Absolute Maximum Ratings at T_j=25°C unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	60	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current[1], T_C=25 °C	I_D	68	A
Pulsed drain current[2], T_C=25 °C	$I_{D,\ pulse}$	204	A
Continuous diode forward current[1], T_C=25 °C	I_S	68	A
Diode pulsed current[2], T_C=25 °C	$I_{S,\ pulse}$	204	A
Power dissipation[3], T_C=25 °C	P_D	81	W
Single pulsed avalanche energy[5]	E_{AS}	91	mJ
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	$R_{:3}$	1.54	°C/W
Thermal resistance, junction-ambient[4]	$R_{:1}$	62	°C/W

Electrical Characteristics at T_j=25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	60			V	V_{GS}=0 V, I_D=250 A
Gate threshold voltage	$V_{GS(th)}$	1.0		2.5	V	V_{DS}=V_{GS}, I_D=250 A
Drain-source on-state resistance	$R_{DS(ON)}$		7.5	10		V_{GS}=10 V, I_D=20 A
Drain-source on-state resistance	$R_{DS(ON)}$		10	14		V_{GS}=4.5 V, I_D=10 A
Gate-source leakage current	I_{GSS}			100	nA	V_{GS}=20 V
				-100		V_{GS}=-20 V
Drain-source leakage current	I_{DSS}			1	A	V_{DS}=60 V, V_{GS}=0 V

Oriental Semiconductor © Copyright Reserved V2.0

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		1204		pF	V_{GS}=0 V, V_{DS}=50 V, - Hz
Output capacitance	C_{oss}		194.1		pF	
Reverse transfer capacitance	C_{rss}		9.9		pF	
Turn-on delay time	$t_{d(on)}$		23.9		ns	V_{GS}=10 V, V_{DS}=50 V, R_G- I_D=25 A
Rise time	t_r		4.6		ns	
Turn-off delay time	$t_{d(off)}$		37.8		ns	
Fall time	t_f		6.4		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		17.9		nC	V_{GS}=10 V, V_{DS}=50 V, I_D=25 A
Gate-source charge	Q_{gs}		3.8		nC	
Gate-						

