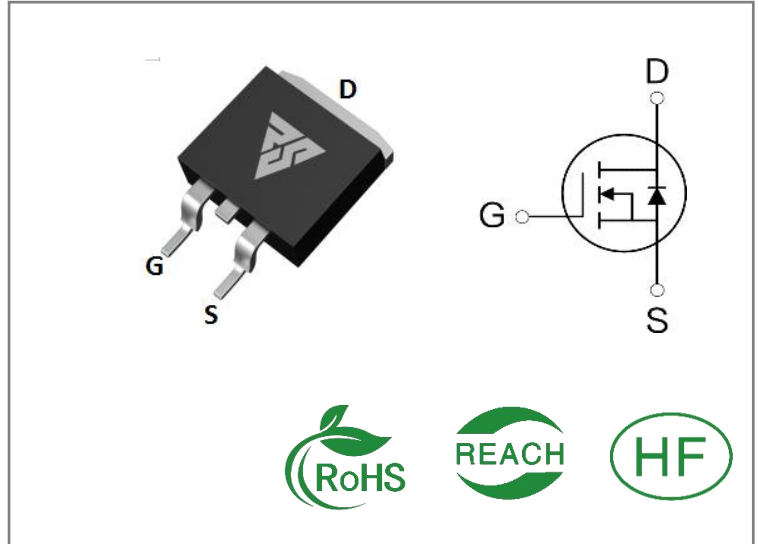


ID	R _{DS(ON)} (Typ)	VDSS
180A	2.9mΩ	100V


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.
RS100N180S	TO-263	RS100N180S	Tape&reel	800 PCS

Absolute Maximun Ratings Tc= 25°C unless otherwise specified

Symbol	Parameter	RS100N180S	Units
VDSS	Drain-to-Source Voltage	100	V
ID	Continuous Drain Current TC=25°C	180	A
ID	Continuous Drain Current TC=100°C	112	
IDM	Pulsed Drain Current	500	
PD	Power Dissipation	227	W
VGS	Gate- to- Source Voltage	±20	V
EAS	Single Pulse Avalanche Engergy L = 0.5mH, IS = 45.8A, RG = 25Ω, Tj = 25°C	524	mJ
TL TPKG	Maximum Temperature for Soldering	300 260	°C
	Leads at 0.063in(1.6mm)from Case for 10 seconds		
	Package Body for 10 seconds		
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	RS100N180S	Units	Test Conditions
R θ JC	Junction-to-Case	0.56	°C / W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 150 °C
R θ JA	Junction-to-Ambient	62		1 cubic foot chamber, free air.

OFF Characteristics T_J= 25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	100	--	--	V	V _{GS} =0V, I _D =250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	V _{DS} =80V, V _{GS} =0V
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	V _{GS} =20V , V _{DS} =0V
	Gate- to- Source Reverse Leakage	--	--	-100		V _{GS} =-20V , V _{DS} =0V

ON Characteristics T_J=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
R _{DS(on)}	Static Drain- to- Source On-Resistance	--	2.9	3.6	mΩ	V _{GS} =10V, I _D =90A
V _{GS(TH)}	Gate Threshold Voltage	2.2	--	3.8	V	V _{GS} =V _{DS} , I _D =250μA

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
t _{d(ON)}	Turn- on Delay Time	--	35	--	nS	V _{DS} =50V I _D =90A R _G =3Ω V _{GS} =10V
t _{rise}	Rise Time	--	111	--		
t _{d(OFF)}	Turn- OFF Delay Time	--	84	--		
t _{fall}	Fall Time	--	112	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	8320	--	pF	VGS= 0V VDS=40V f=1MHz
Coss	Output Capacitance	--	2100	--		
Crss	Reverse Transfer Capacitance	--	310	--		
Qg	Total Gate Charge	--	169	--	nC	VDS= 50V ID=90A VGS=10V
Qgs	Gate- to- Source Charge	--	67	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	30	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	180	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	500	A	
VSD	Diode Forward Voltage	--	--	1.3	V	IS=20A,VGS=0V
trr	Reverse Recovery Time	--	101	--	nS	VGS=0V IS=24A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	338	--	nC	

Notes:

- * 1. Repetitive rating,pulse width limited by maximum junction temperature.
- * 2. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 1\%$

