

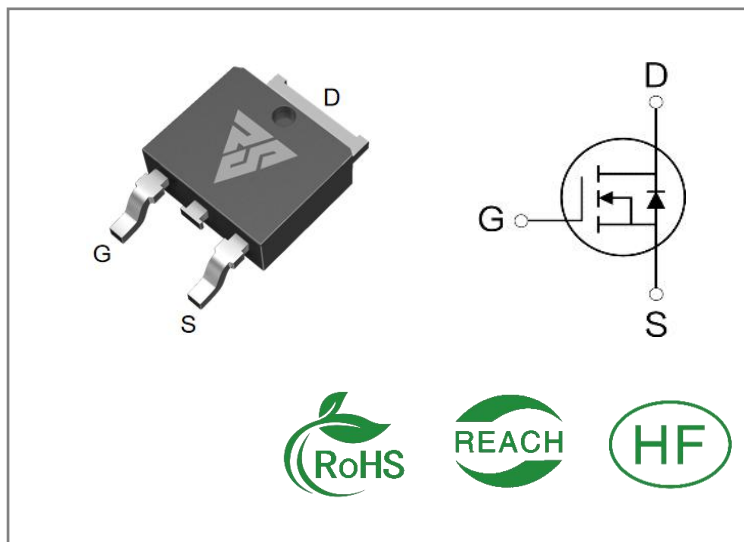
ID	$R_{DS(ON)}$ (Typ)	VDSS
10.6A	340m Ω	700V

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.
RS70R380D	T0-252	RS70R380D	Tape&reel	2500 PCS

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

Symbol	Parameter	RS70R380D	Units
VDSS	Drain-to-Source Voltage	700	V
ID	Continuous Drain Current $T_C = 25^\circ\text{C}$	10.6	A
ID	Continuous Drain Current $T_C = 100^\circ\text{C}$	6.1	
IDM	Pulsed Drain Current (Note*1)	31.8	
PD	Power Dissipation	60	W
VGS	Gate- to- Source Voltage	± 30	V
EAS	Single Pulse Avalanche Energy $L = 10\text{mH}, V_{DS} = 50\text{V}, R_G = 25\ \Omega, T_C = 25^\circ\text{C}$	220	mJ
dv/dt	MOSFET dv/ dt ruggedness $V_{DS} = 0 \dots 400\text{V}$	50	V/ns
dv/dt	Reverse diode dv/dt $V_{DS} = 0 \dots 400\text{V}, T_j = 25^\circ\text{C}, I_{SD} \leq I_D$	15	V/ns
TL TPKG	Maximum Temperature for Soldering	300	$^\circ\text{C}$
	Leads at 0.063in(1.6mm)from Case for 10 seconds Package Body for 10 seconds	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	RS70R380D	Units	Test Conditions
R θ JC	Junction-to-Case	1.4	$^{\circ}\text{C} / \text{W}$	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	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	700	--	--	V	VGS=0V ID=250 μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=700V VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	VGS=30V VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-100		VGS=-30V 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(Note*2)	--	340	380	m Ω	VGS=10V ID=3.2A
VGS(TH)	Gate Threshold Voltage	2	--	4	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	--	18	--	nS	VDS=325V ID=10.6A RG=25 Ω
trise	Rise Time	--	31	--		
td(OFF)	Turn- OFF Delay Time	--	65	--		
tfall	Fall Time	--	28	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	747	--	pF	VGS=0V VDS=50V f=400KHz
Coss	Output Capacitance	--	55	--		
Crss	Reverse Transfer Capacitance	--	3.3	--		
Qg	Total Gate Charge	--	20	--	nC	VDS=520V ID=10.6A VGS=10V
Qgs	Gate- to- Source Charge	--	3.7	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	9	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	10.6	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	31.8	A	
VSD	Diode Forward Voltage	--	--	1.4	V	IS=10.6A VGS=0V
trr	Reverse Recovery Time	--	267	--	nS	VR=100V IS=10.6A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	2.8	--	μC	

Notes:

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

Typical Feature Curve

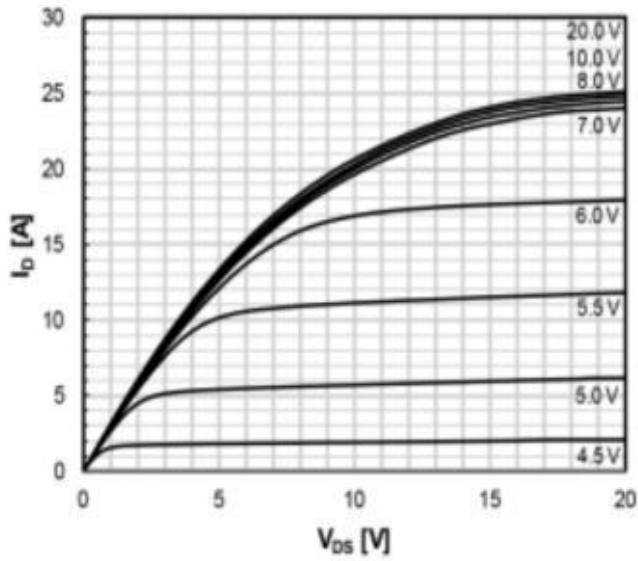


Fig. 1 Output characteristics

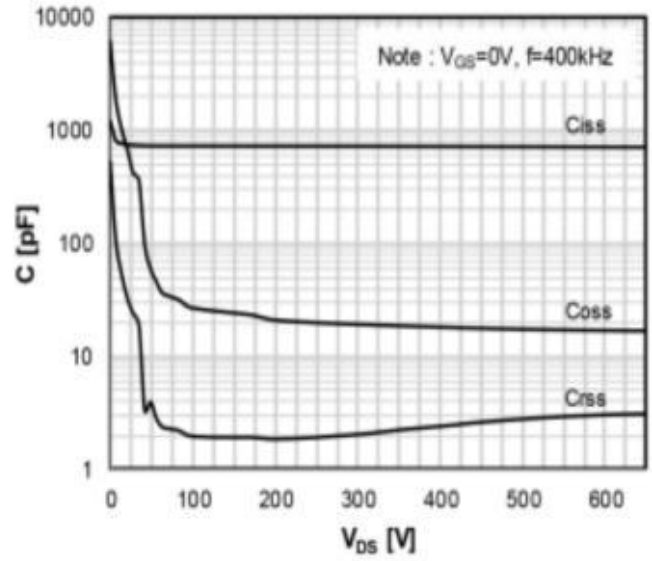


Fig. 2 Capacitances

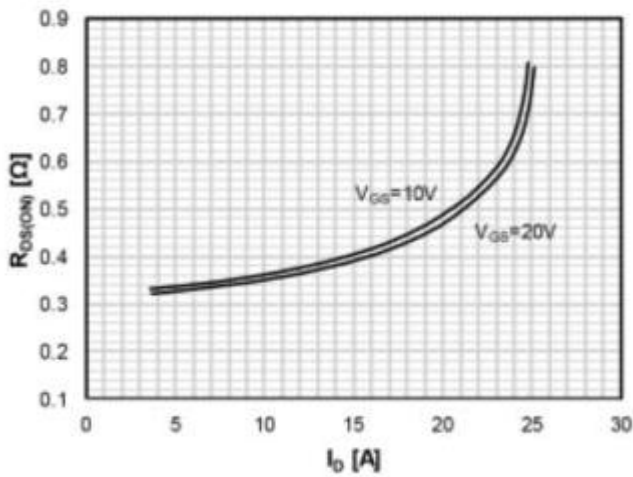


Fig. 3 On-state resistance

