

V_{th} series

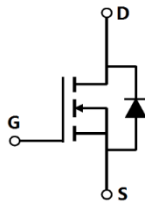


is specially

Switched mode power supply

Parameter	Value	Unit
V _{DS, min} @ T _{j(max)}	60	V
I _{D, pulse}	204	A
R _{DS(ON), max} @ V _{GS} =10V	10	
Q _g	17.9	nC

Product Name	Package	Marking
SFS06R10DF	TO252	SFS06R10D



Absolute Maximum Ratings at $T_j=25$ unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	60	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current ¹⁾ , $T_C=25$ °C	I_D	68	A
Pulsed drain current ²⁾ , $T_C=25$ °C	$I_{D, pulse}$	204	A

 Continuous diode forward current¹⁾, $T_C=25$ °C

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		1204		pF	$V_{GS}=0\text{ V}$, $V_{DS}=50\text{ V}$, 0 / / Hz
Output capacitance	C_{oss}		194		pF	
Reverse transfer capacitance	C_{rss}		9.9		pF	
Turn-on delay time	$t_{d(on)}$		23.9		ns	$V_{GS}=10\text{ V}$, $V_{DS}=50\text{ V}$, $R_G=1$ $I_D=25\text{ A}$
Rise time	t_r		4.6		ns	
Turn-off delay time	$t_{d(off)}$		37.8		ns	
Fall time	t_f		6.4		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		17.9		nC	$V_{GS}=10\text{ V}$, $V_{DS}=50\text{ V}$, $I_D=25\text{ A}$
Gate-source charge	Q_{gs}		3.8		nC	
Gate-drain charge	Q_{gd}		4.2		nC	
Gate plateau voltage	$V_{plateau}$		4.2		V	

