

General Description

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.

The GreenMOS[®] Generic series is optimized for extreme switching performance to minimize switching loss. It is tailored for high power density applications to meet the highest efficiency standards.

Features

- Low $R_{DS(ON)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- EMI and performance balanced



Applications

- LED lighting
- Charger
- Adapter
- TV power
- Telecom power
- Server power
- Solar/UPS

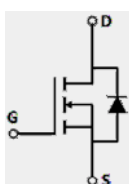
Key Performance Parameters

Parameter	Value	Unit
$V_{DS, min} @ T_{j(max)}$	700	V
$I_{D, pulse}$	13.5	A
$R_{DS(ON), max} @ V_{GS}=10V$	1.2	m
Q_g	7	nC

Marking Information

Product Name	Package	Marking
OSG07N65DF	TO252	OSG07N65D

Package & Pin Information



Absolute Maximum Ratings at $T_j=25^\circ\text{C}$ 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⁾ , $T_C=25^\circ\text{C}$	I_D	4.5	A
Continuous drain current ¹⁾ , $T_C=100^\circ\text{C}$		2.8	
Pulsed drain current ²⁾ , $T_C=25^\circ\text{C}$	$I_{D, \text{pulse}}$	13.5	A
Continuous diode forward current ¹⁾ , $T_C=25^\circ\text{C}$	I_S	4.5	A
Diode pulsed current ²⁾ , $T_C=25^\circ\text{C}$	$I_{S, \text{pulse}}$	13.5	A
Power dissipation ³⁾ , $T_C=25^\circ\text{C}$	P_D	28.4	W
Single pulsed avalanche energy ⁵⁾	E_{AS}	100	mJ
MOSFET dv/dt ruggedness, $V_{DS}=0\dots 480\text{ V}$	dv/dt	50	V/ns
Reverse diode dv/dt, $V_{DS}=0\dots 480\text{ V}$, $I_{SD} = I_D$	dv/dt	15	V/ns

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		260.7		pF	$V_{GS}=0\text{ V}$, $V_{DS}=50\text{ V}$, $f=100\text{ KHz}$
Output capacitance	C_{oss}		24.1		pF	
Reverse transfer capacitance	C_{rss}		1.2		pF	
Turn-on delay time	$t_{d(on)}$		29.8		ns	$V_{GS}=10\text{ V}$, $V_{DS}=400\text{ V}$, $R_G=2\text{ }\Omega$, $I_D=2\text{ A}$
Rise time	t_r		17.8		ns	
Turn-off delay time	$t_{d(off)}$		60.3		ns	
Fall time	t_f		14.9		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		6.7		nC	$V_{GS}=10\text{ V}$, $V_{DS}=400\text{ V}$, $I_D=2\text{ A}$
Gate-source charge	Q_{gs}		1.5		nC	
Gate-drain charge	Q_{gd}		3.2		nC	
Gate plateau voltage	$V_{plateau}$		5.8		V	

