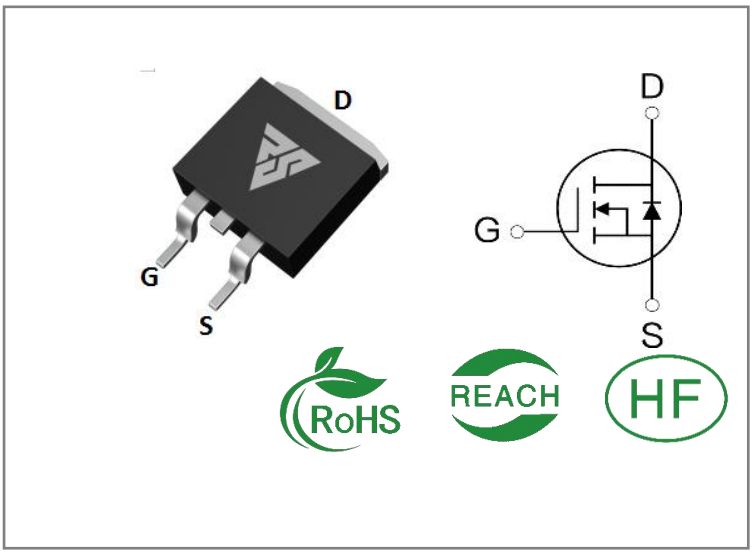
ID	R_{DS}(ON)(Typ)	VDSS
20A	160mΩ	650V



Applications:

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

Features:

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

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS65R190S	T0-263	RS65R190S	Tape&reel	800 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RS65R190S	Units
VDSS	Drain-to-Source Voltage	650	V
ID	Continuous Drain Current TC=25℃	20	A
ID	Continuous Drain Current TC=100℃	13	
IDM	Pulsed Drain Current (Note*1)	60	
PD	Power Dissipation	134	W
VGS	Gate- to- Source Voltage	±30	V
EAS	Single Pulse Avalanche Engergy L=10mH,VDS= 50V, RG = 25 Ω，TC=25℃	310	mJ
dv/dt	MOSFET dv/ dt ruggedness VDS = 0...400V	50	V/ns
dv/dt	Reverse diode dv/dt VDS = 0...400V, Tj = 25℃, ISD≤ID	15	V/ns
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	RS65R190S	Units	Test Conditions
RθJC	Junction-to-Case	0.93	℃/ 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	650	--	--	V	VGS=0V,ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=650V,VGS=0 V
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	VGS=30V ,VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-100		VGS=-30V ,VDS=0 V

ON Characteristics TJ=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance(Note*2)	--	160	190	mΩ	VGS=10V,ID=10A
VGS(TH)	Gate Threshold Voltage	2	--	4	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	--	23	--	nS	VDS=325V ID=20A RG=25Ω
trise	Rise Time	--	35	--		
td(OFF)	Turn- OFF Delay Time	--	113	--		
tfall	Fall Time	--	28	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	1490	--	pF	VGS=0V VDS=50V f=1.0MHz
Coss	Output Capacitance	--	101	--		
Crss	Reverse Transfer Capacitance	--	2.3	--		
Qg	Total Gate Charge	--	36	--	nC	VDS=520V ID=20A VGS=10V
Qgs	Gate- to- Source Charge	--	7.2	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	16	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	20	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	60	A	
VSD	Diode Forward Voltage	--	--	1.4	V	IS=20A,VGS=0V
trr	Reverse Recovery Time	--	347	--	nS	VR=100V IS=20A,di/dt=100A /μs
Qrr	Reverse Recovery Charge	--	5	--	μC	

Notes:

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

Typical Feature Curve

Figure1. Output Characteristics

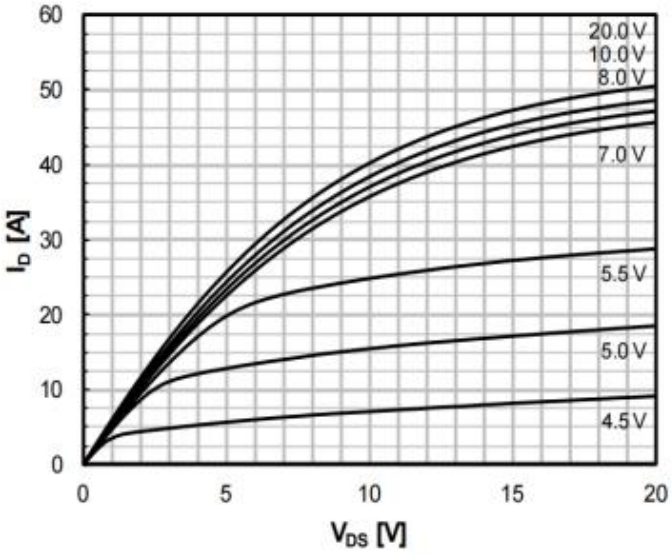


Figure2. Transfer Characteristics

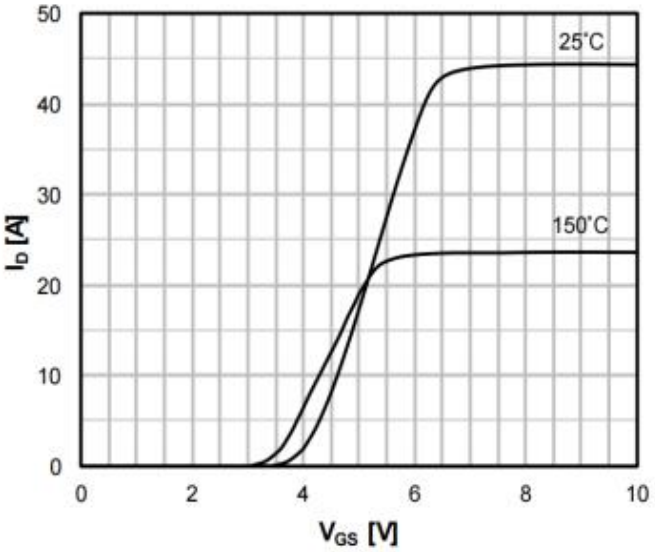


Figure 3. On-Resistance VS.Drain Current

