ID	$R_{DS}(ON)(Typ)$	VDSS
180A	2.0mΩ	30V

Applications:
- Load Switch
- PWM Applications
- Power Managment

Features:
- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability
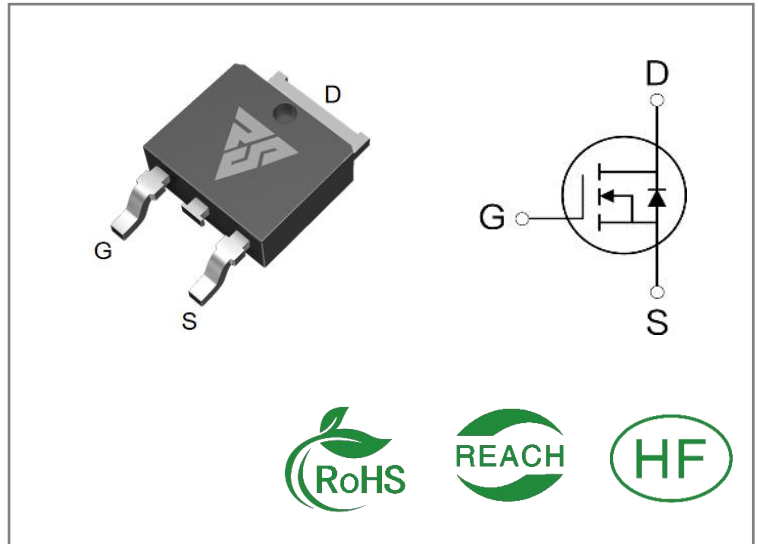
Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS30N180D	T0-252	RS30N180D	Tape&reel	2500 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RS30N180D	Units
VDSS	Drain-to-Source Voltage	30	V
ID	Continuous Drain Current TC=25℃	180	A
ID	Continuous Drain Current TC=100℃	114	
IDM	Pulsed Drain Current	720	
PD	Power Dissipation	80	W
VGS	Gate- to- Source Voltage	±20	V
EAS	Single Pulse Avalanche Engergy L = 0.5mH,VDD = 15V, RG = 25Ω, Tj = 25℃	305	mJ
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	RS30N180D	Units	Test Conditions
RθJC	Junction-to-Case	2.1	℃ / W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃
RθJA	Junction-to-Ambient	35		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	30	--	--	V	VGS=0V ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=30V 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 TJ=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance	--	2.0	2.5	mΩ	VGS=10V,ID=30A
		--	3.3	4.3	mΩ	VGS=4.5V ID=20A
VGS(TH)	Gate Threshold Voltage	1.3	1.9	2.5	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	--	16	--	nS	VDS=15V ID=30A RG=3Ω VGS=10V
trise	Rise Time	--	30	--		
td(OFF)	Turn- OFF Delay Time	--	52	--		
tfall	Fall Time	--	20	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	5060	--	pF	VGS= 0V VDS=15V f=1.0MHz
Coss	Output Capacitance	--	570	--		
Crss	Reverse Transfer Capacitance	--	470	--		
Qg	Total Gate Charge	--	75	--	nC	VDS= 15V ID=20A VGS=10V
Qgs	Gate- to- Source Charge	--	9	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	18	--		

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	--	--	720	A	
VSD	Diode Forward Voltage	--	--	1.2	V	IS=30A,VGS=0V
trr	Reverse Recovery Time	--	24	--	nS	VGS=0V IS=30A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	14	--	nC	

Notes:

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

Typical Feature Curve

Figure 1: Output Characteristics
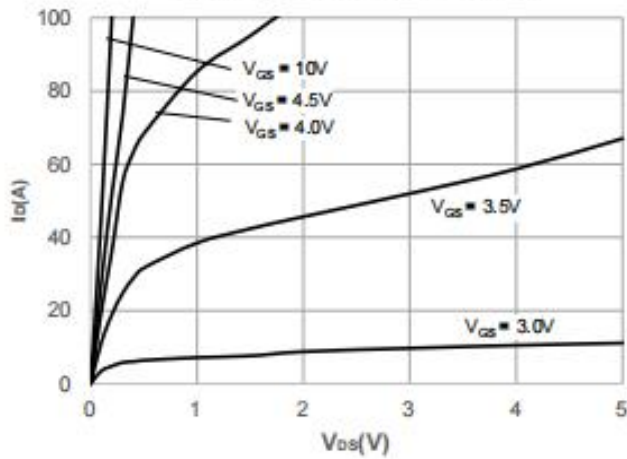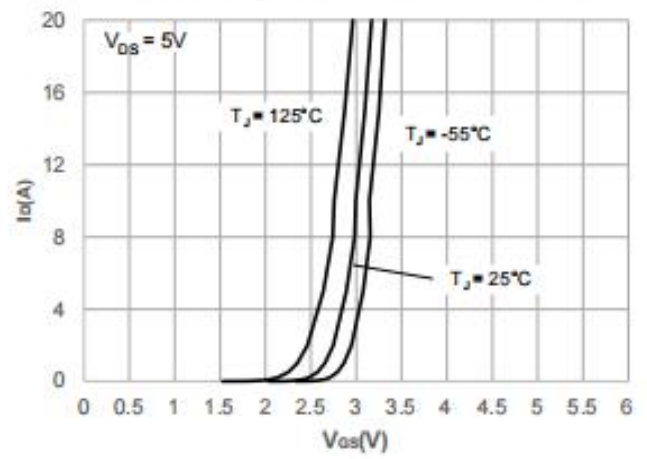
Figure 2: Typical Transfer Characteristics

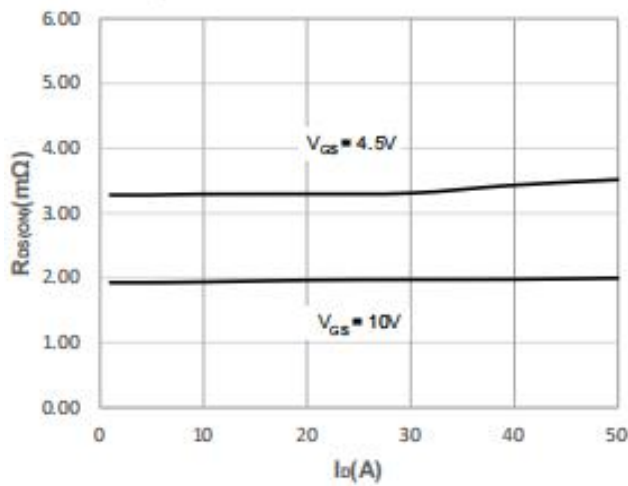Figure 3: On-resistance vs. Drain Current
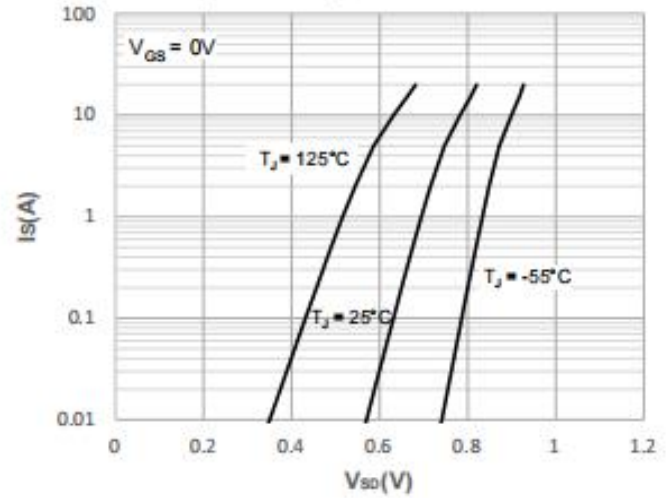
Figure 4: Body Diode Characteristics

