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- Solar inverter
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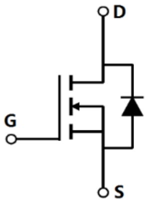
Parameter	**Value**	**Unit**
$V_{DS,\ min}$ @ $T_{j(max)}$	100	V
$I_{D,\ pulse}$	300	A
$R_{DS(ON),\ max}$ @ V_{GS}=10V	8	
Q_g	55.6	nC

Product Name	**Package**	**Marking**
SFG100N10PF	TO220	SFG100N10P



Absolute Maximum Ratings at T_j=25 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	100	A
Pulsed drain current[2], T_C=25 °C	$I_{D,\ pulse}$	300	A
Continuous diode forward current[1], T_C=25 °C	I_S	100	A
Diode pulsed current[2], T_C=25 °C	$I_{S,\ pulse}$	300	A
Power dissipation[3], T_C=25 °C	P_D	148	W
Single pulsed avalanche energy[5]	E_{AS}	130	mJ
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	**Symbol**	**Value**	**Unit**
Thermal resistance, junction-case	R	0.84	°C/W
Thermal resistance, junction-ambient[4]	R	62	°C/W

Electrical Characteristics at T_j=25 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	$R_{DS(ON)}$		6.5	8.0		V_{GS}=10 V, I_D=12 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

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		3530		pF	V_{GS}=0 V, V_{DS}=50 V, 1 MHz
Output capacitance	C_{oss}		560		pF	
Reverse transfer capacitance	C_{rss}		9		pF	
Turn-on delay time	$t_{d(on)}$		22.5		ns	V_{GS}=10 V, V_{DS}=50 V, R_G I_D=10 A
Rise time	t_r		8.6		ns	
Turn-off delay time	$t_{d(off)}$		66.6		ns	
Fall time	t_f		42.1		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition

