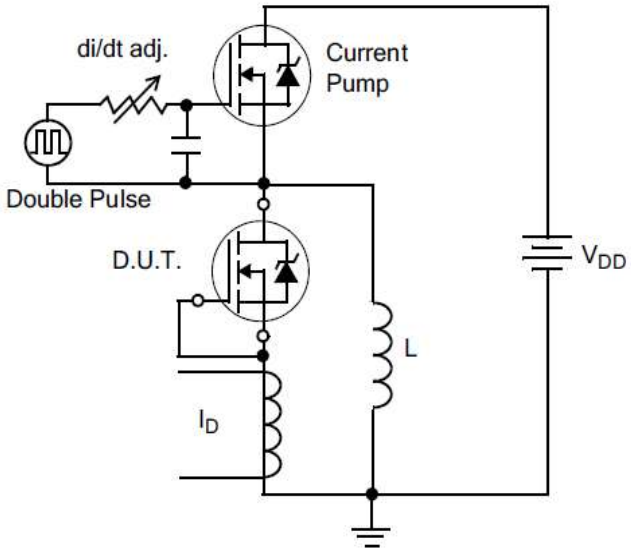


Figure E.Diode Reverse Recovery Test Circuit

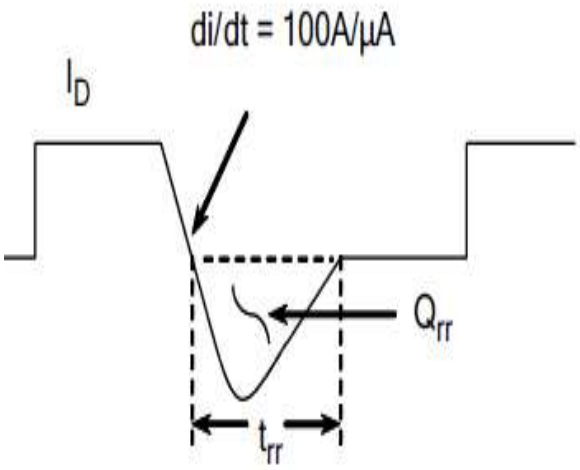


Figure F.Diode Reverse Recovery Waveform

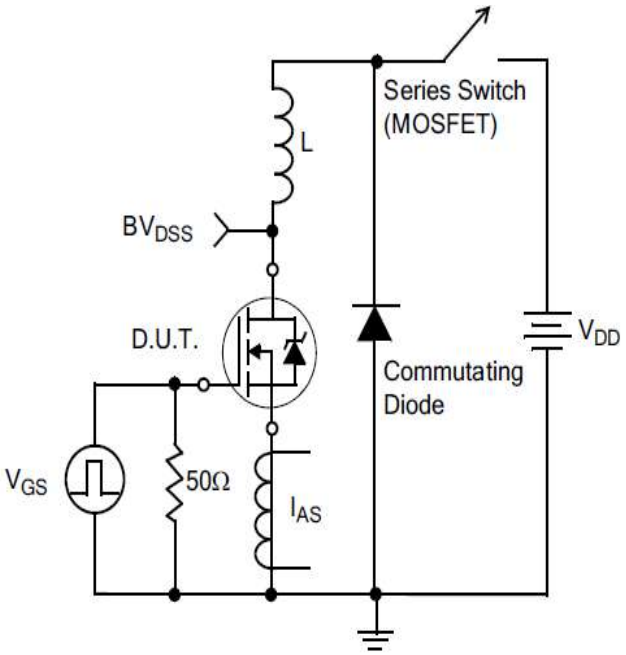
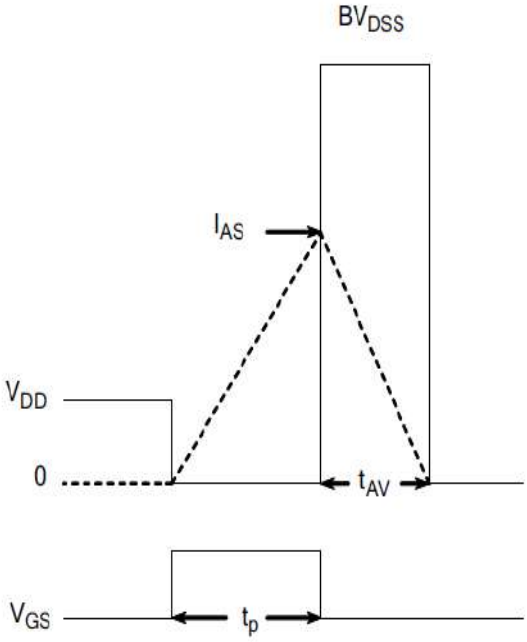