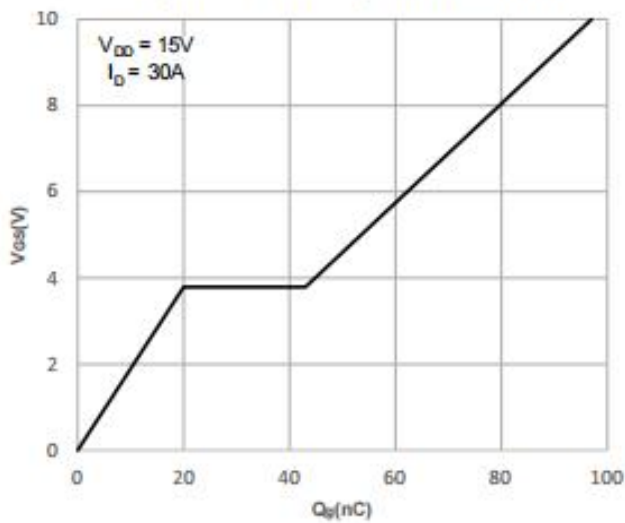Figure 5: Gate Charge Characteristics

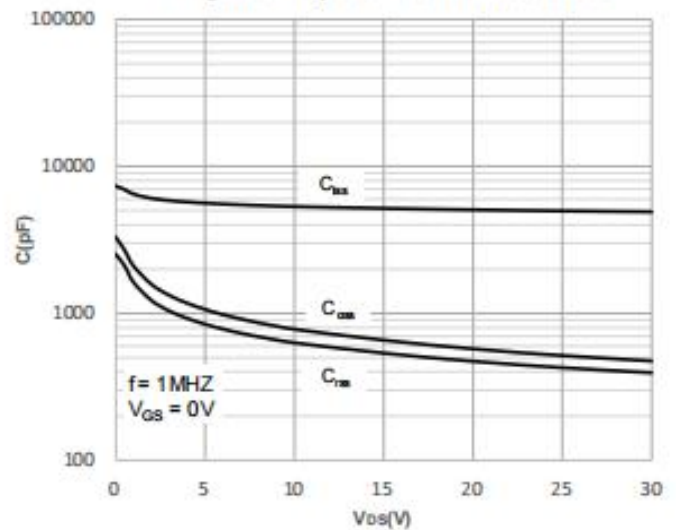Figure 6: Capacitance Characteristics

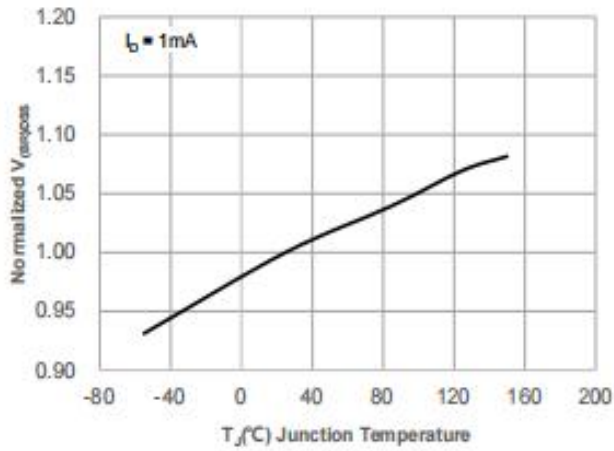Figure 7: Normalized Breakdown voltage vs. Junction Temperature

