ID	R_{DS}(ON)(Typ)	VDSS
40A	71mΩ	600V

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
- Fast Recovery Time

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RSF60T090W	T0-247	RSF60T090W	Tube	30 PCS

Absolute Maximun Ratings **Tc= 2 5℃ unless otherwise specified**

Symbol	Parameter	RSF60T090W	Units
VDSS	Drain-to-Source Voltage	600	V
ID	Continuous Drain Current TC=25℃	40	A
ID	Continuous Drain Current TC=100℃	20	
IDM	Pulsed Drain Current (Note*1)	120	
PD	Power Dissipation	219	W
VGS	Gate- to- Source Voltage	±30	V
EAS	Single Pulse Avalanche Engergy VDD = 50V, RG = 25 Ω，TC=25℃	625	mJ
dv/dt	Reverse diode dv/dt VDS = 0...480V, Tj = 25℃, ISD≤ID	50	V/ns
TL TPKG	Maximum Temperature for Soldering		℃
	Leads at 0.063in(1.6mm)from Case for 10 seconds	300	
	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	RSF60T090W	Units	Test Conditions
RθJC	Junction-to-Case	0.57	℃/ 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	600	--	--	V	VGS=0V ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	10	μA	VDS=600V 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 TJ=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance(Note*2)	--	71	90	mΩ	VGS=10V ID=20A
VGS(TH)	Gate Threshold Voltage	3	4	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	--	36	--	nS	VDS=300V ID=40A RG=10Ω
trise	Rise Time	--	75	--		
td(OFF)	Turn- OFF Delay Time	--	68	--		
tfall	Fall Time	--	48	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	2898	--	pF	VGS=0V VDS=200V f=100KHz
Coss	Output Capacitance	--	68	--		
Crss	Reverse Transfer Capacitance	--	2.5	--		
Qg	Total Gate Charge	--	56	--	nC	VDS=480V ID=40A VGS=10V
Qgs	Gate- to- Source Charge	--	19	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	23	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	40	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	120	A	
VSD	Diode Forward Voltage	--	--	1.4	V	IS=40A,VGS=0V
trr	Reverse Recovery Time	--	190	--	nS	VGS=0V IS=40A di/dt=100A/µs
Qrr	Reverse Recovery Charge	--	1.6	--	µC	

Notes:

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* 1. Repetitive rating, pulse width limited by maximum junction temperature.

