

## General Description

SFGMOS<sup>®</sup>

$R_{DS(ON)}$ , 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.

low

## 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

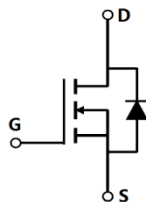
## Key Performance Parameters

Parameter	Value	Unit
$V_{DS, min} @ T_{j(max)}$	100	V
$I_{D, pulse}$	45	A
$R_{DS(ON) max} @ V_{GS}=10V$	75	
$Q_g$	6.5	nC

## Marking Information

Product Name	Package	Marking
SFG10R75DF	TO252	SFG10R75D

## Package & Pin information



**Absolute Maximum Ratings** at  $T_j=25^{\circ}\text{C}$  unless otherwise noted

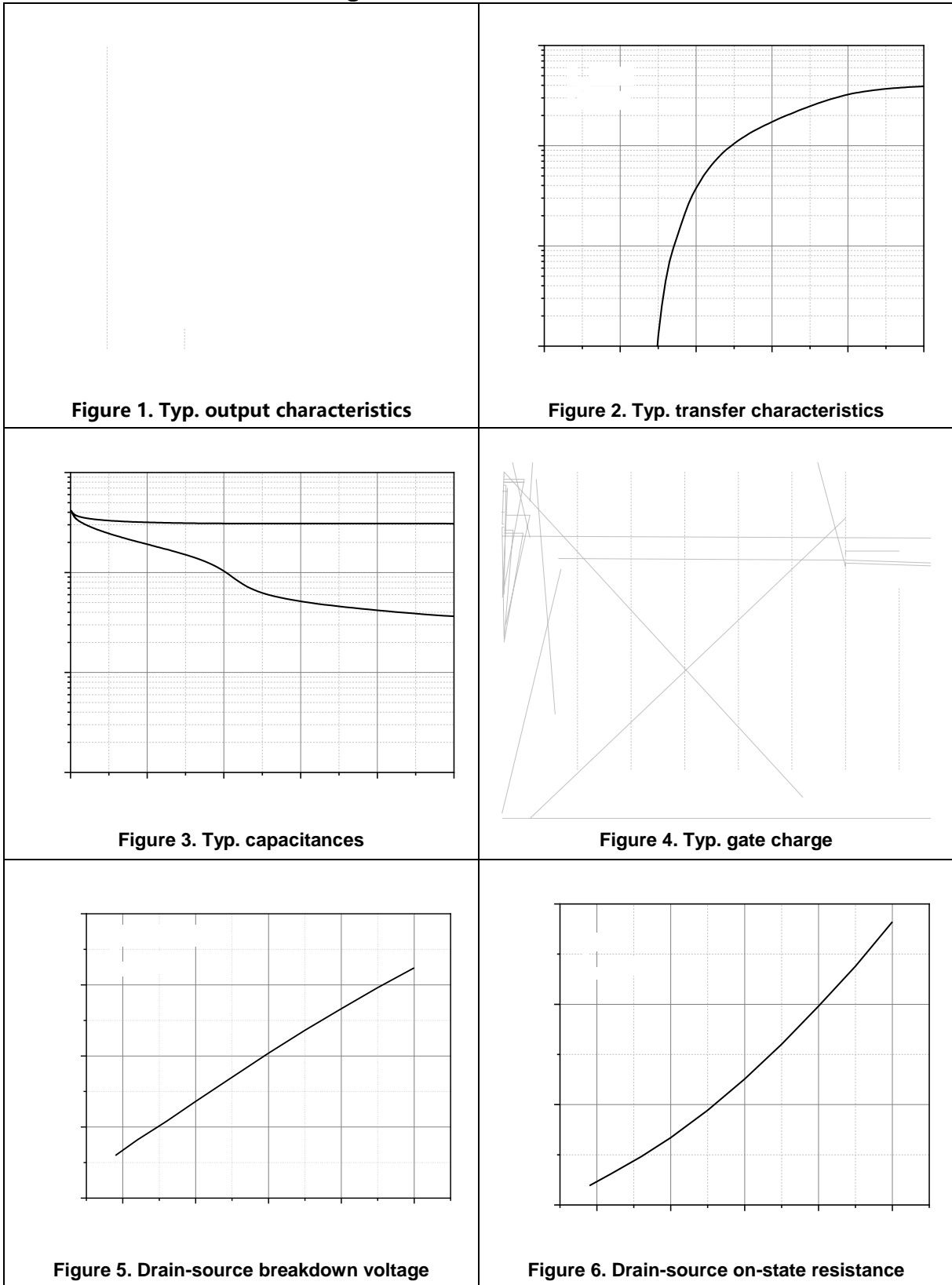
Parameter	Symbol	Value	Unit
Drain source voltage	$V_{DS}$	100	V
Gate source voltage	$V_{GS}$	$\pm 20$	V
Continuous drain current <sup>1)</sup> , $T_C=25^{\circ}\text{C}$	$I_D$	15	A
Pulsed drain current <sup>2)</sup> , $T_C=25^{\circ}\text{C}$	$I_{D, pulse}$	45	A