Electrical Characteristics Diagrams

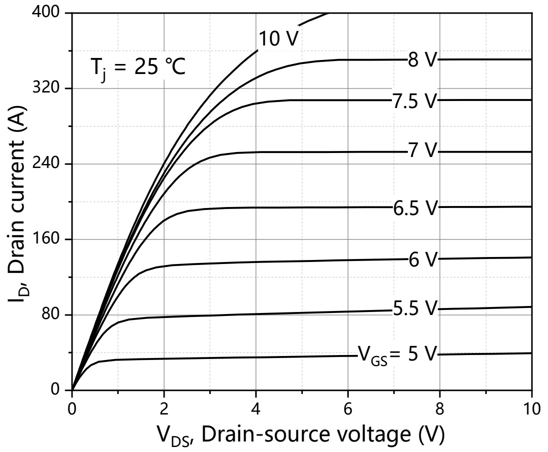


Figure 1. Typ. output characteristics

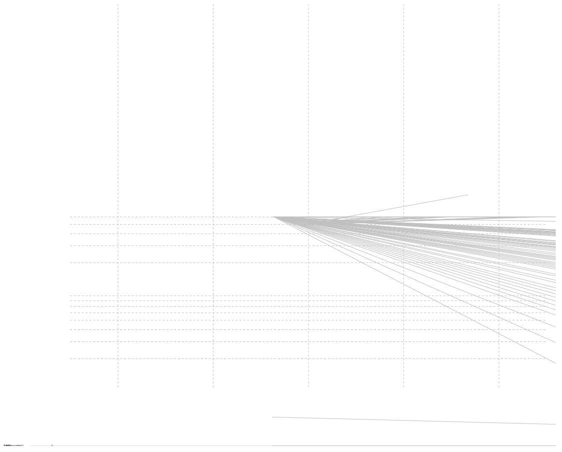


Figure 2. Typ. transfer characteristics

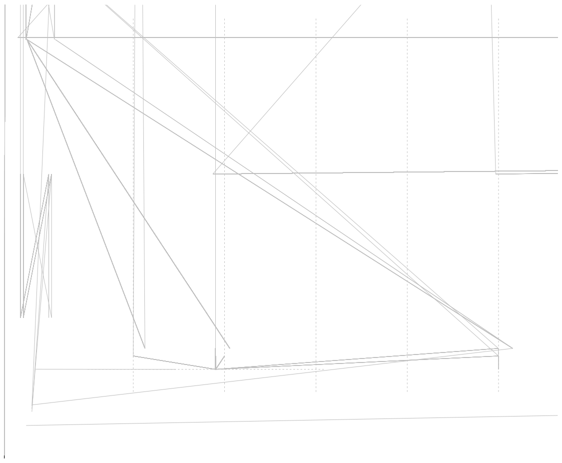


Figure 3. Typ. capacitances

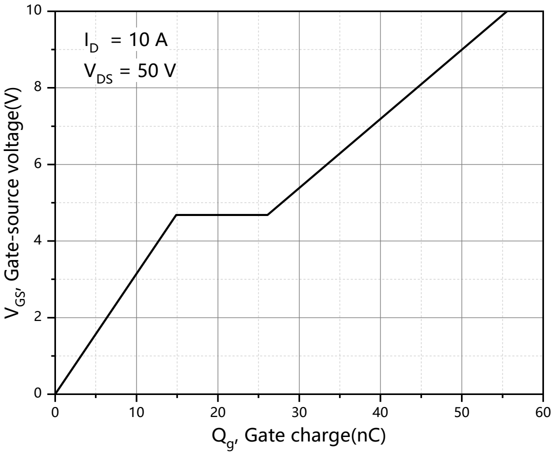


Figure 4. Typ. gate charge

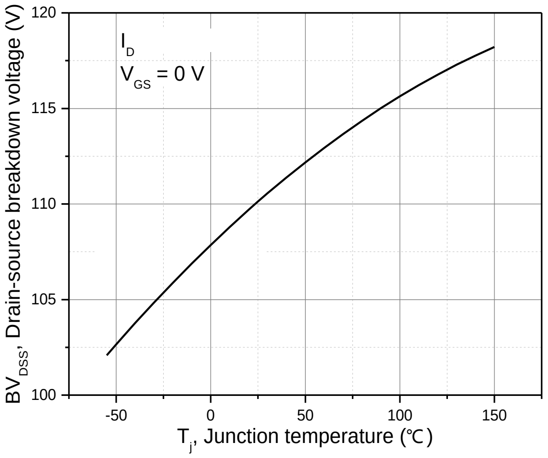


Figure 5. Drain-source breakdown voltage