* 2. Pulse Test: Pulse width ≤ 300µs, Duty Cycle ≤ 2%

Typical Feature Curve

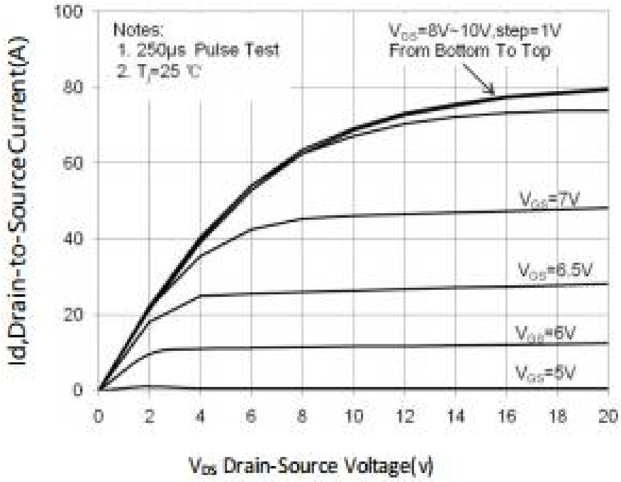


Figure1. Typical Output Characteristics

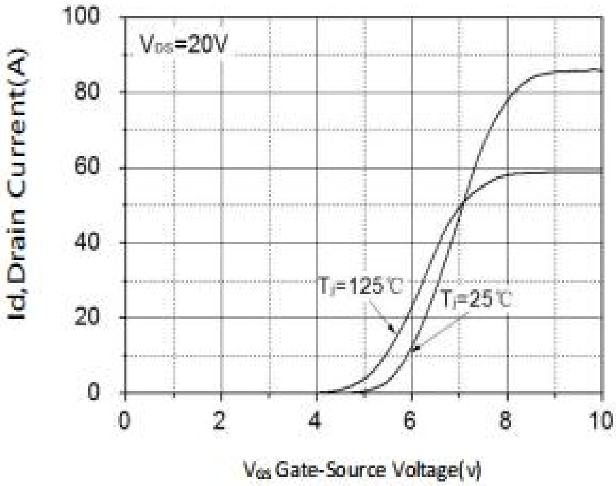


Figure2. Typical Transfer Characteristics

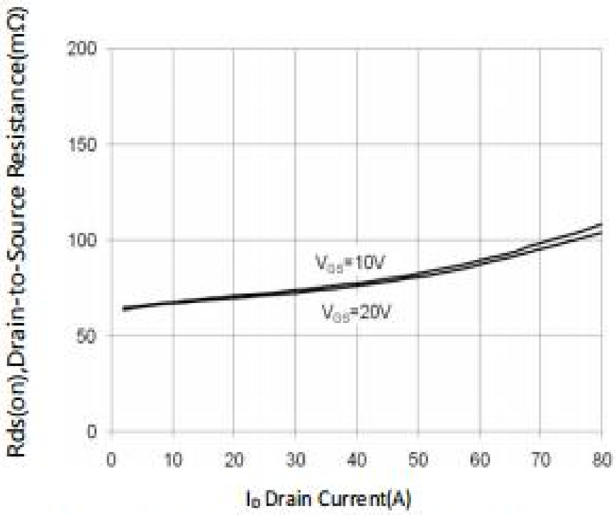


Figure3. On-Resistance versus Drain Current

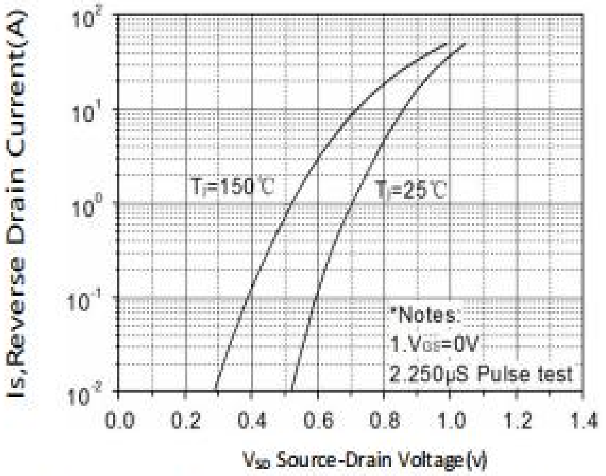


Figure4. Diode forward voltage versus Current

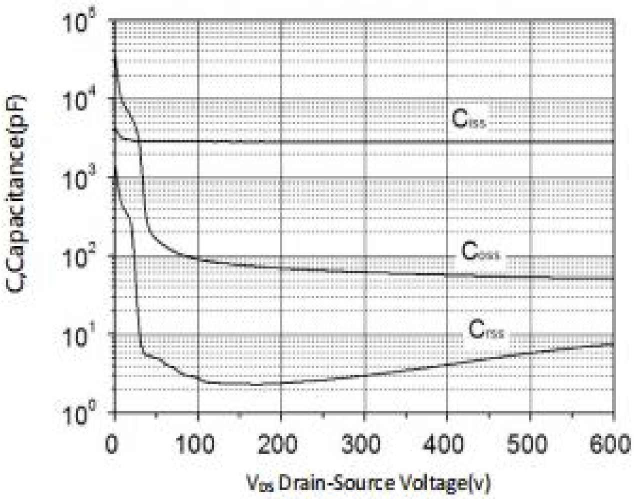


Figure5. Typical Capacitance versus V_{DS}