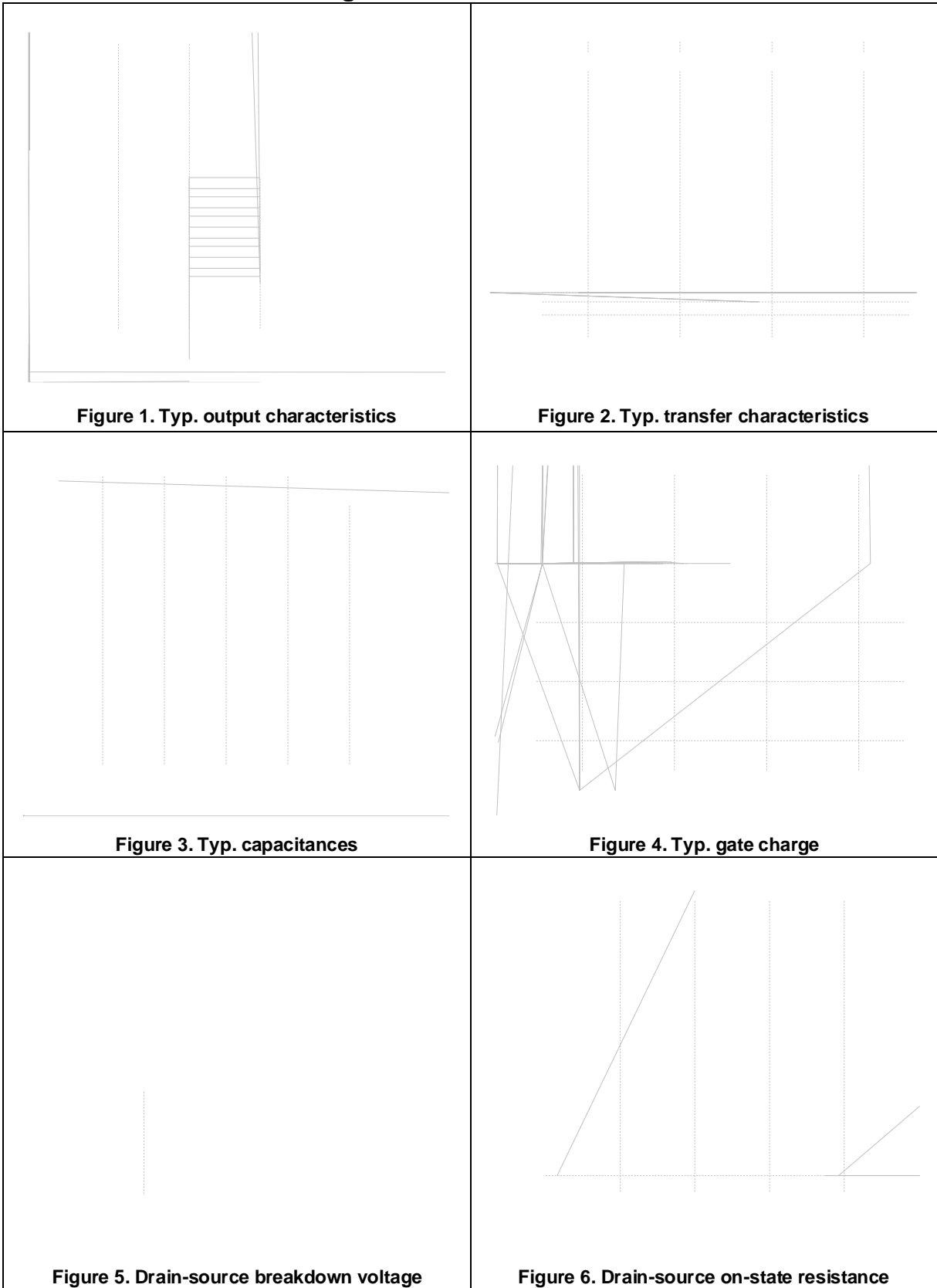
Body Diode Characteristics

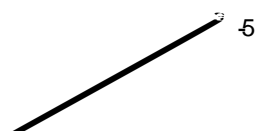
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage	V_{SD}			1.3	V	$I_S=20\text{ A}$, $V_{GS}=0\text{ V}$
Reverse recovery time	t_{rr}		42.6		ns	$V_R=50\text{ V}$, $I_S=25\text{ A}$, 0 / /
Reverse recovery charge	Q_{rr}		36.3		nC	
Peak reverse recovery current	I_{rrm}		1.4		A	

Note

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) P_d is based on max. junction temperature, using junction-case thermal resistance.
- 4) The value of R_{θ} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_a=25\text{ °C}$.
- 5) $V_{DD}=30\text{ V}$, $V_{GS}=10\text{ V}$, $L=0.3\text{ mH}$, starting $T_j=25\text{ °C}$.

