Absolute Maximum Ratings at T_j=25 unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	650	V
Gate-source voltage	V_{GS}	±30	V
Continuous drain current[1], T_C=25 °C	I_D	53	A
Continuous drain current[1], T_C=100 °C		33.5	
Pulsed drain current[2], T_C=25 °C	$I_{D,\ pulse}$	159	A
Continuous diode forward current[1], T_C=25 °C	I_S	53	A
Diode pulsed current[2], T_C=25 °C	$I_{S,\ pulse}$	159	A
Power dissipation[3] ,T_C=25 °C	P_D	390	W
Single pulsed avalanche energy[5]	E_{AS}	1600	mJ
MOSFET dv/dt ruggedness, V_{DS}	dv/dt	50	V/ns
Reverse diode dv/dt, V_{DS} SD D	dv/dt	50	V/ns
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		5820.4		pF	V_{GS}=0 V, V_{DS}=50 V, 00 kHz
Output capacitance	C_{oss}		293.2		pF	
Reverse transfer capacitance	C_{rss}		8.0		pF	
Turn-on delay time	$t_{d(on)}$		51.2		ns	V_{GS}=10 V, V_{DS}=400 V, R_G I_D=25 A
Rise time	t_r		88.2		ns	
Turn-off delay time	$t_{d(off)}$		93.5		ns	
Fall time	t_f		4.3		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		108.0		nC	V_{GS}=10 V, V_{DS}=400 V, I_D=25 A
Gate-source charge	Q_{gs}		27.4		nC	
Gate-drain charge	Q_{gd}		45.8		nC	
Gate plateau voltage	$V_{plateau}$		6.7		V	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage	V_{SD}			1.3	V	I_S=53 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		159.5		ns	I_S=25 A, di/dt=100
Reverse recovery charge	Q_{rr}		1.2		C	
Peak reverse recovery current	I_{rrm}		14.5		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}=100 V, V_{GS}=10 V, L=60 mH, starting T_j=25 °C.