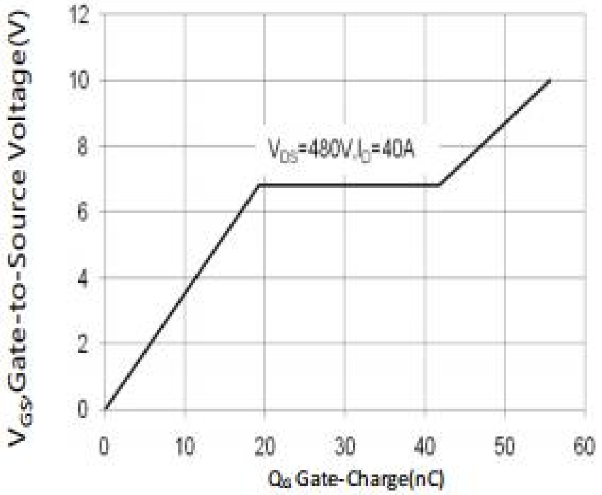


Figure6. Typical Gate Charge versus V_{GS}

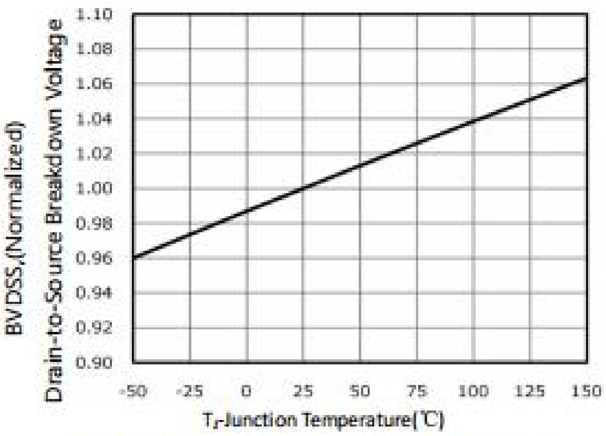


Figure7. BV_{DSS} Variation with Temperature

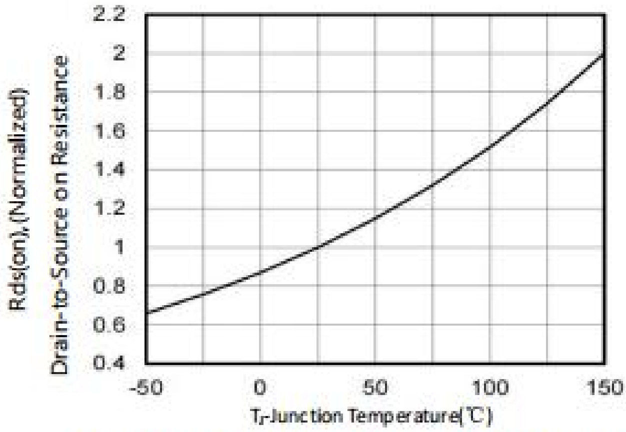


Figure8. On-Resistance Variation with Temperature

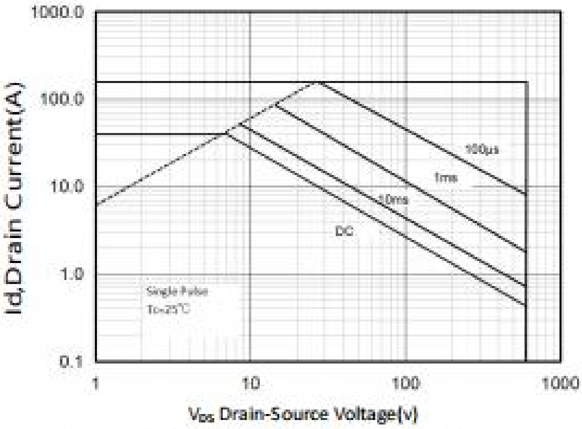


Figure9. Maximum Safe Operating Area

TO-247

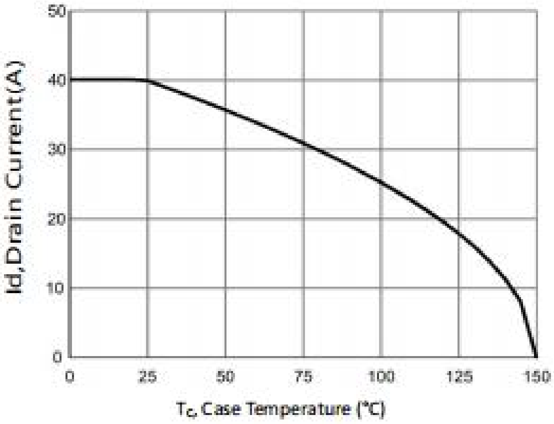
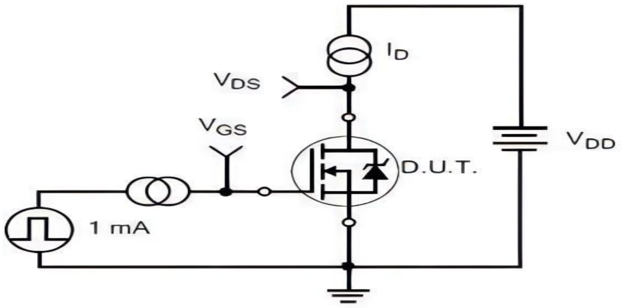
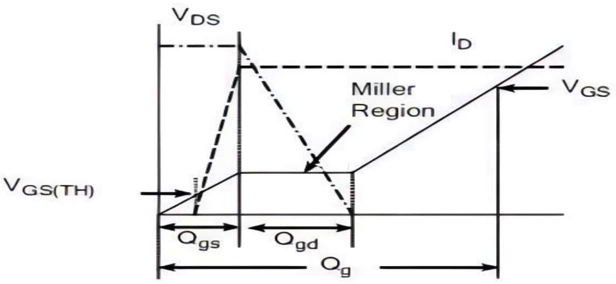