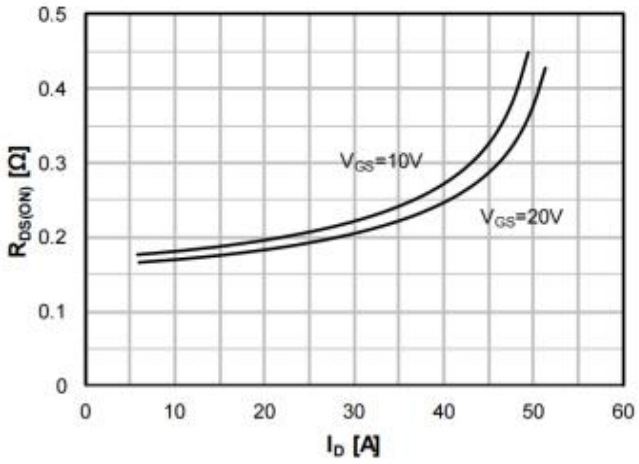


Figure 4. Capacitance

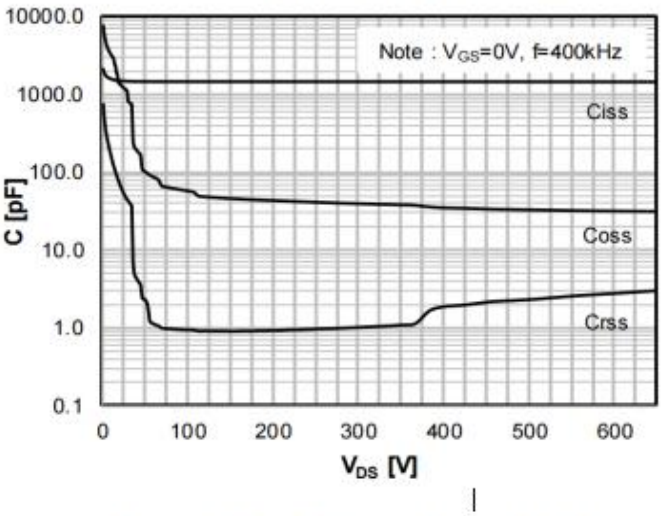


Figure 5. Gate Charge

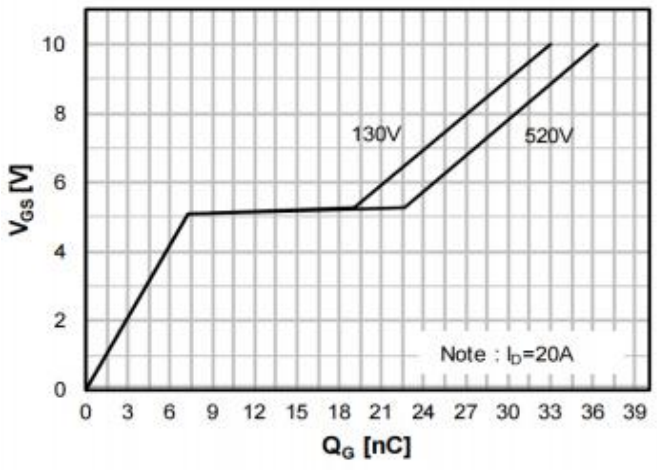


Figure 6.Body Diode Forward Voltage

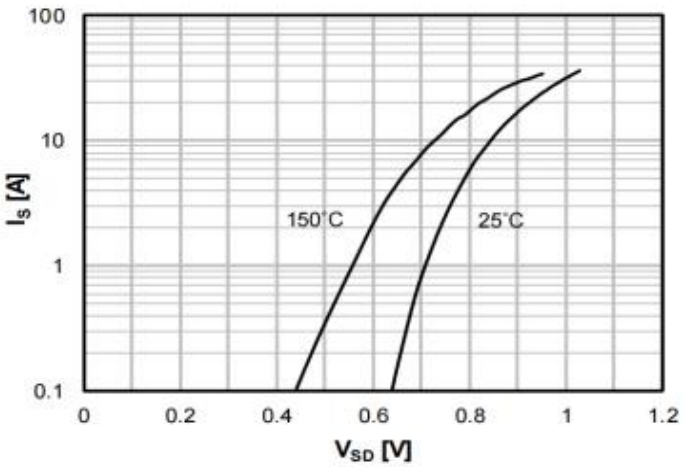


Figure 7.On-Resistan ce vs. Junction Temperature

