General Description

SFGMOS® low $R_{DS(ON)}$, 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 reliability and uniformity
- Fast switching and soft recovery

Applications

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

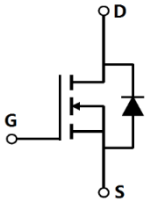
Key Performance Parameters

Parameter	Value	Unit
$V_{DS,\ min}$ @ $T_{j(max)}$	100	V
$I_{D,\ pulse}$	120	A
$R_{DS(ON)\ max}$ @ V_{GS}=10V	20	
Q_g	19.8	nC

Marking Information

Product Name	Package	Marking
SFG10R20GF	PDFN5*6	SFG10R20G

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	40	A
Pulsed drain current[2], T_C=25 °C	$I_{D, pulse}$	120	A
Continuous diode forward current[1], T_C=25 °C	I_S	40	A
Diode pulsed current[2], T_C=25 °C	$I_{S, Pulse}$	120	A
Power dissipation[3], T_C=25 °C	P_D	72	W
Single pulsed avalanche energy[5]	E_{AS}	30	mJ
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	R	1.74	°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	$V_{GS(th)}$	1.0		2.5	V	V_{DS}=V_{GS}, I_D=250 A
Drain-source on-state resistance	$R_{DS(ON)}$		17	20		V_{GS}=10 V, I_D=8 A
Drain-source on-state resistance	$R_{DS(ON)}$			26		V_{GS}=4.5 V, I_D=6 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