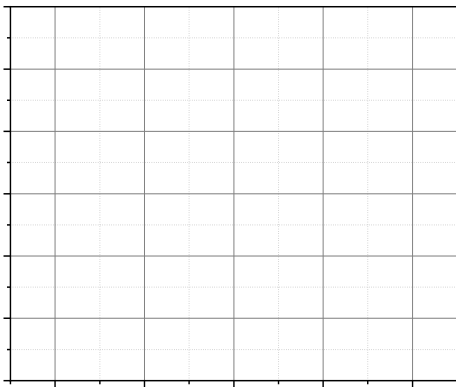
 Continuous diode forward current<sup>1)</sup>,  $T_C=25^{\circ}\text{C}$

**Dynamic Characteristics**

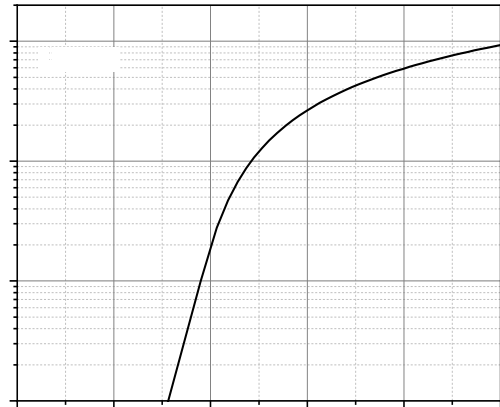
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	$C_{iss}$		310		pF	$V_{GS}=0\text{ V}$ , $V_{DS}=25\text{ V}$ , 0 / / kHz
Output capacitance	$C_{oss}$		171		pF	
Reverse transfer capacitance	$C_{rss}$		16.7		pF	
Turn-on delay time	$t_{d(on)}$		14		ns	$V_{GS}=10\text{ V}$ , $V_{DS}=50\text{ V}$ , $R_G\ 1$ $I_D=5\text{ A}$
Rise time	$t_r$		3.2		ns	
Turn-off delay time	$t_{d(off)}$		36		ns	
Fall time	$t_f$					

