

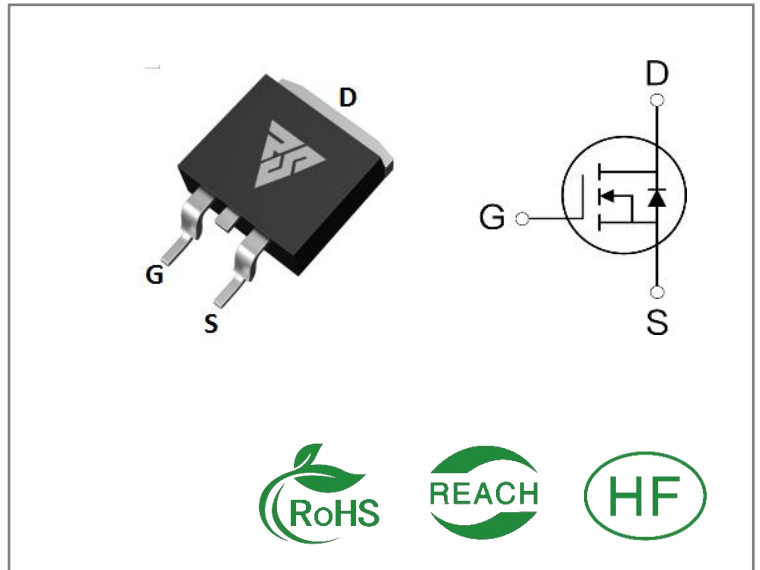
ID	R _{DS(ON)} (Typ)	VDSS
18A	0.28Ω	500V

Applications:

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)

Features:

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


Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS18N50S	T0-263	RS18N50S	Tape&reel	800 PCS

Absolute Maximum Ratings Tc= 25°C unless otherwise specified

Symbol	Parameter	RS18N50S	Units
VDSS	Drain-to-Source Voltage	500	V
ID	Continuous Drain Current TC=25°C	18	A
IDM	Pulsed Drain Current (Note*1)	72	
PD	Power Dissipation	140	W
VGS	Gate- to- Source Voltage	±30	V
EAS	Single Pulse Avalanche Energy L = 10mH,,VDD = 50V, RG = 25Ω	600	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	RS18N50S	Units	Test Conditions
R θ JC	Junction-to-Case	0.89	$^{\circ}\text{C} / \text{W}$	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 $^{\circ}\text{C}$
R θ JA	Junction-to-Ambient	62.5		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	500	--	--	V	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	$V_{DS}=500\text{V}, V_{GS}=0\text{V}$
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	$V_{GS}=30\text{V}, V_{DS}=0\text{V}$
	Gate- to- Source Reverse Leakage	--	--	-100		$V_{GS}=-30\text{V}, V_{DS}=0\text{V}$

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(Note*2)	--	0.28	0.34	Ω	$V_{GS}=10\text{V}, I_D=9\text{A}$
VGS(TH)	Gate Threshold Voltage	3	--	4	V	$V_{GS}=V_{DS}, I_D=250\mu\text{A}$

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	50	--	nS	$V_{DS}=250\text{V}$ $I_D=18\text{A}$ $R_G=25\Omega$
trise	Rise Time	--	36	--		
td(OFF)	Turn- OFF Delay Time	--	226	--		
tfall	Fall Time	--	60	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	2350	--	pF	VGS=0V VDS=25V f=1.0MHz
Coss	Output Capacitance	--	225	--		
Crss	Reverse Transfer Capacitance	--	15	--		
Qg	Total Gate Charge	--	52	--	nC	VDS=400V ID=18A VGS=10V
Qgs	Gate- to- Source Charge	--	10	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	19	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	18	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	72	A	
VSD	Diode Forward Voltage	--	--	1.4	V	IS=9A,VGS=0V
trr	Reverse Recovery Time	--	485	--	nS	VGS=0V IS=18A,di/dt=100 A/μs
Qrr	Reverse Recovery Charge	--	4	--	μC	

