

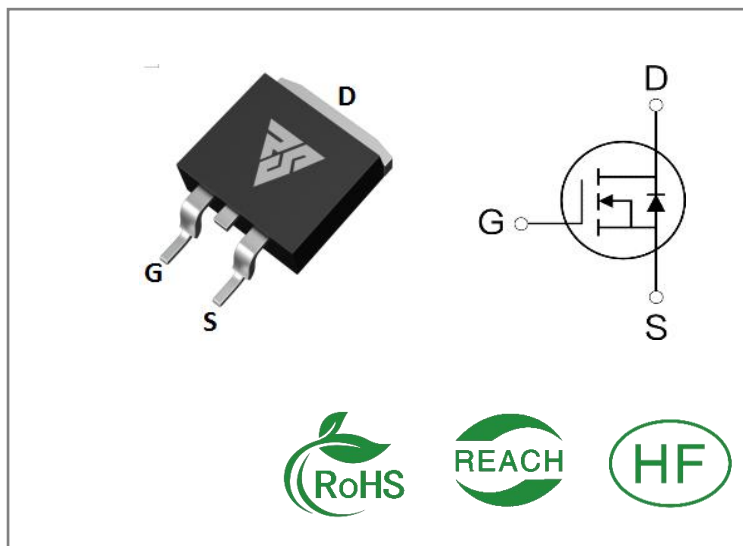
ID	$R_{DS(ON)}$ (Typ)	VDSS
160A	5.2m Ω	150V

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.
RS150N160S	TO-263	RS150N160S	Tape&reel	800 PCS

Absolute Maximun Ratings $T_c = 25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	RS150N160S	Units
VDSS	Drain-to-Source Voltage	150	V
ID	Continuous Drain Current $T_C=25^{\circ}\text{C}$	160	A
ID	Continuous Drain Current $T_C=100^{\circ}\text{C}$	112	
IDM	Pulsed Drain Current	600	
PD	Power Dissipation	425	W
VGS	Gate- to- Source Voltage	± 20	V
EAS	Single Pulse Avalanche Engergy $L = 0.3\text{mH}, I_S = 60\text{A}, R_G = 25\Omega, T_j = 25^{\circ}\text{C}$	540	mJ
TL TPKG	Maximum Temperature for Soldering	300 260	$^{\circ}\text{C}$
	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	RS150N160S	Units	Test Conditions
R θ JC	Junction-to-Case	0.42	$^{\circ}\text{C} / \text{W}$	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 150 $^{\circ}\text{C}$
R θ JA	Junction-to-Ambient	46		1 cubic foot chamber, free air.

OFF Characteristics $T_J = 25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	150	--	--	V	VGS=0V ID=250 μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=120V 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 $T_J = 25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance	--	5.2	6.5	m Ω	VGS=10V, ID=20A
VGS(TH)	Gate Threshold Voltage	2.5	--	4.5	V	VGS=VDS ID=250 μA

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	19	--	nS	VDS=75V RL=3.5 Ω RG=6 Ω VGS=10V
trise	Rise Time	--	31	--		
td(OFF)	Turn- OFF Delay Time	--	52	--		
tfall	Fall Time	--	40	--		