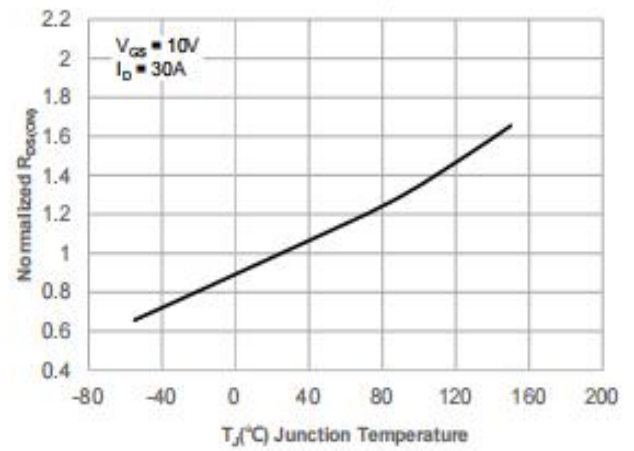Figure 8: Normalized on Resistance vs. Junction Temperature
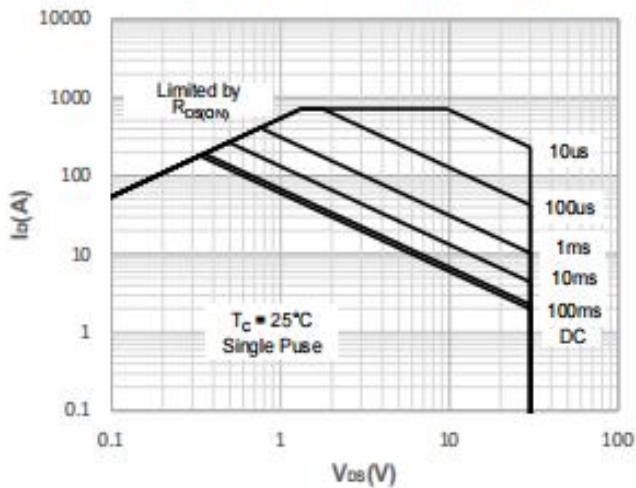

Figure 9: Maximum Safe Operating Area

Figure 10: Maximum Continuous Drian Current vs. Case Temperature
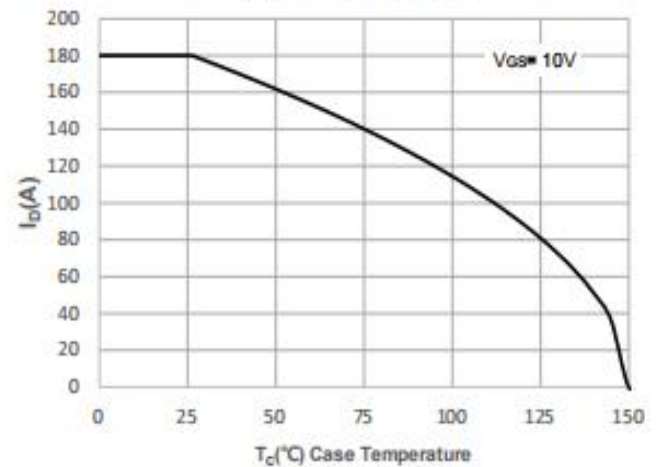

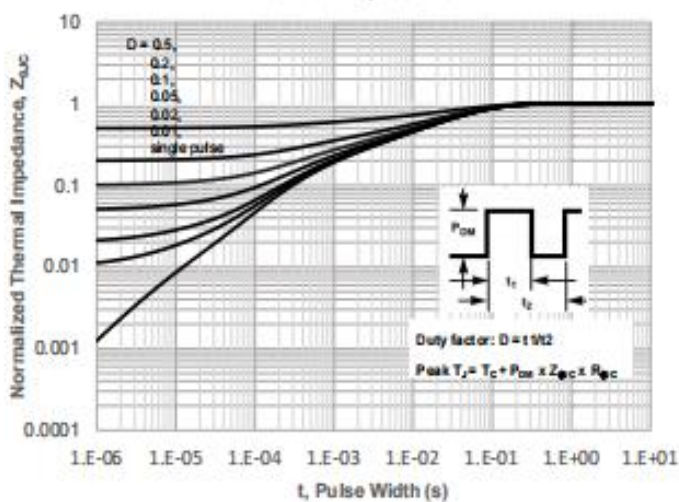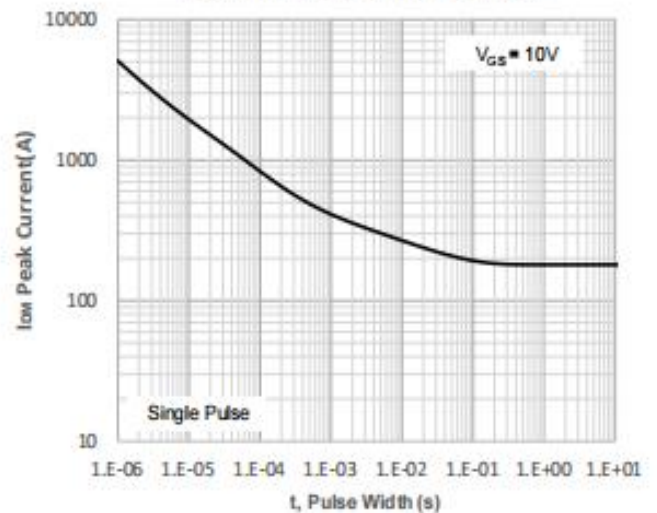Figure 11: Normalized Maximum Transient Thermal Impedance