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

Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

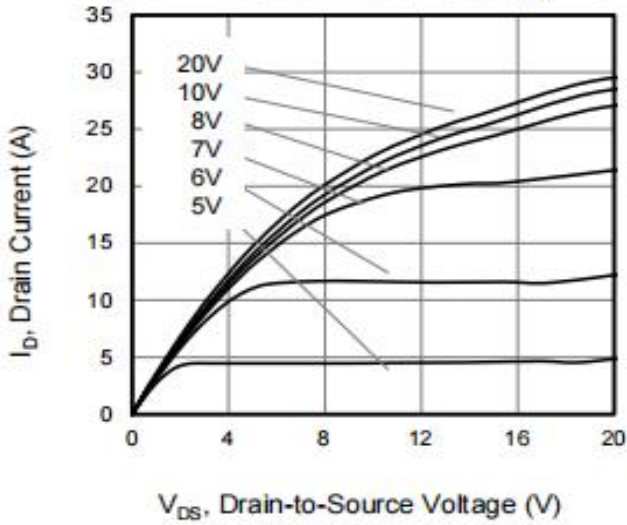


Figure 2. Body Diode Forward Voltage

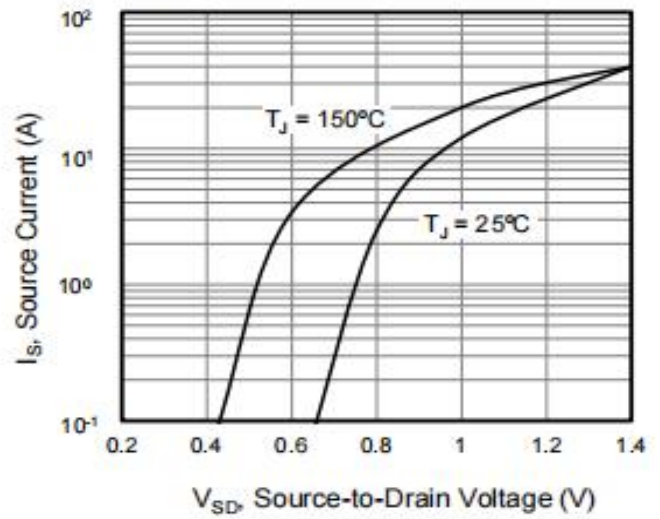