Dynamic Characteristics Essentially independent of operating temperature

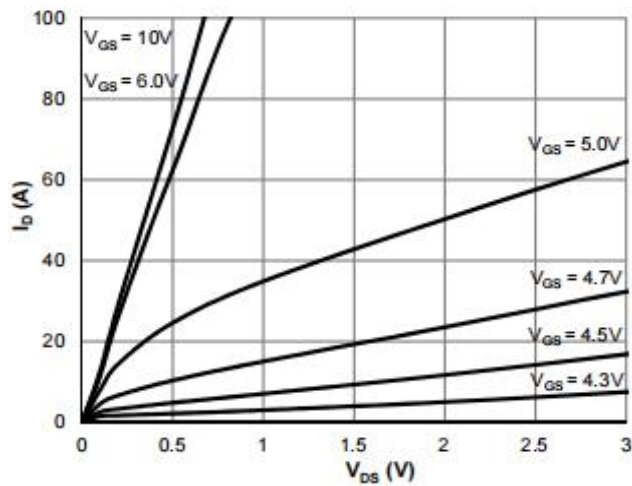
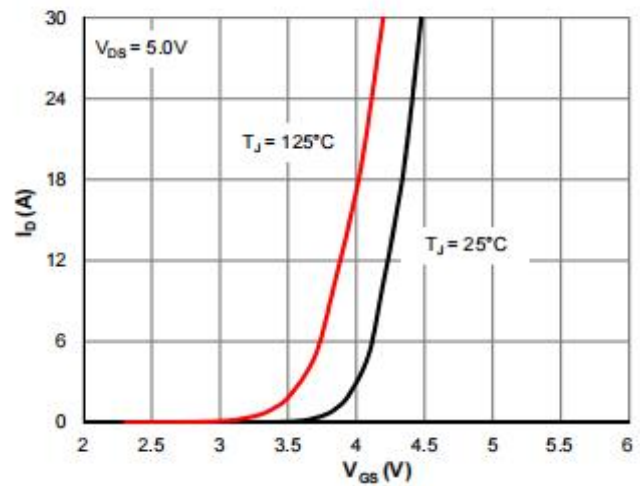
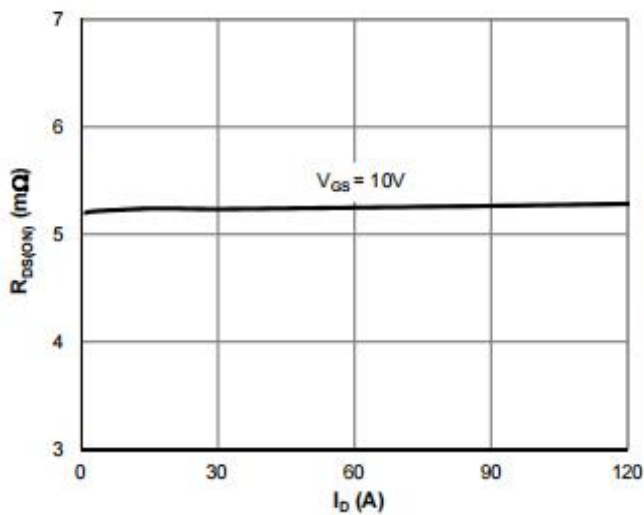
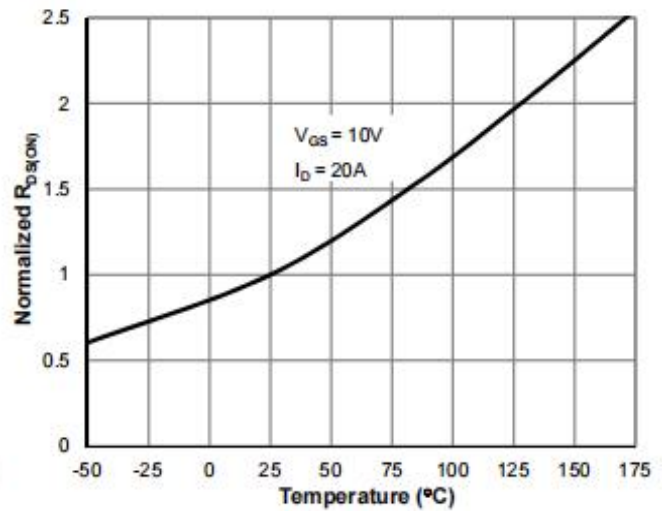
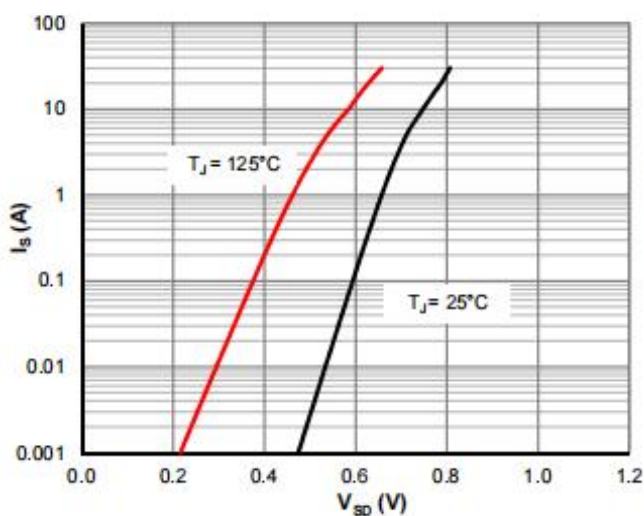
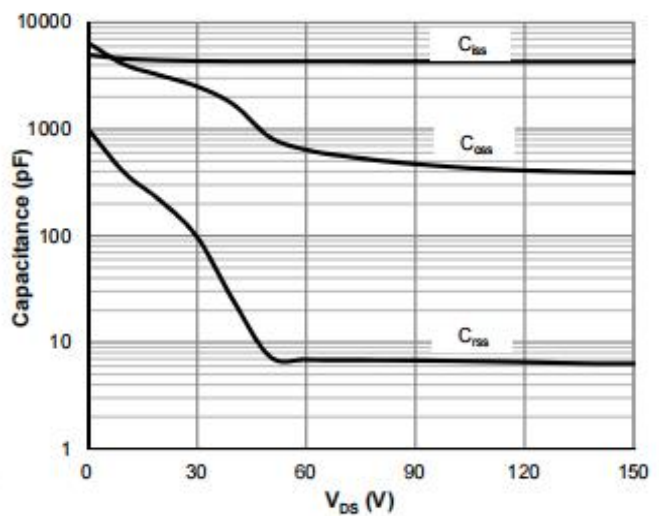
Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	4300	--	pF	VGS= 0V VDS=75V f=1MHz
Coss	Output Capacitance	--	530	--		
Crss	Reverse Transfer Capacitance	--	7.5	--		
Qg	Total Gate Charge	--	68	--	nC	VDS= 75V ID=20A VGS=10V
Qgs	Gate- to- Source Charge	--	15	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	14	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	160	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	600	A	
VSD	Diode Forward Voltage	--	--	1.0	V	IS=1A,VGS=0V
trr	Reverse Recovery Time	--	100	--	nS	VGS=0V IS=15A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	150	--	nC	

