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. V_{th} series

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TTHMGEXSRW

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Switched mode power supply

/ I 4I VSV ERGI 4EVE I X VW

Parameter	Value	Unit
$V_{DS,\ min}$ @ $T_{j(max)}$	30	V
$I_{D,\ pulse}$	135	A
$R_{DS(ON),\ max}$ @ V_{GS}=10V	7	
Q_g	13.1	nC

1 EVCMRK -R SV EXSR

Product Name	Package	Marking
SFS03R06NF	PDFN3.3*3.3	SFS03R06N

4EGCEKI 4MR MR SV EXSR

Absolute Maximum Ratings at T_j=25 unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	30	V
Gate-source voltage	V_{GS}	±15	V
Continuous drain current[1], T_C=25 °C	I_D	45	A
Pulsed drain current[2], T_C=25 °C	$I_{D, pulse}$	135	A
Continuous diode forward current[1], T_C=25 °C	I_S	45	A
Diode pulsed current[2], T_C=25 °C	$I_{S, pulse}$	135	A
Power dissipation[3], T_C=25 °C	P_D	25	W
Single pulsed avalanche energy[5]	E_{AS}	25	mJ
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	R		

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		1014		pF	V_{GS}=0 V, V_{DS}=25 V, Hz
Output capacitance	C_{oss}		274		pF	
Reverse transfer capacitance	C_{rss}		12.6		pF	
Turn-on delay time	$t_{d(on)}$		18.2		ns	V_{GS}=10 V, V_{DS}=30 V, R_G I_D=30 A
Rise time	t_r		4.3		ns	
Turn-off delay time	$t_{d(off)}$		28.5		ns	
Fall time	t_f		3.8		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		13.1		nC	V_{GS}=10 V, V_{DS}=30 V, I_D=30 A
Gate-source charge	Q_{gs}		3.5		nC	
Gate-drain charge	Q_{gd}		1.5		nC	
Gate plateau voltage	$V_{plateau}$		4		V	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage	V_{SD}			1.3	V	I_S=20 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		18		ns	V_R=30 V, I_S=30 A,
Reverse recovery charge	Q_{rr}		7.1		nC	
Peak reverse recovery current	I_{rrm}		0.6		A	

Note

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) Pd is based on max. junction temperature, using junction-case thermal resistance.
4) The value of R 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 °C.
5) V_{DD}=30 V,V_{GS}=10 V, L=0.3 mH, starting T_j=25 °C.

Electrical Characteristics Diagrams

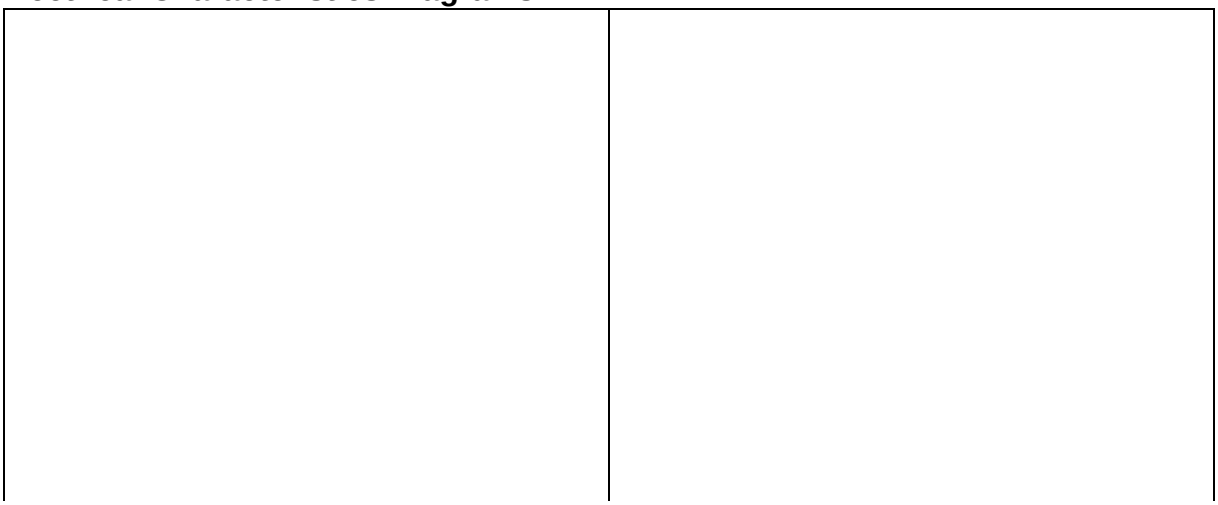

Figure 1. Typ. output charac8 05₩2-4(c)-3(ha)