Figure G.Unclamped Inductive Switching Test Circuit



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

Figure H.Unclamped Inductive Switching Waveforms

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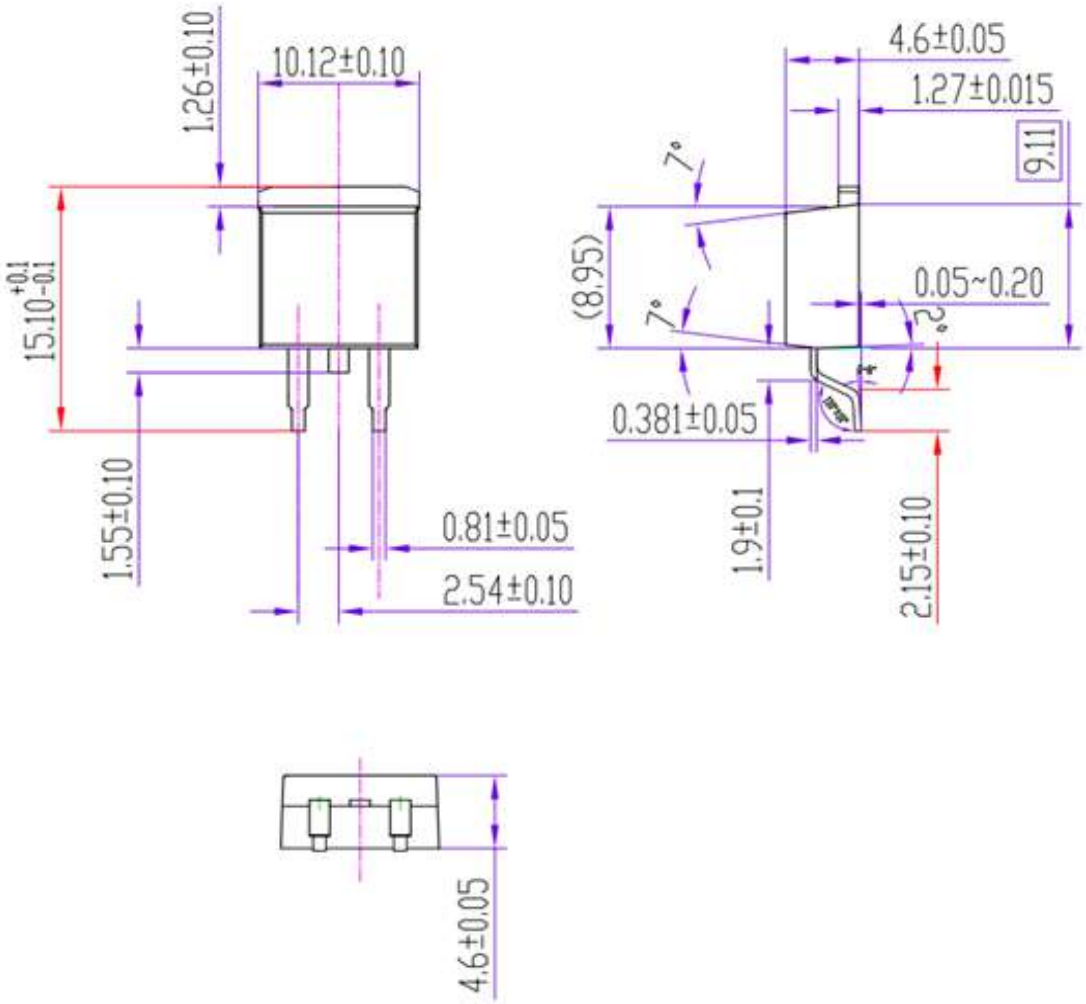
Package outline drawing

Unit:mm



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