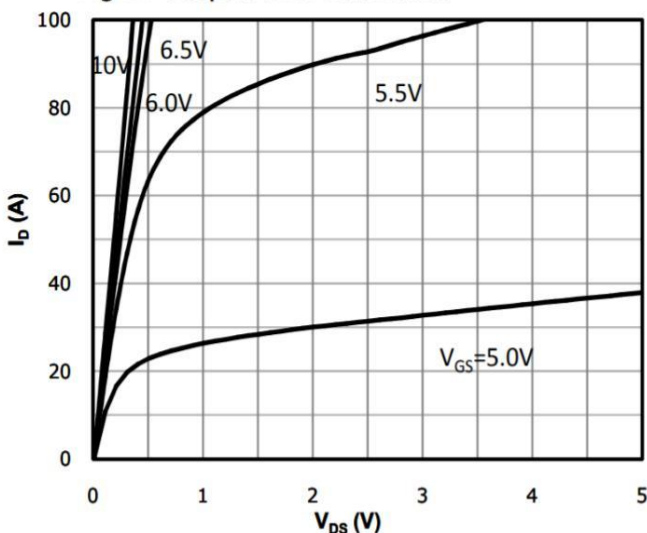
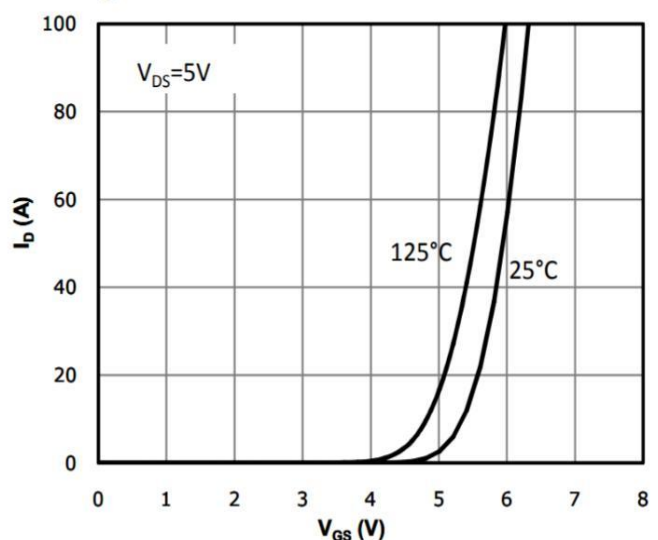
Typical Feature Curve
Fig 1: Output Characteristics