Figure 3. Drain Current vs. Temperature

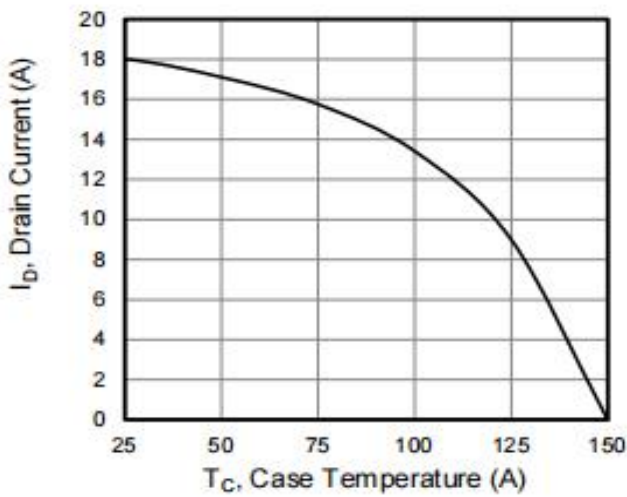


Figure 4. BV_{DSS} Variation vs. Temperature

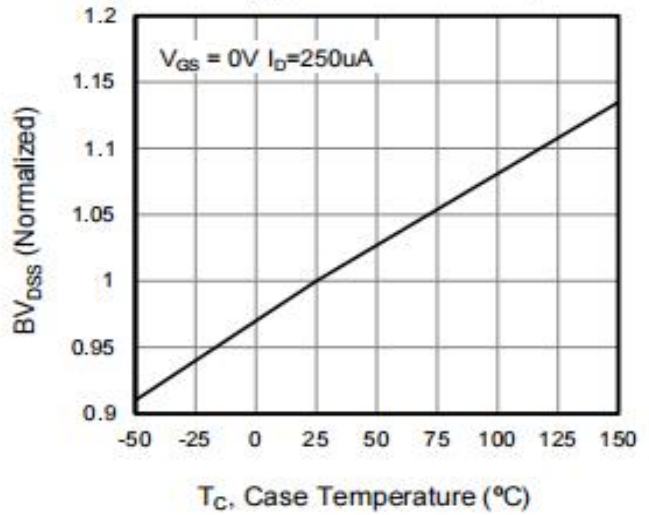


Figure 5. Transfer Characteristics

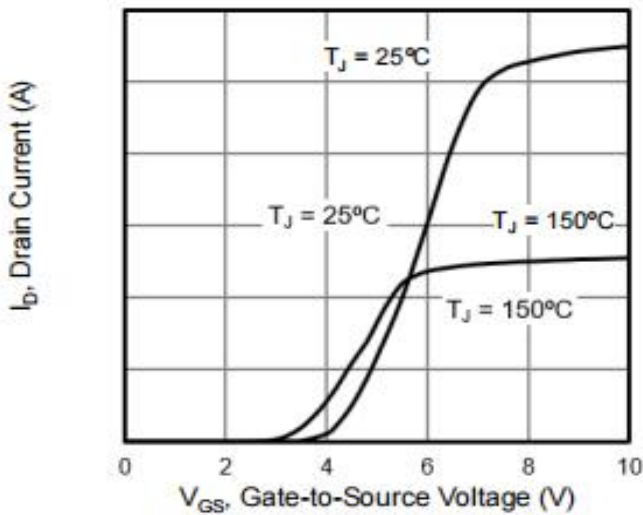


