Absolute Maximum Ratings at T_j=25 unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	800	V
Gate-source voltage	V_{GS}	±30	V
Continuous drain current[1], T_C=25 °C	I_D	4	A
Continuous drain current[1], T_C=100 °C		2.5	
Pulsed drain current[2], T_C=25 °C	$I_{D,\ pulse}$	12	A
Continuous diode forward current[1], T_C=25 °C	I_S	4	A
Diode pulsed current[2], T_C=25 °C	$I_{S,\ pulse}$	12	A
Power dissipation[3], T_C=25 °C	P_D	37	W
Single pulsed avalanche energy[5]	E_{AS}	100	mJ
MOSFET dv/dt ruggedness, V_{DS} 640 V	dv/dt	50	V/ns
Reverse diode dv/dt, V_{DS} 640 V, I_{SD} D	dv/dt	15	V/ns

Operation and stor8 50p7.9 685.34 56.184 0.48 337.7 523

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		363.5		pF	V_{GS}=0 V, V_{DS}=50 V, Hz
Output capacitance	C_{oss}		25.5		pF	
Reverse transfer capacitance	C_{rss}		1.35		pF	
Turn-on delay time	$t_{d(on)}$		16.8		ns	V_{GS}=10 V, V_{DS}=400 V, R_G=25 I_D=2 A
Rise time	t_r		5.7		ns	
Turn-off delay time	$t_{d(off)}$		31		ns	
Fall time	t_f		42.8		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		7.5		nC	V_{GS}=10 V, V_{DS}=400 V, I_D=4 A
Gate-source charge	Q_{gs}		2.1		nC	
Gate-drain charge	Q_{gd}		2.9		nC	
Gate plateau voltage	$V_{plateau}$		5.6		V	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage	V_{SD}			1.3	V	I_S=4 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		214.4		ns	I_S=4 A,
Reverse recovery charge	Q_{rr}		1.6		C	
Peak reverse recovery current	I_{rrm}		13.3		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}=50 V, V_{GS}=10 V, L=10 mH, starting T_j=25 °C.