Fig 2: Transfer Characteristics


Fig 3: Rds(on) vs Drain Current and Gate Voltage

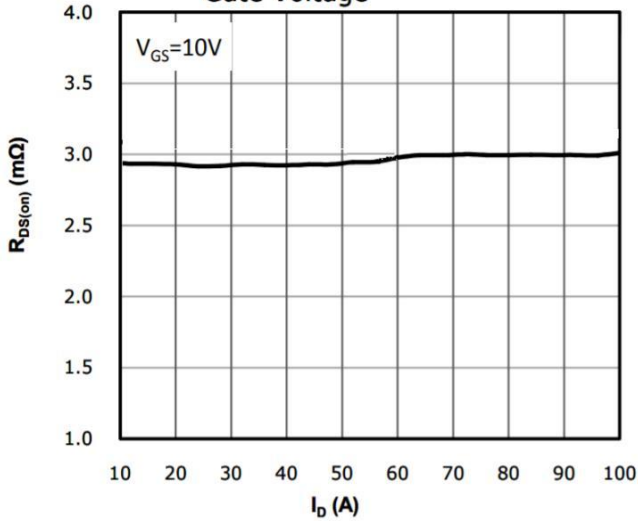


Fig 4: Rds(on) vs Gate Voltage

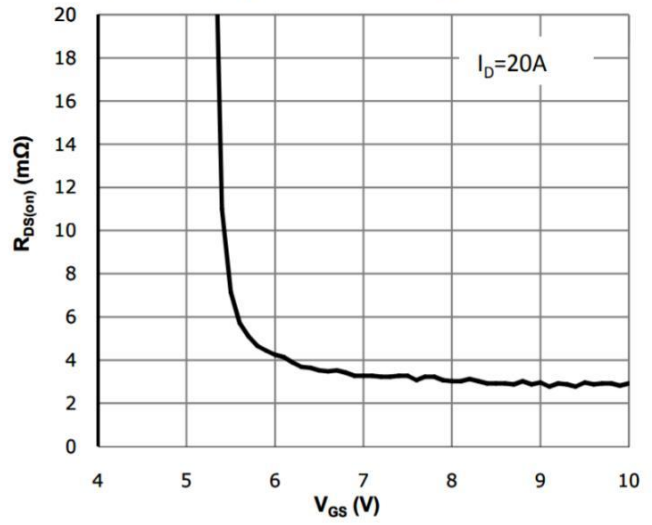


Fig 5: Rds(on) vs. Temperature

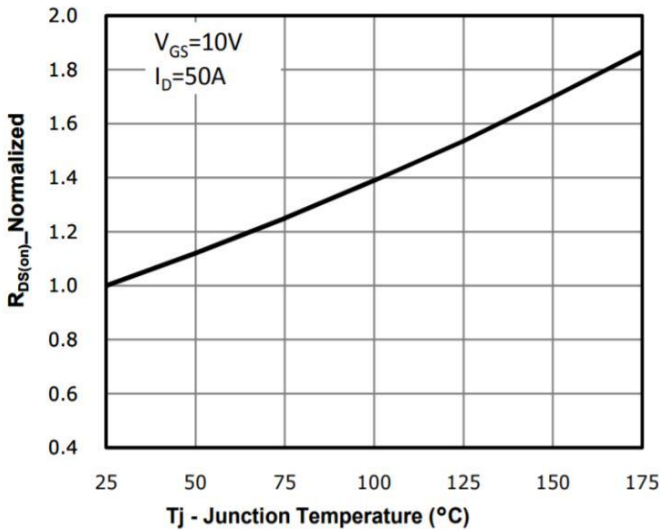