Figure 12: Peak Current Capacity
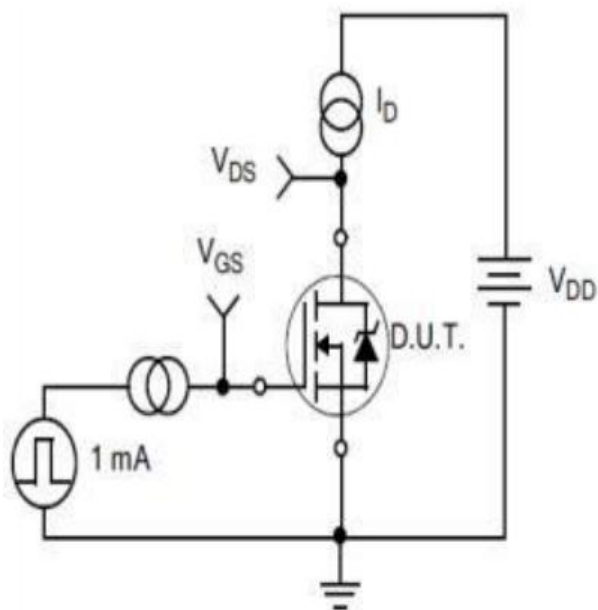
Test ircuits and Waveforms
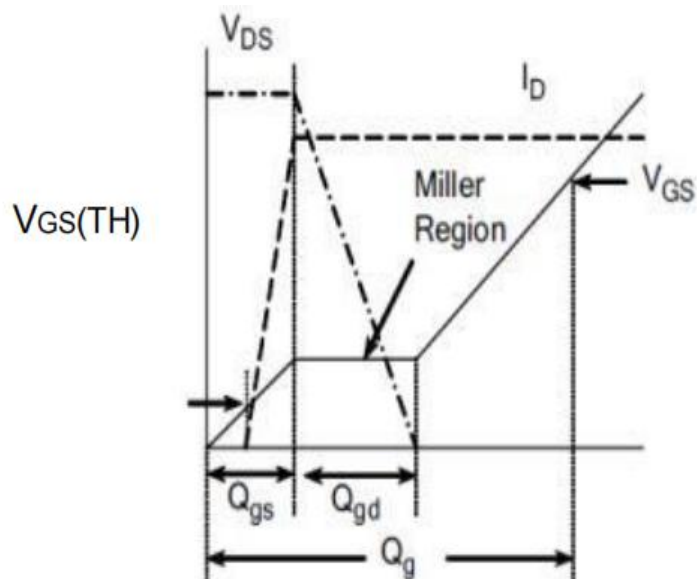