Figure 6. On-Resistance vs. Temperature

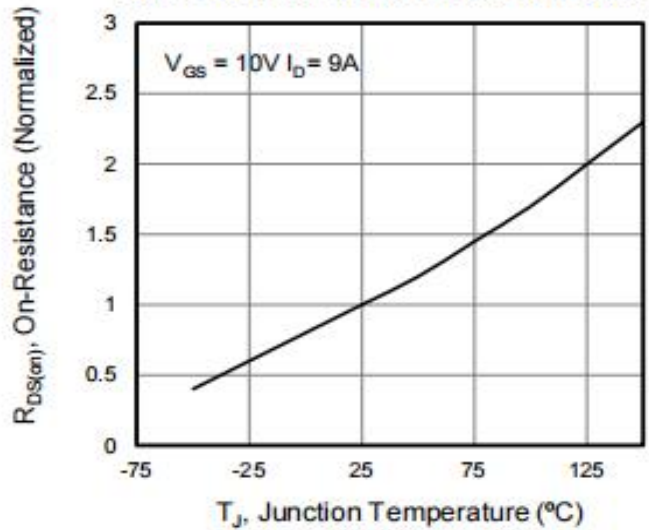


Figure 7. Capacitance

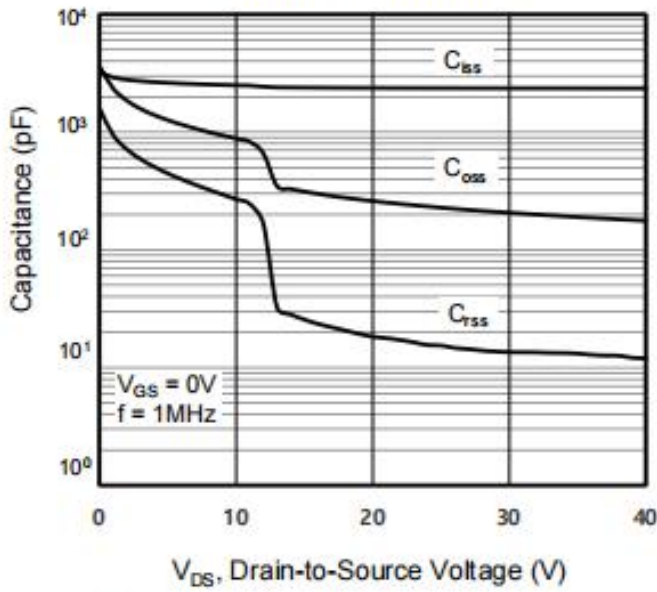


Figure 8. Gate Charge

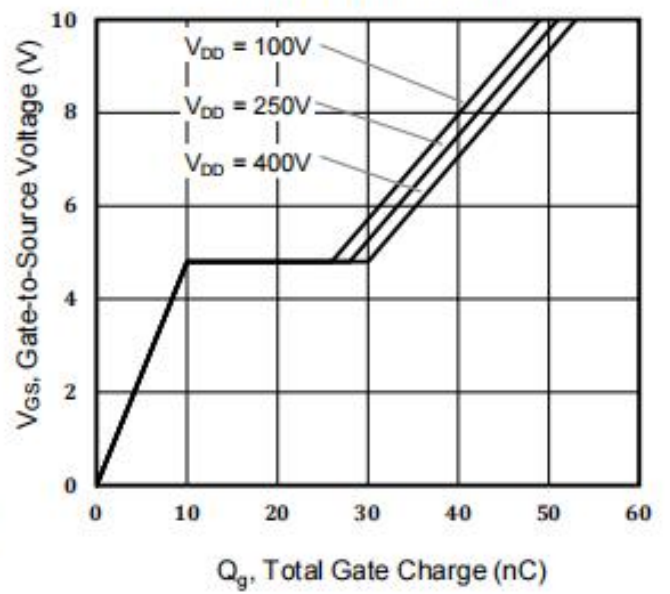
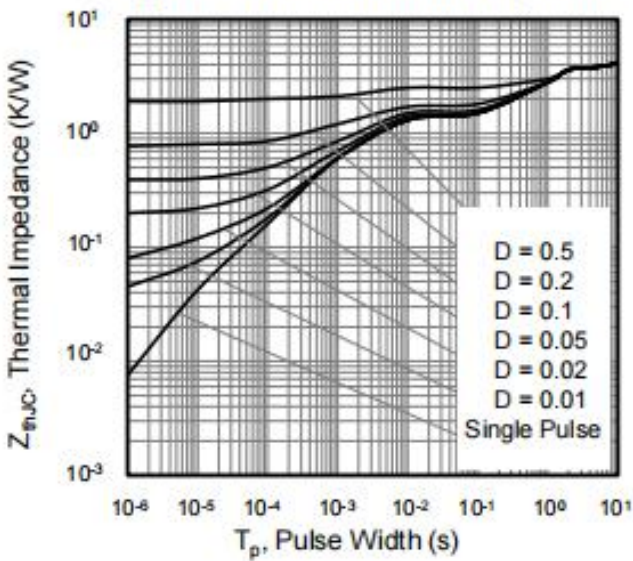


