General Description

SFGMOS®

DS(ON),

low gate charge, fast switching and excellent avalanche characteristics. The high V_{th} series is specially optimized for high systems with gate driving voltage greater than 10V.

Features

- Low $R_{DS(ON)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

Applications

- Switched mode power supply
- Motor driver
- Battery protection
- DC-DC convertor
- Solar inverter
- UPS and energy inverter

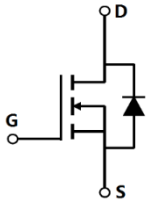
Key Performance Parameters

Parameter	Value	Unit
$V_{DS,\ min}$ @ $T_{j(max)}$	100	V
$I_{D,\ pulse}$	450	A
$R_{DS(ON),\ max}$ @ V_{GS}=10V	3.5	
Q_g	87.8	nC

Marking Information

Product Name	Package	Marking
SFG150N10KF	TO263	SFG150N10K

Package & Pin information



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

Parameter	Symbol	Value	Unit
Drain source voltage	V_{DS}	100	V
Gate source voltage	V_{GS}	±20	V
Continuous drain current[1)], T_C=25 °C	I_D	150	A
Pulsed drain current[2)], T_C=25 °C	$I_{D, pulse}$	450	A
Continuous diode forward current[1)], T_C=25 °C	I_S	150	A
Diode pulsed current[2)], T_C=25 °C	$I_{S, pulse}$	450	A
Power dissipation[3)], T_C=25 °C	P_D	250	W
Single pulsed avalanche energy[5)]	E_{AS}	265	mJ
Operation and storage temperature	T_{stg} T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	R	0.5	°C/W
Thermal resistance, junction-ambient[4)]	R	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}	100			V	V_{GS}=0 V, I_D=250 A
Gate threshold voltage	$V_{GS(th)}$	2.0		4.0	V	V_{DS}=V_{GS}, I_D=250 A
Drain-source on-state resistance	$R_{DS(ON)}$		3.22	3.50		V_{GS}=10 V, I_D=30 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}=100 V, V_{GS}=0 V
Gate resistance	R_G		4.9			

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		6850		pF	V_{GS}=0 V, V_{DS}=25 V, 100 kHz
Output capacitance	C_{oss}		3170		pF	
Reverse transfer capacitance	C_{rss}		251		pF	
Turn-on delay time	$t_{d(on)}$		32		ns	V_{GS}=10 V, V_{DS}=50 V, R_G I_D=65 A
Rise time	t_r		138		ns	
Turn-off delay time	$t_{d(off)}$		88		ns	
Fall time	t_f		106		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		87.8		nC	V_{GS}=10 V, V_{DS}=50 V, I_D=65 A
Gate-source charge	Q_{gs}		27.1		nC	
Gate-drain charge	Q_{gd}		22.9		nC	
Gate plateau voltage	$V_{plateau}$		5.5		V	