Notes:

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

Typical Feature Curve

Figure 1: Saturation Characteristics

Figure 2: Transfer Characteristics

Figure 3: $R_{DS(ON)}$ vs. Drain Current

Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

Figure 5: Body-Diode Characteristics

Figure 6: Capacitance Characteristics

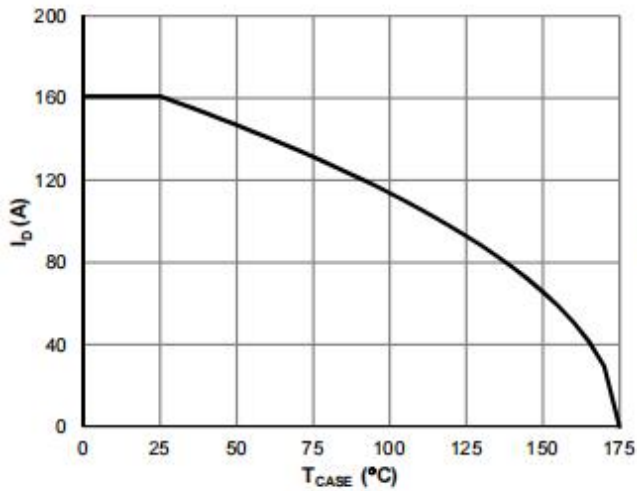


Figure 7: Current De-rating

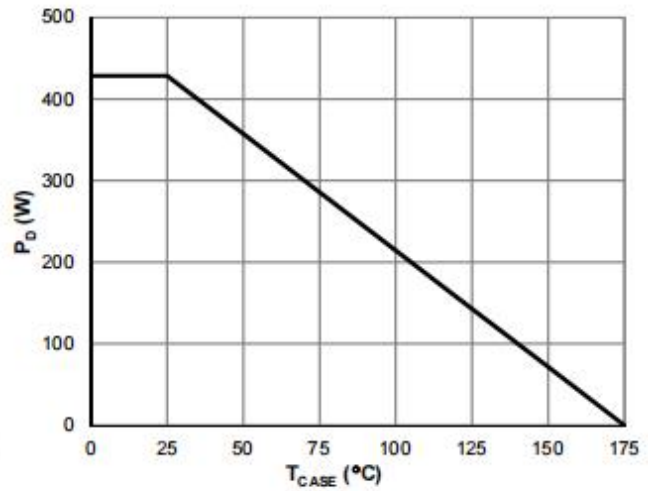


Figure 8: Power De-rating

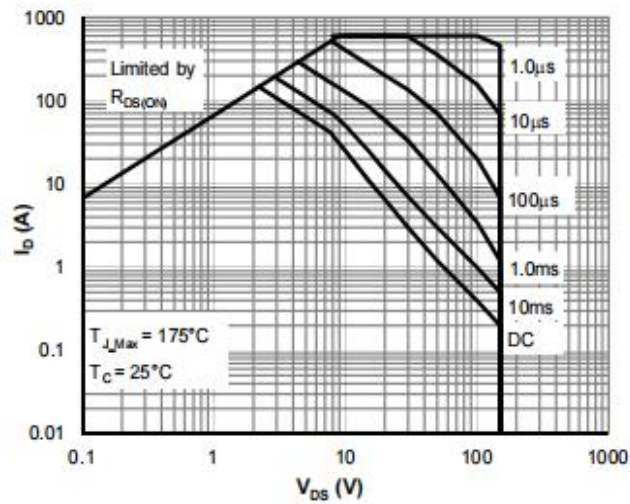


Figure 9: Maximum Safe Operating Area

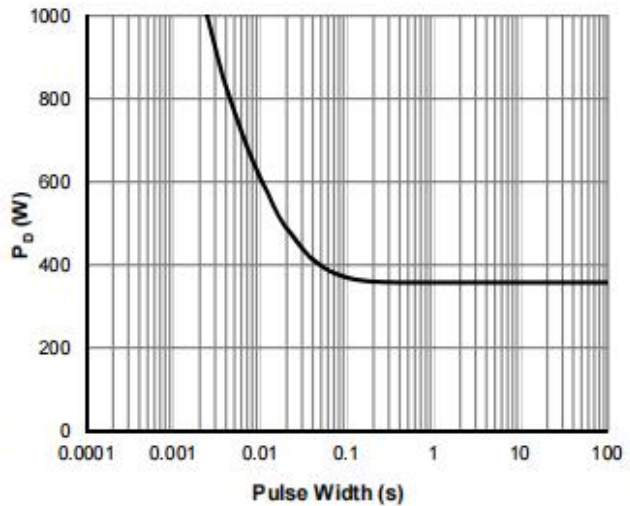


Figure 10: Single Pulse Power Rating, Junction-to-Case

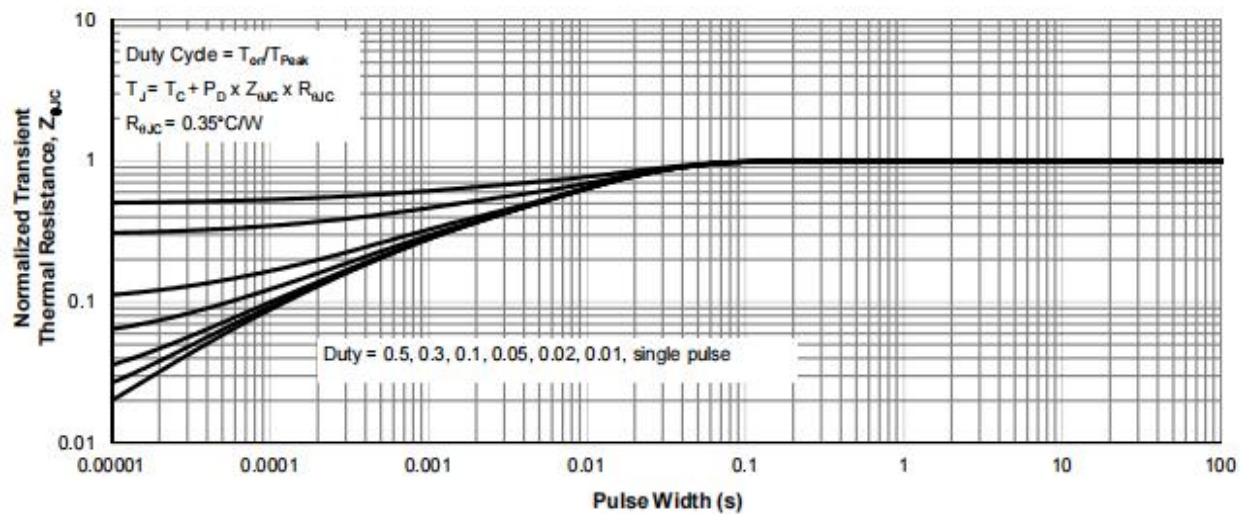