Electrical Characteristics Diagrams

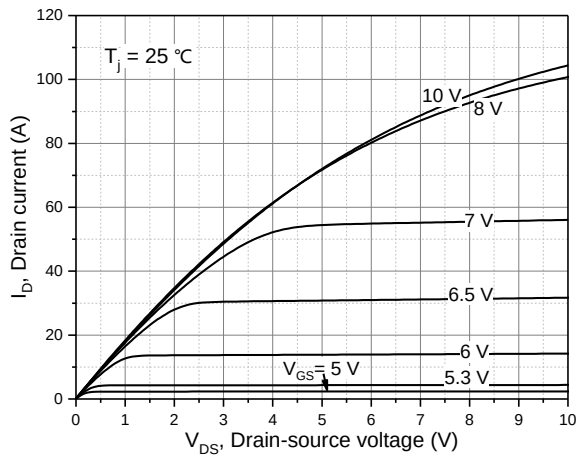


Figure 1. Typ. output characteristics

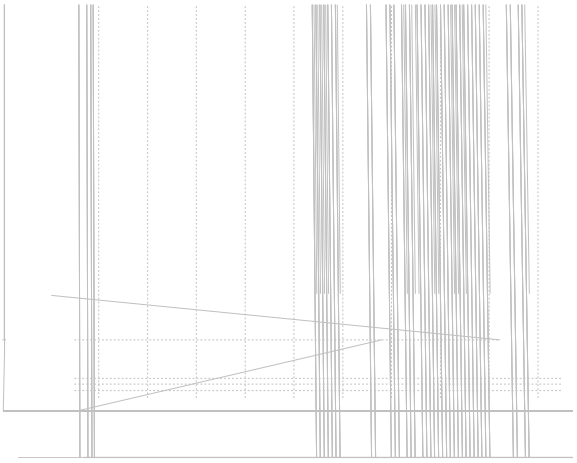


Figure 2. Typ. transfer characteristics

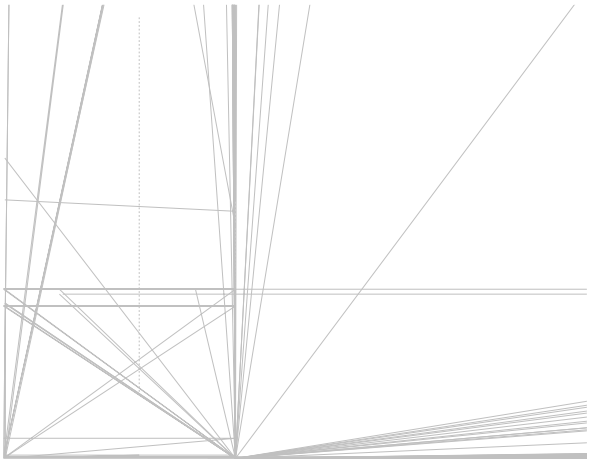


Figure 3. Typ. capacitances

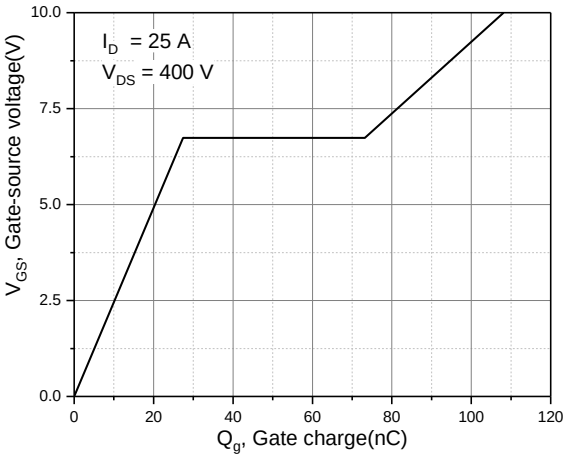


Figure 4. Typ. gate charge

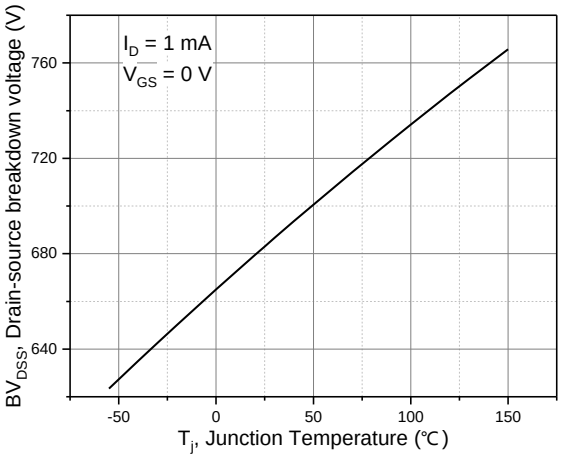


Figure 5. Drain-source breakdown voltage

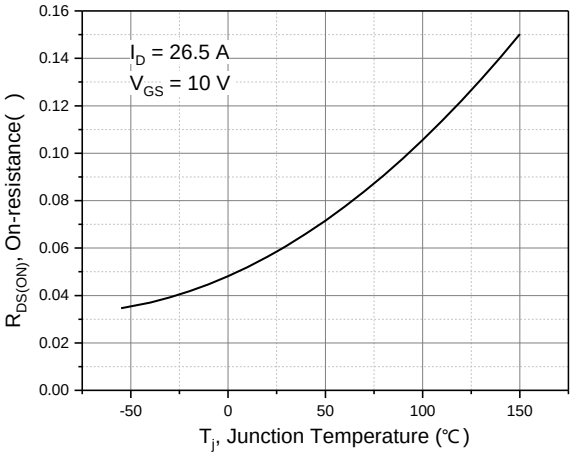