Fig 6: Capacitance Characteristics

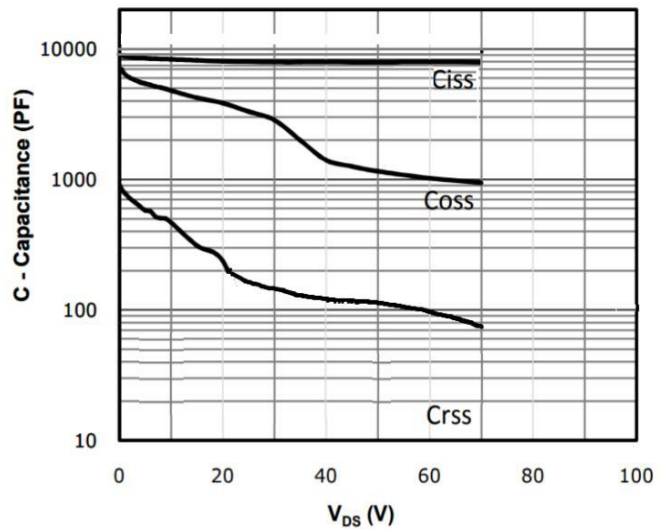


Fig 7: Gate Charge Characteristics

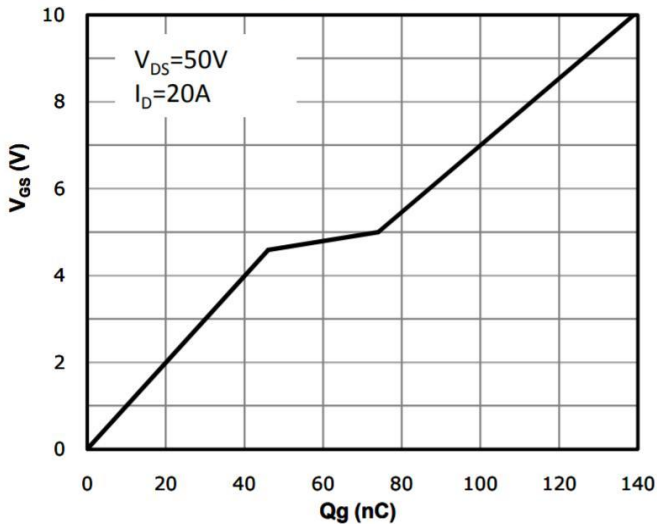


Fig 8: Body-diode Forward Characteristics

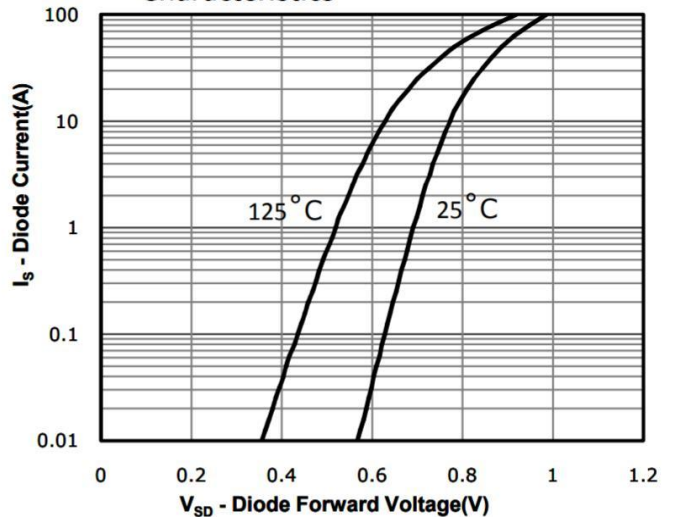


