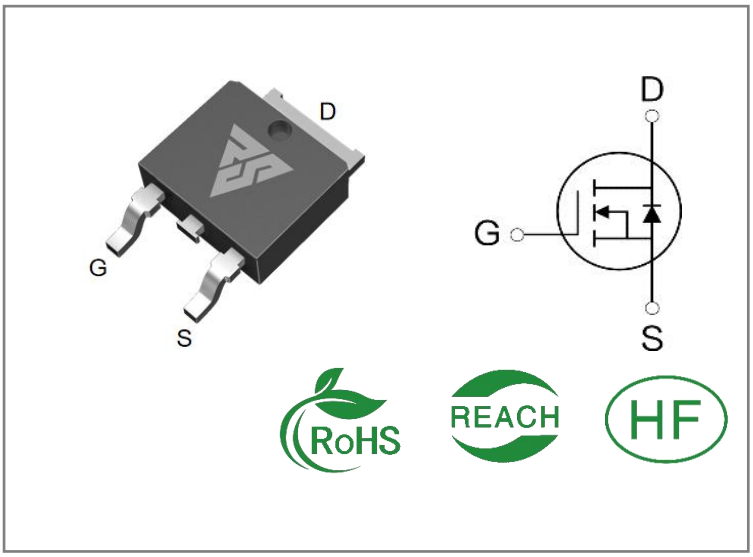
ID	R_{DS}(ON)(Typ)	VDSS
50A	12mΩ	60V



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.
RS60N50D	T0-252	RS60N50D	Tape&reel	2500 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RS60N50D	Units
VDSS	Drain-to-Source Voltage	60	V
ID	Continuous Drain Current TC=25℃	50	A
ID	Continuous Drain Current TC=100℃	33	
IDM	Pulsed Drain Current (Note*1)	200	
PD	Power Dissipation	75	W
VGS	Gate- to- Source Voltage	±20	V
EAS	Single Pulse Avalanche Engergy	81	mJ
TL TPKG	Maximum Temperature for Soldering	300	℃
	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 175	

* 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.

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Thermal Resistance

Symbol	Parameter	RS60N50D	Units	Test Conditions
RθJC	Junction-to-Case	2	℃/ W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃

OFF Characteristics TJ= 25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	60	--	--	V	VGS=0V,ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=60V,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(Note*2)	--	12	17	mΩ	VGS=10V,ID=30A
		--	16	25	mΩ	VGS=4.5V,ID=20A
VGS(TH)	Gate Threshold Voltage	1.0	1.6	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	--	11	--	nS	VDS=30V ID=30A RG=1.8Ω
trise	Rise Time	--	79	--		
td(OFF)	Turn- OFF Delay Time	--	33	--		
tfall	Fall Time	--	107	--		

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Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	2030	--	pF	VGS=0V VDS=25V f=1.0MHz
Coss	Output Capacitance	--	130	--		
Crss	Reverse Transfer Capacitance	--	115	--		
Qg	Total Gate Charge	--	45	--	nC	VDS=30V ID=30A VGS=10V
Qgs	Gate- to- Source Charge	--	8	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	11	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	50	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	200	A	
VSD	Diode Forward Voltage	--	--	1.2	V	IS=30A,VGS=0V
trr	Reverse Recovery Time	--	14	--	nS	VGS=0V IS=30A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	10	--	nC	

Notes:

* 1. Repetitive rating, pulse width limited by maximum junction temperature.
* 2. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 0.5%