Figure 11: Normalized Maximum Transient Thermal Impedance

Test ircuits and Waveforms

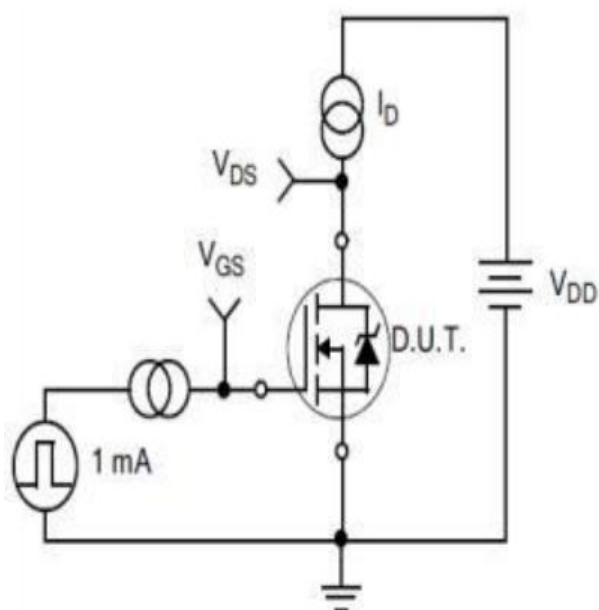


Figure A.
Gate Charge Test Circuit

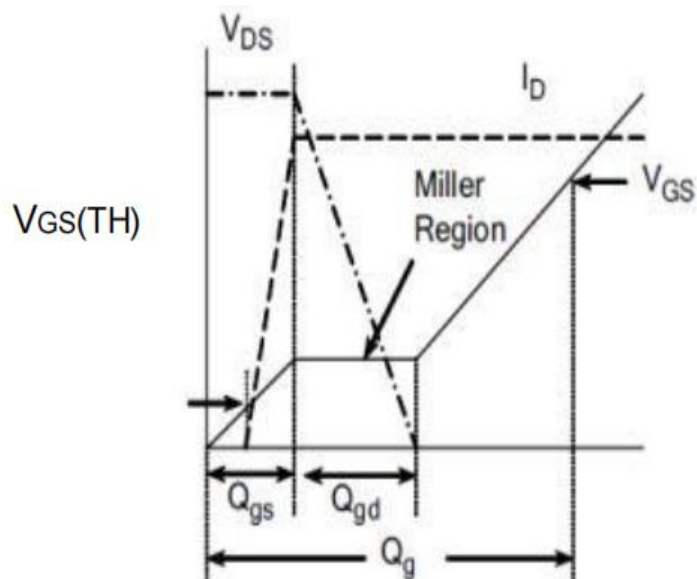


Figure B.
Gate Charge Waveform

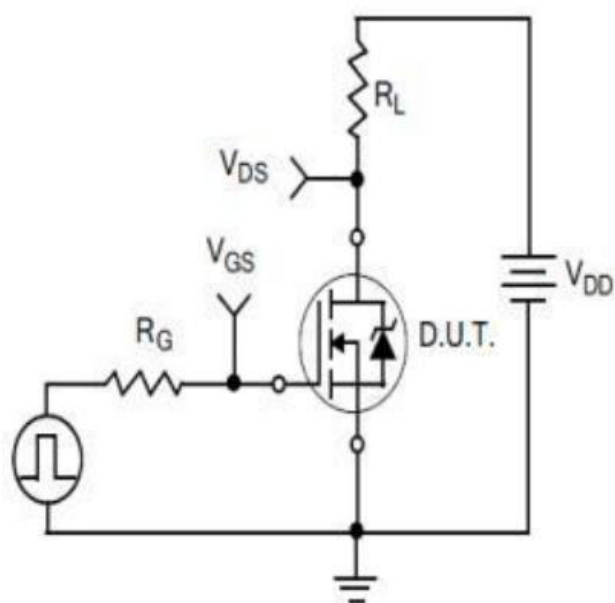


Figure C.
Resistive Switching Test Circuit

