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	170	A
Pulsed drain current[2], T_C=25 °C	$I_{D, pulse}$	510	A
Continuous diode forward current[1], T_C=25 °C	I_S	170	A
Diode pulsed current[2], T_C=25 °C	$I_{S, pulse}$	510	A
Power dissipation[3], T_C=25 °C	P_D	340	W
Single pulsed avalanche energy[5]	E_{AS}	540	mJ
Operation and storage temperature	T_{stg} T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	R	0.37	°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	$R_{DS(ON)}$		2.8	3.0		V_{GS}=10 V, I_D=30 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}		9644		pF	V_{GS}=0 V, V_{DS}=50 V, 100 kHz
Output capacitance	C_{oss}		1300		pF	
Reverse transfer capacitance	C_{rss}		24.6		pF	
Turn-on delay time	$t_{d(on)}$		43.7		ns	V_{GS}=10 V, V_{DS}=50 V, R_G I_D=20 A
Rise time	t_r		19.7		ns	
Turn-off delay time	$t_{d(off)}$		102.3		ns	

Electrical Characteristics Diagrams

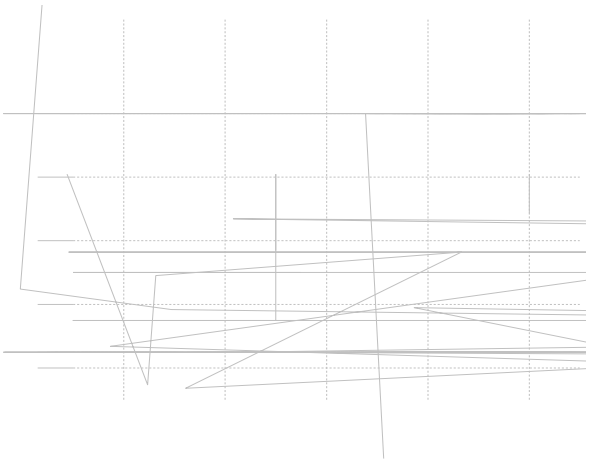

Figure 1. Typ. output characteristics

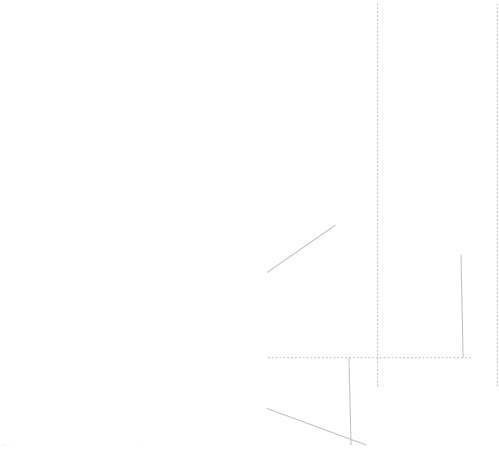

Figure 2. Typ. transfer characteristics

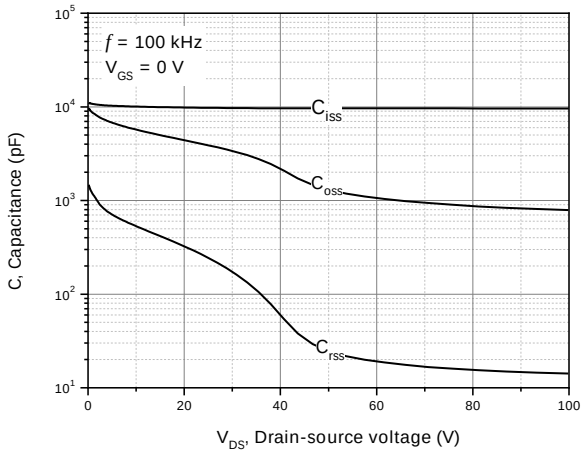

Figure 3. Typ. capacitances

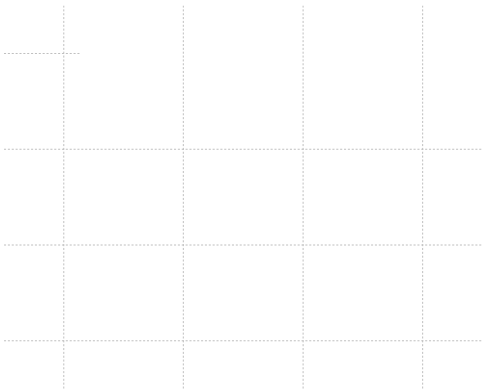

Figure 4. Typ. gate charge

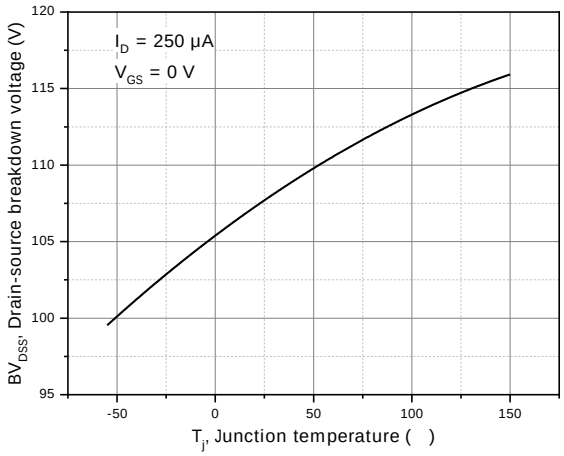

Figure 5. Drain-source breakdown voltage

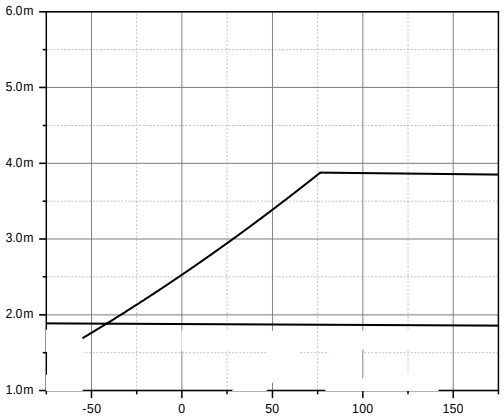

Figure 6. Drain-source on-state resistance

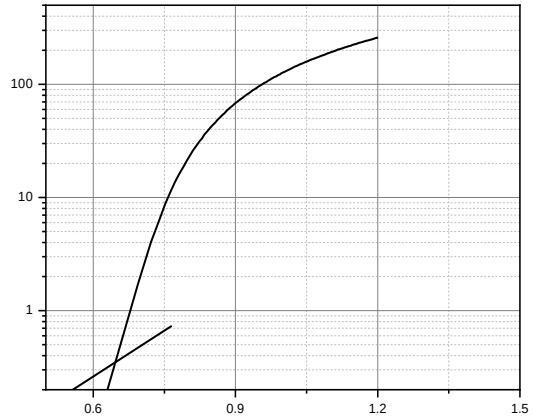

Figure 7. Forward characteristic of body diode

Figure 8. Drain-source on-state resistance

Figure 9. Drain current