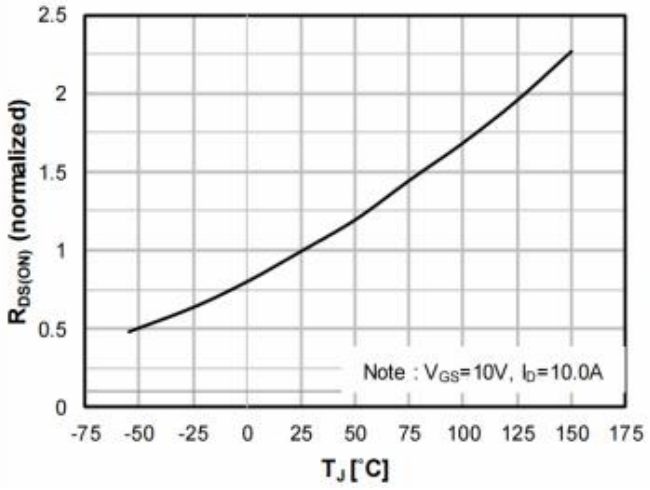


Figure 8.Bearkdown Voltage vs. Junction Temperature

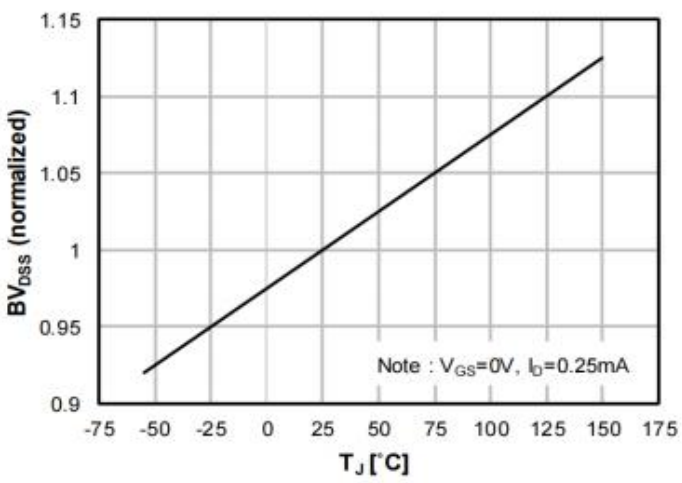


Figure 9.Safe operation area

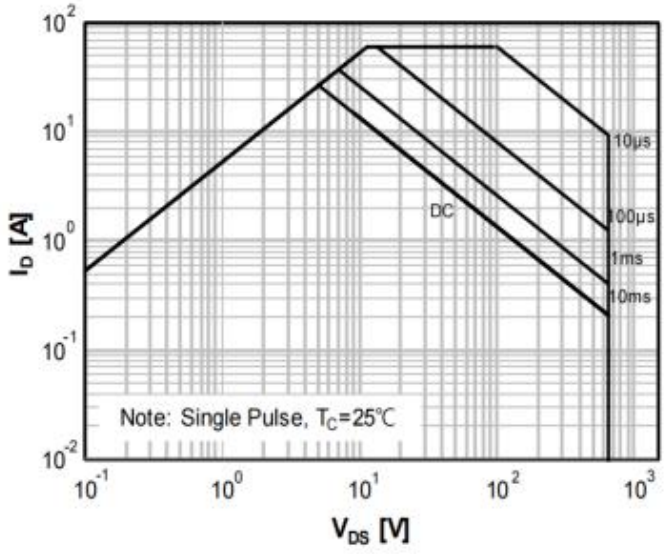
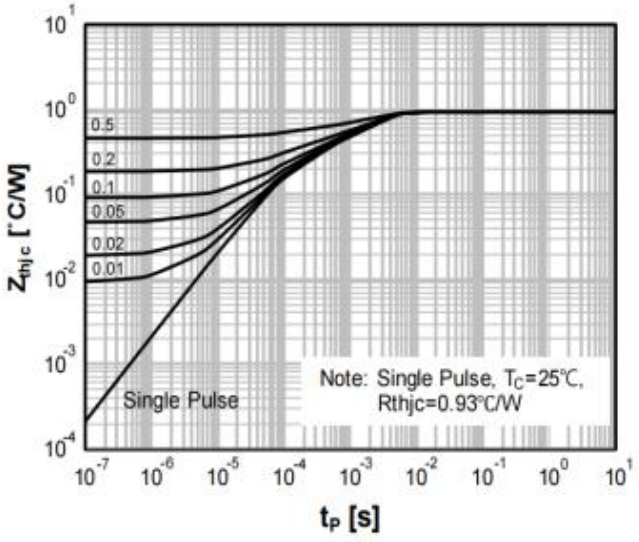


