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
$I_{D,\ pulse}$	390	A
$R_{DS(ON),\ max}$ @ V_{GS}=10V	4.6	
Q_g	101.6	nC

Marking Information

Product Name	Package	Marking

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	130	A
Pulsed drain current[2)], T_C=25 °C	$I_{D,\ pulse}$	390	A
Continuous diode forward current[1)], T_C=25 °C	I_S	130	A
Diode pulsed current[2)], T_C=25 °C	$I_{S,\ pulse}$	390	A
Power dissipation[3)], T_C=25 °C	P_D	192	W
Single pulsed avalanche energy[5)]	E_{AS}	235	mJ
Operation and storage temperature	T_{stg} T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	R	0.65	°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	$R_{DS(ON)}$		4.0	4.6		V_{GS}=10 V, I_D=20 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

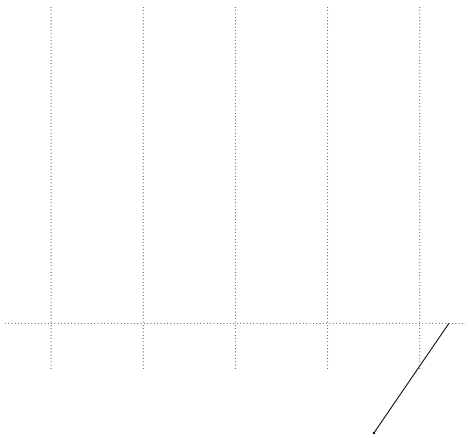

Figure 1. Typ. output characteristics

Figure 2. Typ. transfer characteristics

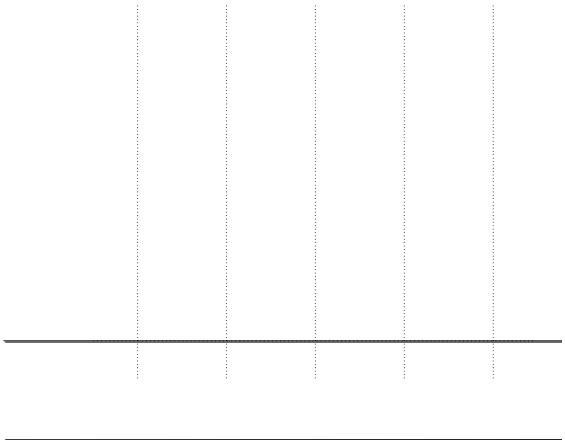

Figure 3. Typ. capacitances

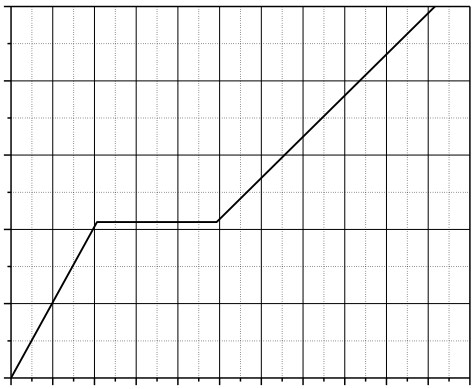

Figure 4. Typ. gate charge

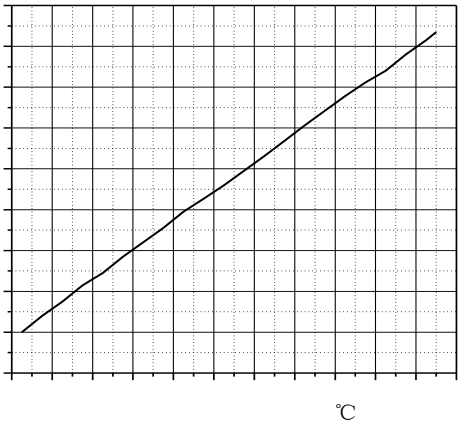

Figure 5. Drain-source breakdown voltage

Figure 6. Drain-source on-state resistance

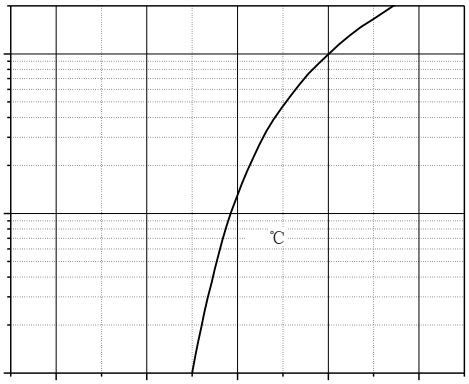

Figure 7. Forward characteristic of body diode

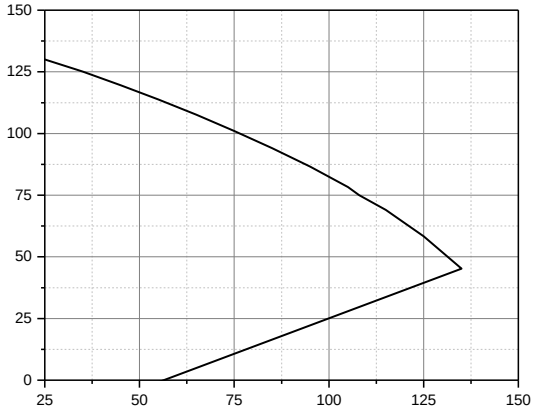