Electrical Characteristics Diagrams

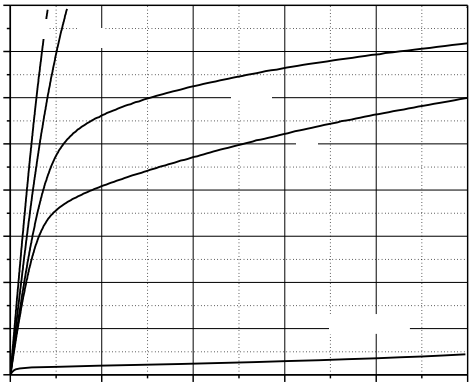


Figure 1. Typ. output characteristics

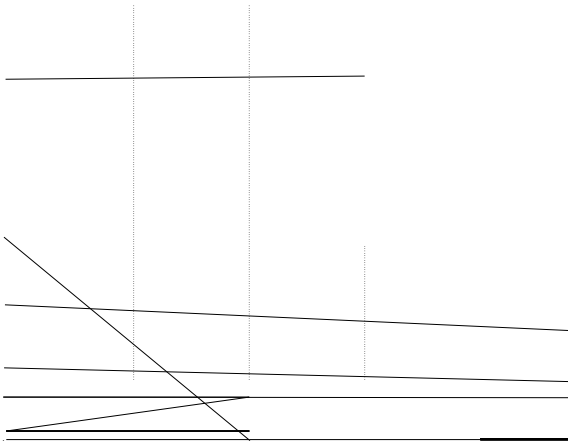


Figure 2. Typ. transfer characteristics

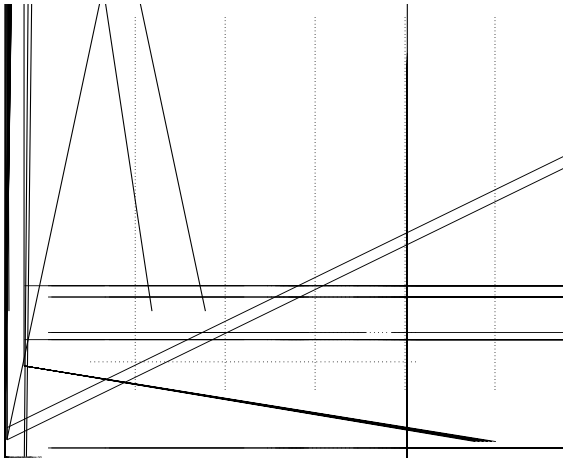


Figure 3. Typ. capacitances

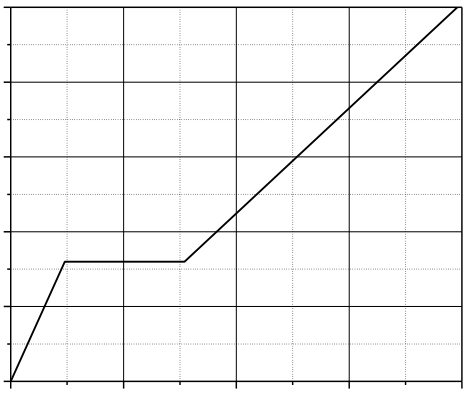


Figure 4. Typ. gate charge

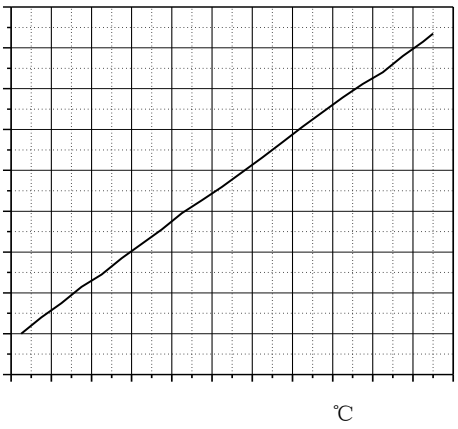


Figure 5. Drain-source breakdown voltage

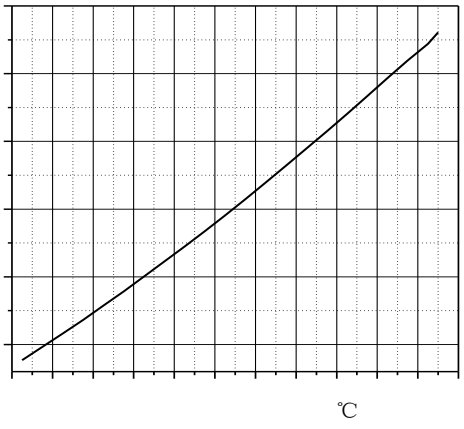


Figure 6. Drain-source on-state resistance