Figure 10.Transient Thermal Impedance



Test Circuits and Waveforms

Figure A: Gate Charge Test Circuit and Waveform

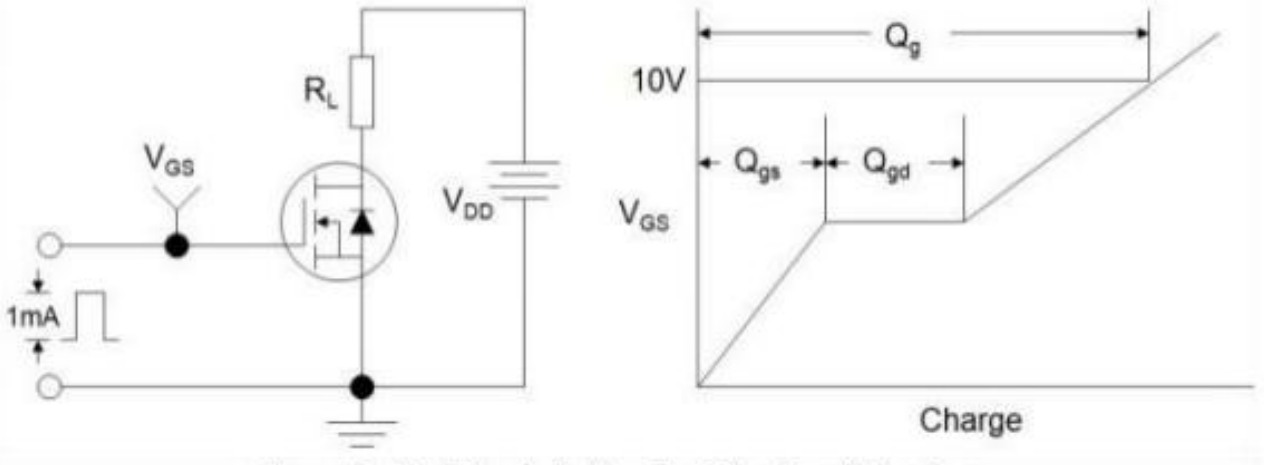


Figure B: Resistive Switching Test Circuit and Waveform

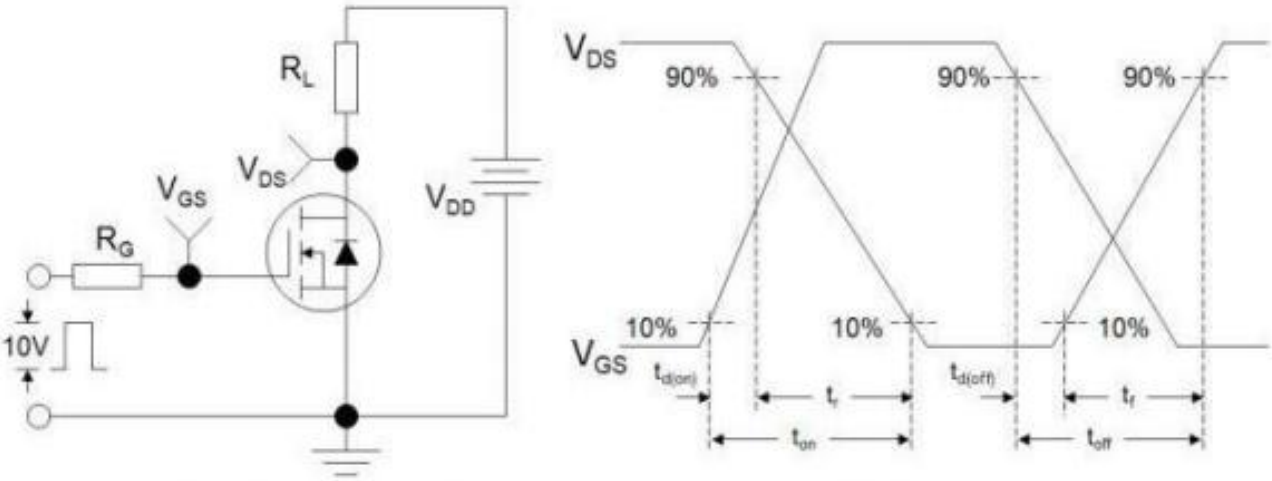