Figure 9. Transient Thermal Impedance



Test Circuits and Waveforms

Figure A: Gate Charge Test Circuit and Waveform

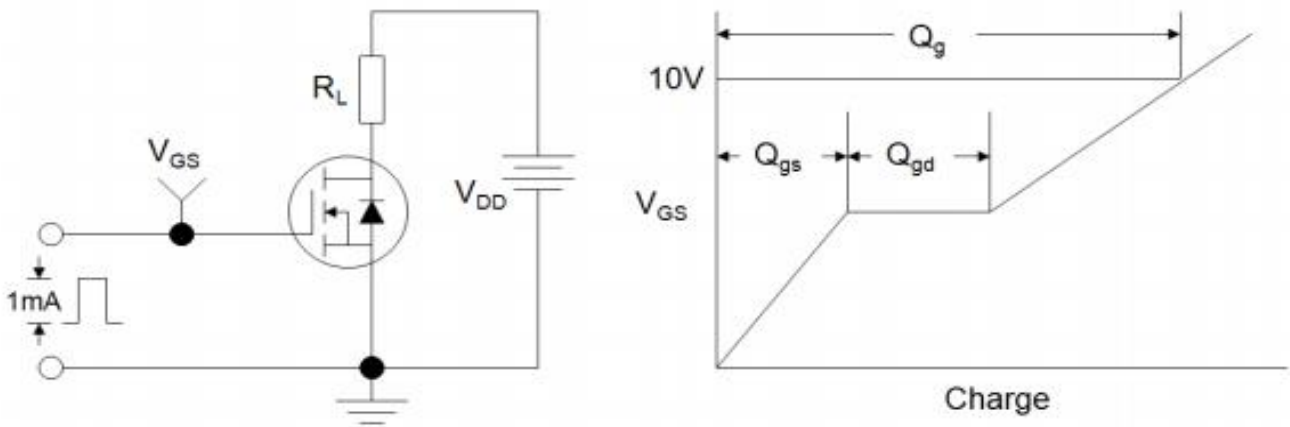


Figure B: Resistive Switching Test Circuit and Waveform

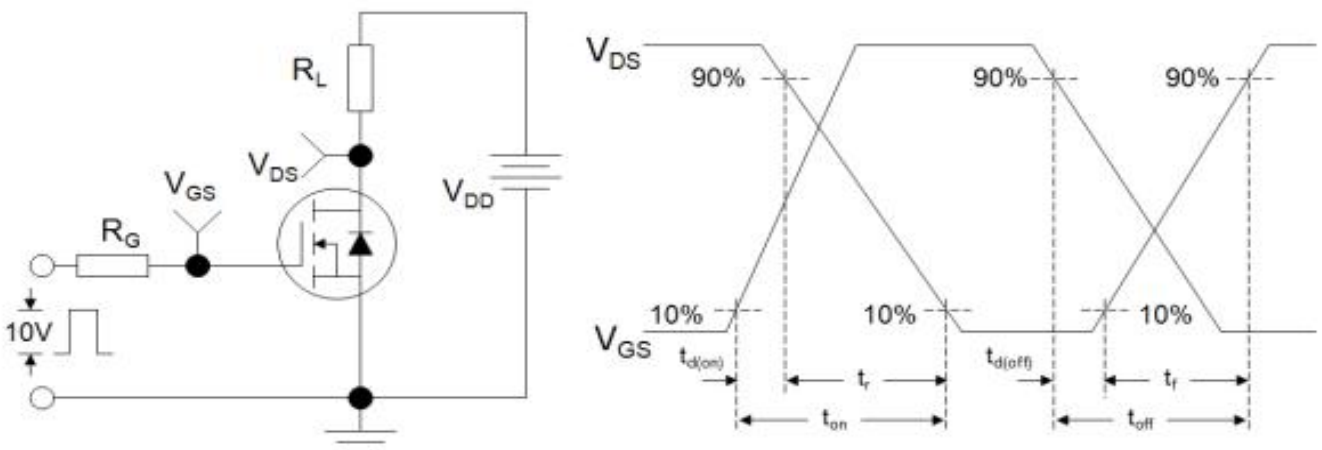