Electrical Characteristics Diagrams





Test circuits and waveforms

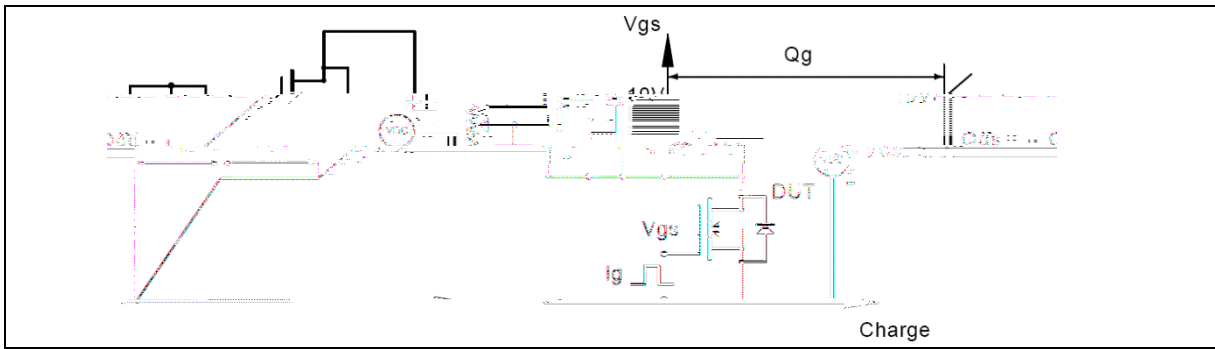


Figure 1. Gate charge test circuit & waveform

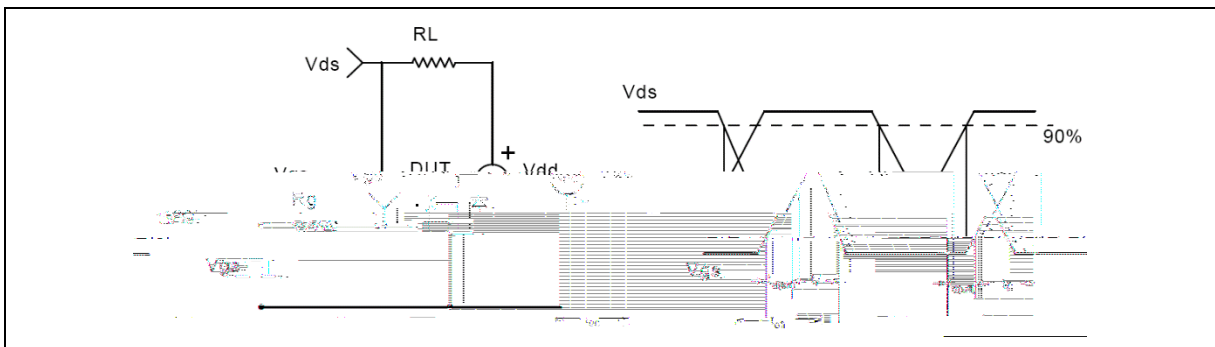


Figure 2. Switching time test circuit & waveforms

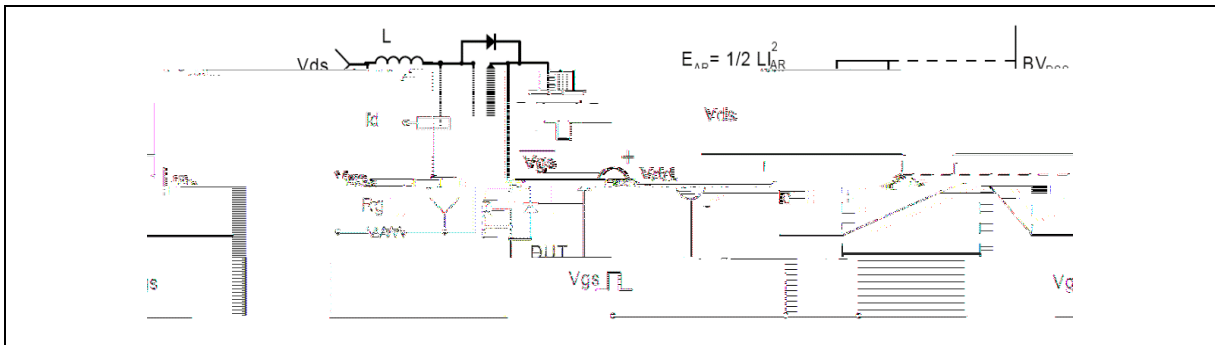


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

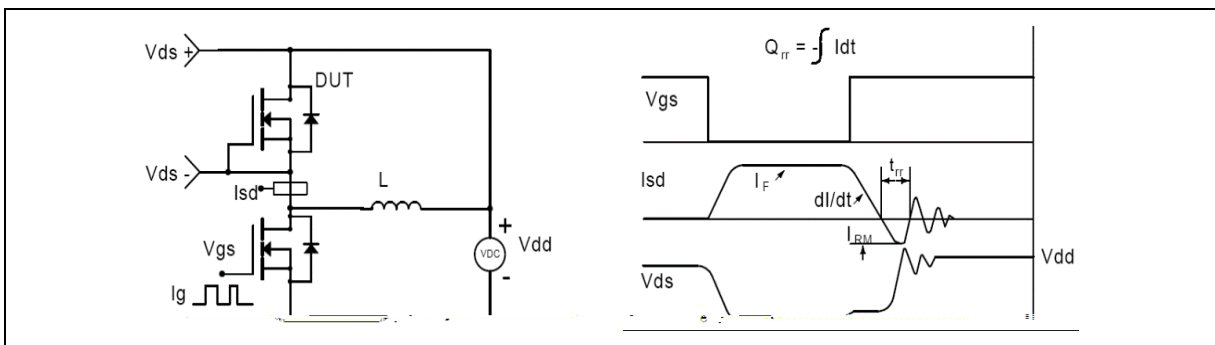
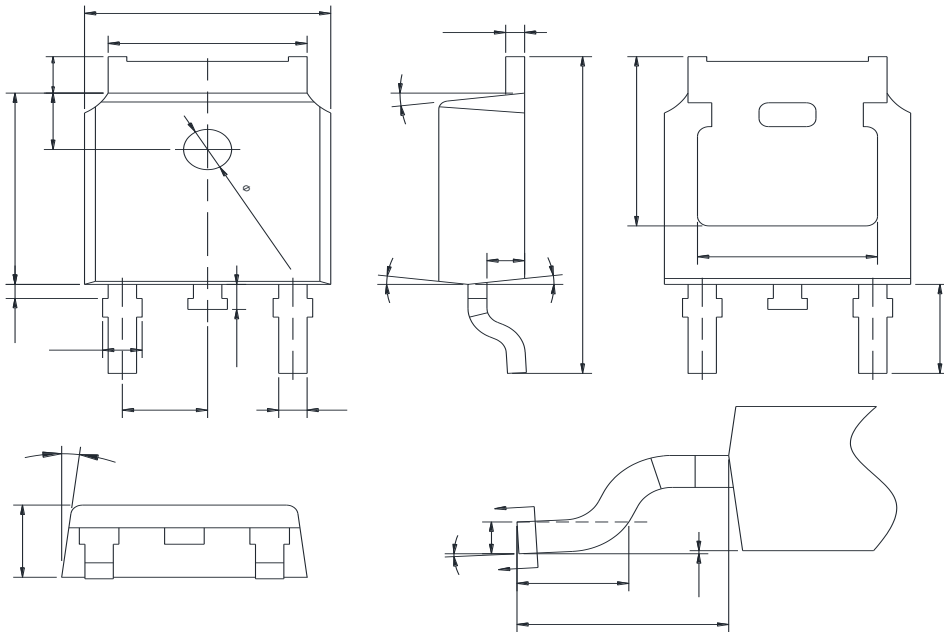