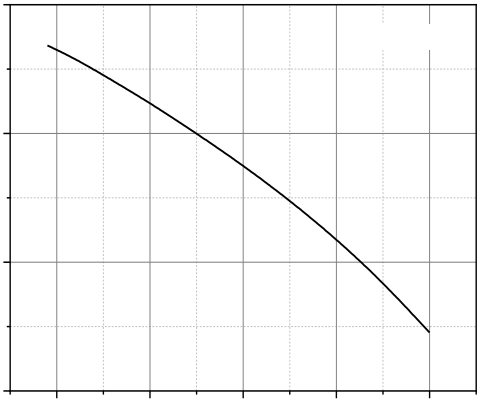

Figure 7. Threshold voltage

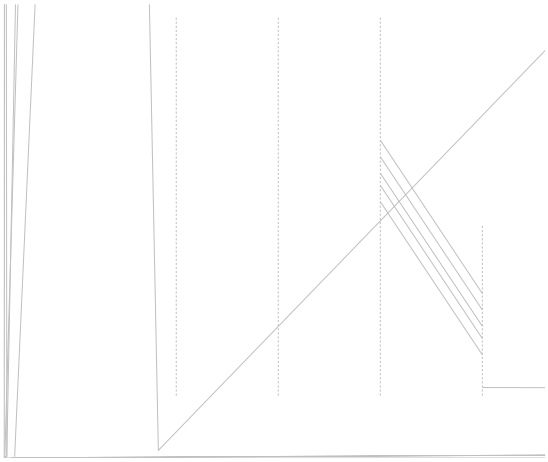

Figure 8. Forward characteristic of body diode

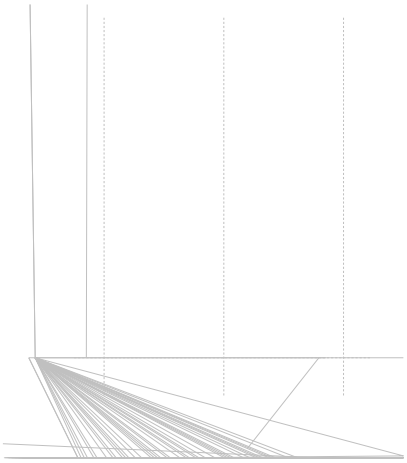

Figure 9. Drain-source on-state resistance

Figure 10. Drain current

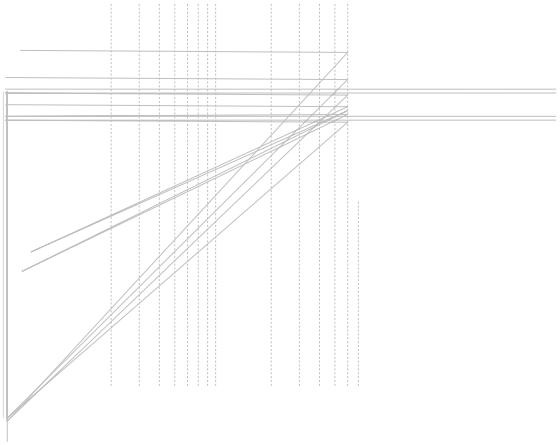

Figure 11. Safe operation area T_C=25

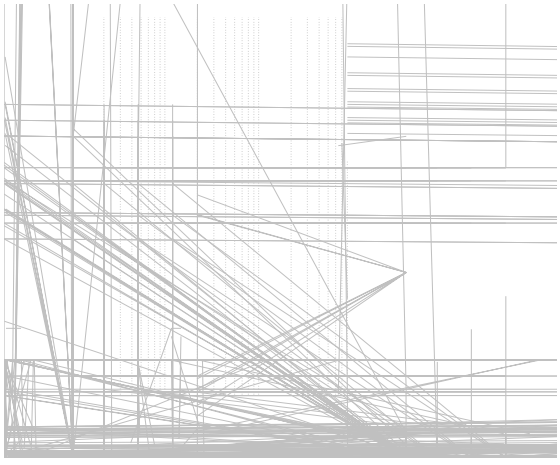

Figure 12. Max. transient thermal impedance

Test circuits and waveforms