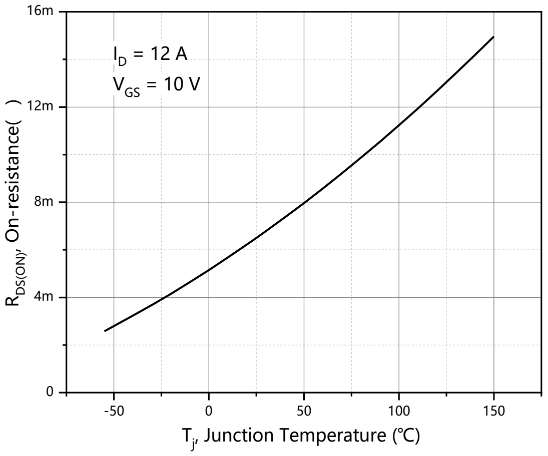


Figure 6. Drain-source on-state resistance

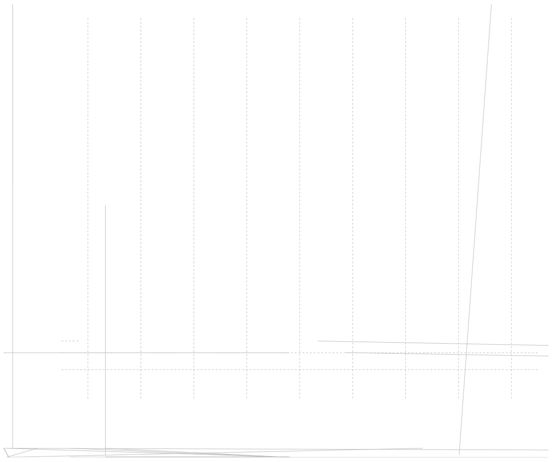


Figure 7. Forward characteristic of body diode

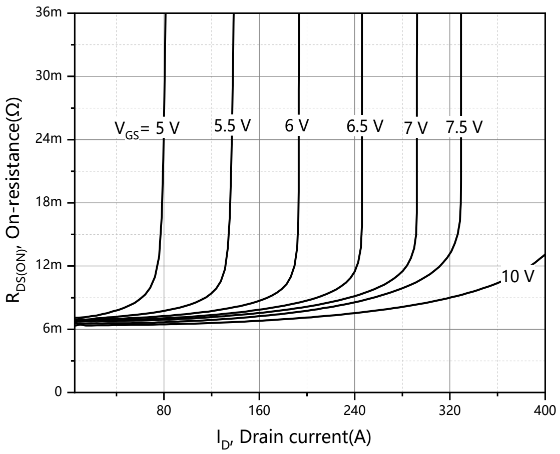


Figure 8. Drain-source on-state resistance

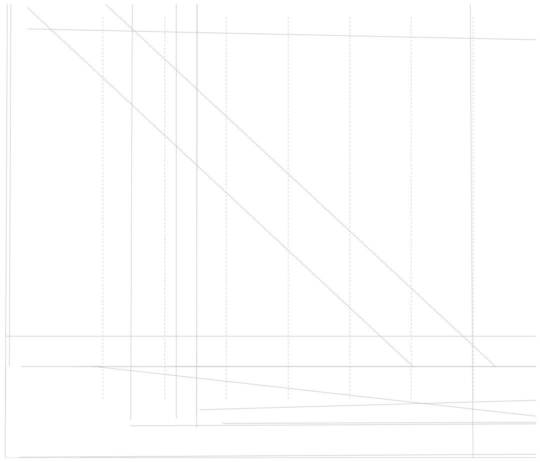


Figure 9. Drain current

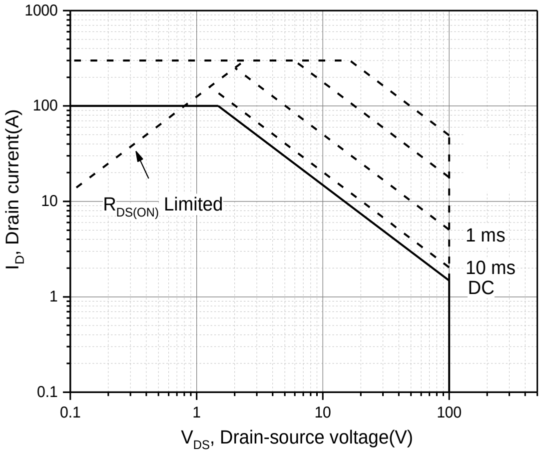


Figure 10. Safe operation area T_C=25 °C