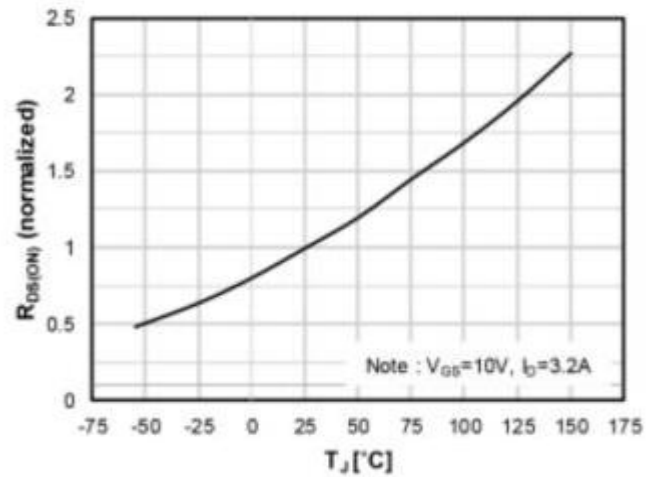


Fig. 4 On-state resistance with temperature

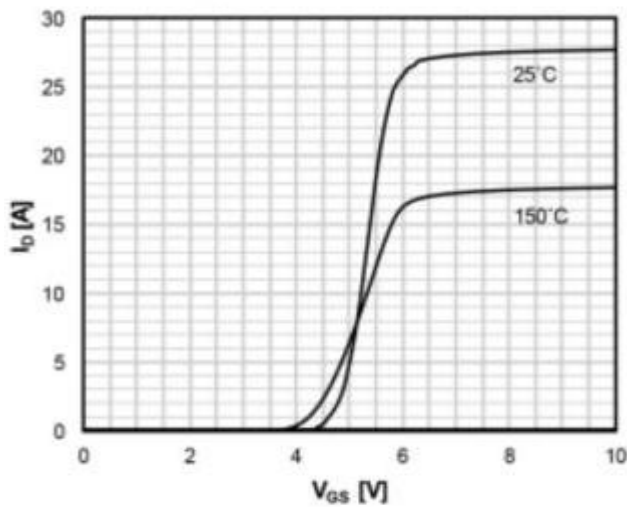


Fig. 5. Transfer characteristics

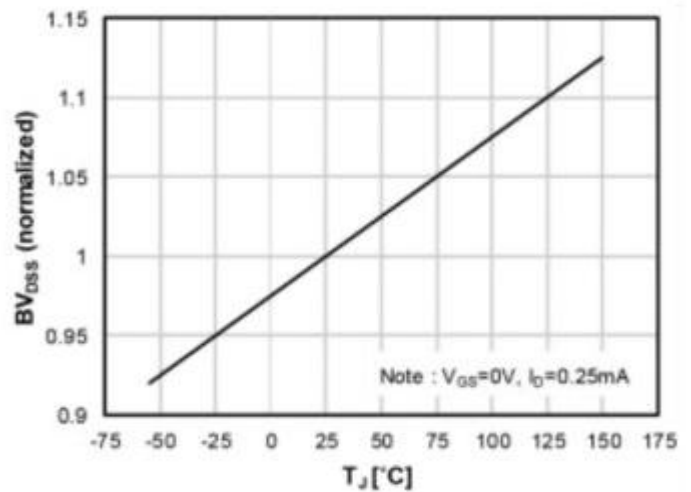


Fig. 6. Breakdown voltage with temperature

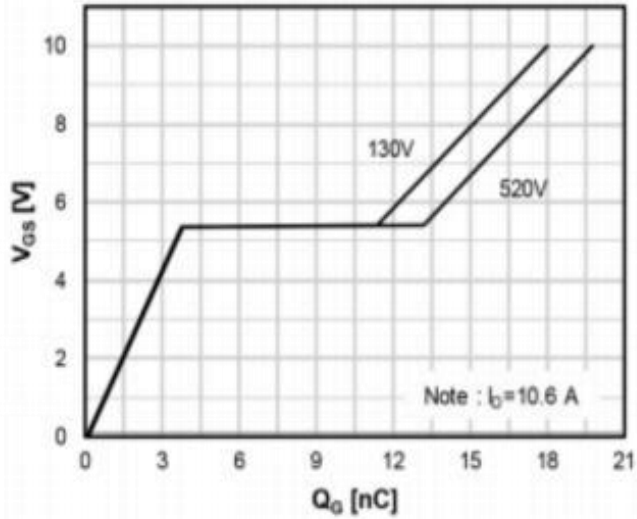