Electrical Characteristics Diagrams

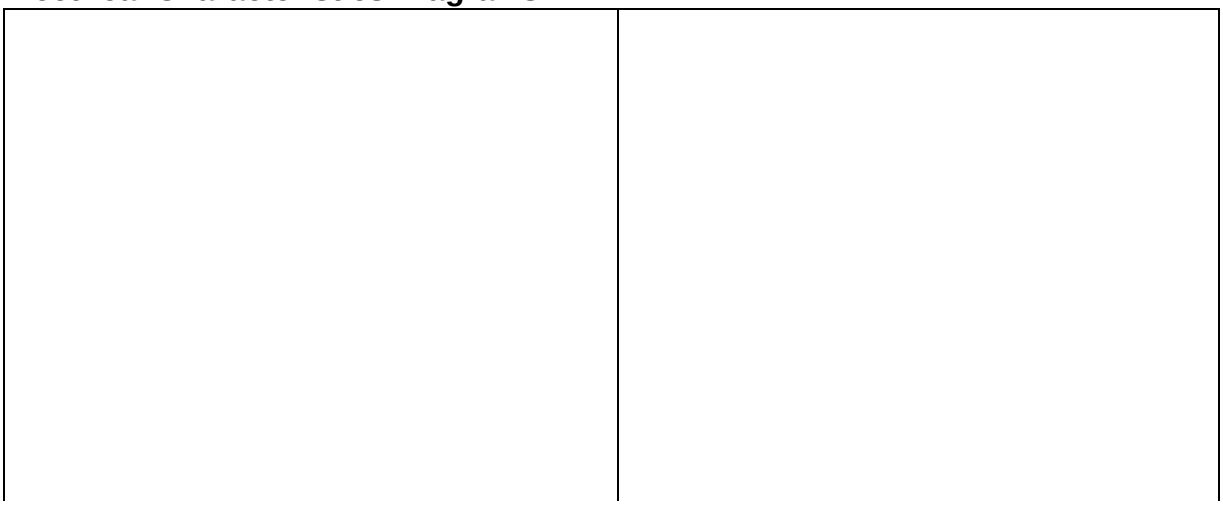


Figure 1. Typ. output characteristics

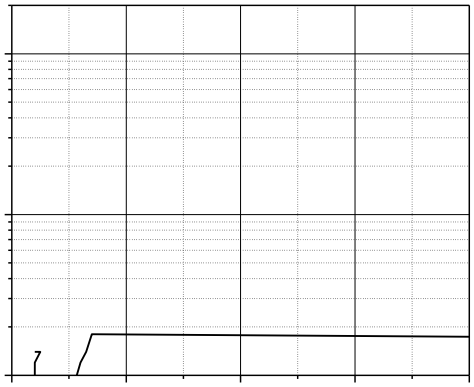


Figure 7. Forward characteristic of body diode

Figure 8. Drain-source on-state resistance

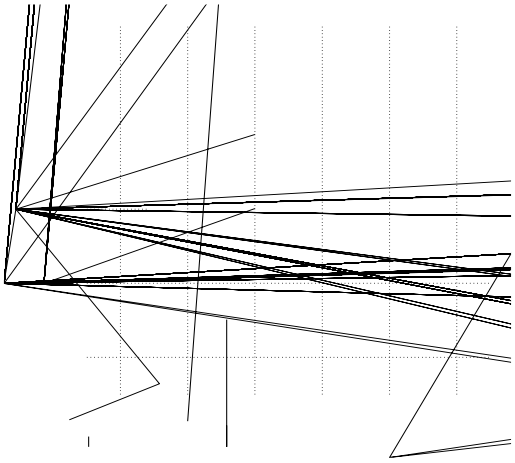


Figure 9. Drain current

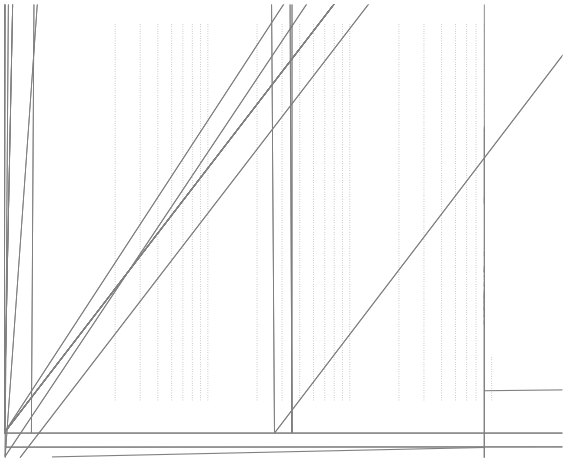


Figure 10. Safe operation area T_C=25 °C

Test circuits and waveforms

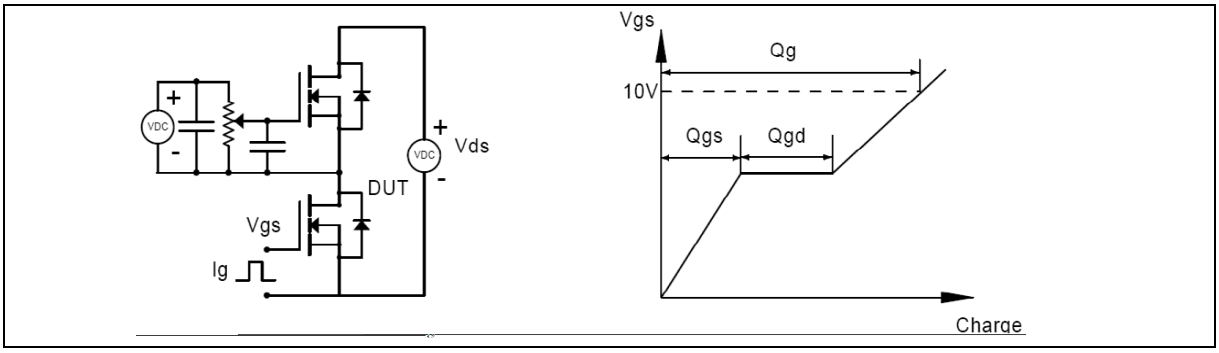


Figure 1. Gate charge test circuit & waveform

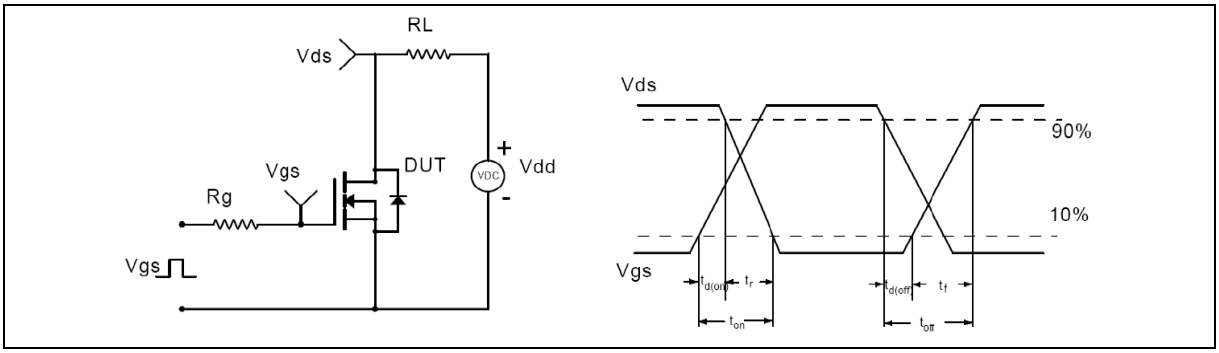


Figure 2. Switching time test circuit & waveforms

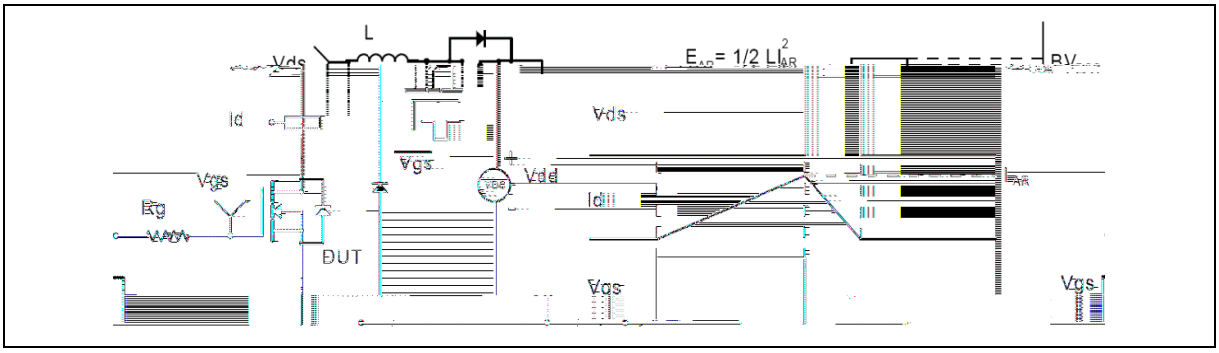