Fig 9: Power Dissipation

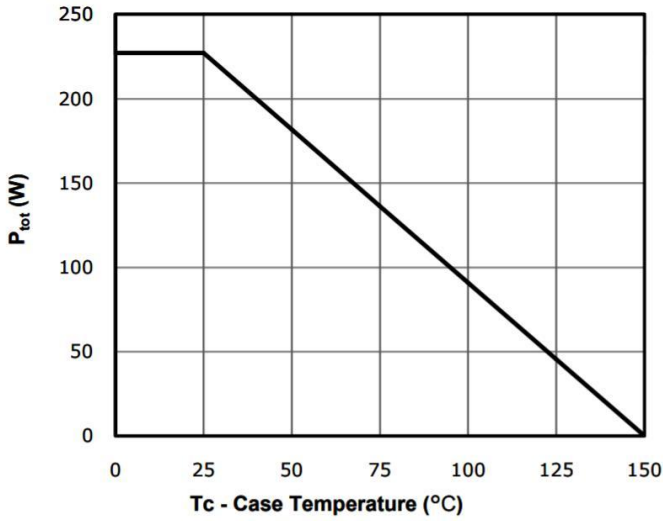


Fig 10: Drain Current Derating

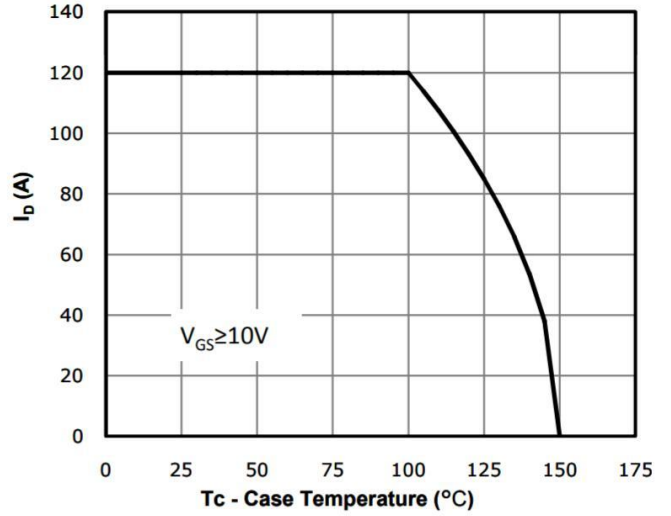


Fig 11: Safe Operating Area

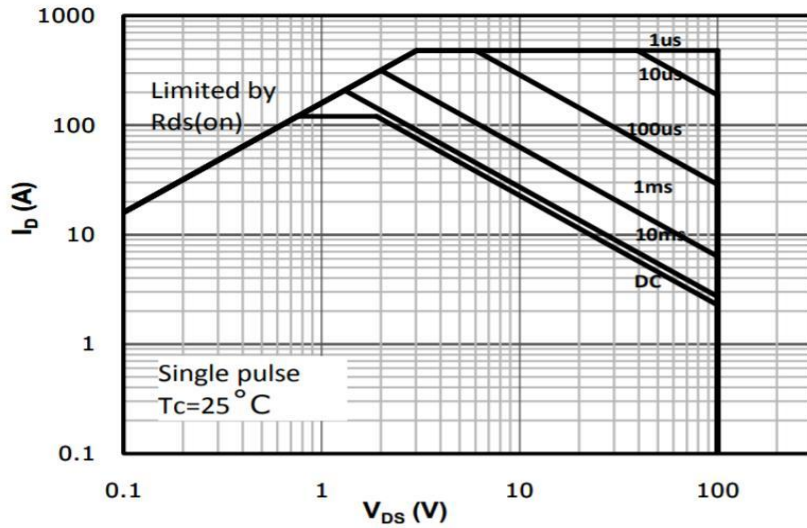
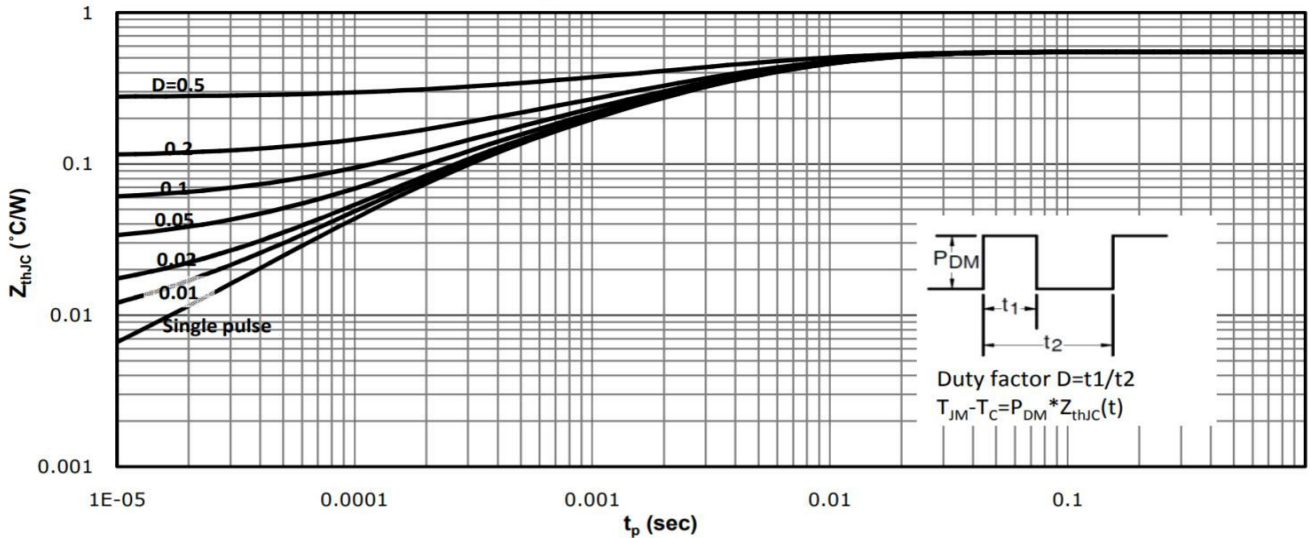