Fig 7. Gate charge

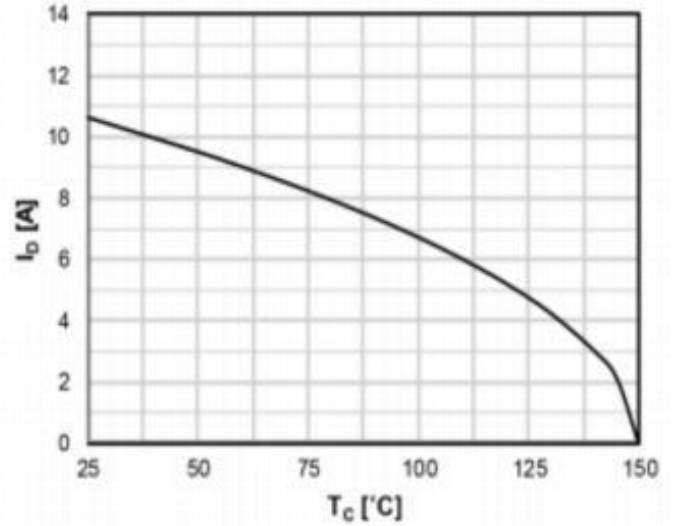


Fig 8. Maximum drain current

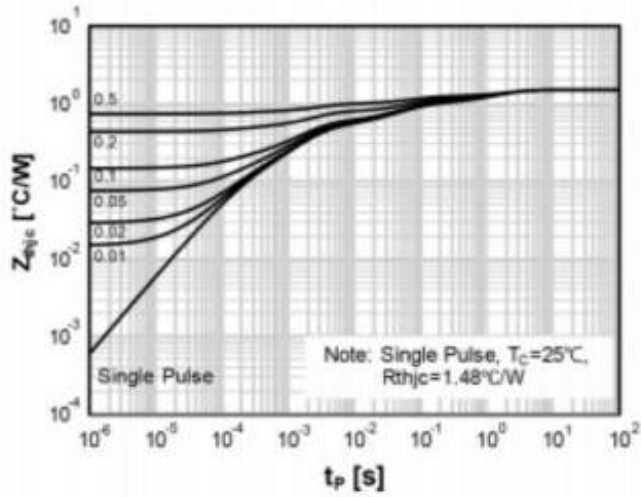


Fig 9. Maximum thermal characteristics

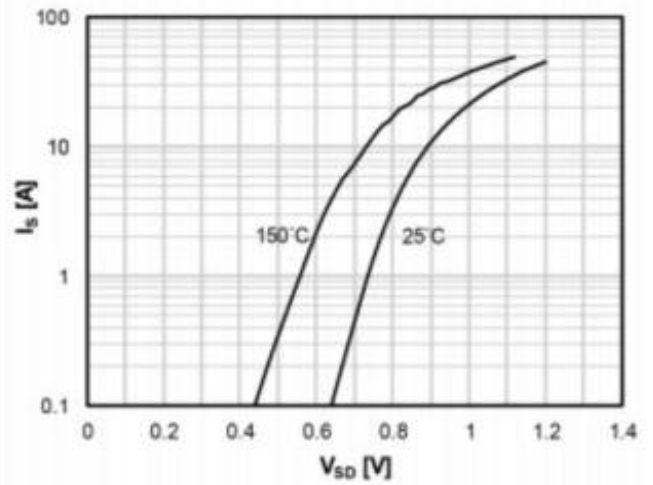


Fig 10. Body diode characteristics