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

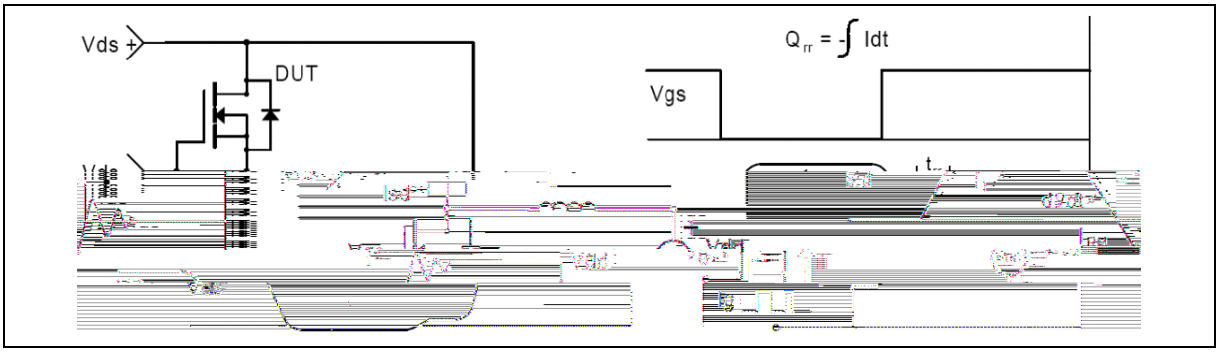
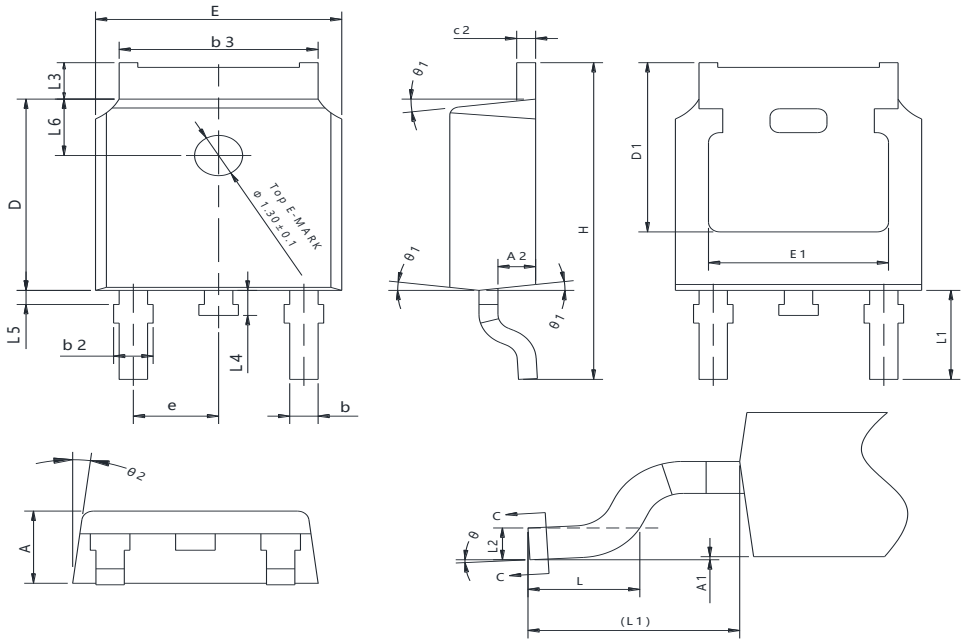


Figure 4. Diode reverse recovery test circuit & waveforms

Package Information



Symbol	mm		
	Min	Nom	Max
A	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	2.90REF		
L2	0.508BSC		
L3	0.90	-	1.25
L4	0.60	0.80	1.00
L5	0.15	-	0.75
L6	1.80REF		
	0	-	

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		

Ordering Information

Package Type	Units/ Reel	Reels/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO252-J	2500	2	5000	5	25000
TO252-P	2500	2	5000	5	25000

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG80R1K4DF	TO252	yes	yes	yes

ORIENTAL SEMICONDUCTOR