Figure A.
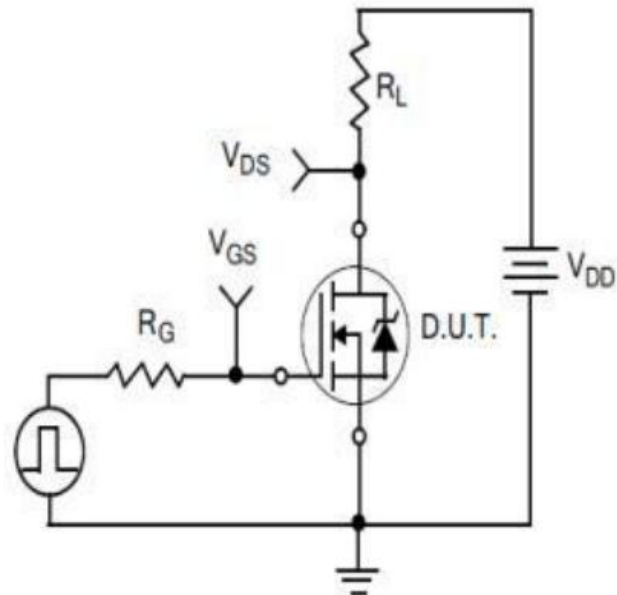Gate Charge Test Circuit

Figure B.
Gate Charge Waveform

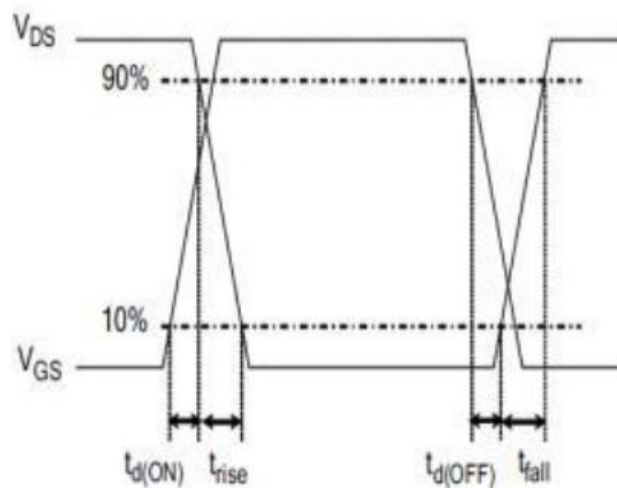
Figure C.
Resistive Switching Test Circuit

Figure D.
Resistive Switching Waveforms

Test ircuits and Waveforms

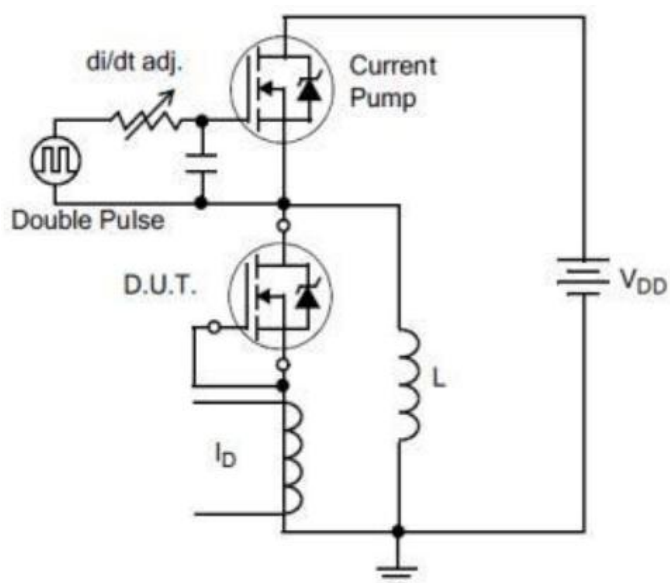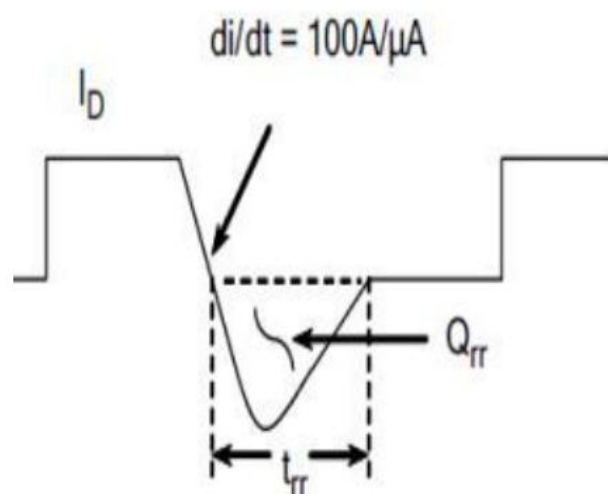
Figure E.Diode Reverse Recovery
Test Circuit