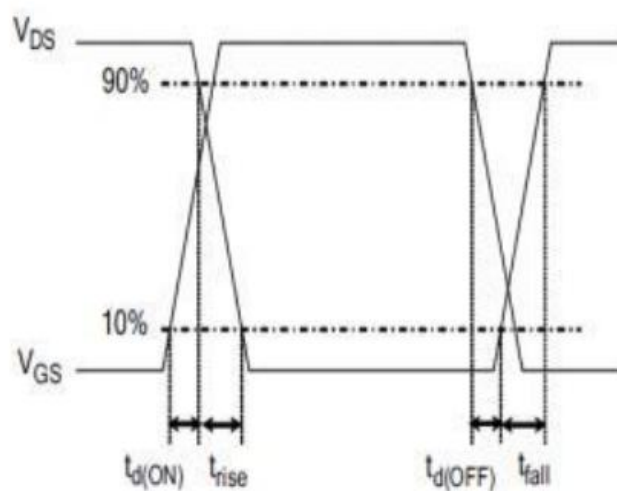


Figure D.
Resistive Switching Waveforms

Test ircuits and Waveforms

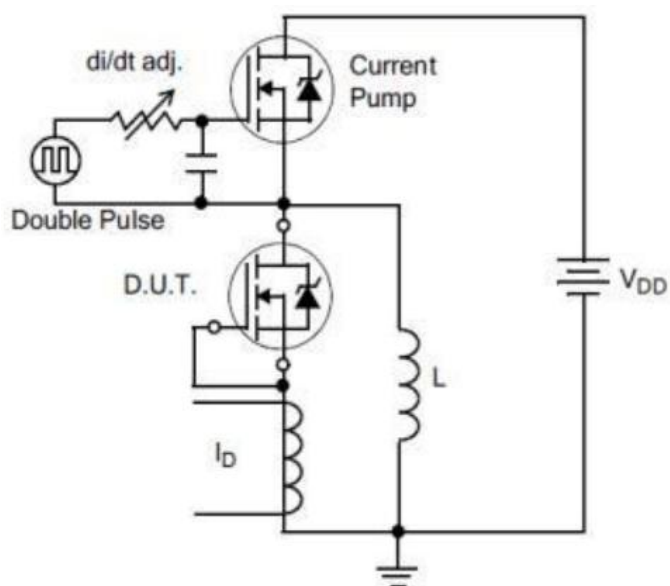


Figure E.Diode Reverse Recovery Test Circuit

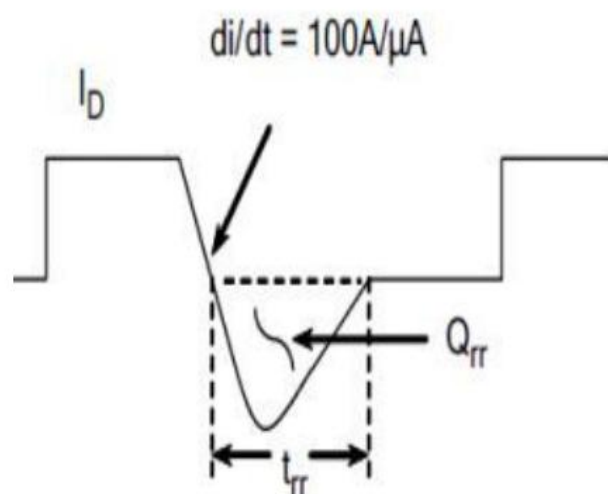


Figure F.Diode Reverse Recovery Waveform

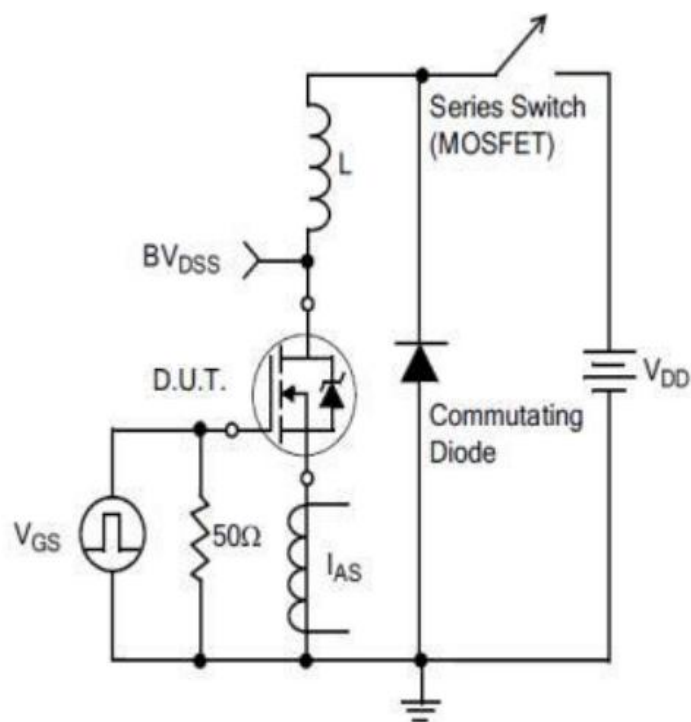
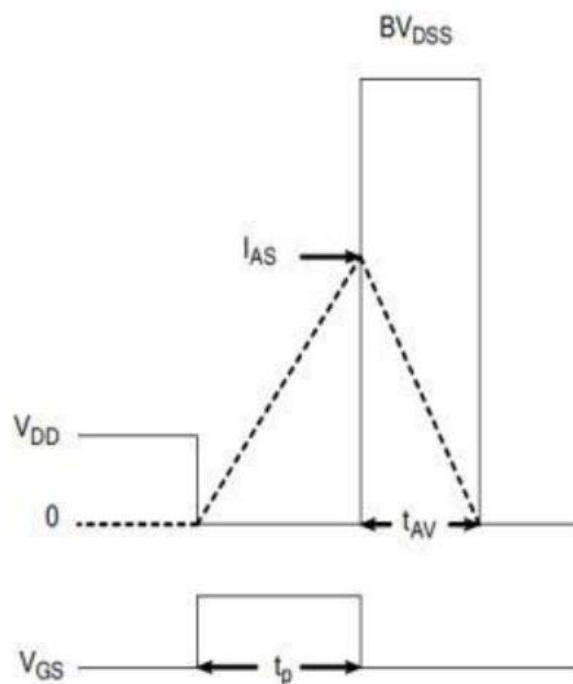