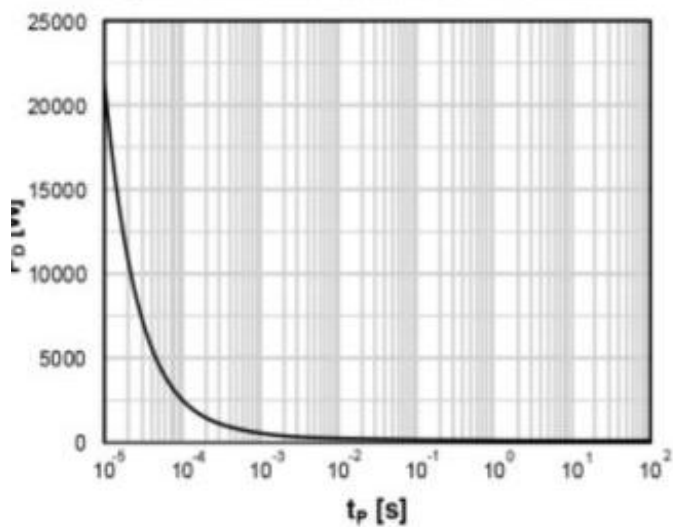


Fig 11. Power dissipation

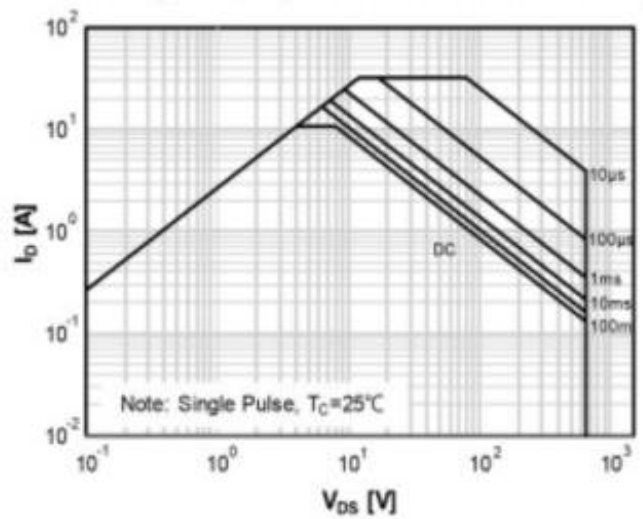


Fig 12. Safe operating area

Test Circuits and Waveforms

Figure A: Gate Charge Test Circuit and Waveform

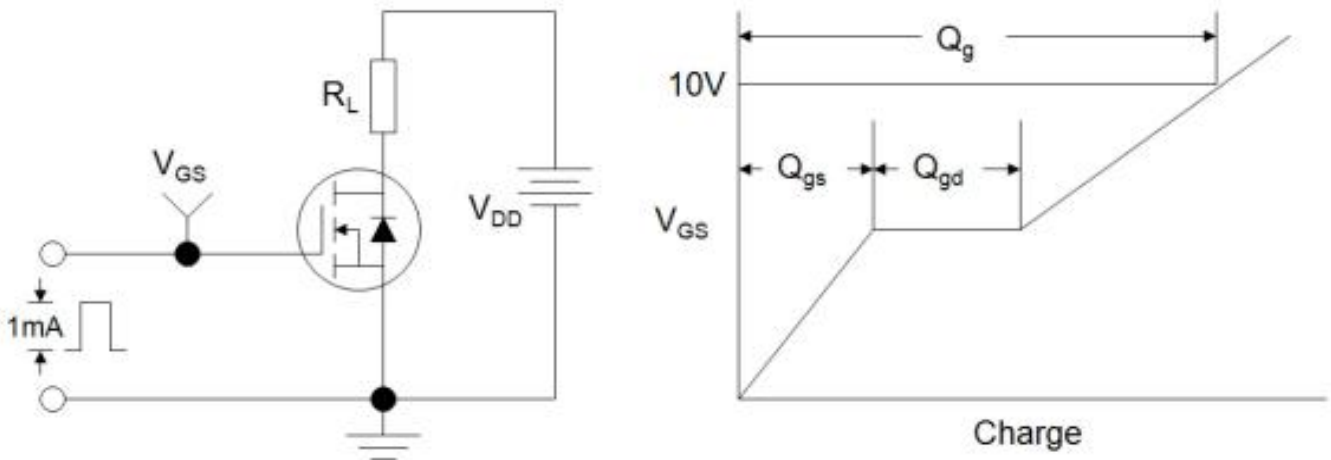