di/dt = 100A/μA

Figure F.Diode Reverse Recovery
Waveform
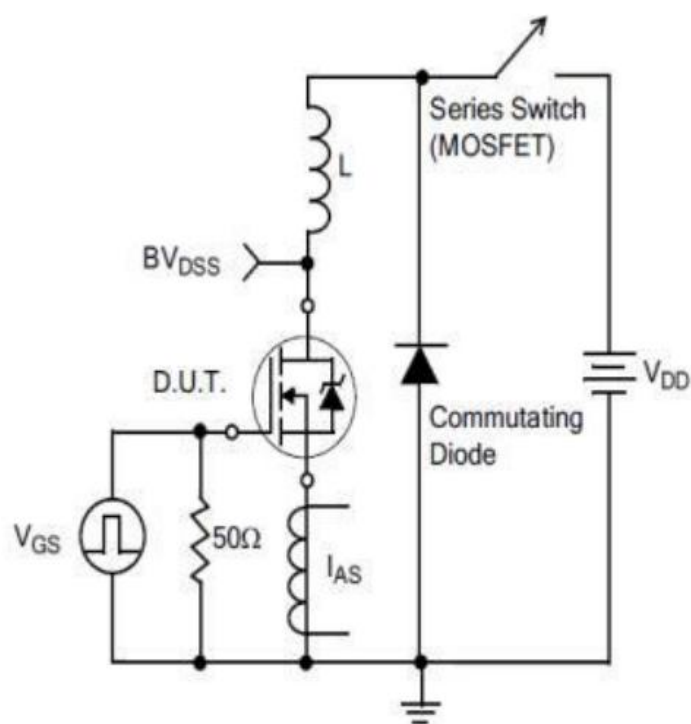
Figure G.Unclamped Inductive
Switching Test Circuit
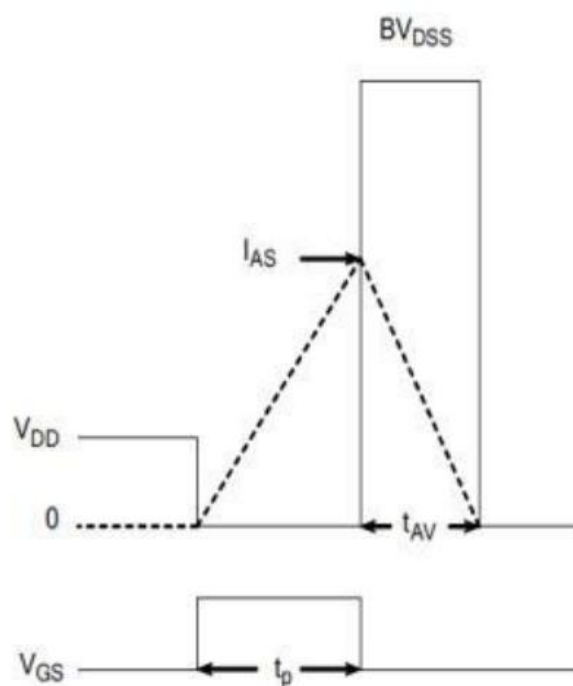
$$E_{AS}= \frac{I_{AS}^2 L}{2}$$