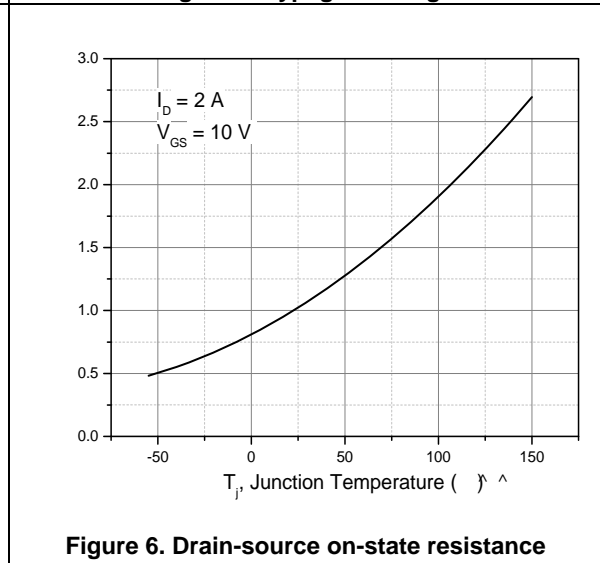
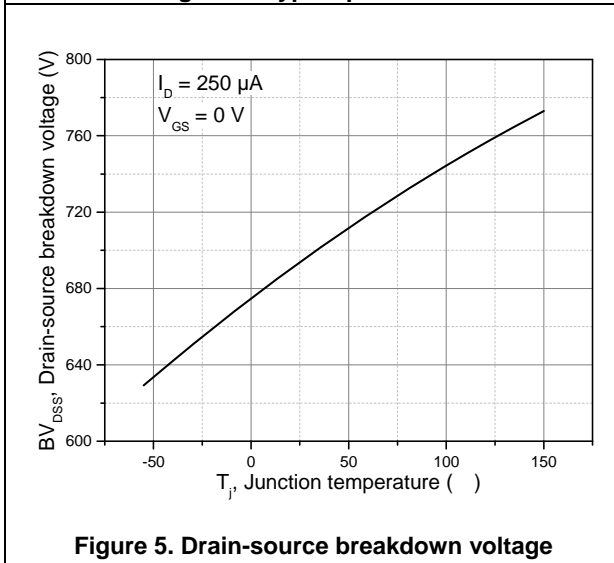
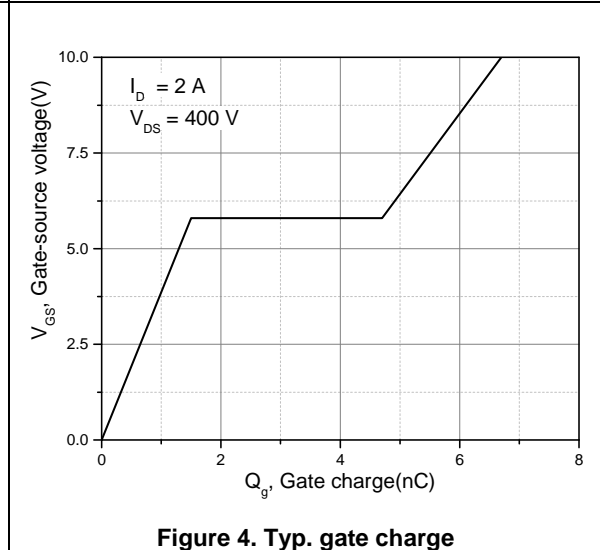
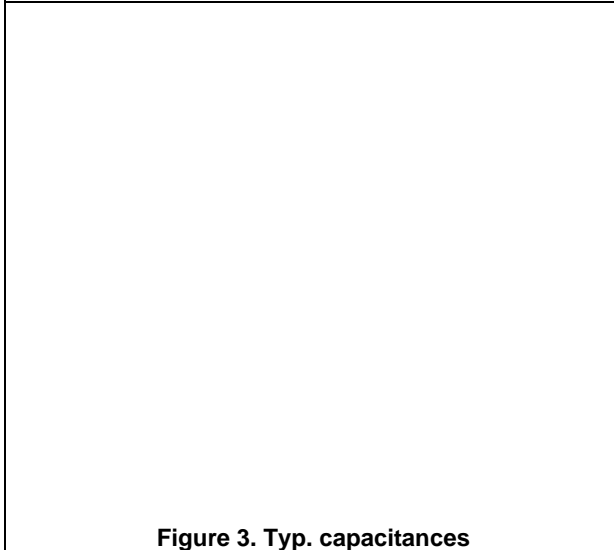
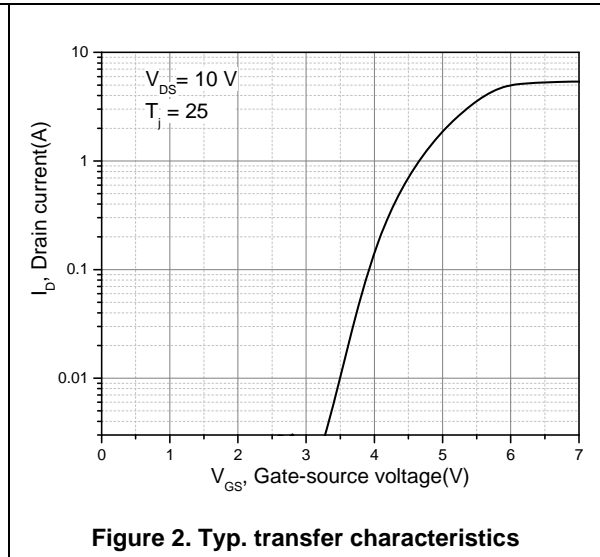
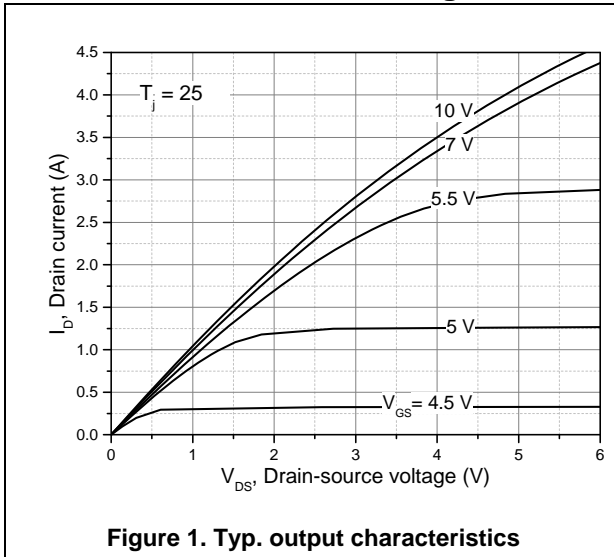
Body Diode Characteristics

