General Description

SFGMOS® B D ; : D

$R_{DS(ON)}$, low gate charge, fast switching and excellent avalanche characteristics. The low V_{th} series is specially designed to use in synchronous rectification power systems with low driving voltage.

Features

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

Applications

- PD charger
- Motor driver
- Switching voltage regulator
- DC-DC convertor
- Switched mode power supply

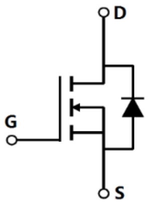
Key Performance Parameters

Parameter	Value	Unit
$V_{DS,\ min}$ @ $T_{j(max)}$	100	V
$I_{D,\ pulse}$	90	A
$R_{DS(ON),\ max}$ @ V_{GS}=10V	20	
Q_g	16.2	nC

Marking Information

Product Name	Package	Marking
SFG10S20GF	PDFN5*6	SFG10S20G

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 current1), T_C=25 °C	I_D	30	A
Pulsed drain current2), T_C=25 °C	$I_{D,\ pulse}$	120	A
Continuous diode forward current1), T_C=25 °C	I_S	30	A
Diode pulsed current2), T_C=25 °C	$I_{S,\ pulse}$	120	A
Power dissipation3), T_C=25 °C	P_D	71	W
Single pulsed avalanche energy5)	E_{AS}	57	mJ
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	**Symbol**	**Value**	**Unit**
Thermal resistance, junction-case	R_{8}	1.76	°C/W
Thermal resistance, junction-ambient4)	R_{6}	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	$V_{GS(th)}$	1.4		2.5	V	V_{DS}=V_{GS}, I_D=250 A
Drain-source on-state resistance	$R_{DS(ON)}$		13.8	20.0		V_{GS}=10 V, I_D=10 A

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		1004		pF	V_{GS}=0 V, V_{DS}=50 V, 2100 kHz
Output capacitance	C_{oss}		185		pF	
Reverse transfer capacitance	C_{rss}		9.8		pF	
Turn-on delay time	$t_{d(on)}$		16.6		ns	V_{GS}=10 V, V_{DS}=50 V, R_G=10