Figure 10. Safe operation area T_C=25 °C

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Test circuits and waveforms

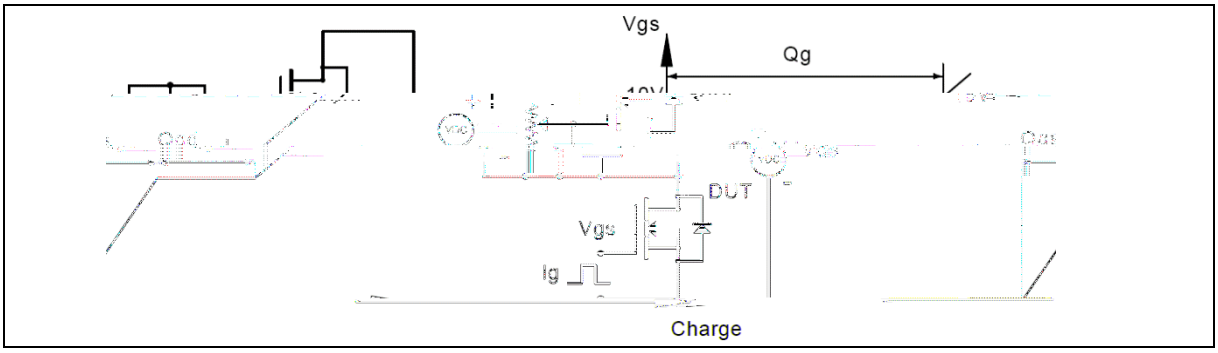

Figure 1. Gate charge test circuit & waveform

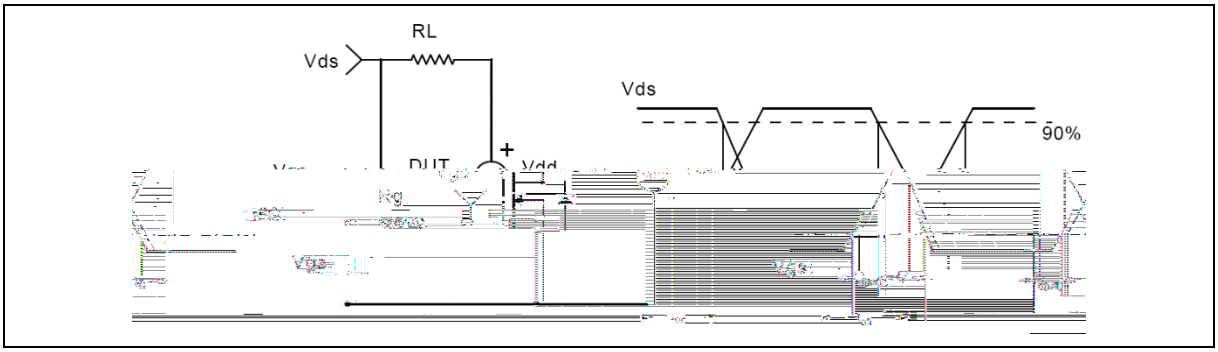

Figure 2. Switching time test circuit & waveforms

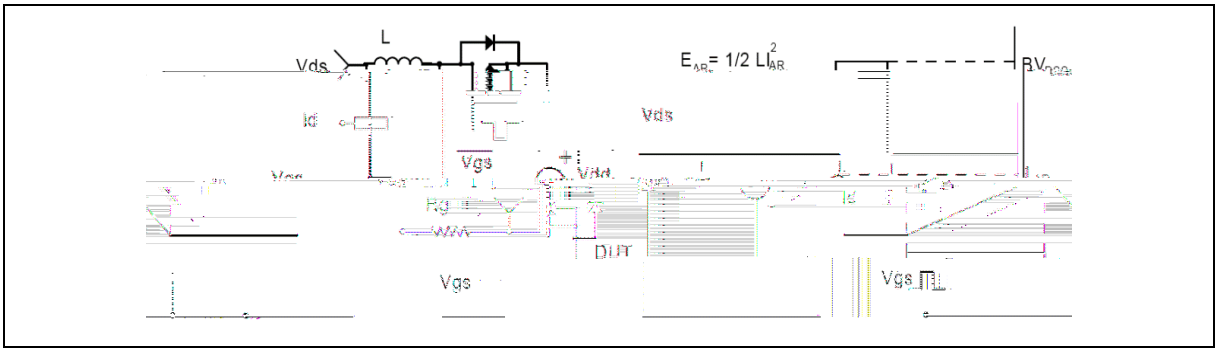

Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

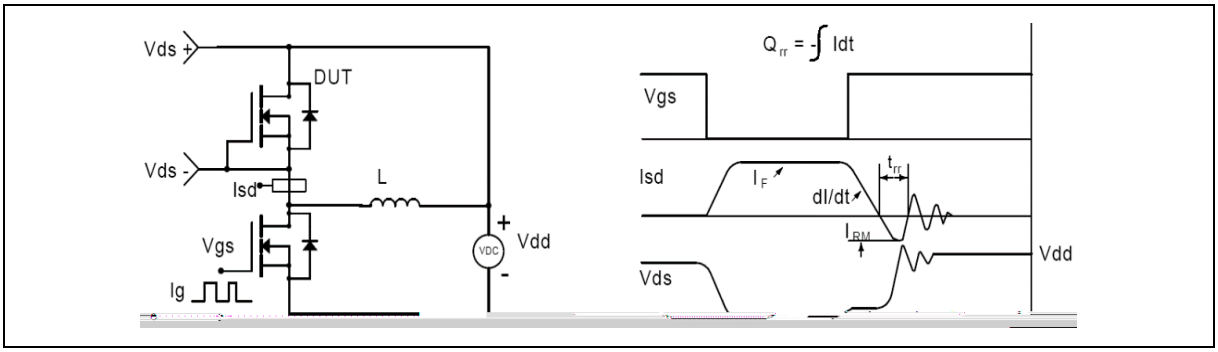

Figure 4. Diode reverse recovery test circuit & waveforms

Package Information

Symbol	mm		
	Min	Nom	Max
A	4.40	4.50	4.60
A1	0.00	0.10	0.25
A2	2.20	2.40	2.60
b			

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
SFG170N10KF	TO263	yes	yes	yes

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