The GreenMOS® high voltage MOSFET utilizes charge balance technology to achieve outstanding low on-resistance and lower gate charge. It is engineered to minimize conduction loss, provide superior switching performance and robust avalanche capability.

GreenMOS®

RoHS

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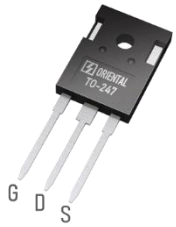
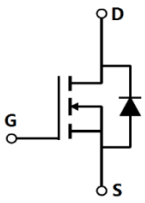
Parameter	Value	Unit
$V_{DS,\ min}$ @ $T_{j(max)}$	650	V
$I_{D,\ pulse}$	60	A
$R_{DS(ON),\ max}$ @ V_{GS}=10V	0.18	
Q_g	35.5	nC

Product Name	Package	Marking
OSG60R180HSF	TO247	OSG60R180HS





Absolute Maximum Ratings at T_j=25 unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	600	V
Gate-source voltage	V_{GS}	±30	V
Continuous drain current[1], T_C=25 °C	I_D	20	A
Continuous drain current[1], T_C=100 °C		12.7	
Pulsed drain current[2], T_C=25 °C	$I_{D,\ pulse}$	60	A
Continuous diode forward current[1], T_C=25 °C	I_S	20	A
Diode pulsed current[2], T_C=25 °C	$I_{S,\ pulse}$	60	A
Power dissipation[3], T_C=25 °C	P_D	163	W
Single pulsed avalanche energy[5]	E_{AS}	570	mJ
MOSFET dv/dt ruggedness, V_{DS}	dv/dt	50	V/ns
Reverse diode dv/dt, V_{DS} SD D	dv/dt	15	V/ns
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	R	0.77	°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}	600			V	V_{GS}=0 V, I_D=250 uA
		650				V_{GS}=0 V, I_D=250 uA, T_j=150 °C
Gate threshold voltage	$V_{GS(th)}$	2.9		3.9	V	V_{DS}=V_{GS}, I_D=250 uA
Drain-source on-state resistance	$R_{DS(ON)}$		0.14	0.18		V_{GS}=10 V, I_D=10 A
			0.34			V_{GS}=10 V, I_D=10 A, T_j=150 °C
Gate-source leakage current	I_{GSS}			100	nA	V_{GS}=30 V
				-100		V_{GS}=-30 V
Drain-source leakage current	I_{DSS}			1	A	V_{DS}=600 V, V_{GS}=0 V
Gate resistance	R_G		10.8			

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		1660.9		pF	V_{GS}=0 V, V_{DS}=50 V, 00 KHz
Output capacitance	C_{oss}		120.2		pF	
Reverse transfer capacitance	C_{rss}		1.3		pF	
Turn-on delay time	$t_{d(on)}$		31		ns	V_{GS}=10 V, V_{DS}=400 V, R_G I_D=10 A
Rise time	t_r		20.1		ns	
Turn-off delay time	$t_{d(off)}$		84.4		ns	
Fall time	t_f		9.9		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		35.5		nC	V_{GS}=10 V, V_{DS}=400 V, I_D=10 A
Gate-source charge	Q_{gs}		10.3		nC	
Gate-drain charge	Q_{gd}		10		nC	