Electrical Characteristics Diagrams

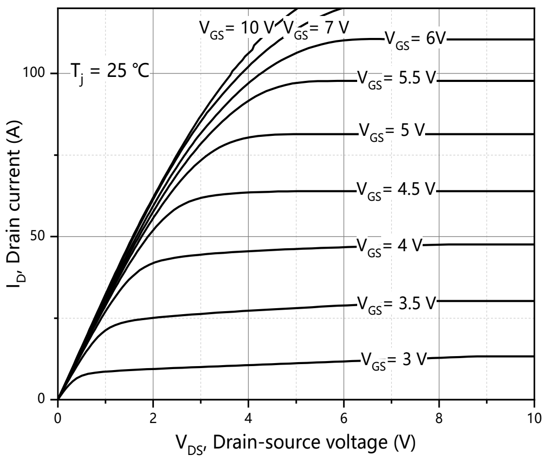


Figure 1. Typ. output characteristics

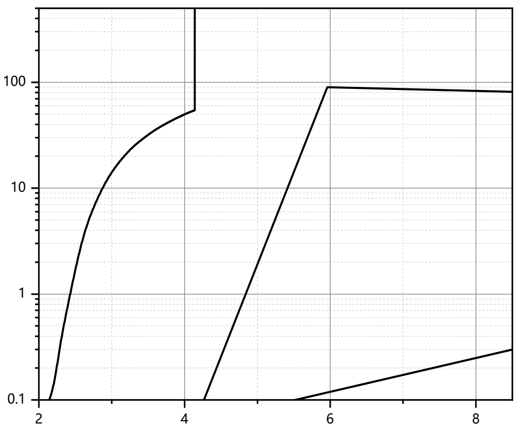


Figure 2. Typ. transfer characteristics

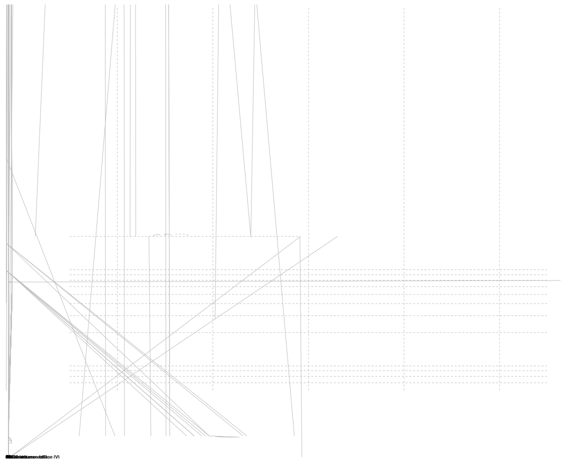


Figure 3. Typ. capacitances

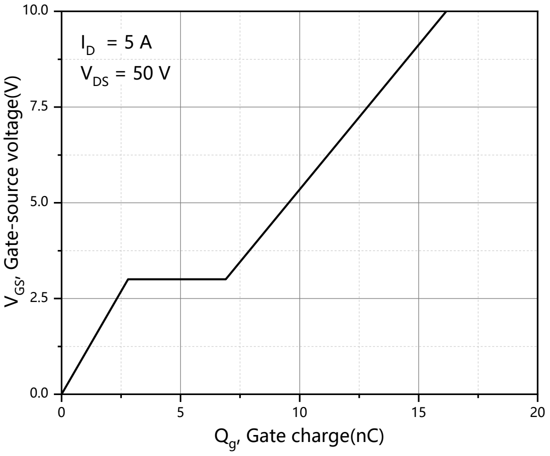


Figure 4. Typ. gate charge

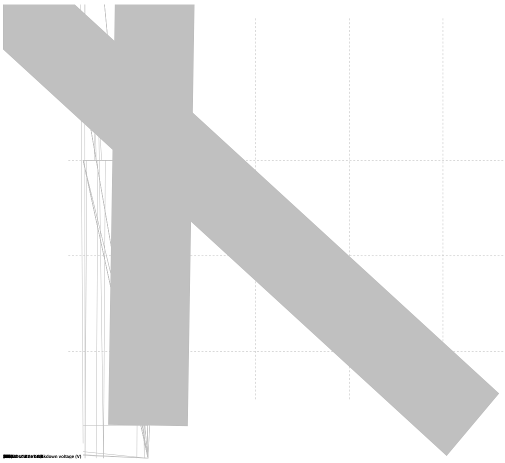


Figure 5. Drain-source breakdown voltage

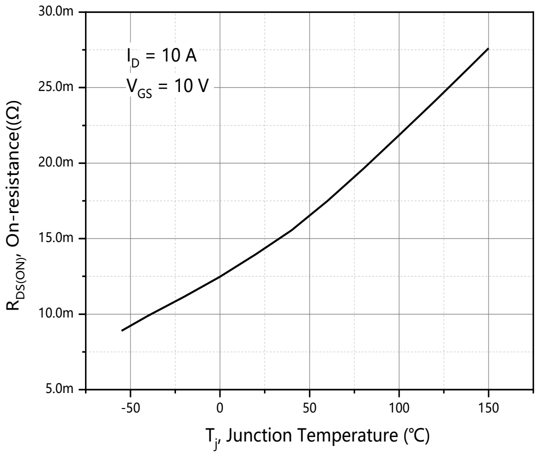


Figure 6. Drain-source on-state resistance

Test circuits and waveforms