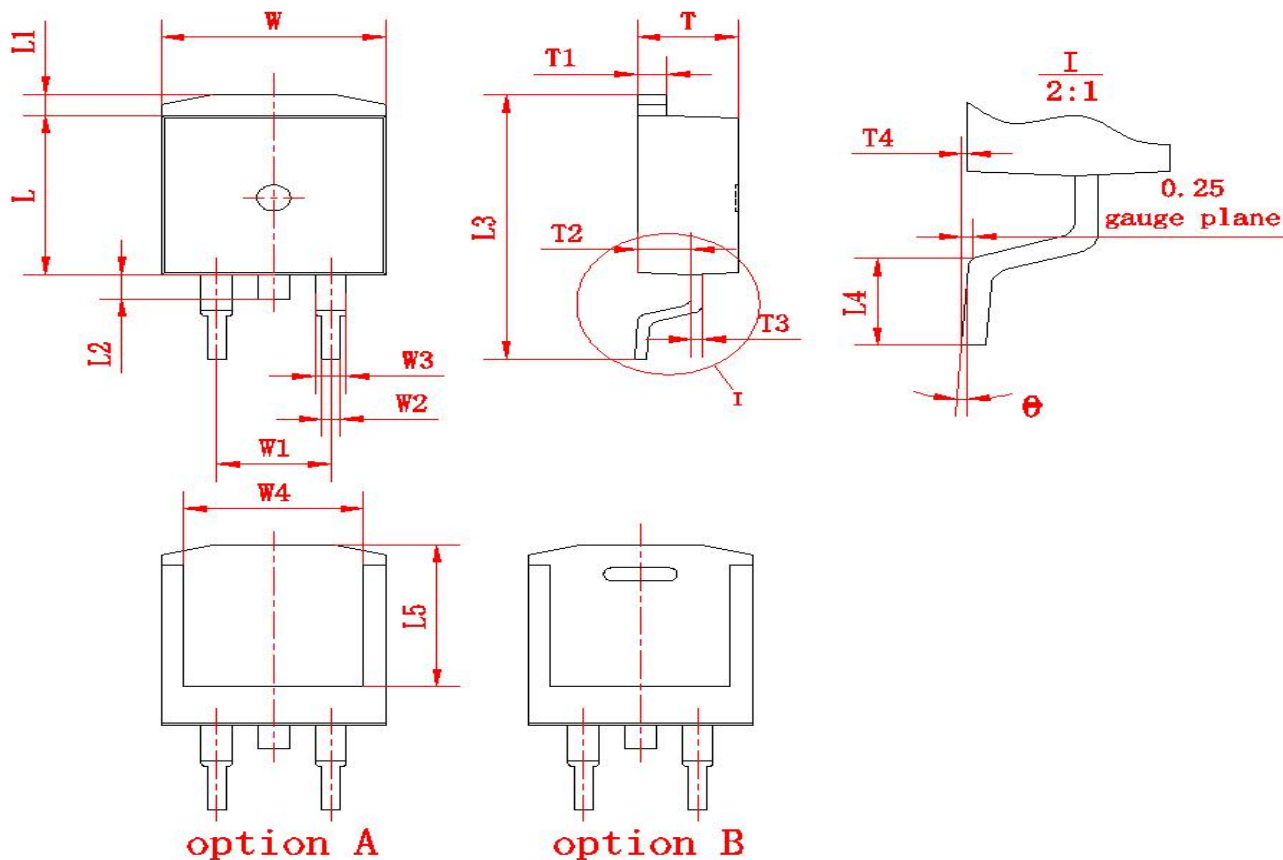
Figure G.Unclamped Inductive Switching Test Circuit



$$EAS = \frac{IAS^2 L}{2}$$

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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