Electrical Characteristics Diagrams

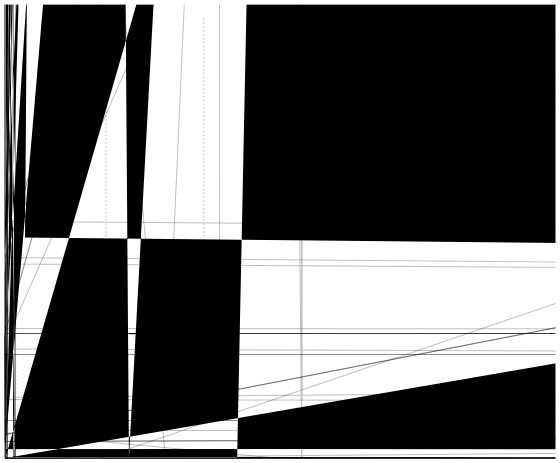


Figure 1. Typ. output characteristics

Figure 2. Typ. transfer characteristics

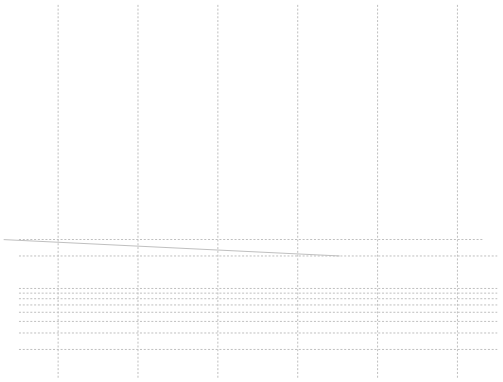


Figure 3. Typ. capacitances

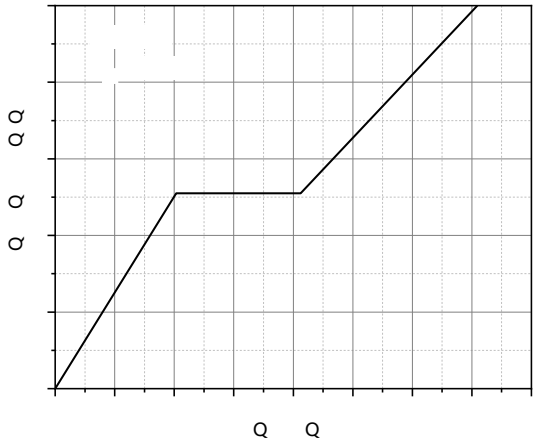


Figure 4. Typ. gate charge

Figure 5. Drain-source breakdown voltage

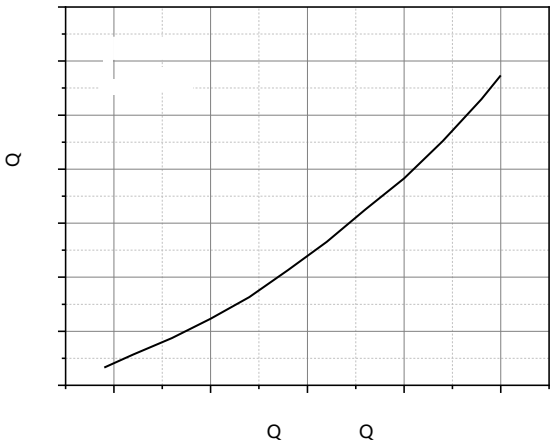


Figure 6. Drain-source on-state resistance

Figure 7. Threshold voltage

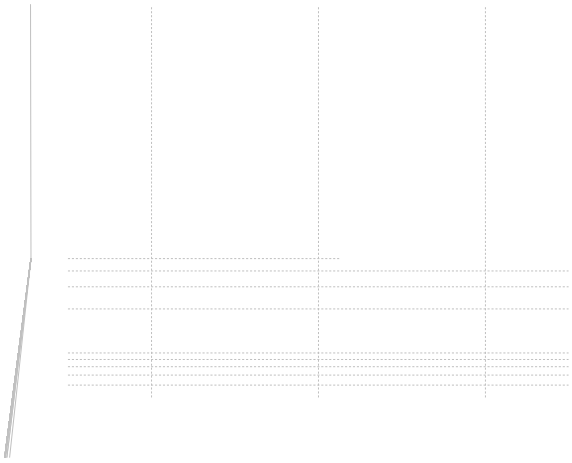


Figure 8. Forward characteristic of body diode

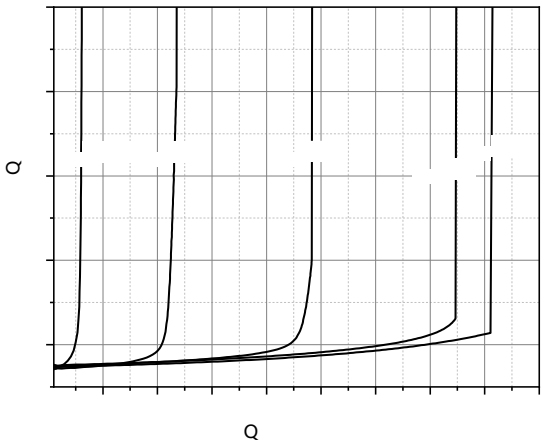


Figure 9. Drain-source on-state resistance