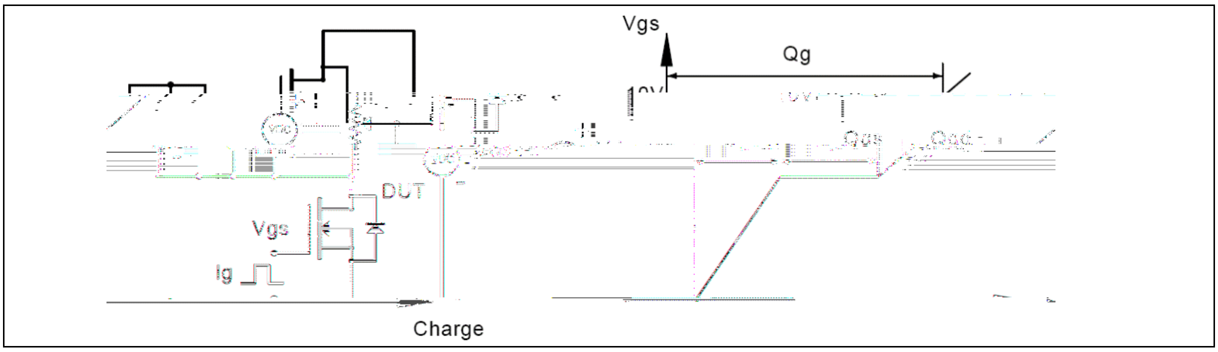


Figure 1. Gate charge test circuit & waveform

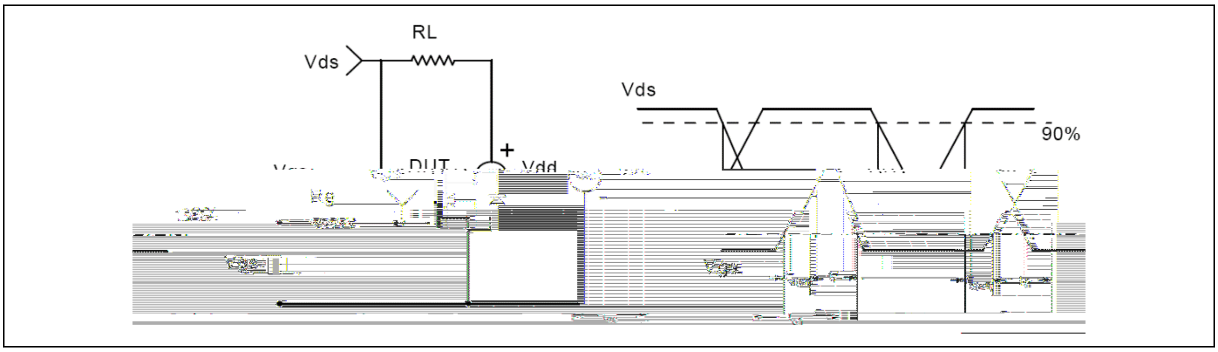


Figure 2. Switching time test circuit & waveforms

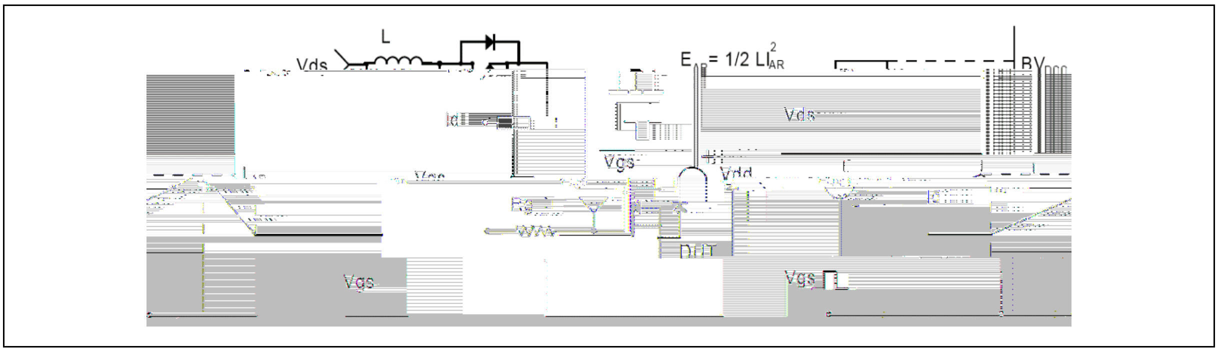


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

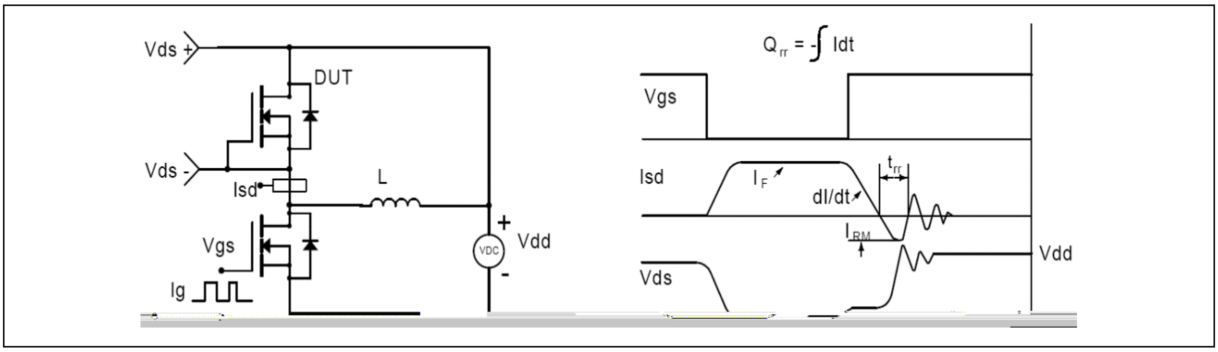
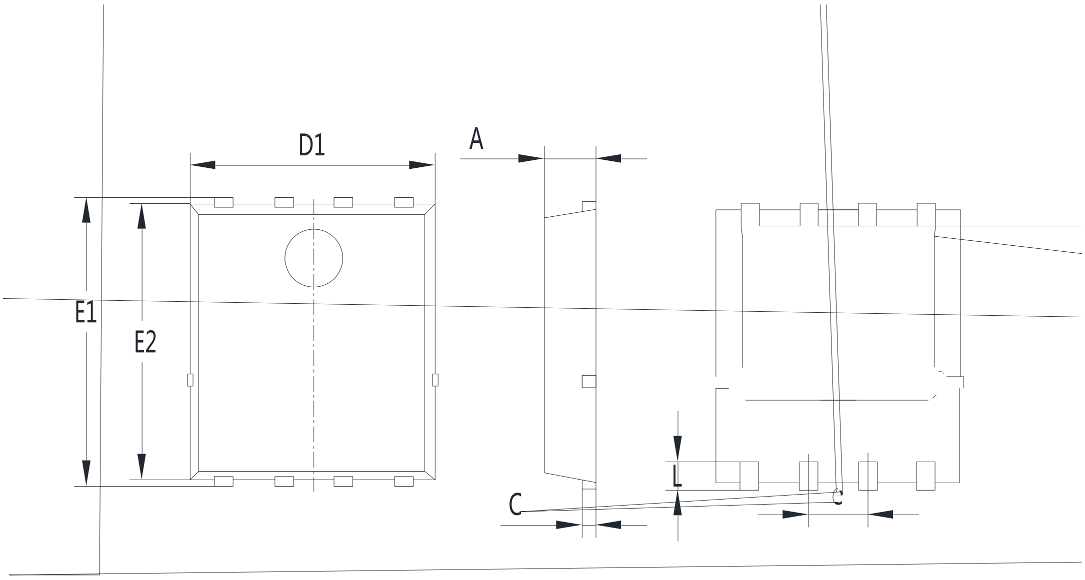


Figure 4. Diode reverse recovery test circuit & waveforms

Package Information



Symbol	mm		
	Min	Nom	Max
A	1.00	1.10	1.20
b	0.30	0.40	0.50
c	0.154	0.254	0.354
D1	5.00	5.20	5.40
D2	3.80	4.10	4.25
e	1.17	1.27	1.37
E1	5.95	6.15	6.35
E2	5.66	5.86	6.06
E4	3.52	3.72	3.92
H	0.40	0.50	0.60
L	0.30	0.60	0.70
L1	0.12 REF		
K	1.15	1.30	1.45

Version 1: PDFN5*6-P package outline dimension

Ordering Information

Package Type	Units/ Reel	Reels / Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
PDFN5*6-P	5000	2	10000	5	50000
PDFN5*6-K	5000	2	10000	5	50000

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
SFG10S20GF	PDFN5*6	yes	yes	yes

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