Figure 6. Drain-source on-state resistance

Figure 7. Forward characteristic of body diode

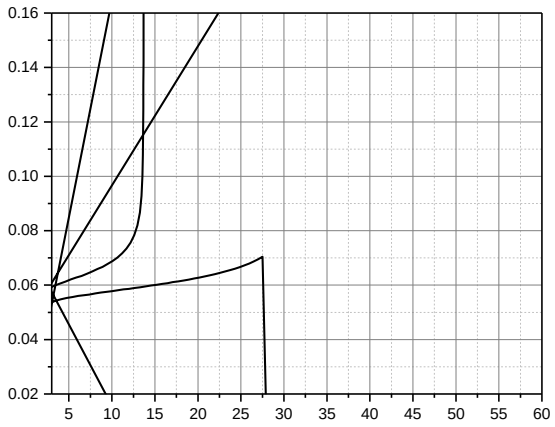


Figure 8. Drain-source on-state resistance

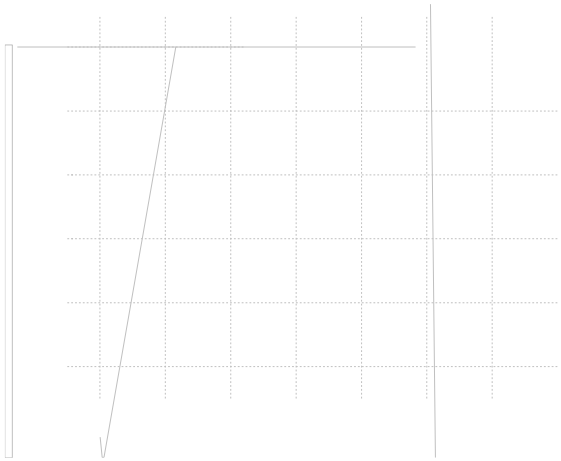


Figure 9. Drain current

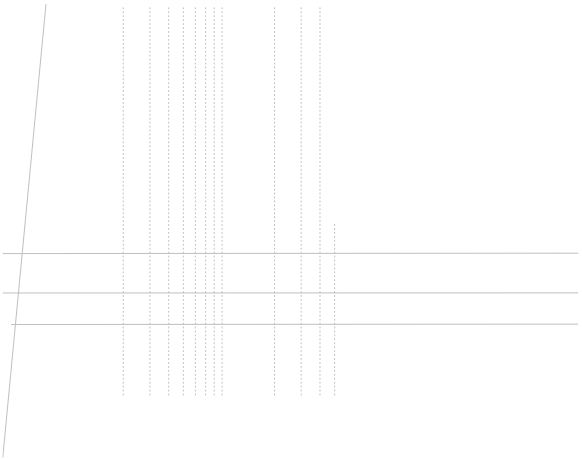


Figure 10. Safe operation area T_C=25 °C

Test circuits and waveforms

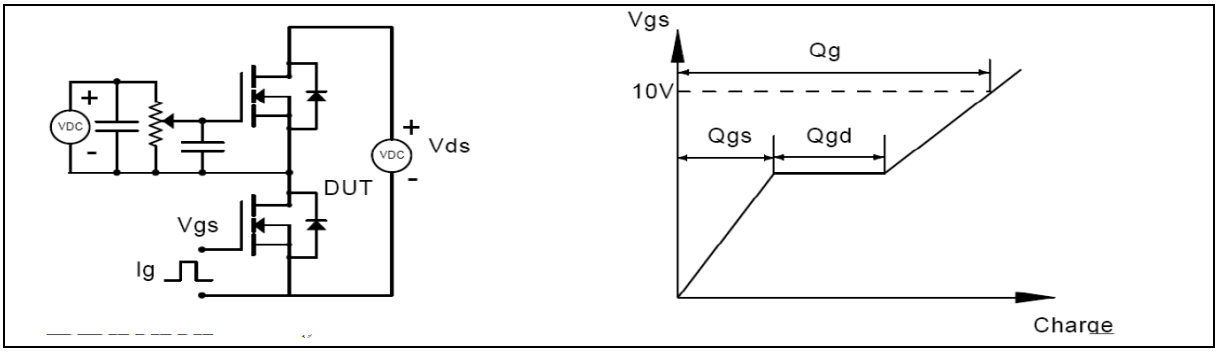


Figure 1. Gate charge test circuit & waveform