Fig 12: Max. Transient Thermal Impedance



Test circuits and Waveforms

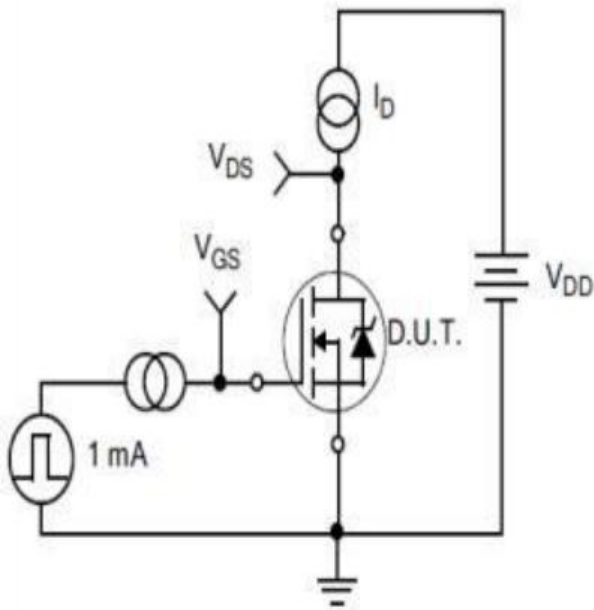


Figure A.
Gate Charge Test Circuit

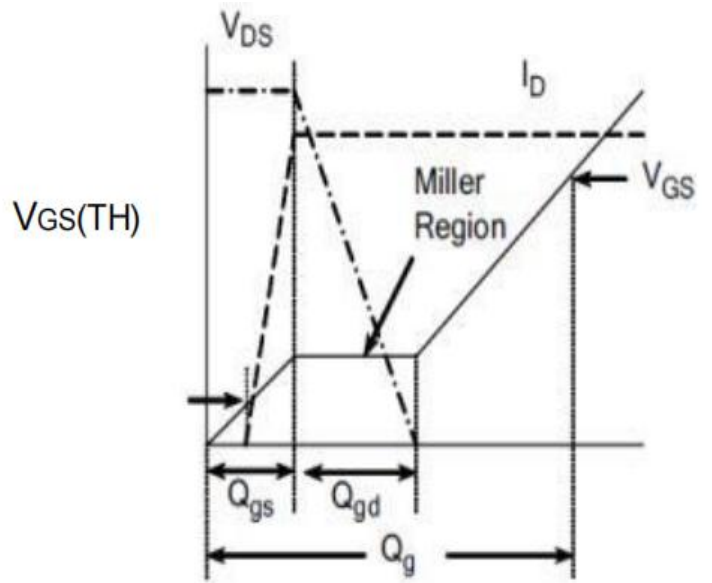


Figure B.
Gate Charge Waveform

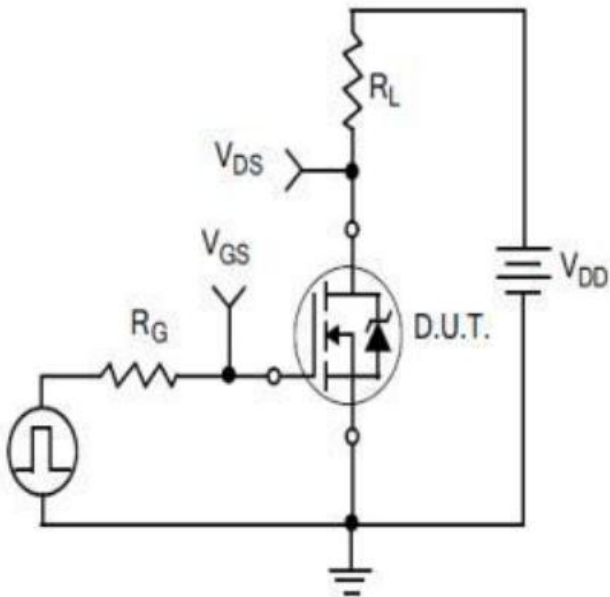


Figure C.
Resistive Switching Test Circuit

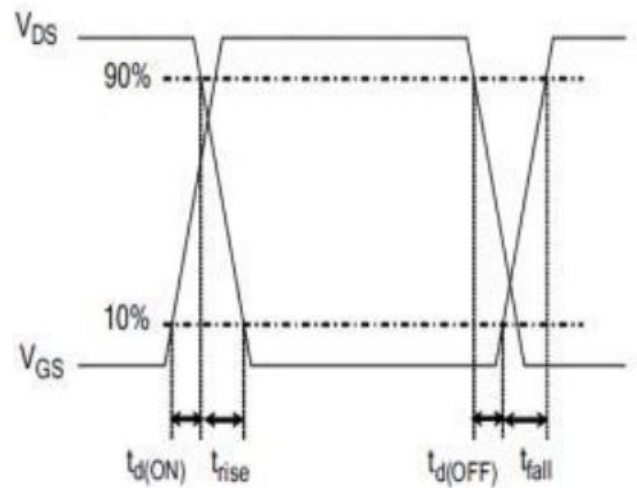