**Electrical Characteristics Diagrams**

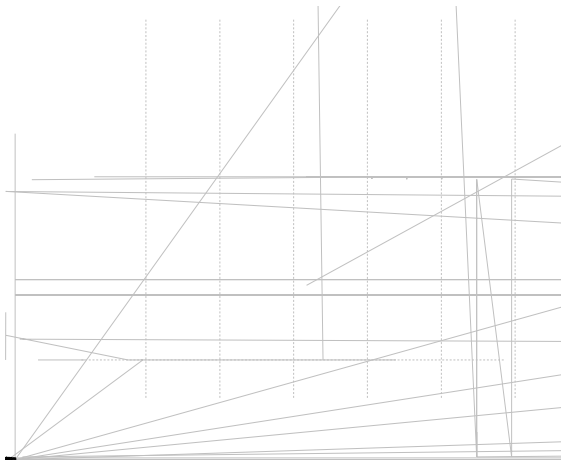




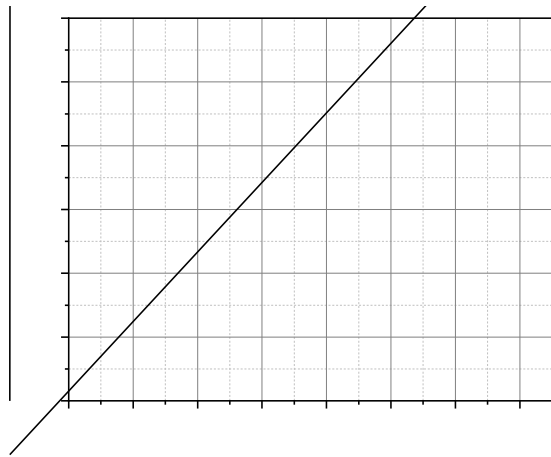
**Figure 7. Threshold voltage**



**Figure 8. Forward characteristic of body diode**



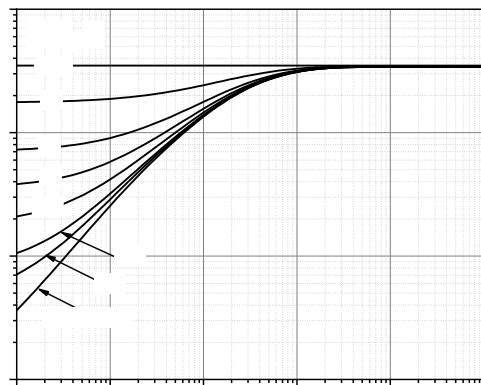
**Figure 9. Drain-source on-state resistance**