Figure 4. Diode reverse recovery test circuit & waveforms

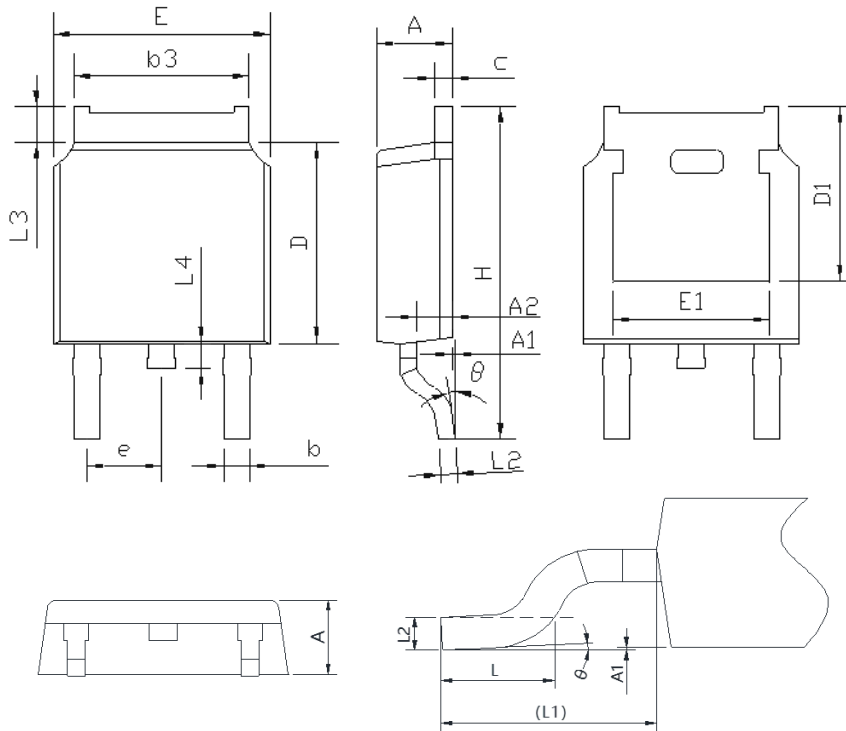
Package Information



Symbol	mm		
	Min	Nom	Max
A	2.20	2.30	2.38
A1	0.00	-	0.10
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 REF		
L2	0.508 BSC		
L3	0.90	-	1.25
L4	0.60	0.80	1.00
L5	0.15	-	0.75
L6	1.80 REF		
	0	-	
0			
1			

Version 1: TO252-J package outline dimension

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 2: TO252-P package outline dimension

Ordering Information

Package Type	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
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