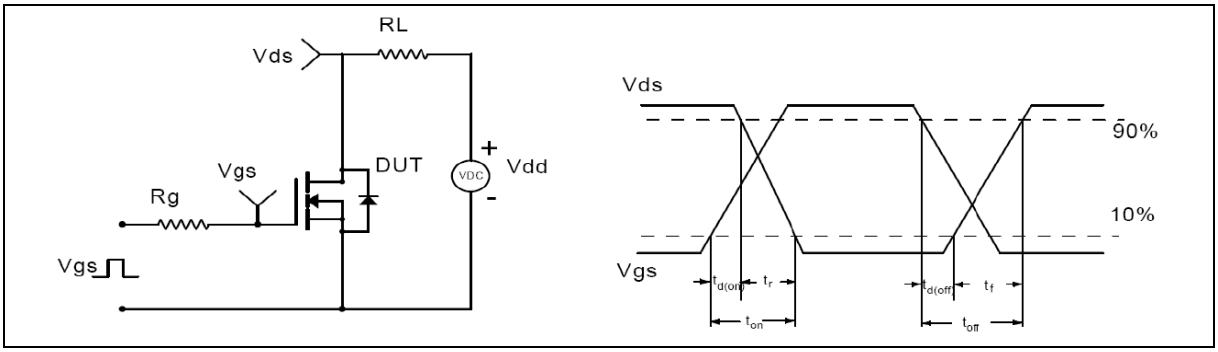


Figure 2. Switching time test circuit & waveforms

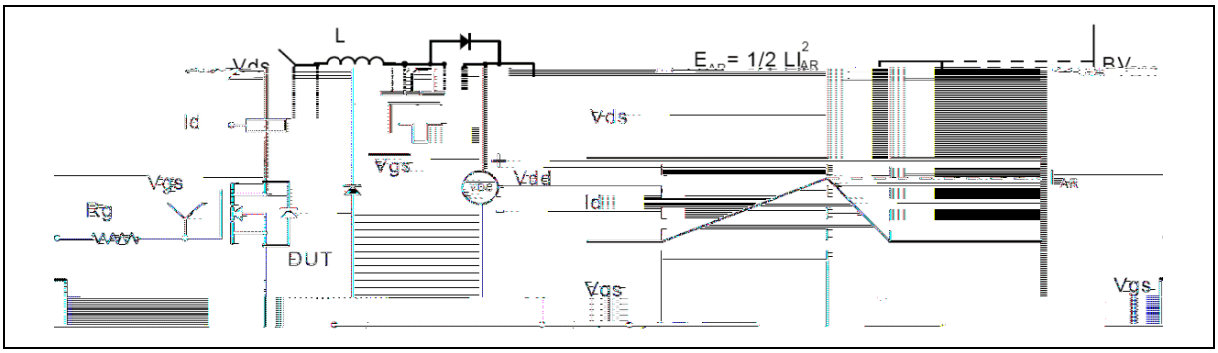


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

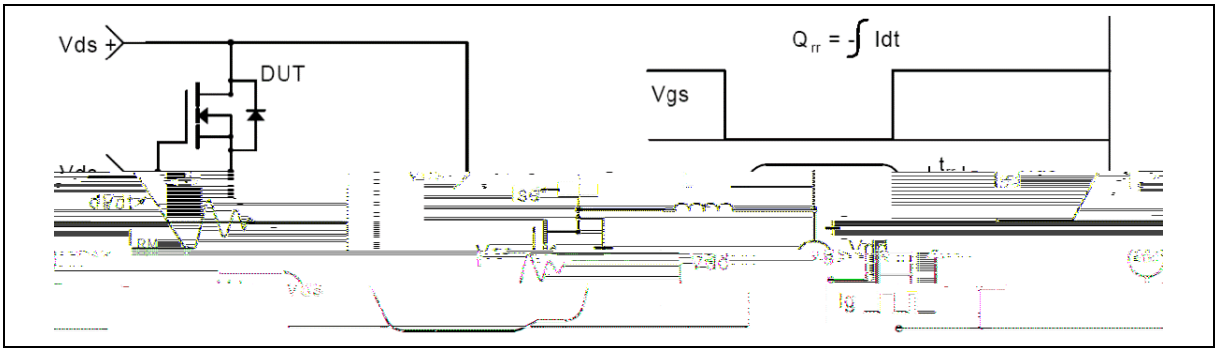
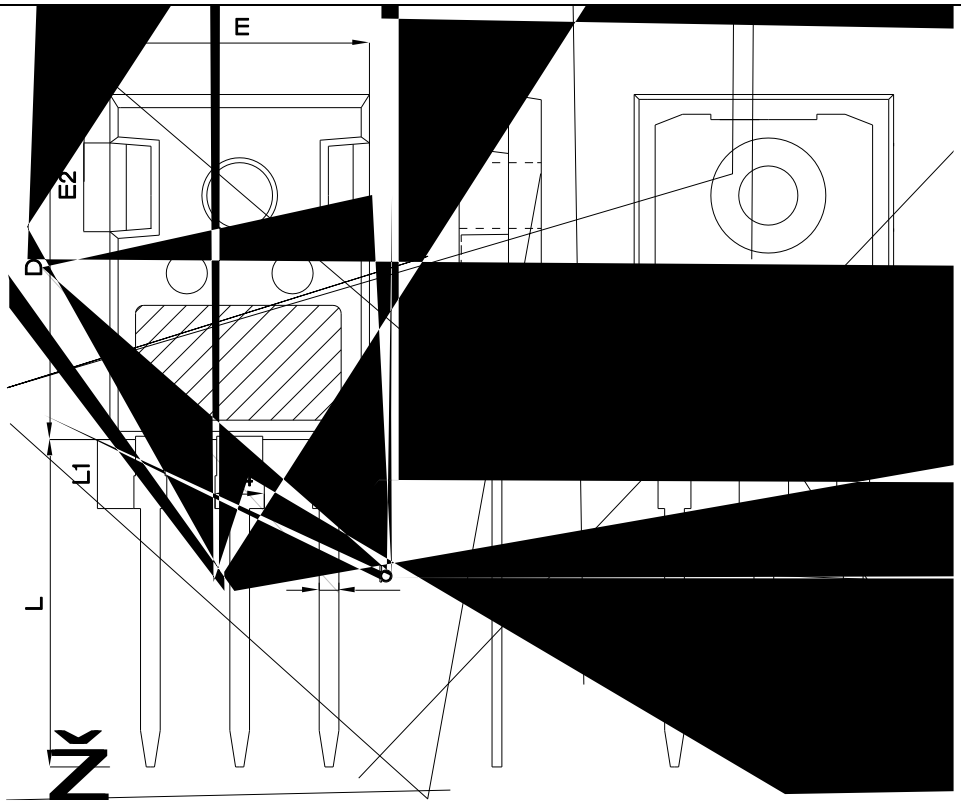


Figure 4. Diode reverse recovery test circuit & waveforms

Package Information



Symbol	mm		
	Min	Nom	Max
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
b4	2.91	3.01	3.21
c	0.51	0.61	0.75
D	20.80	21.00	21.30
D1	16.25	16.55	16.85
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e	5.44BSC		
L	19.82	19.92	20.22
L1	-	-	4.30
	3.40	3.60	3.80
	-	-	7.30
S	6.15BSC		

Version1: TO247-C package outline dimension

Ordering Information

Package Type	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO247-C	30	11	330	6	1980

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG65R069HSZF	TO247	yes	yes	yes