Figure10. Maximum Continuous Drain Current versus Case Temperature

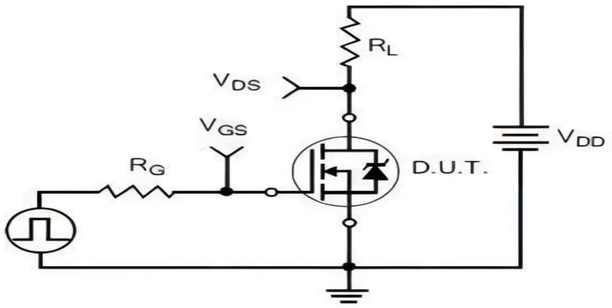
Test Circuits and Waveforms



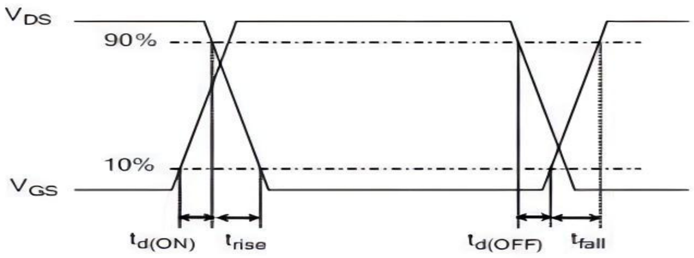
Gate Charge Test Circuit



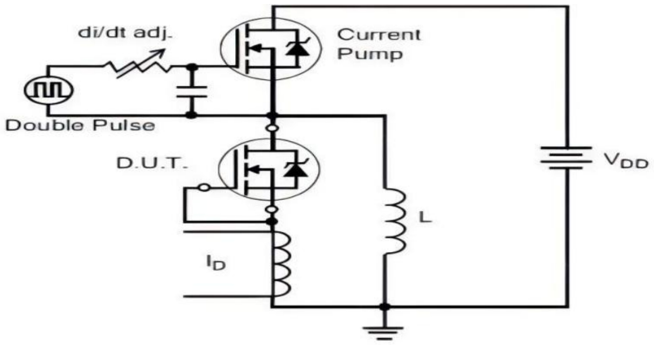
Gate Charge Waveform



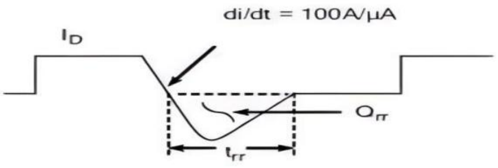
Resistive Switching Test Circuit



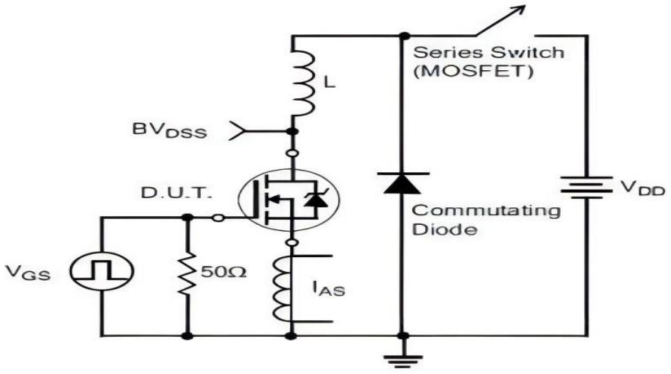