**Figure 10. Drain current**

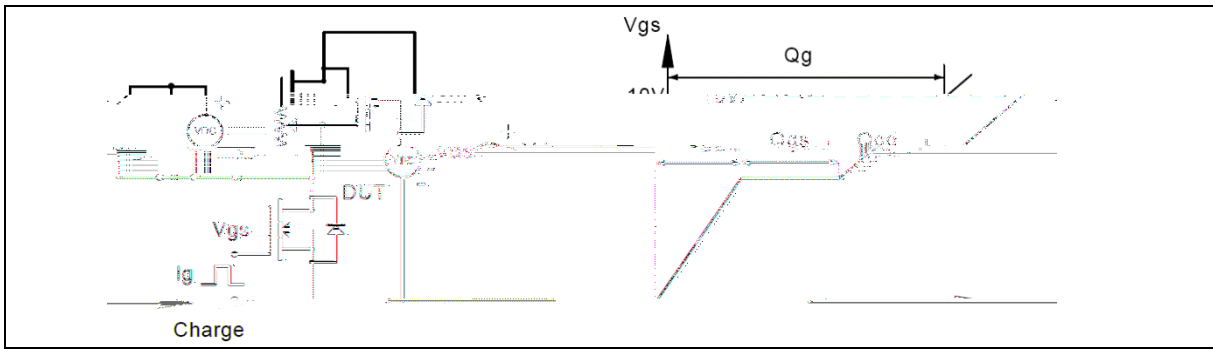


**Figure 11. Safe operation area  $T_C=25\text{ }^\circ\text{C}$**

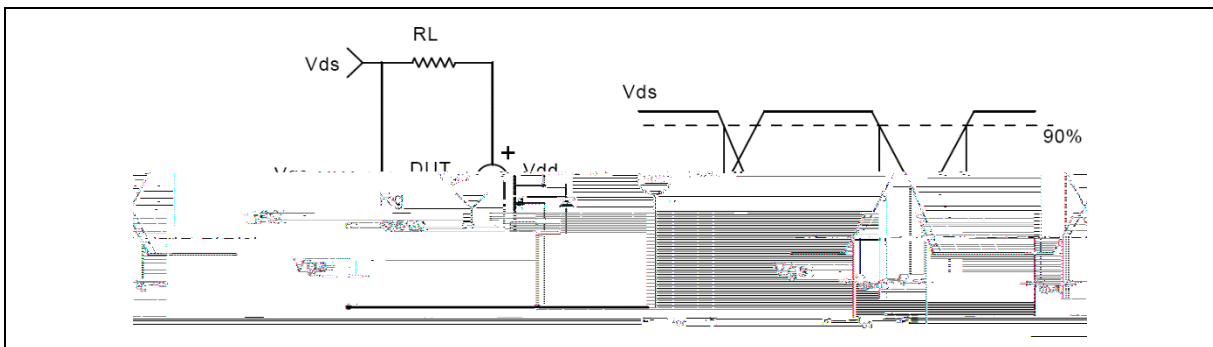


**Figure 12. Max. transient thermal impedance**

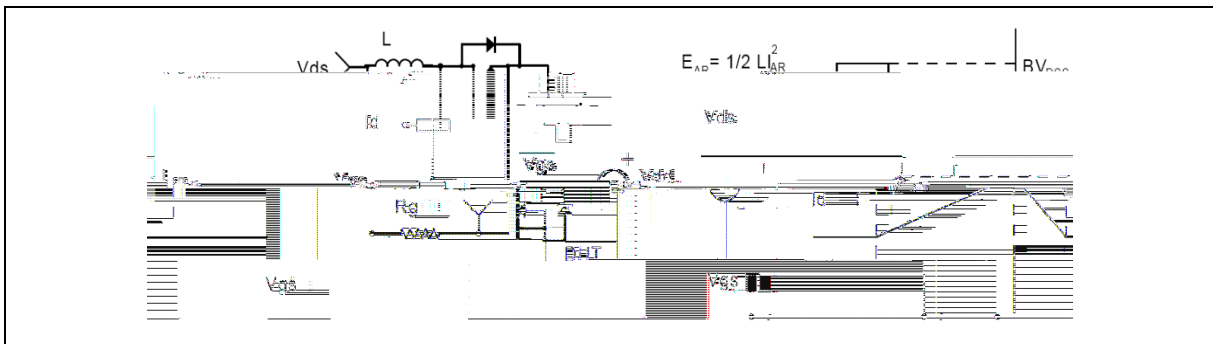
**Test circuits and waveforms**



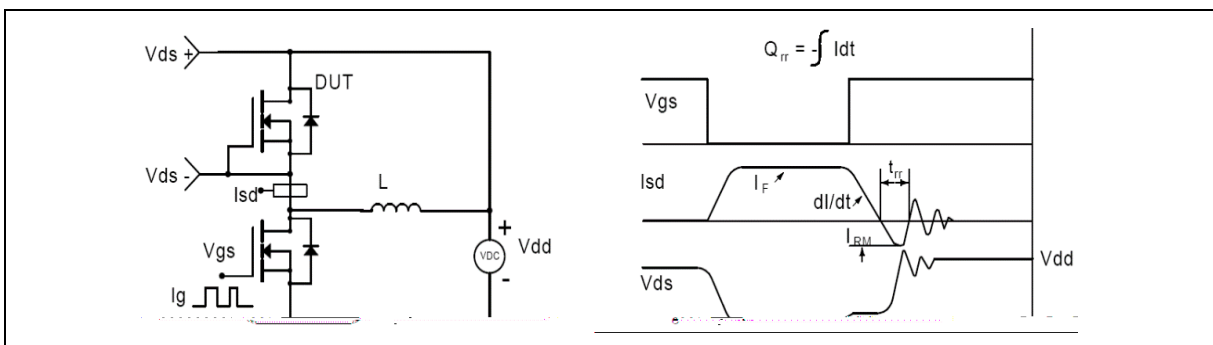
**Figure 1. Gate charge test circuit & waveform**