Figure 8. Drain current

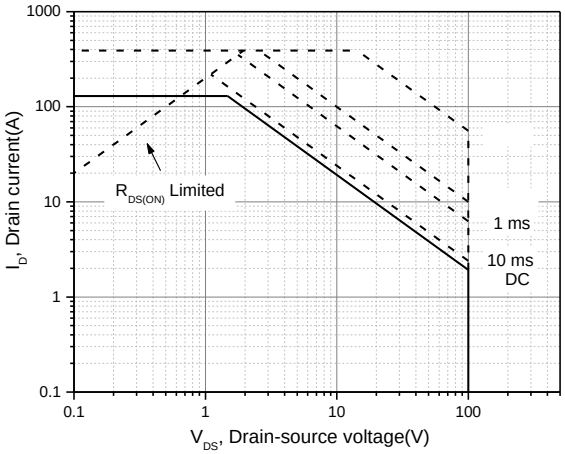

Figure 9. Safe operation area T_C=25 °C

Test circuits and waveforms

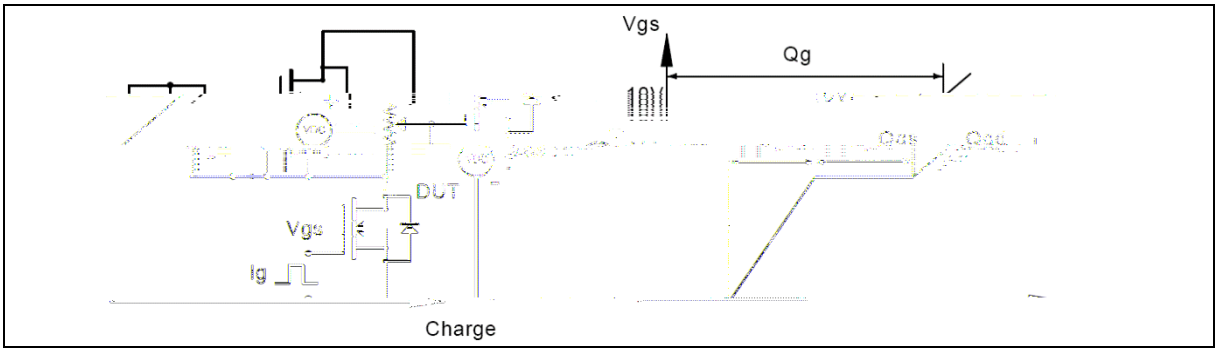

Figure 1. Gate charge test circuit & waveform

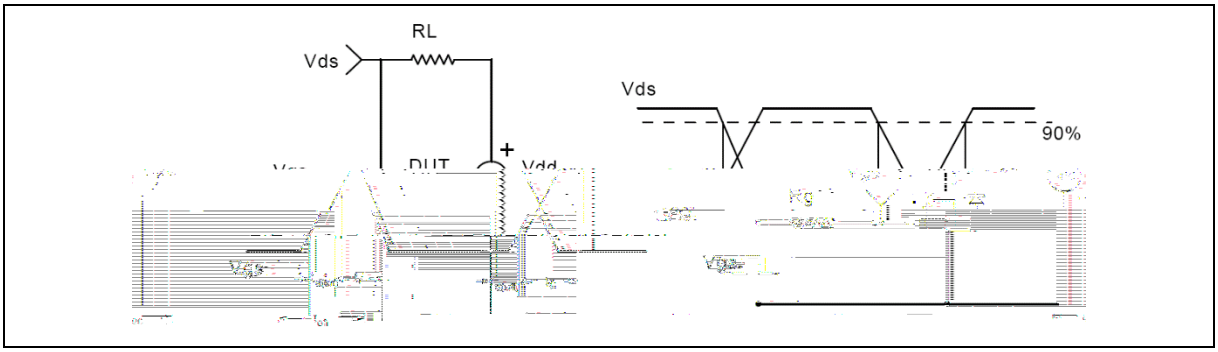

Figure 2. Switching time test circuit & waveforms

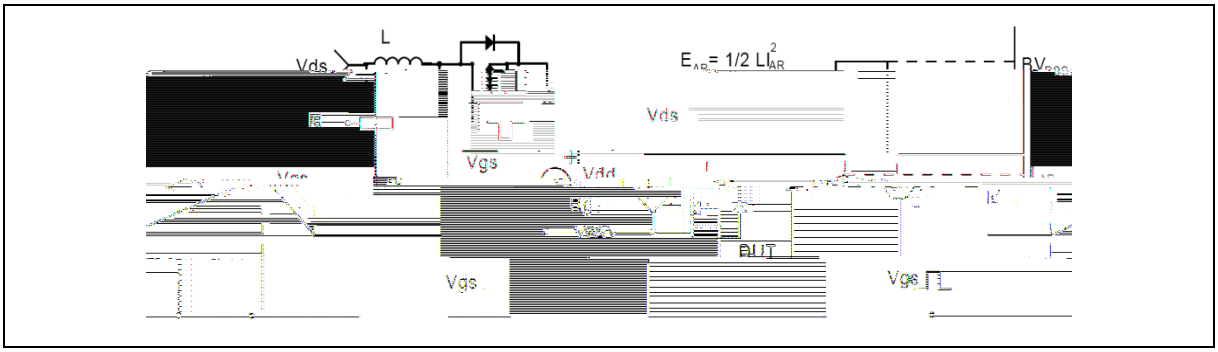

Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

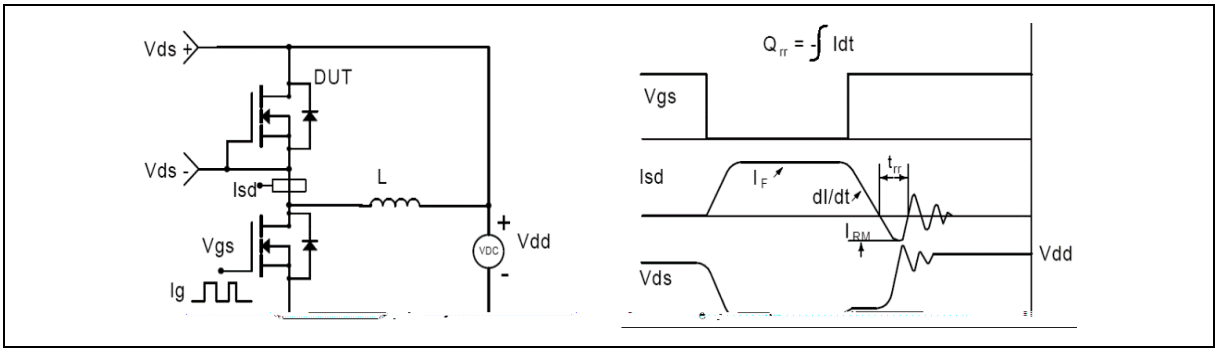

Figure 4. Diode reverse recovery test circuit & waveforms

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
SFG130N10KF	TO263	yes	yes	yes

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