Figure D.
Resistive Switching Waveforms

Test circuits and Waveforms

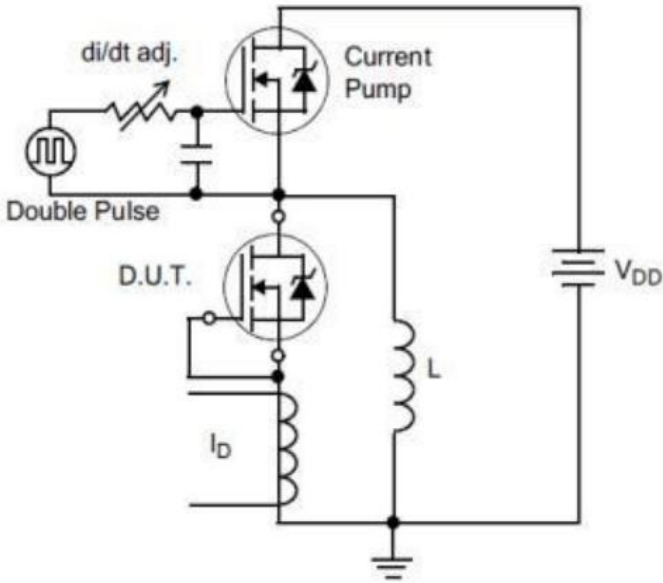


Figure E. Diode Reverse Recovery Test Circuit

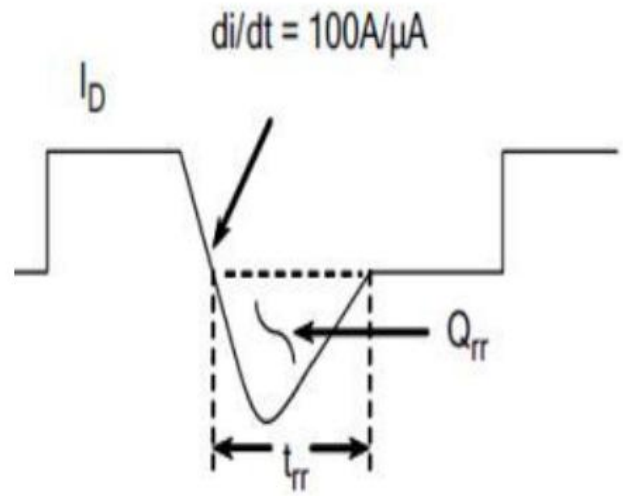


Figure F. Diode Reverse Recovery Waveform

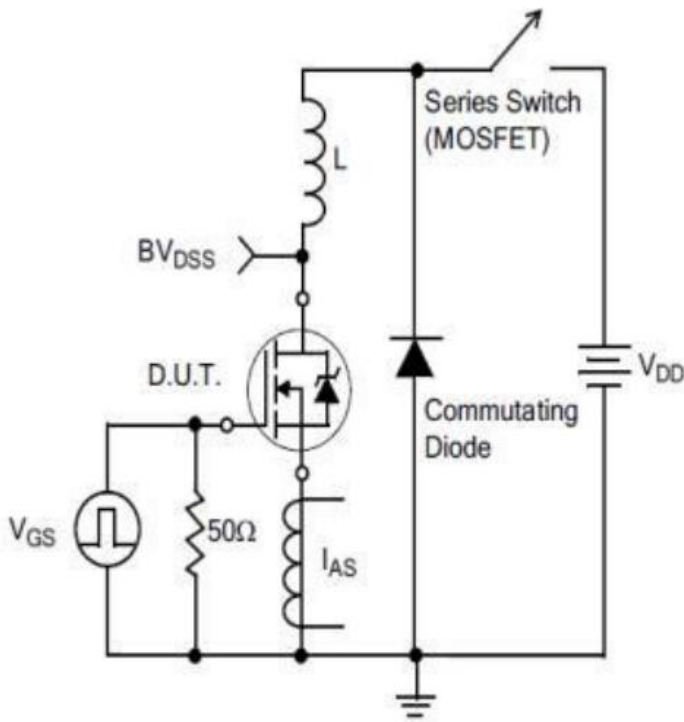
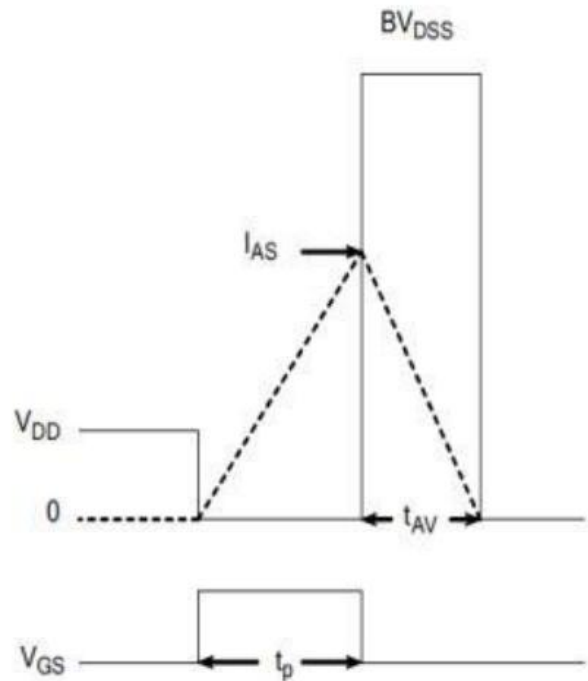