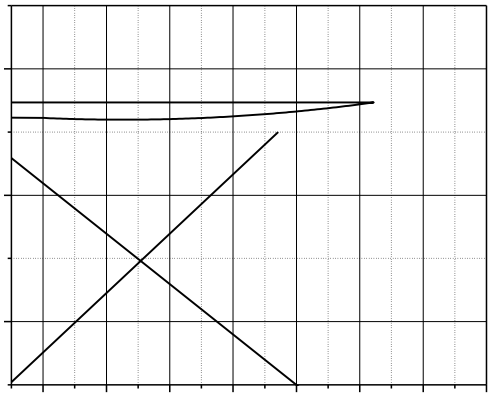


Figure 7. Drain-source on-state resistance

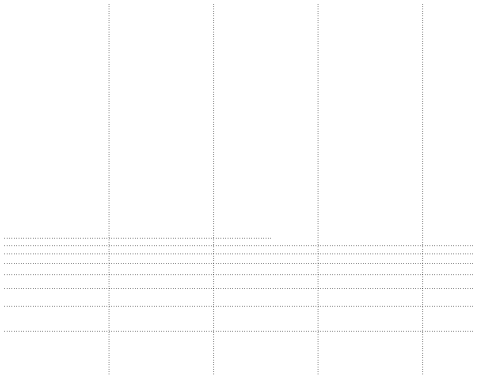


Figure 8. Forward characteristic of body diode

Figure 9. Safe operation area T_C=25 °C

Test circuits and waveforms

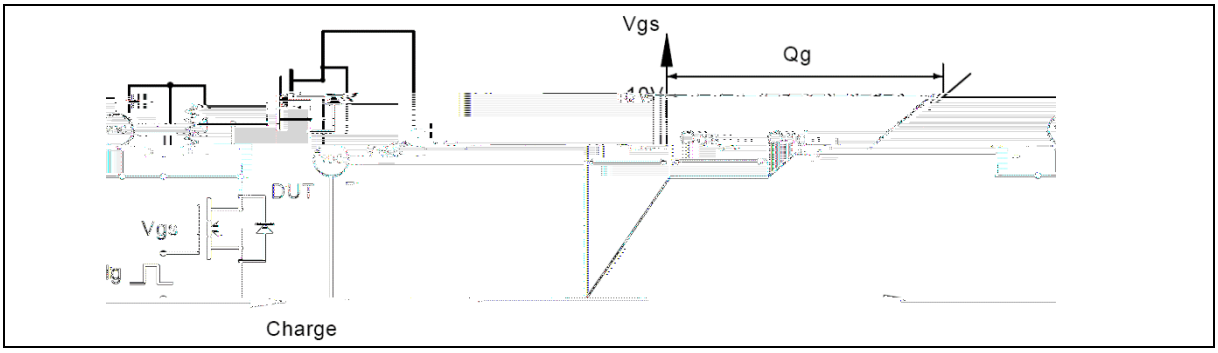


Figure 1. Gate charge test circuit & waveform

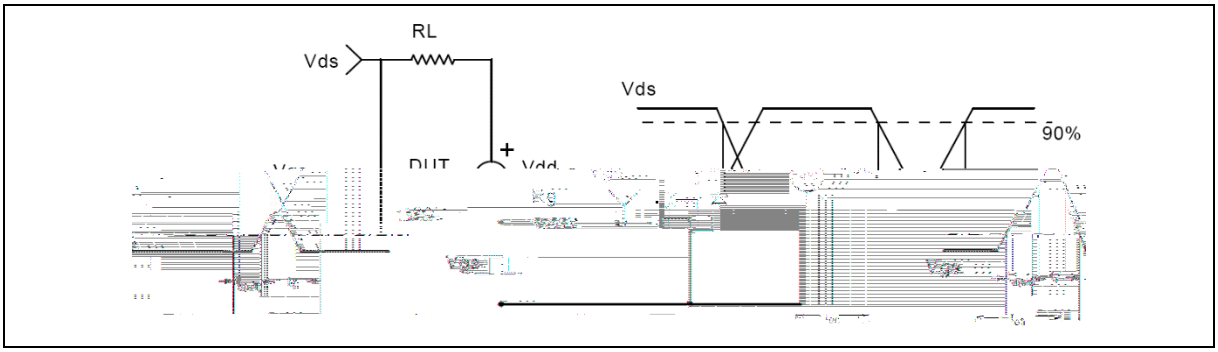


Figure 2. Switching time test circuit & waveforms

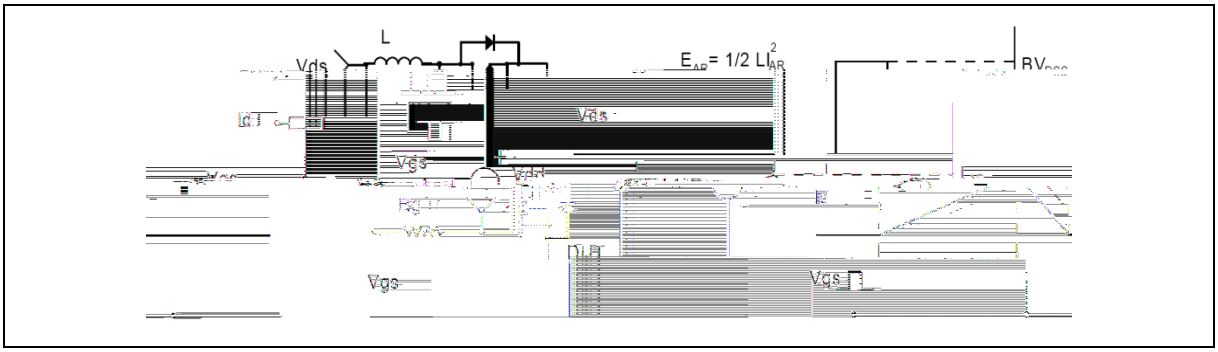


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