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Typical Feature Curve

Figure1: Output Characteristics

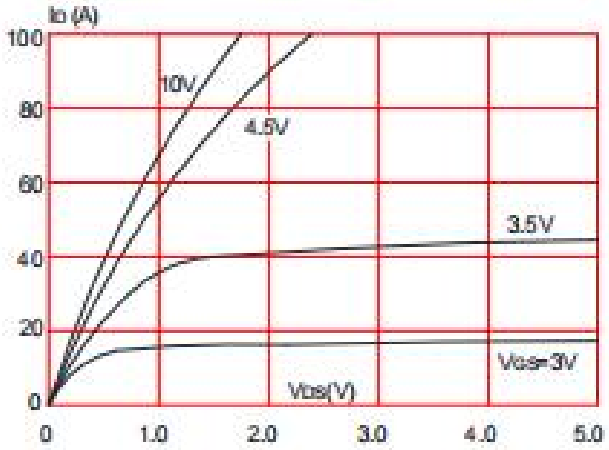

Figure 2: Typical Transfer Characteristics

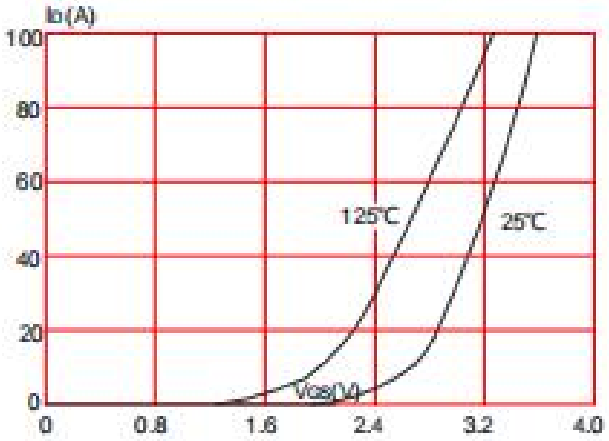

Figure 3: On-resistance vs. Drain Current

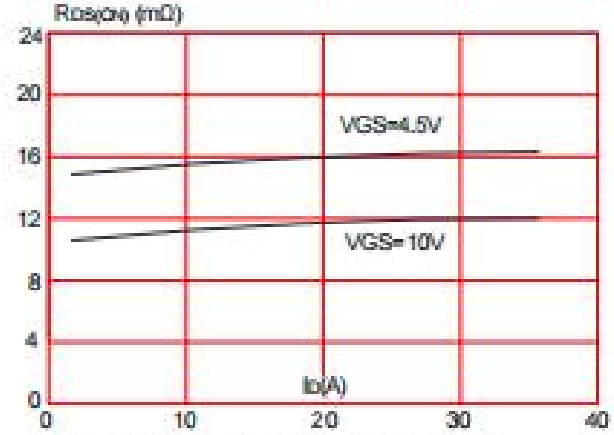

Figure 4: Body Diode Characteristics

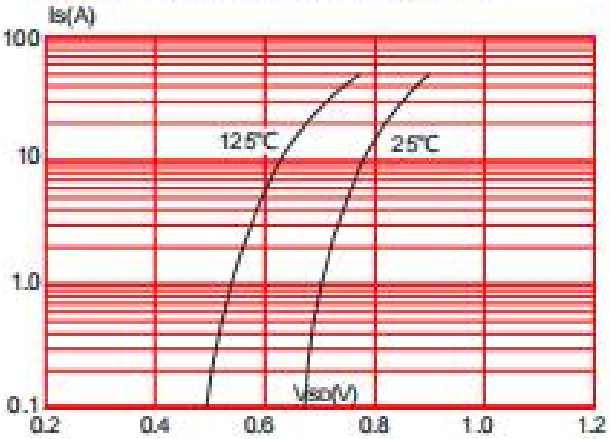

Figure 5: Gate Charge Characteristics

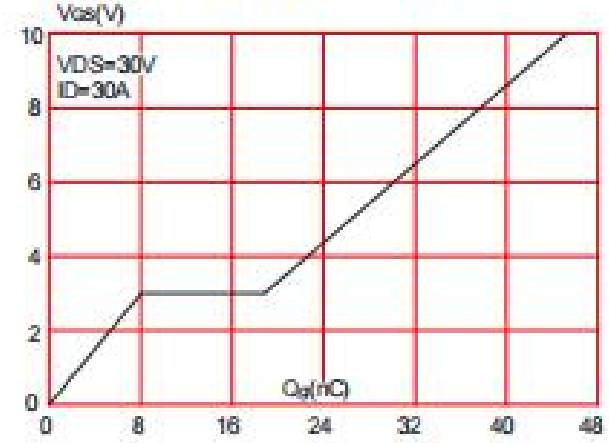

Figure 6: Capacitance Characteristics

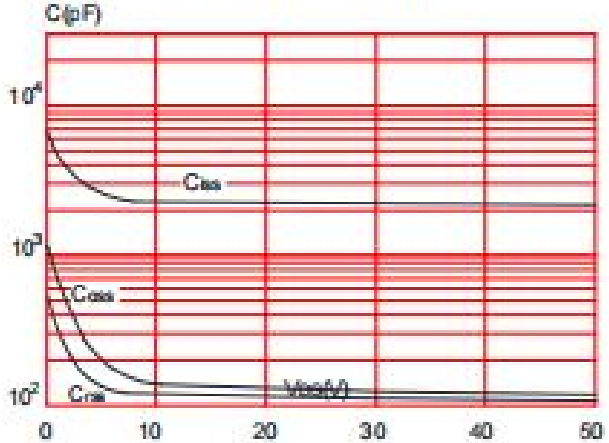

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Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