Figure B: Resistive Switching Test Circuit and Waveform

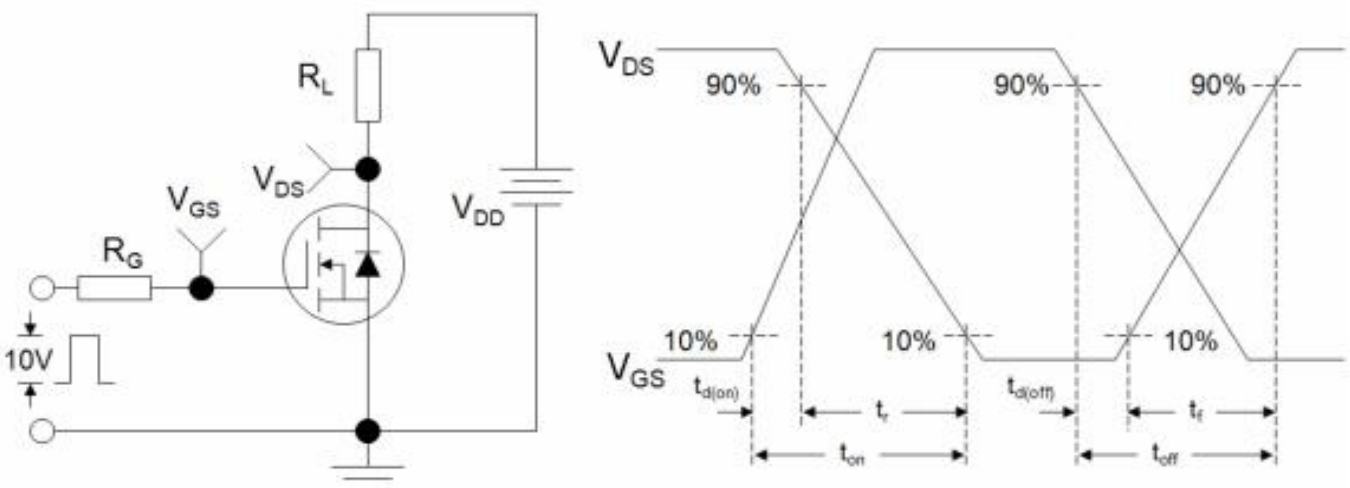
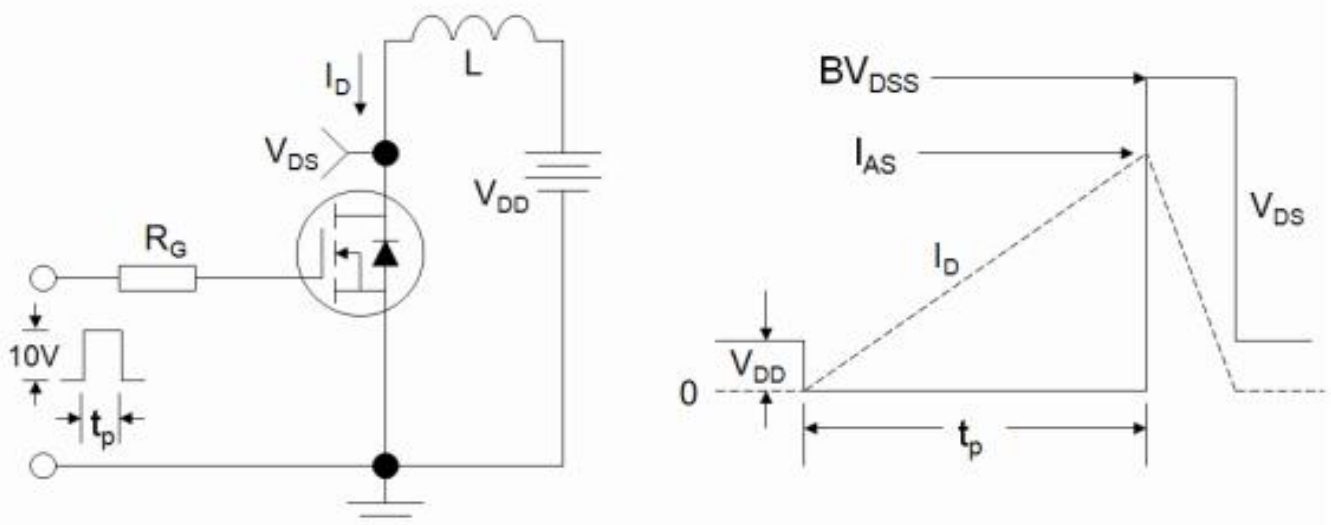
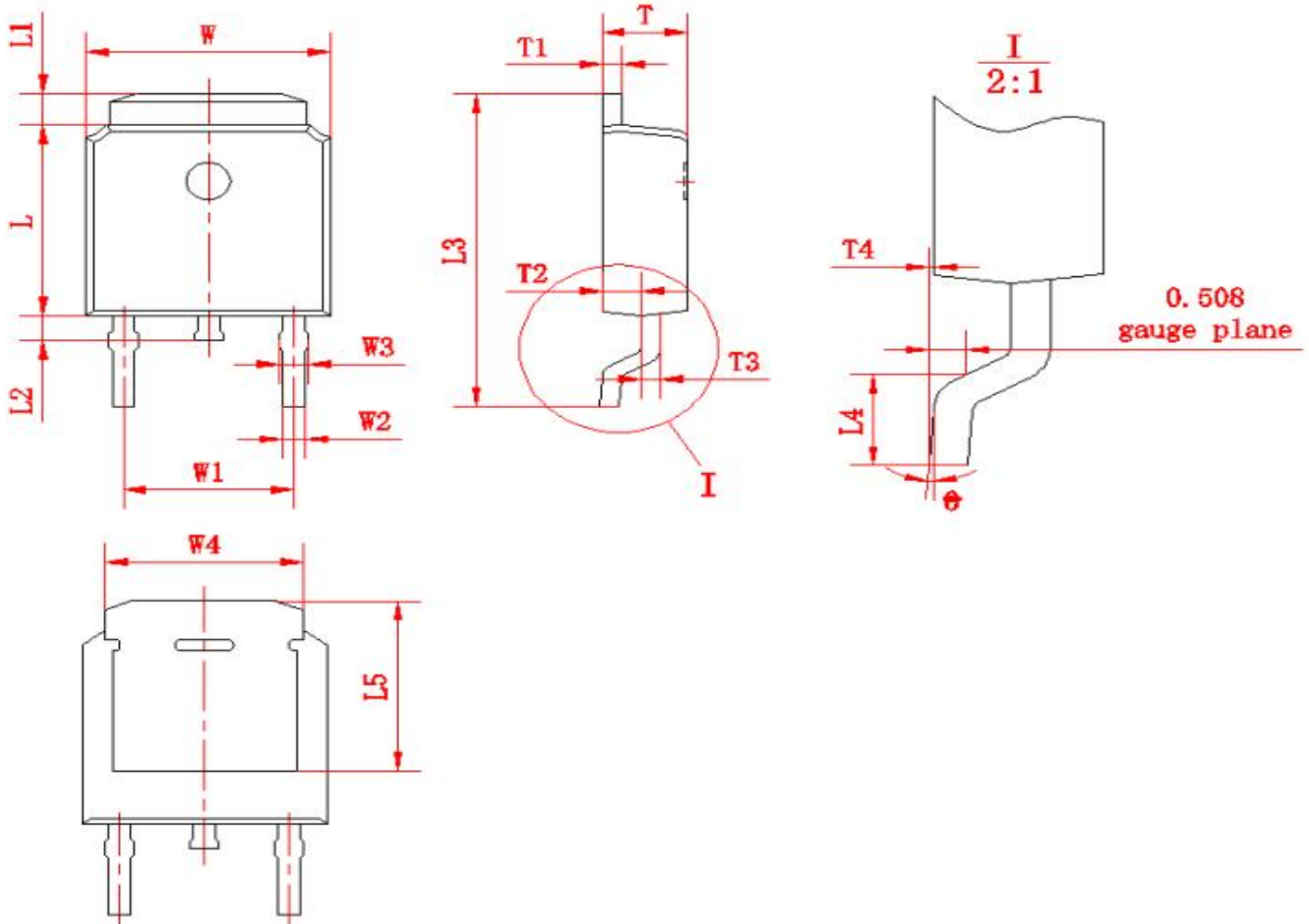


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



Package outline drawing(TO-252 Unit: mm)



符号	尺寸		符号	尺寸		符号	尺寸	
	Min	Max		Min	Max		Min	Max
W	6.50	6.70	L1	0.80	1.20	T1	0.48	0.58
W1	(4.572)		L2	0.60	1.00	T2	0.95	1.15
W2	0.6	0.8	L3	9.70	10.30	T3	0.48	0.58
W3	0.68	0.88	L4	1.30	1.70	T4	0.00	0.12
W4	(5.3)		L5	(5.20)		0	0	8
L	6.00	6.20	T	2.20	2.40			

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