Resistive Switching Waveforms



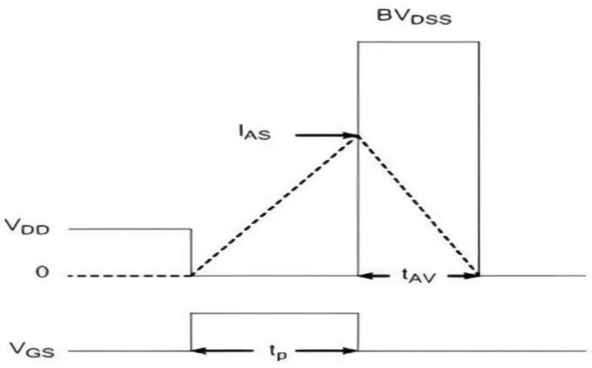
Diode Reverse Recovery Test Circuit



Diode Reverse Recovery Waveform



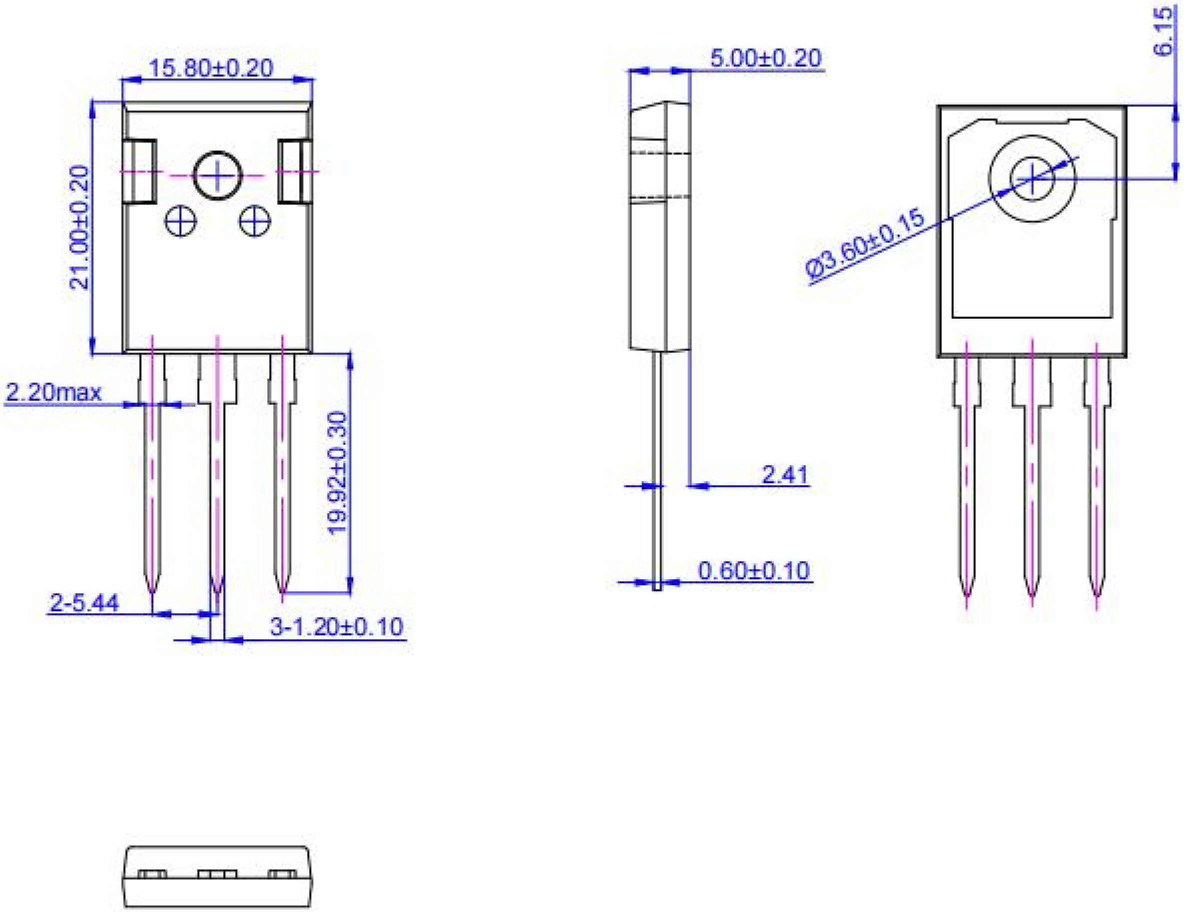
Unclamped Inductive Switching Test Circuit



$$E_{AS} = \frac{I_{AS}^2 L}{2}$$

Unclamped Inductive Switching Waveforms

Package outline drawing(TO-247 Unit: mm)



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