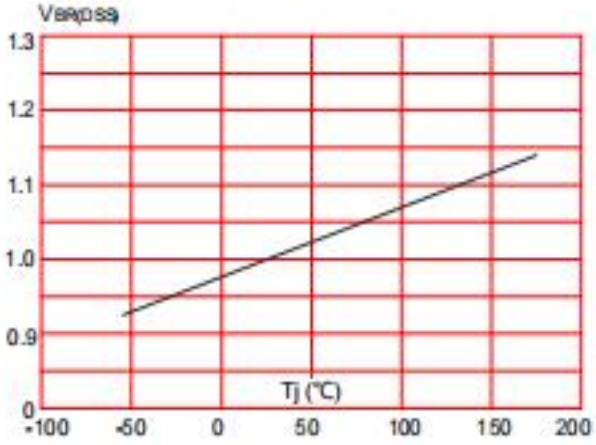


Figure 8: Normalized on Resistance vs. Junction Temperature

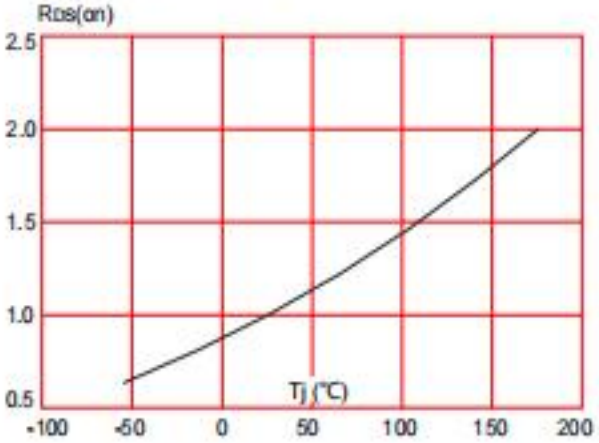


Figure 9: Maximum Safe Operating Area

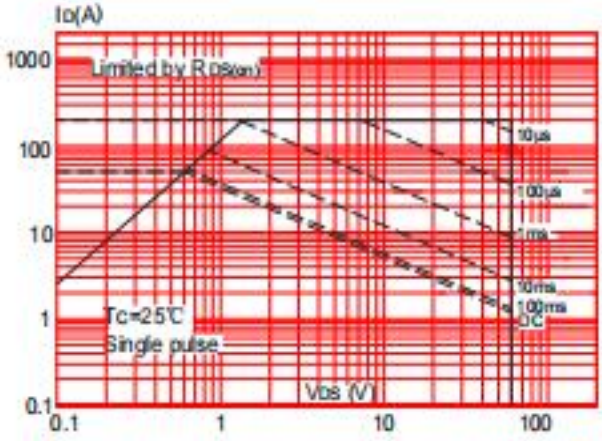


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

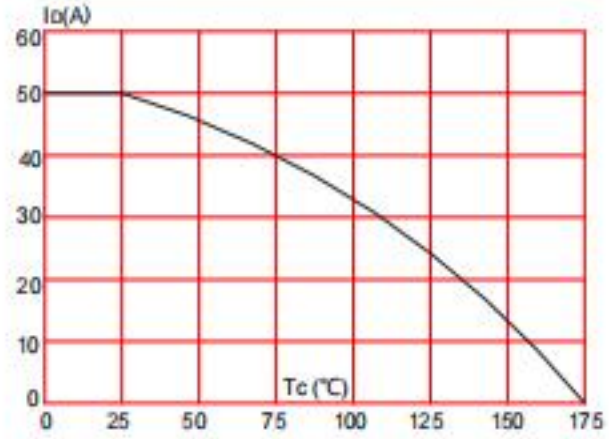
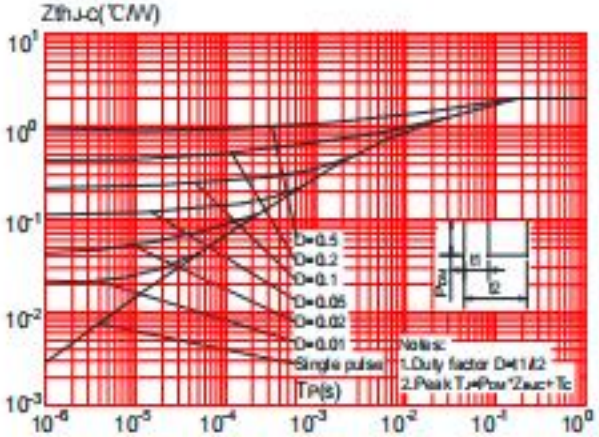