Test circuits and waveforms

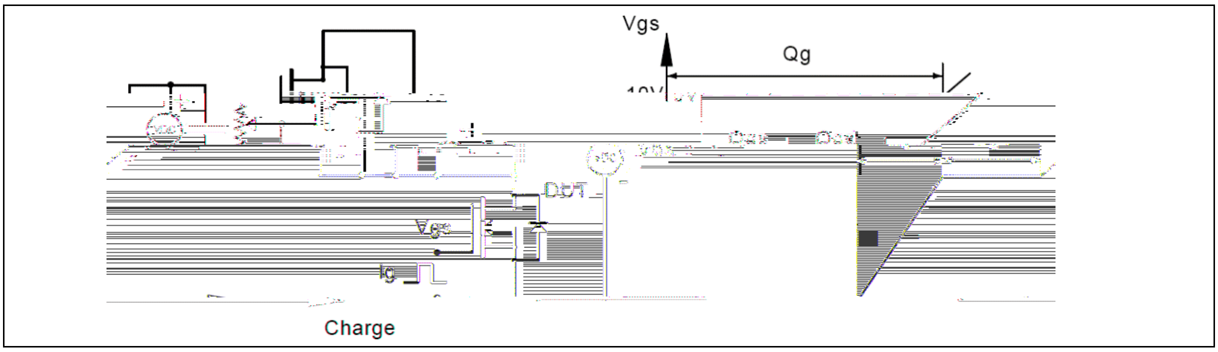


Figure 1. Gate charge test circuit & waveform

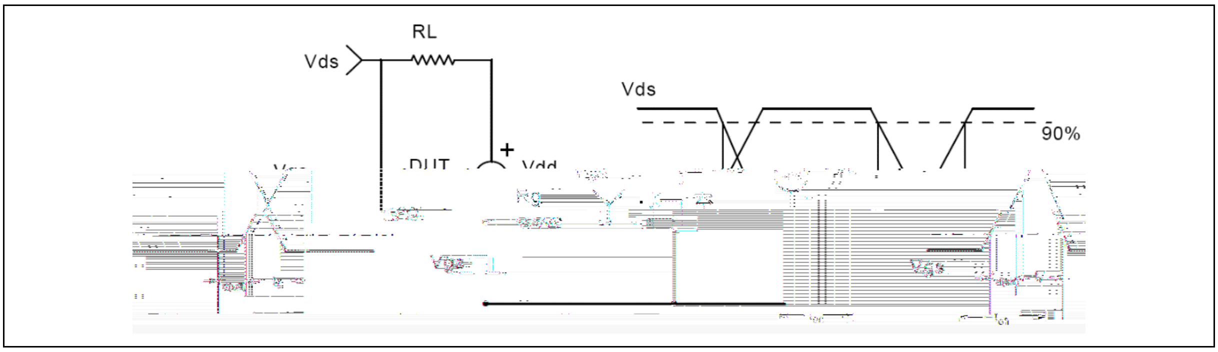


Figure 2. Switching time test circuit & waveforms

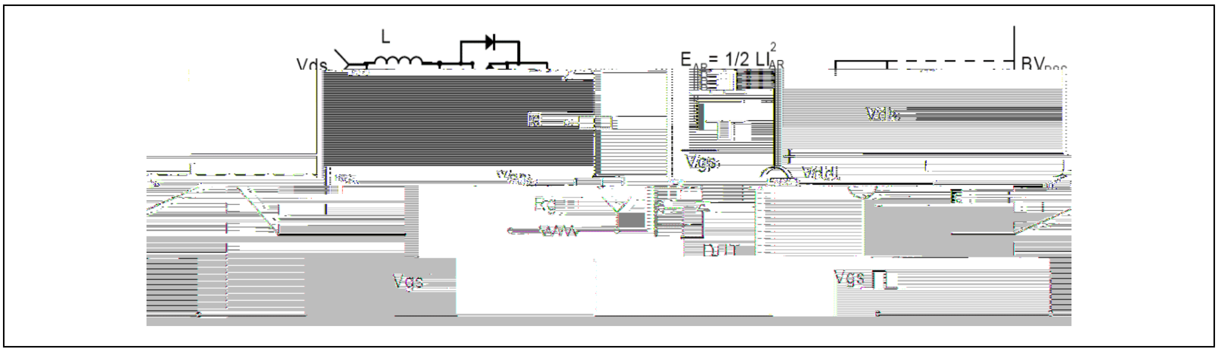


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

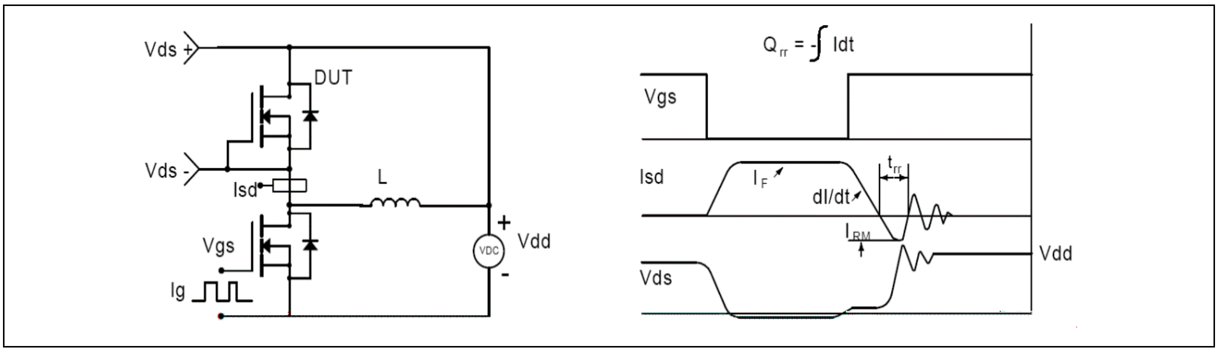
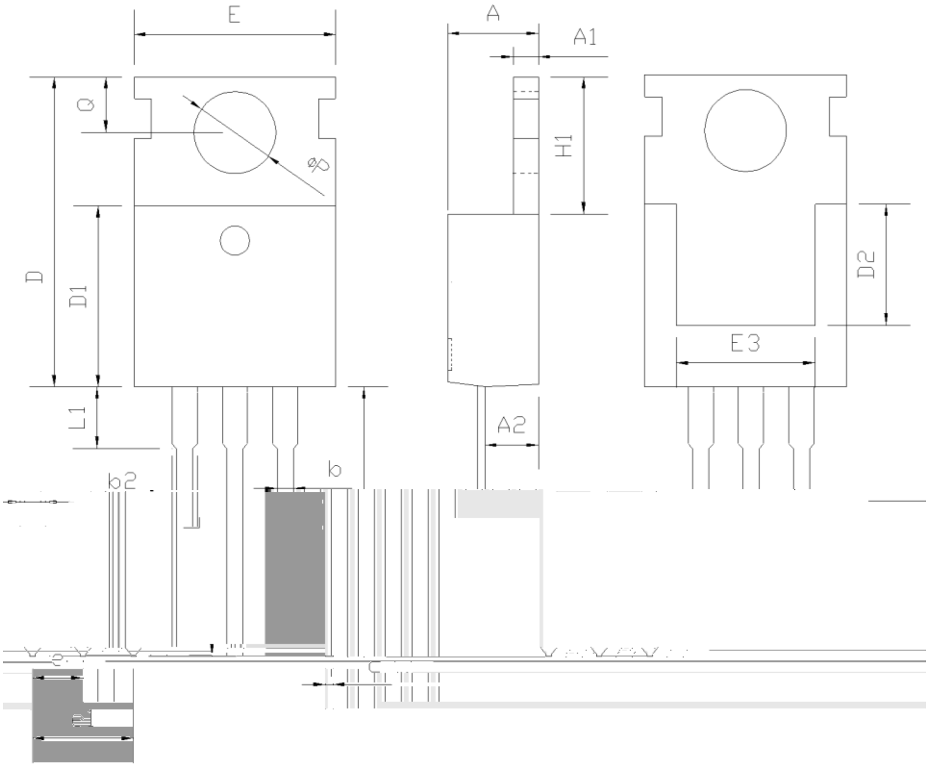