Oriental Semiconductor © Copyright Reserved V2.0

Electrical Characteristics Diagrams

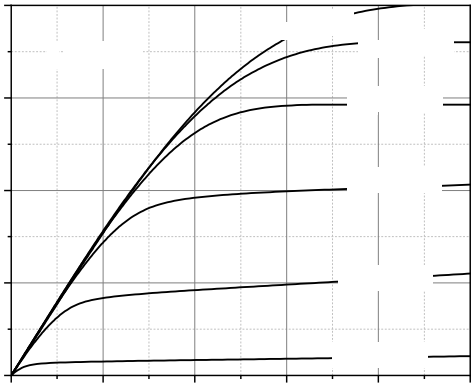

Figure 1. Typ. output characteristics

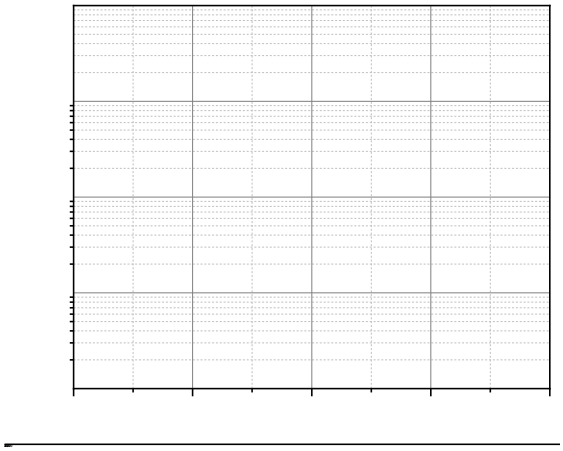

Figure 2. Typ. transfer characteristics

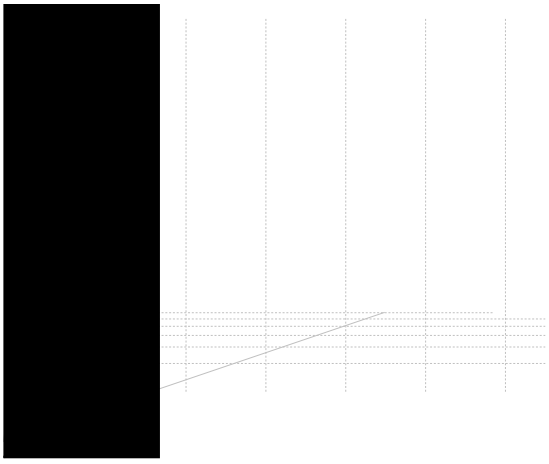

Figure 3. Typ. capacitances

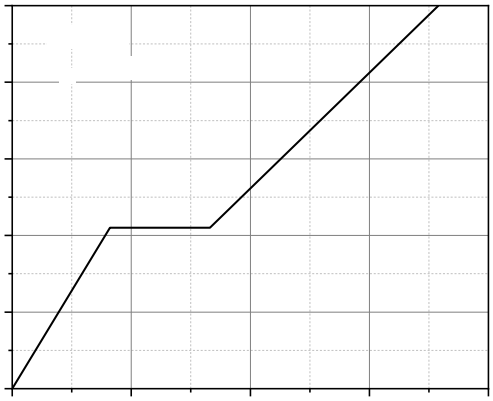

Figure 4. Typ. gate charge

Figure 5. Drain-source breakdown voltage

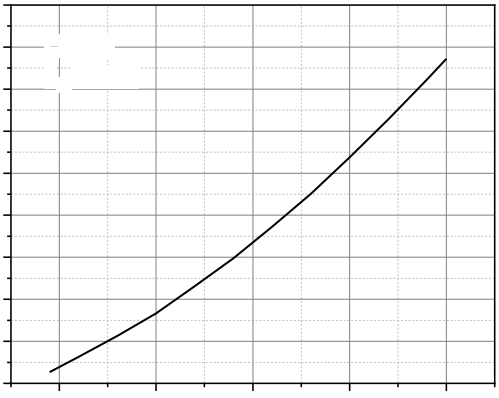

Figure 6. Drain-source on-state resistance

Oriental Semiconductor © Copyright Reserved V2.0

Oriental Semiconductor © Copyright Reserved V2.0

Test circuits and waveforms

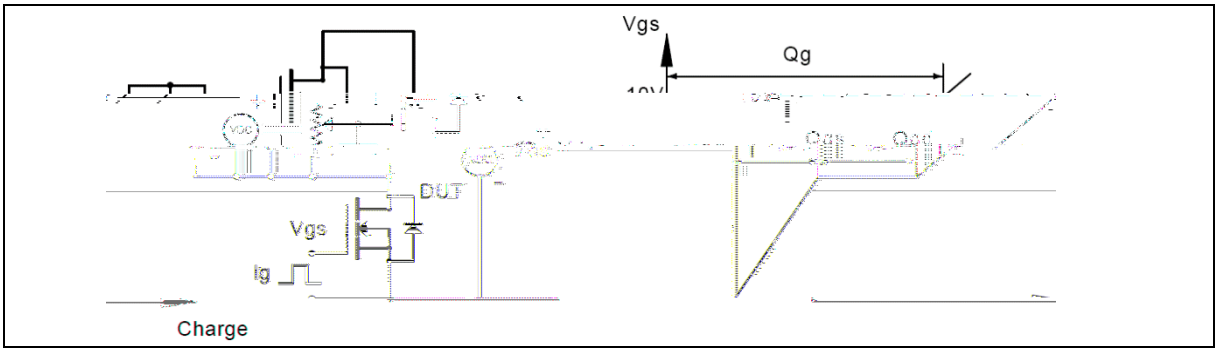

Figure 1. Gate charge test circuit & waveform

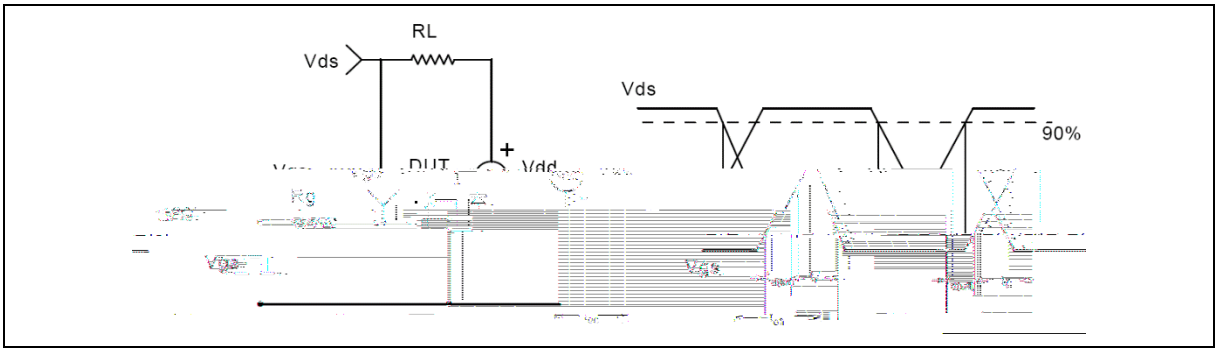

Figure 2. Switching time test circuit & waveforms

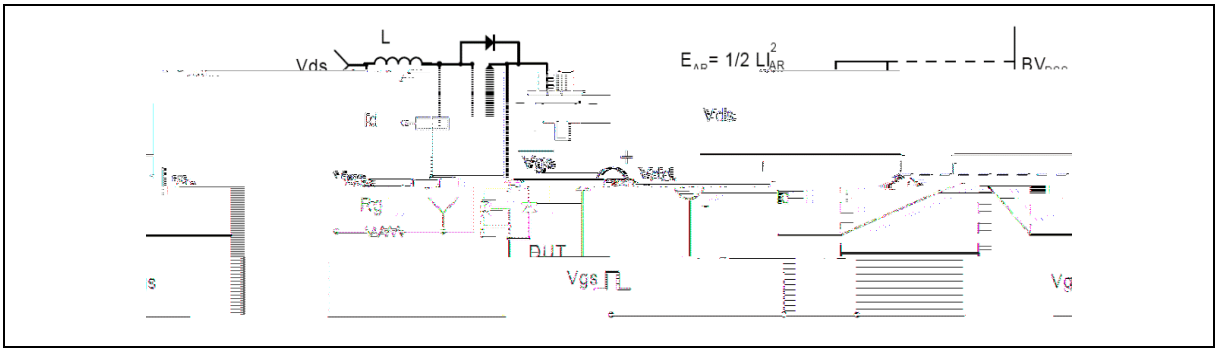

Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