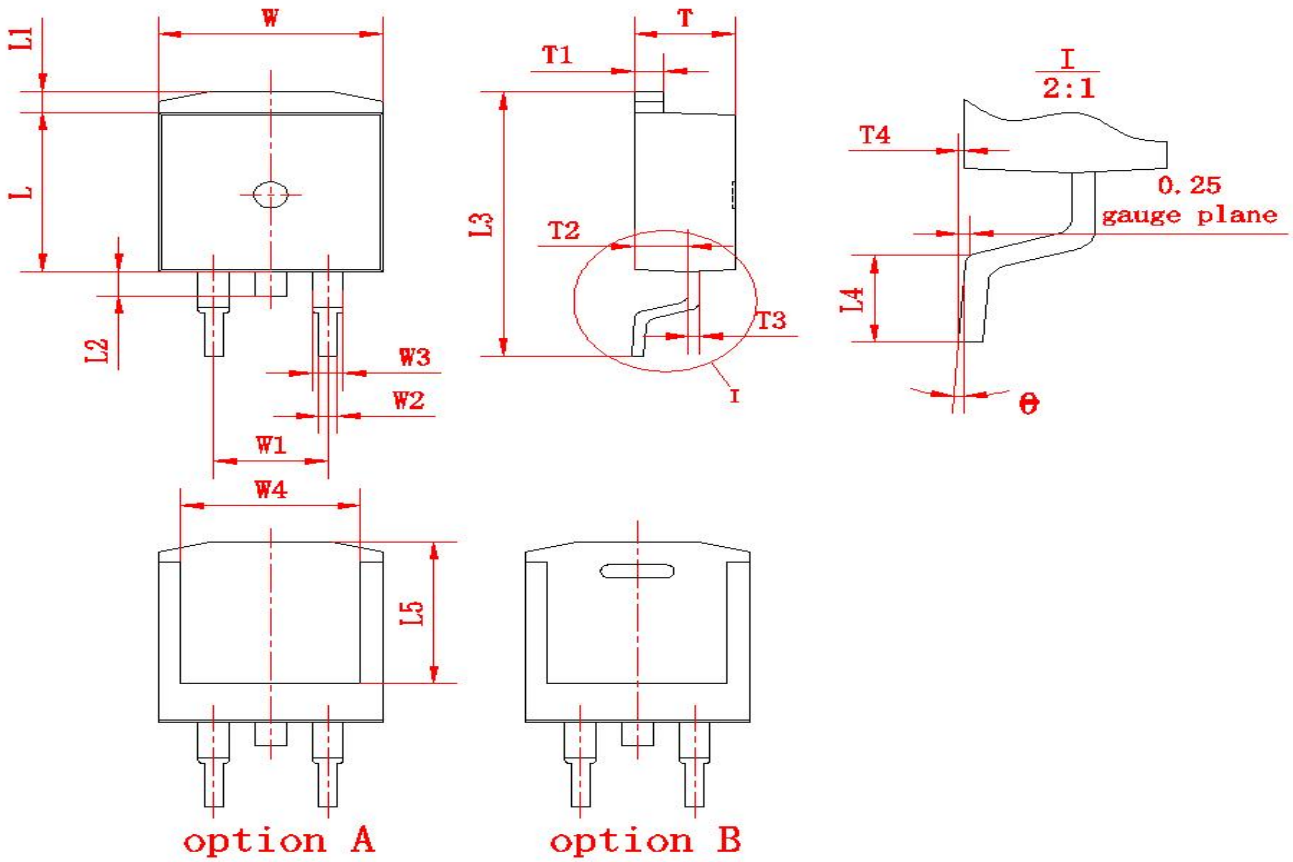
Figure G. Unclamped Inductive Switching Test Circuit



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

Figure H. Unclamped Inductive Switching Waveforms

Package outline drawing(TO-263 Unit: mm)



(单位: mm)

符号	尺寸		符号	尺寸		符号	尺寸	
	Min	Max		Min	Max		Min	Max
W	9.80	10.20	L1	1.00	1.40	T1	1.20	1.40
W1	(5.08)		L2	1.20	1.60	T2	2.20	2.60
W2	0.70	0.95	L3	15.00	15.60	T3	0.45	0.65
W3	1.17	1.62	L4	2.20	2.80	T4	0	0.25
W4	(8.0)		L5	(8.2)		θ	0°	8°
L	9.00	9.40	T	4.30	4.70			

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