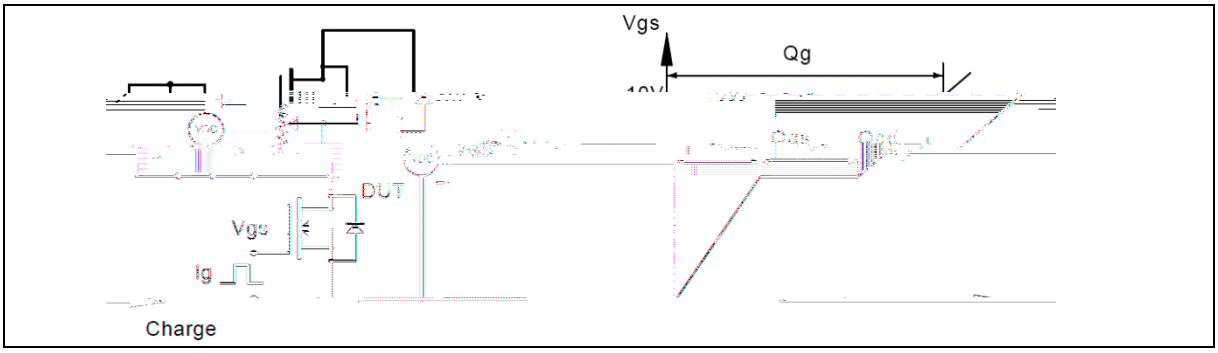

Figure 1. Gate charge test circuit & waveform

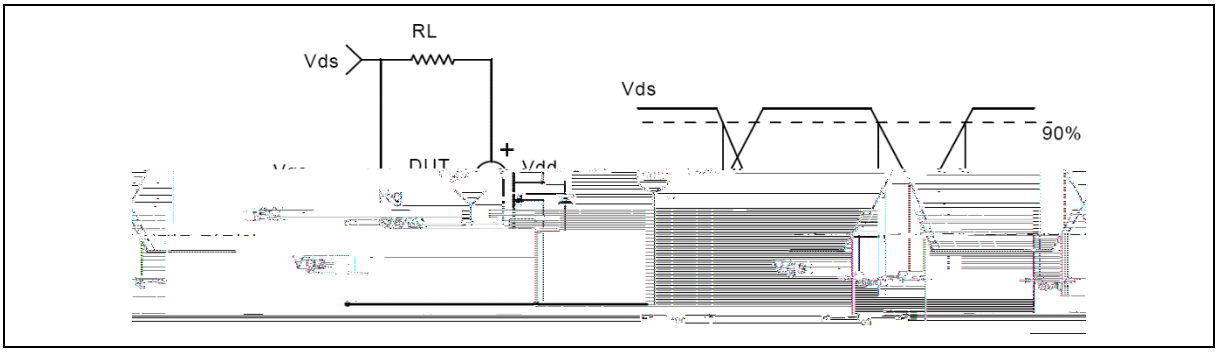

Figure 2. Switching time test circuit & waveforms

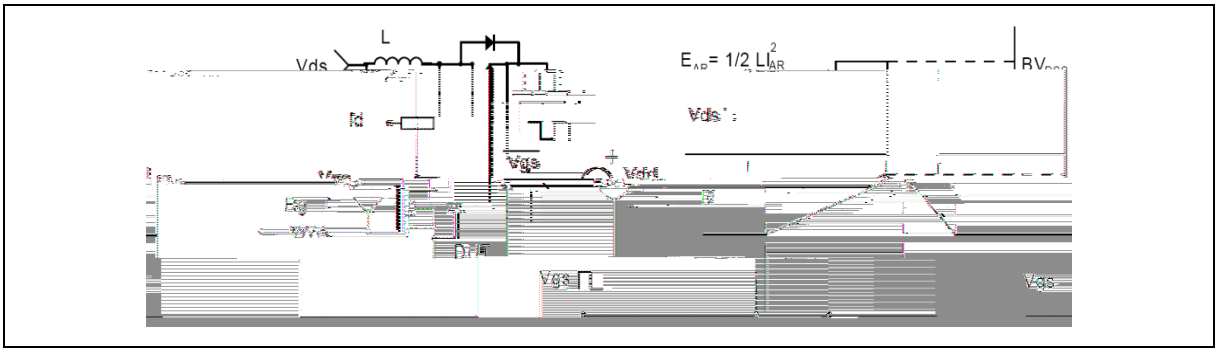

Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

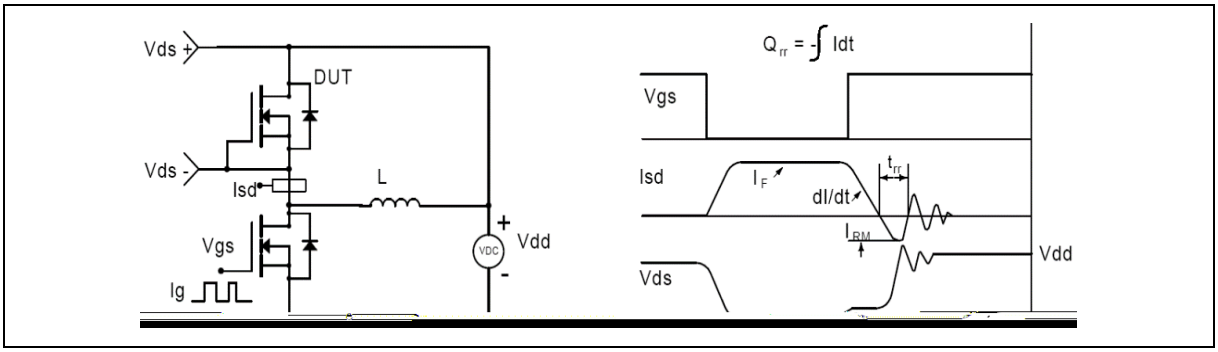

Figure 4. Diode reverse recovery test circuit & waveforms

Package Information

Symbol	mm		
	Min	Nom	Max
A	0.70	0.80	0.90
A1	0.00	0.03	0.05
b2	0.24	0.30	0.35
c	0.10	0.15	