Figure H.Unclamped Inductive
Switching Waveforms

Package outline drawing(TO-252 Unit: mm)
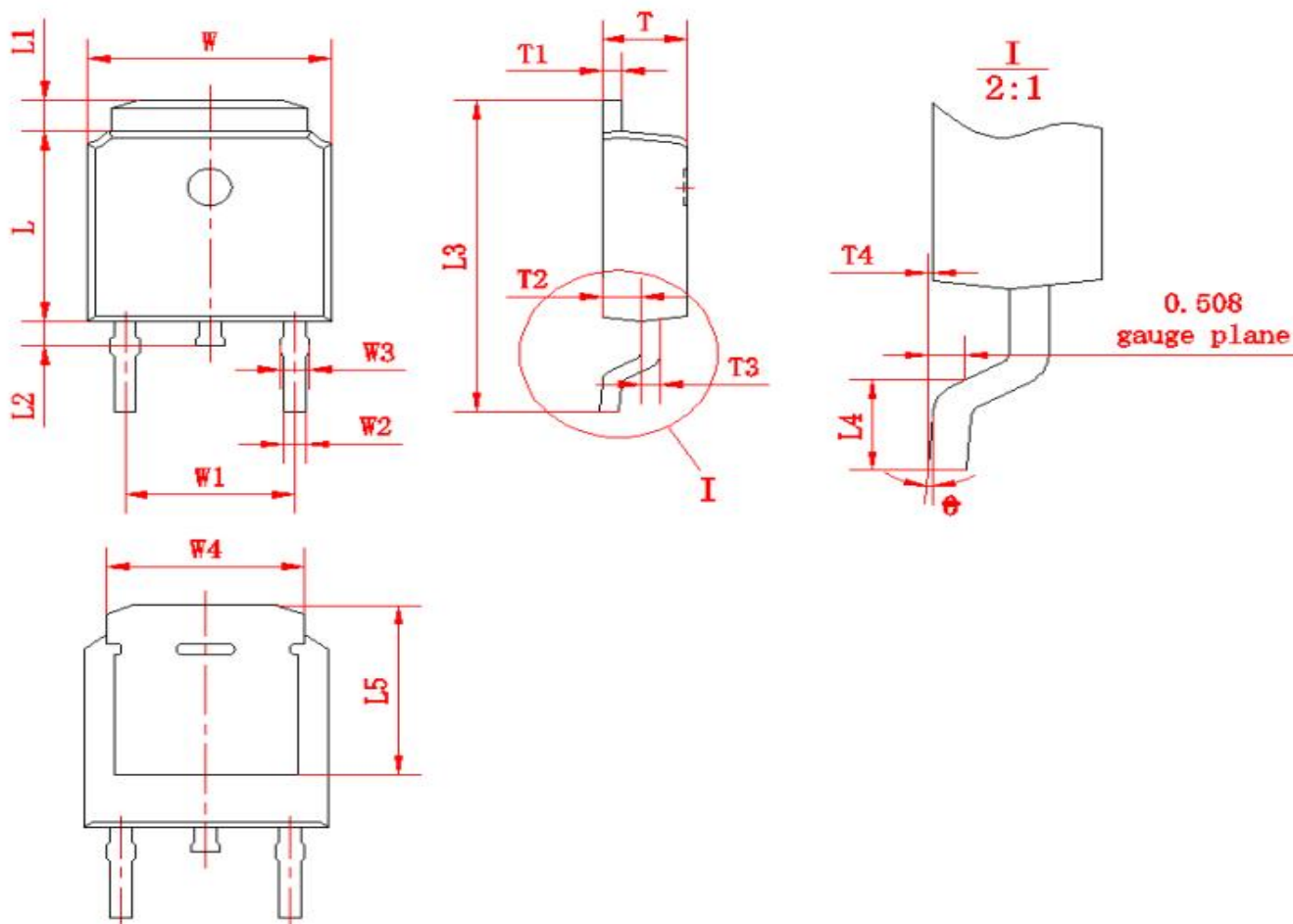
符号	尺寸		符号	尺寸		符号	尺寸	
	Min	Max		Min	Max		Min	Max
W	6.50	6.70	L1	0.80	1.20	T1	0.48	0.58
W1	(4.572)		L2	0.60	1.00	T2	0.95	1.15
W2	0.6	0.8	L3	9.70	10.30	T3	0.48	0.58
W3	0.68	0.88	L4	1.30	1.70	T4	0.00	0.12
W4	(5.3)		L5	(5.20)		θ	0	8
L	6.00	6.20	T	2.20	2.40			

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