Figure 10. Drain current

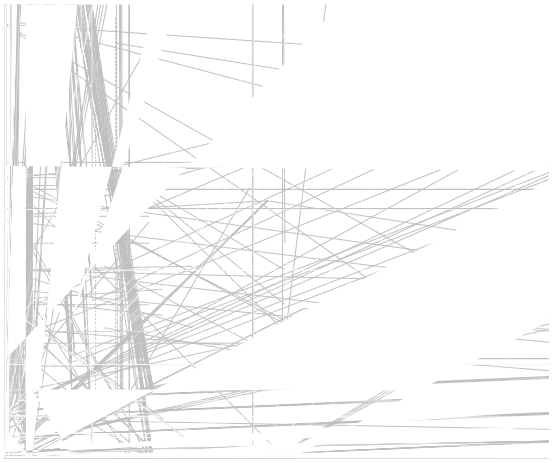


Figure 11. Safe operation area for T_C=25 °C

Test circuits and waveforms

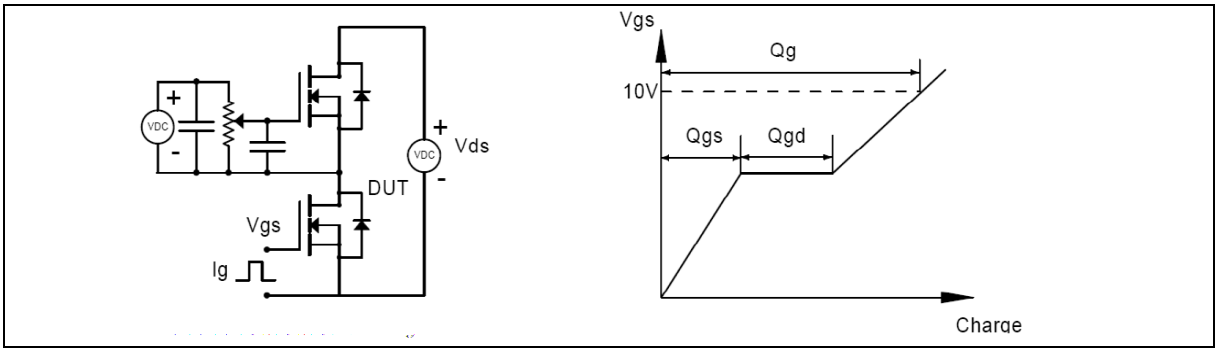


Figure 1. Gate charge test circuit & waveform

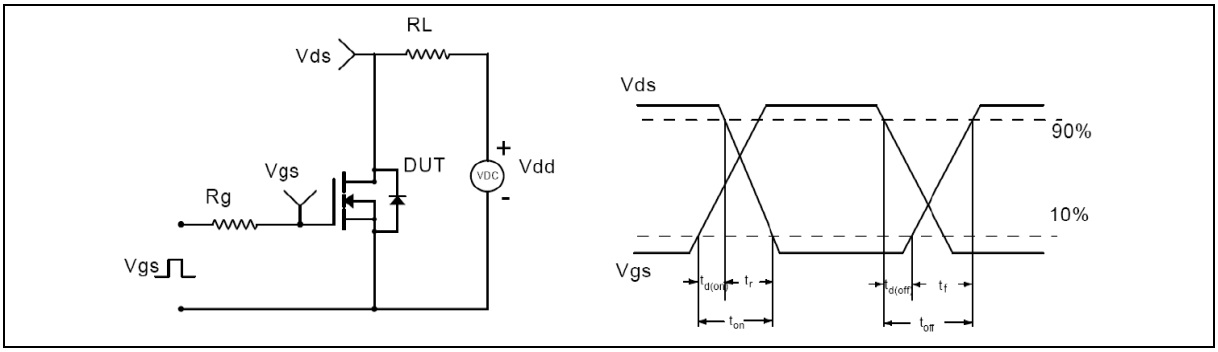


Figure 2. Switching time test circuit & waveforms

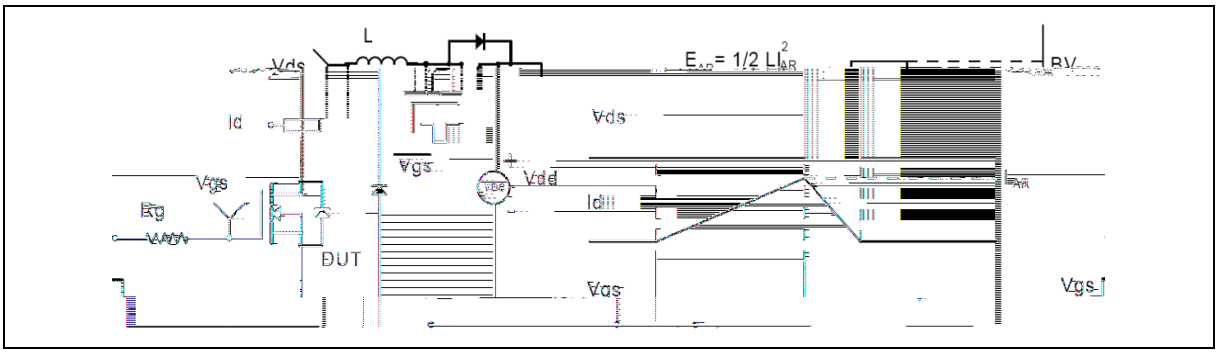


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

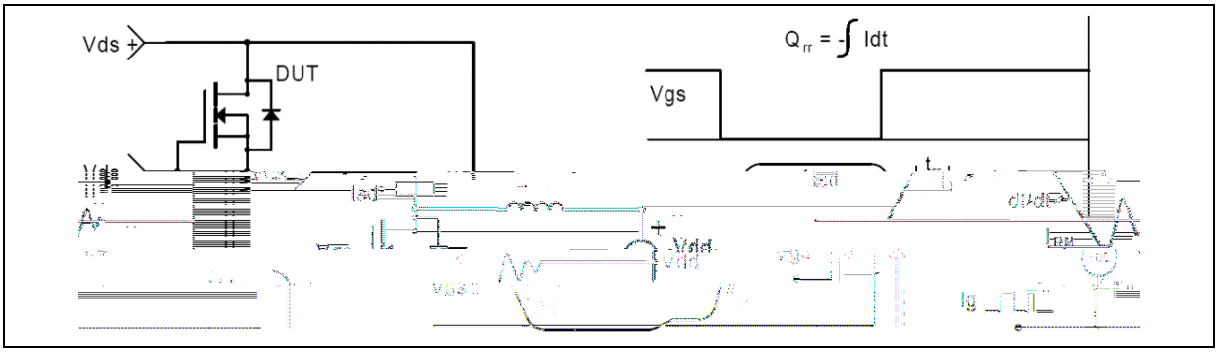


Figure 4. Diode reverse recovery test circuit & waveforms

Package Information

Symbol	mm		
	Min	Nom	Max
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
a	0.00	-	0.15
a'	0.00	-	0.15
b	1.16	-	1.26
b1	1.15	1.2	1.22
b2	1.96	-	2.06
b3	1.95	2.00	2.02
b4	2.96	-	3.06
b5	2.96	3.00	3.02
b6	-	-	2.25
b7	-	-	3.25
c	0.59	-	0.66
c1	0.58	0.60	0.62
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.17	1.35
E	15.70	15.80	15.90
E1	13.10	13.30	13.50
E2	4.40	4.50	4.60
E3	2.40	2.50	2.60
e	5.436 BSC		
L	19.80	19.92	20.10
L1	-	-	4.30
M	0.35	-	0.95
P	3.40	3.50	3.60
P1	7.00	-	7.40
P2	2.40	2.5	2.6
Q	5.60	-	6.0
S	6.05	6.15	6.25

Ordering Information

Package Type	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO247-J	30	20	600	5	3000

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG60R180HSF	TO247	yes	yes	yes