**Figure 2. Switching time test circuit & waveforms**

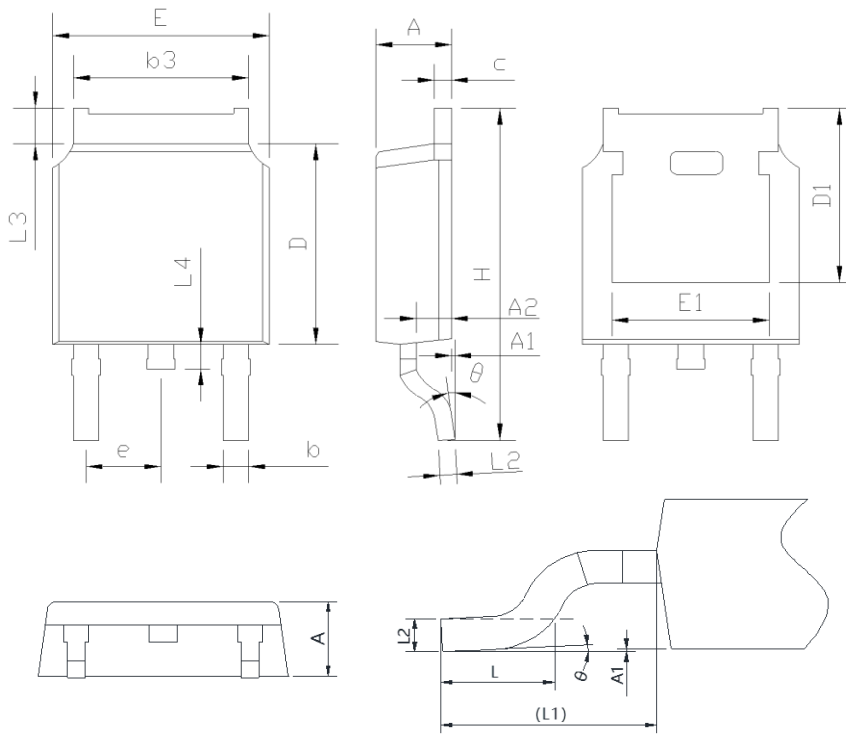


**Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms**



**Figure 4. Diode reverse recovery test circuit & waveforms**

**Package Information**



Symbol	mm		
	Min	Nom	Max
A	2.20	2.30	2.38
A1	0.00	-	0.20
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b3	5.20	5.33	5.46
c	0.43	0.53	0.61
D	5.98	6.10	6.22
D1	5.30 REF		
E	6.40	6.60	6.73
E1	4.63	-	-
e	2.286 BSC		
H	9.40	10.10	10.50
L	1.38	1.50	1.75
L1	2.90 REF		
L2	0.51 BSC		
L3	0.88	-	1.28
L4	0.50	-	1.00
	0	-	

Version 1: TO252-P package outline dimension

## Package Information

Symbol	mm		
	Min	Nom	Max
A	2.20	2.30	2.38
A1	0.00	-	0.10
A2	0.90	1.01	1.10
b	0.72	-	0.85
b1	0.71	0.76	0.81
b2	0.72	-	0.90
b3	5.13	5.33	5.46
c	0.47	-	0.60
c1	0.46	0.51	0.56
c2	0.47	-	0.60
D	6.00	6.10	6.20
D1	5.25	-	-
E	6.50	6.60	6.70
E1	4.70	-	-
e	2.186	2.286	2.386
H	9.80	10.10	10.40
L	1.40	1.50	1.70
L1		2.90	



### Ordering Information

Package Type	Units/ Reel	Reels / Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO252-P	2500	2	5000	5	25000
TO252-J	2500	2	5000	5	25000

### Product Information

Product	Package	Pb Free	RoHS	Halogen Free
SFG10R75DF	TO252	yes	yes	yes

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