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



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Test ircuits and Waveforms

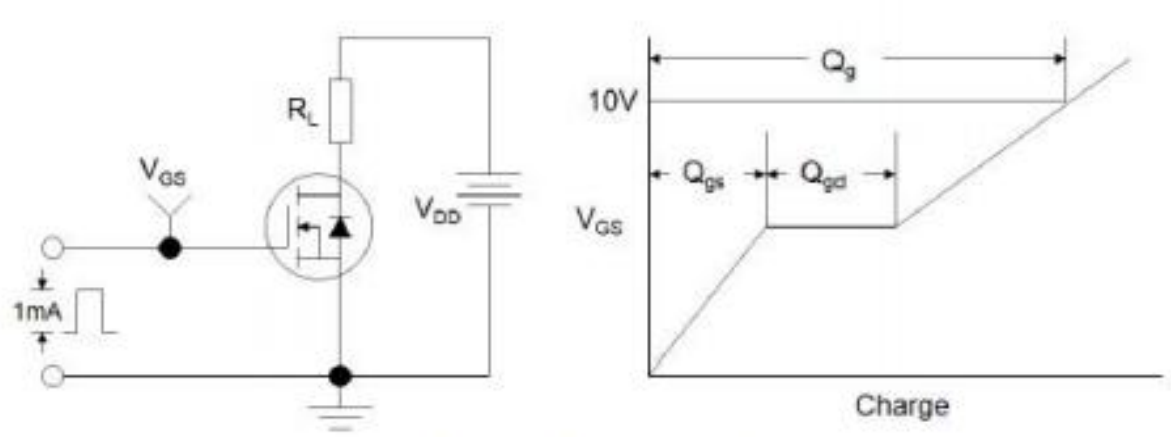

Figure1:Gate Charge Test Circuit & Waveform

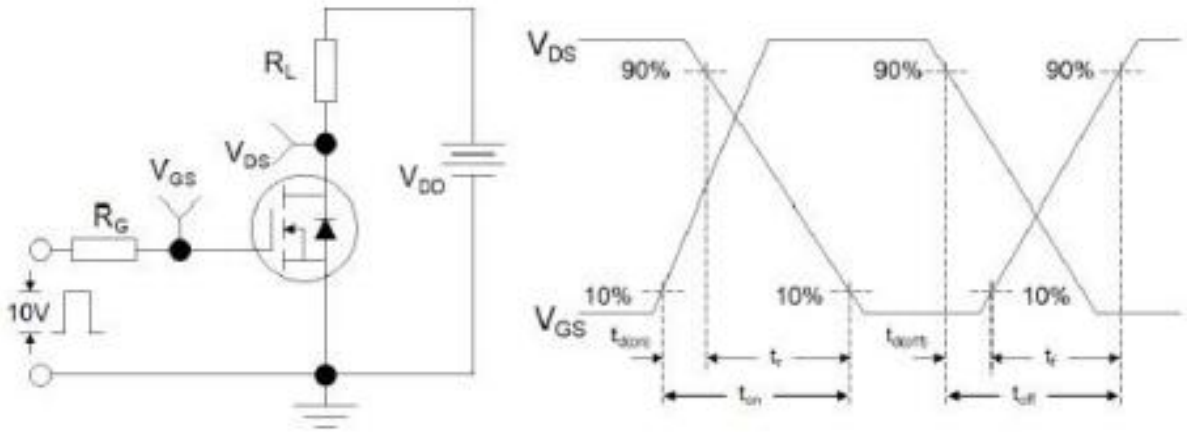

Figure 2: Resistive Switching Test Circuit & Waveforms