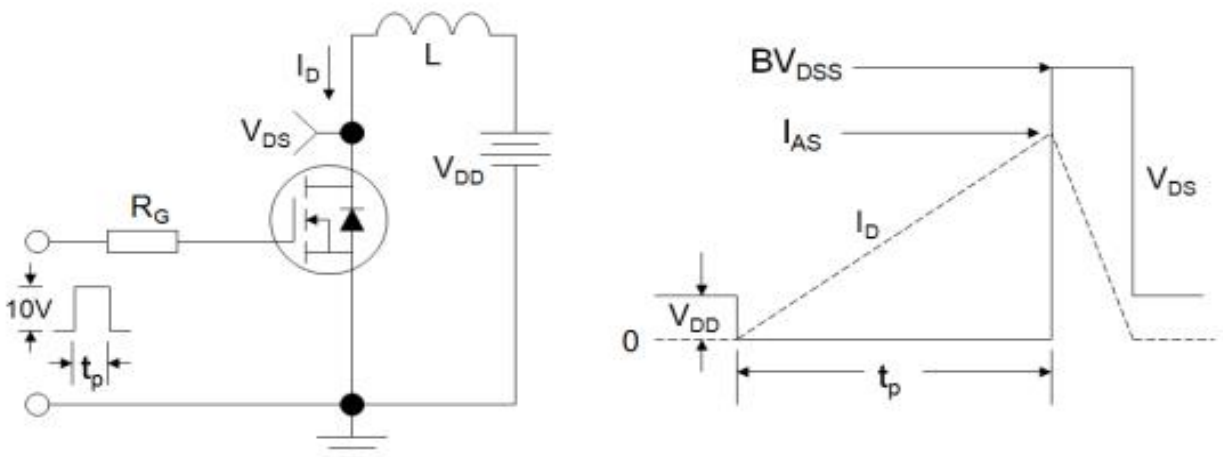
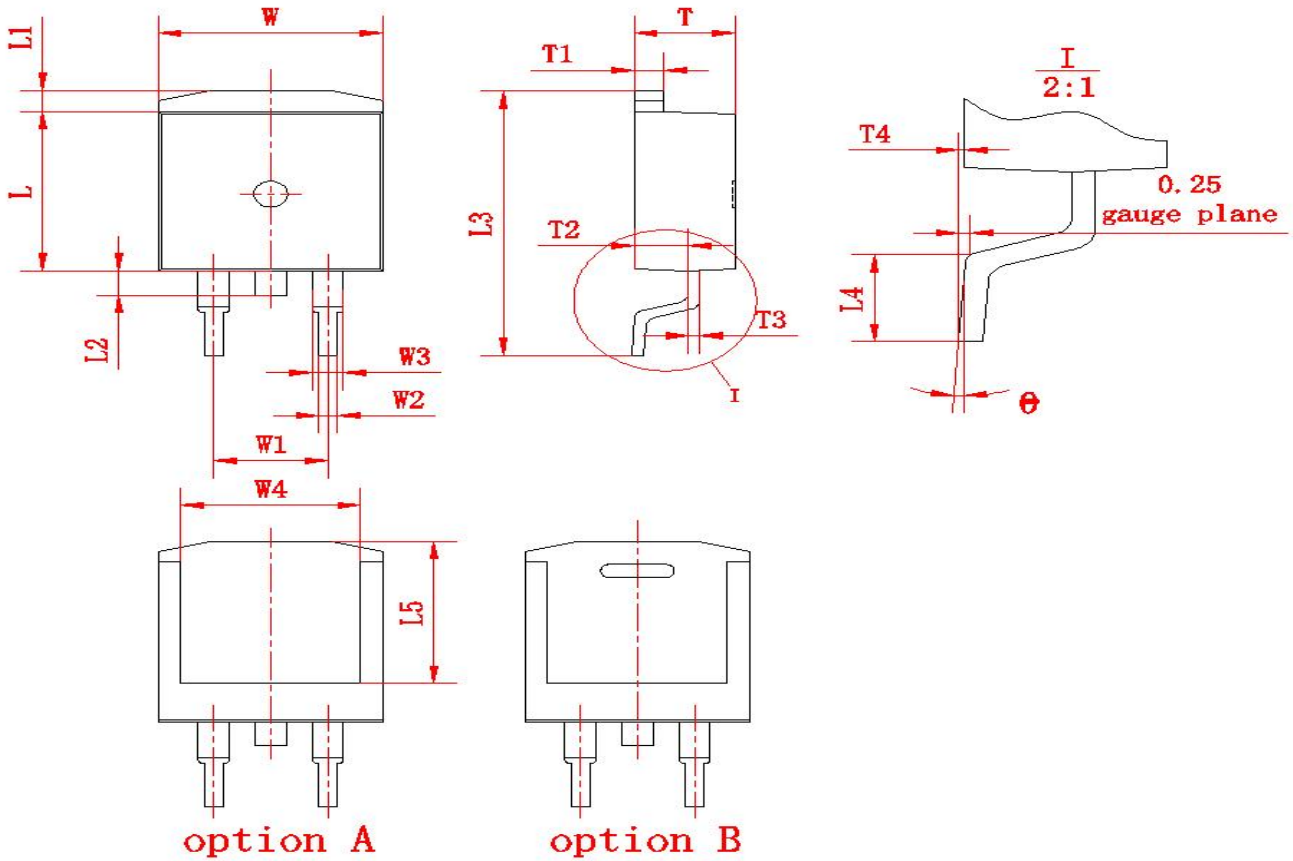


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



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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