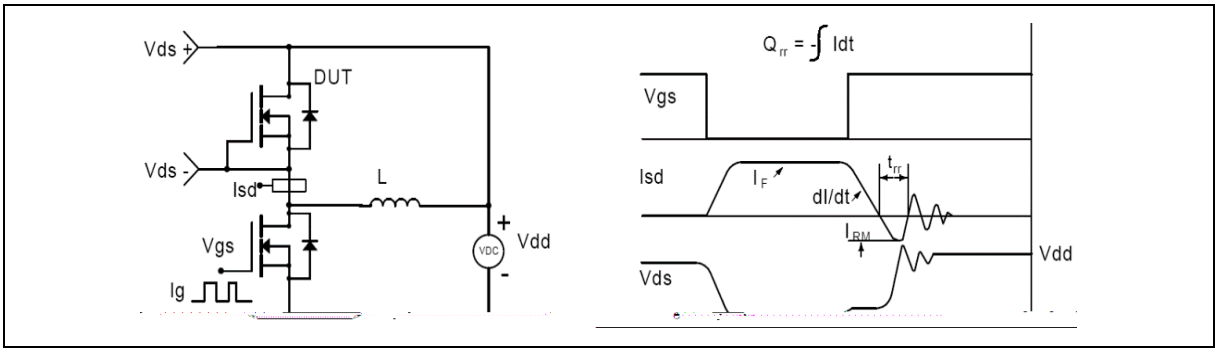

Figure 4. Diode reverse recovery test circuit & waveforms

Package Information

Symbol	mm		
	Min	Nom	Max
A	4.40	4.50	4.60
A1	1.27	1.30	1.33
A2	2.30	2.40	2.50
b	0.70	-	0.90
b1	1.27	-	1.40
c	0.45	0.50	0.60
D	15.30	15.70	16.10
D1	9.10	9.20	9.30
D2	13.10	-	13.70
E	9.70	9.90	10.20
E1	7.80	8.00	8.20

Oriental Semiconductor © Copyright Reserved V2.0

Ordering Information

Package Type	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO220-J	50	20	1000	5	5000

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
SFS06R10PF	TO220	yes	yes	yes

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Oriental Semiconductor hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

For further information on technology, delivery terms and conditions and prices, please contact the Oriental Semiconductor sales representatives (www.orientalsemi.com).

© Oriental Semiconductor Co.,Ltd. All Rights Reserved

ORIENTAL SEMICONDUCTOR