Electrical Characteristics Diagrams

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Test circuits and waveforms

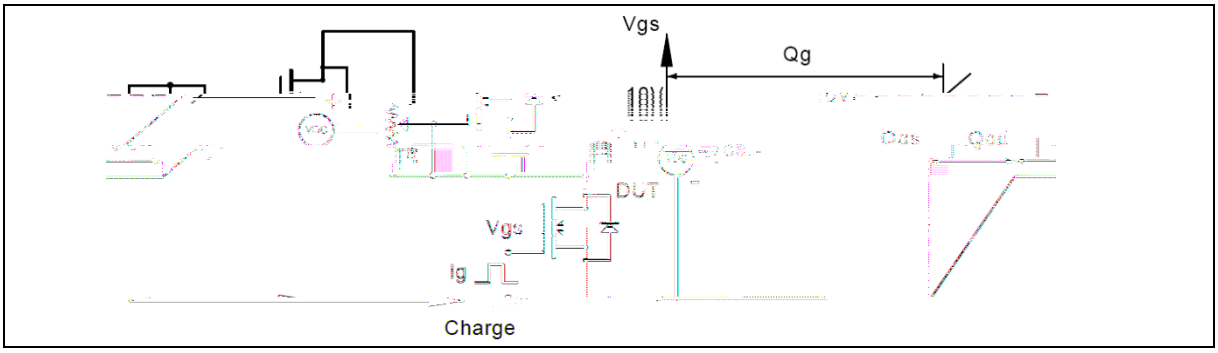

Figure 1. Gate charge test circuit & waveform

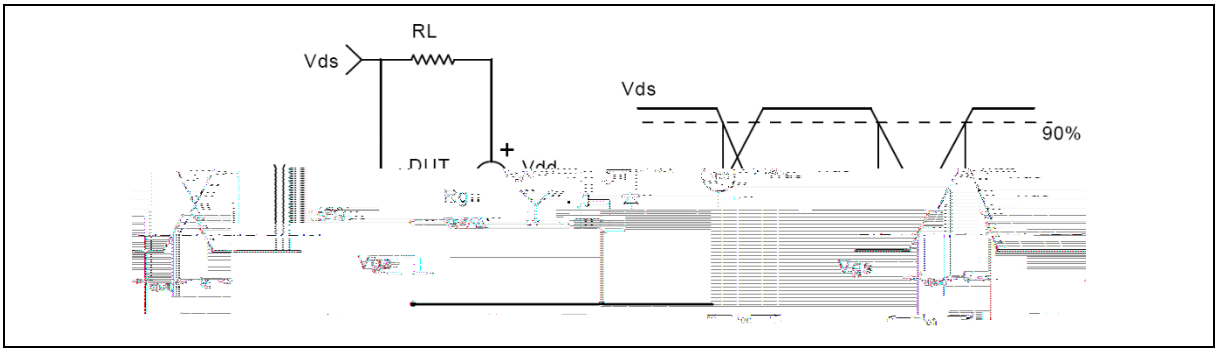

Figure 2. Switching time test circuit & waveforms

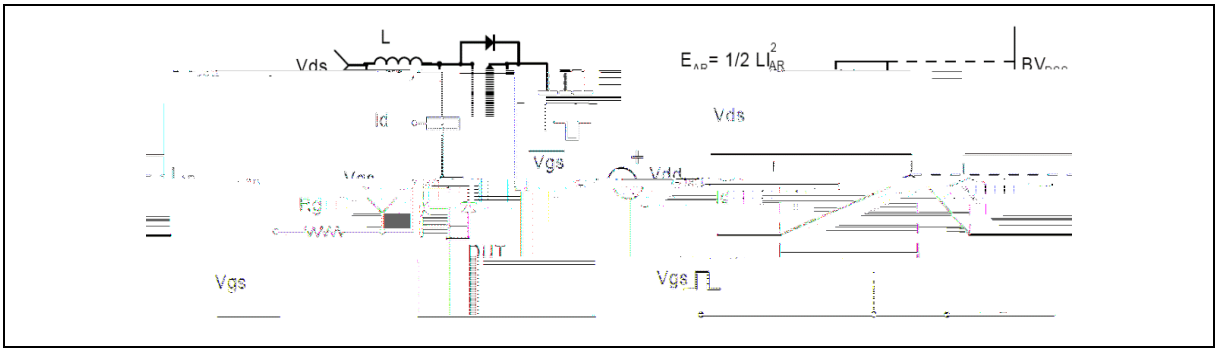

Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

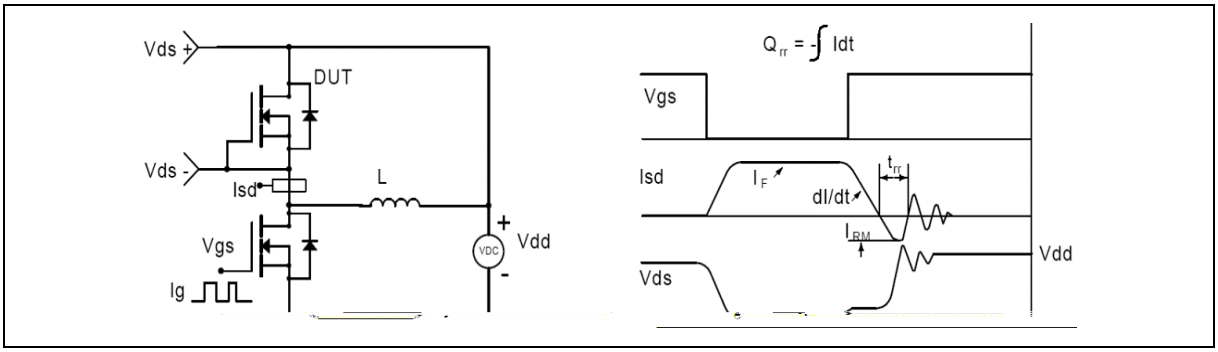

Figure 4. Diode reverse recovery test circuit & waveforms

Package Information

Symbol	mm		
	Min	Nom	Max
A	4.40	4.50	4.60
A1	0.00	0.10	0.25
A2	2.20	2.40	2.60
b	0.76	-	0.89
b1	0.75	0.80	0.85
b2	1.23	-	1.37
b3	1.22	1.27	1.32
c	0.47	-	0.60
c1	0.46	0.51	0.56
c2	1.25	1.30	1.35
D	9.10	9.20	9.30
D1	8.00	-	-
E	9.80	9.90	10.00
E1	7.80	-	-
e	2.54 BSC		
H	14.90	15.30	15.70

14.90

Ordering Information

Package Type	Units/ Reel	Reels / Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO263-C	800	1	800	5	4000
TO263-J	800	1	800	10	8000

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
SFG150N10KF	TO263	yes	yes	yes

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