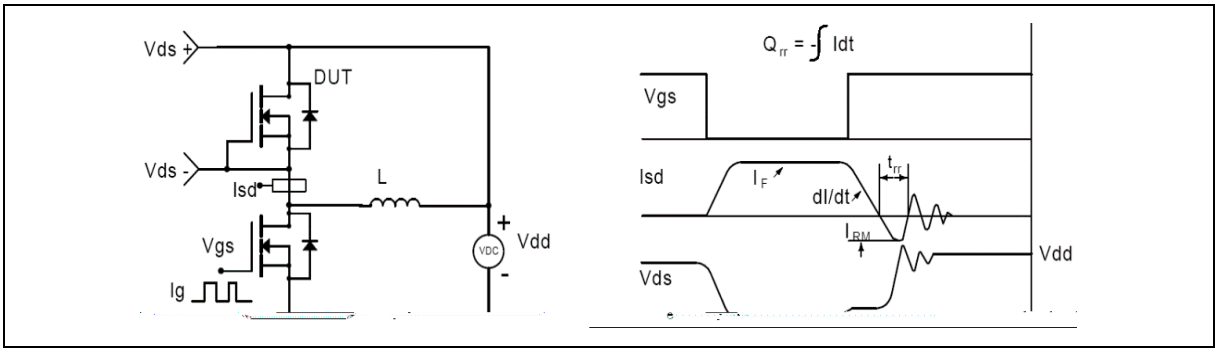
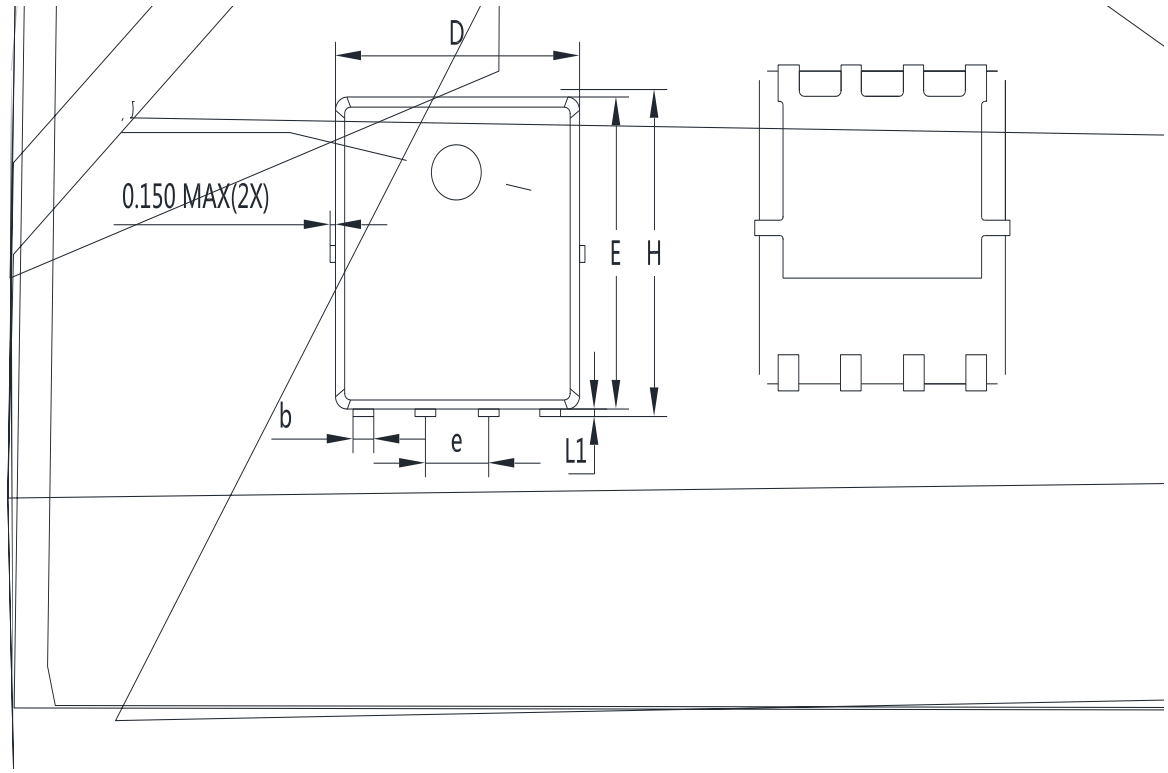


Figure 4. Diode reverse recovery test circuit & waveforms

Package Information



Symbol	mm		
	Min	Nom	Max
A	0.8	0.9	1.0
A1	0	0.03	0.05
b	0.35	0.42	0.49
c	0.254 REF		
D	4.9	5.0	5.1
F	1.40 REF		
E	5.7	5.8	5.9
e	1.27 BSC		
H	5.95	6.08	6.20
L1	0.10	0.14	0.18
G	0.60 REF		
K	4.00 REF		

Version 1: PDFN5*6-K package outline dimension

Ordering Information

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

Product Information

Product	Package	Pb Free	RoHS	Halogen Free