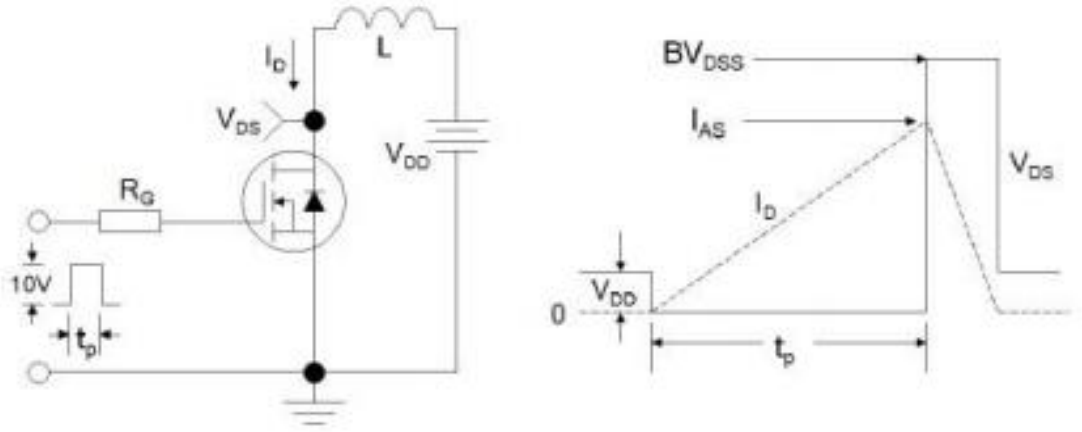

Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

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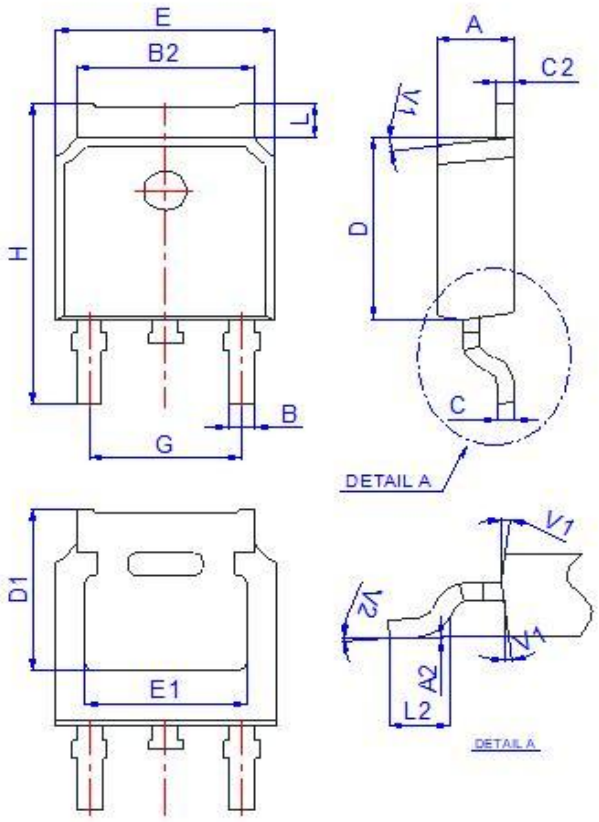
Package outline drawing(TO-252 Unit: mm)



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

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