Figure 4. Diode reverse recovery test circuit & waveforms

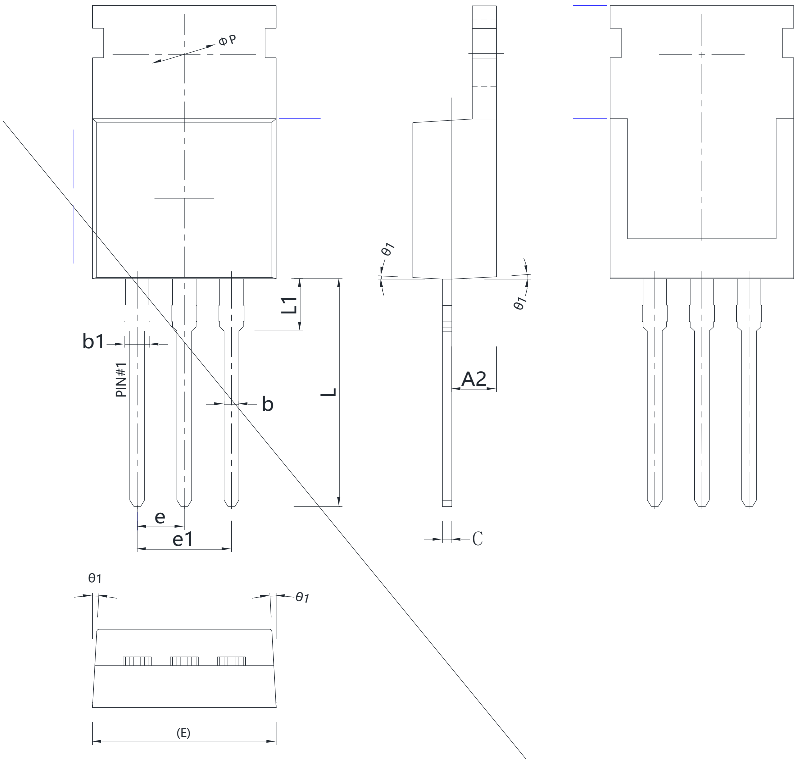
Package Information



Symbol	mm		
	Min	Nom	Max
A	4.37	4.57	4.77
A1	1.25	1.30	1.45
A2	2.20	2.40	2.60
b	0.70	0.80	0.95
b2	1.17	1.27	1.47
c	0.40	0.50	0.65
D	15.10	15.60	16.10
D1	8.80	9.10	9.40
D2	5.50	-	-
E	9.70	10.00	10.30
E3	7.00	-	-
e	2.54 BSC		
e1	5.08 BSC		
H1	6.25	6.50	6.85
L	12.75	13.50	13.80
L1	-	3.10	3.40
	3.40	3.60	3.80
Q	2.60	2.80	3.00

Version 1: TO220-C package outline dimension

Package Information



Symbol	mm		
	Min	Nom	Max
A	4.40	4.50	4.60
A1	1.27	1.30	1.33
A2	2.30	2.40	2.50
b	0.70	-	0.90
b1	1.27	-	1.40
c	0.45	0.50	0.60
D	15.30	15.70	16.10
D1	9.10	9.20	9.30
D2	13.10	-	13.70
E	9.70	9.90	10.20
E1	7.80	8.00	8.20
e	2.54 BSC		
e1	5.08 BSC		
H1	6.30	6.50	6.70
L	12.78	13.08	13.38
L1	-	-	3.50
L2	4.60 REF		
	3.55	3.60	3.65
Q	2.73	-	2.87
1	1		

Version 2: TO220-J package outline dimension

Ordering Information

Package Type	Units/ Tube	Tubes / Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO220-C	50	20	1000	6	6000
TO220-J	50	20	1000	5	5000

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
SFG100N10PF	TO220	yes	yes	yes

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