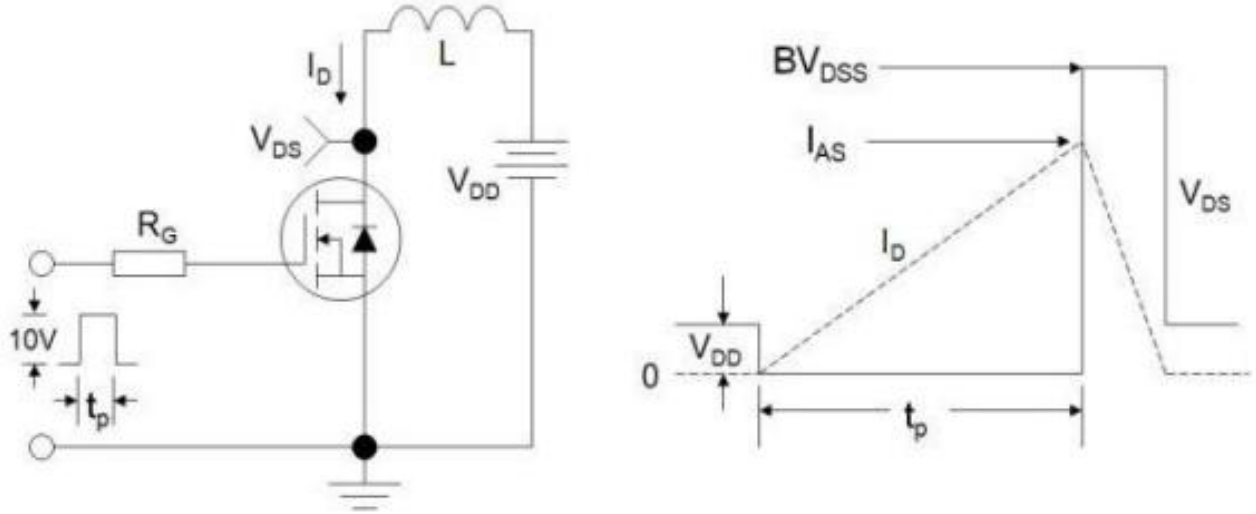
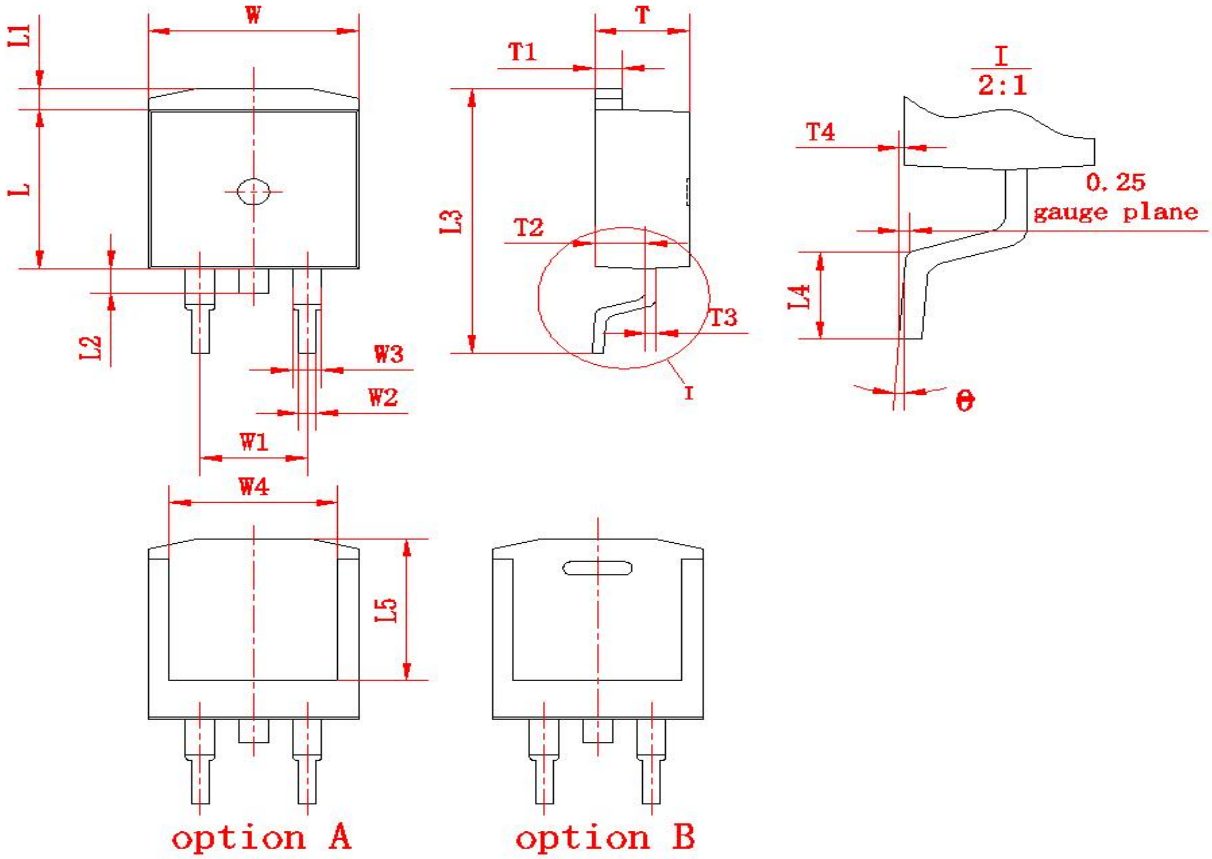


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



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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