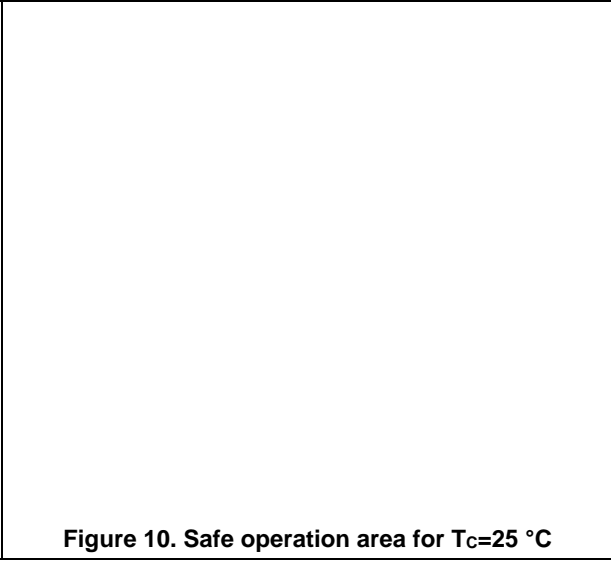
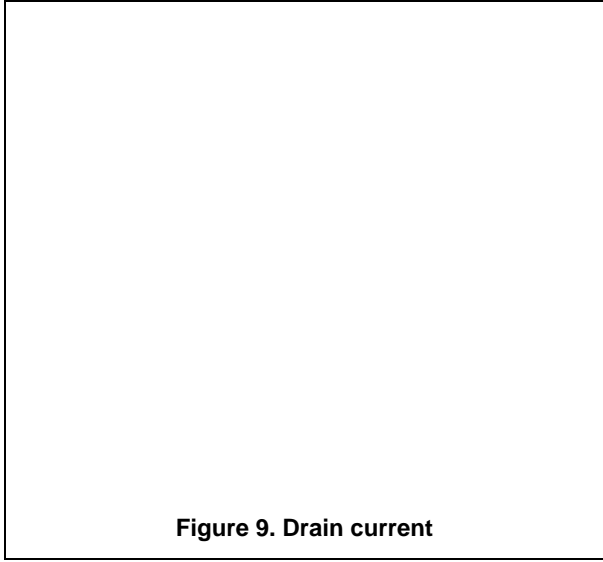
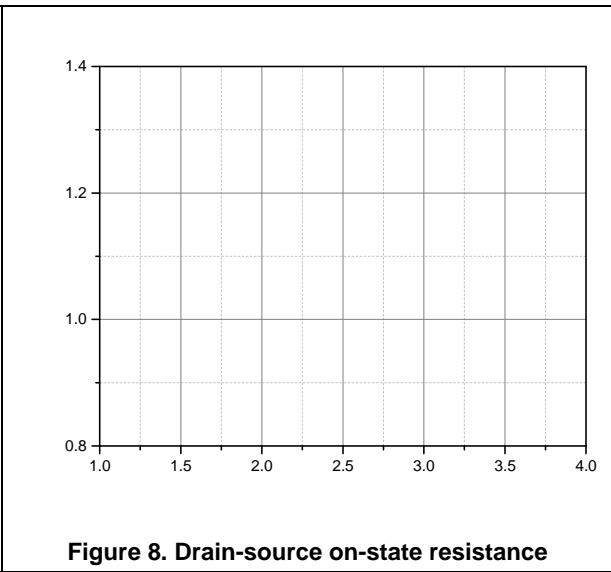
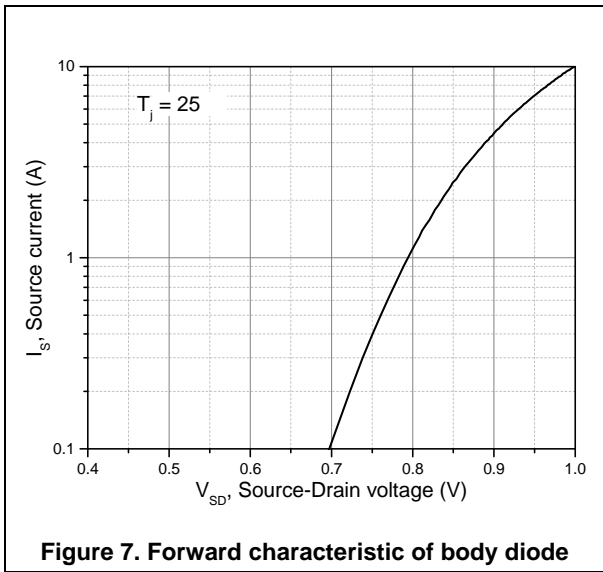
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage	V_{SD}			1.3	V	$I_S=4.5\text{ A}$, $V_{GS}=0\text{ V}$
Reverse recovery time	t_{rr}		130		ns	$V_R=400\text{ V}$, $I_S=2\text{ A}$, $di/dt=100\text{ A}/\mu\text{s}$
Reverse recovery charge	Q_{rr}		0.92		μC	
Peak reverse recovery current	I_{rrm}		14.7		A	

Note

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) P_d is based on max. junction temperature, using junction-case thermal resistance.
- 4) The value of R_{JA} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_a=25\text{ }^\circ\text{C}$.
- 5) $V_{DD}=100\text{ V}$, $V_{GS}=10\text{ V}$, $L=60\text{ mH}$, starting $T_j=25\text{ }^\circ\text{C}$.

Electrical Characteristics Diagrams





Test circuits and waveforms

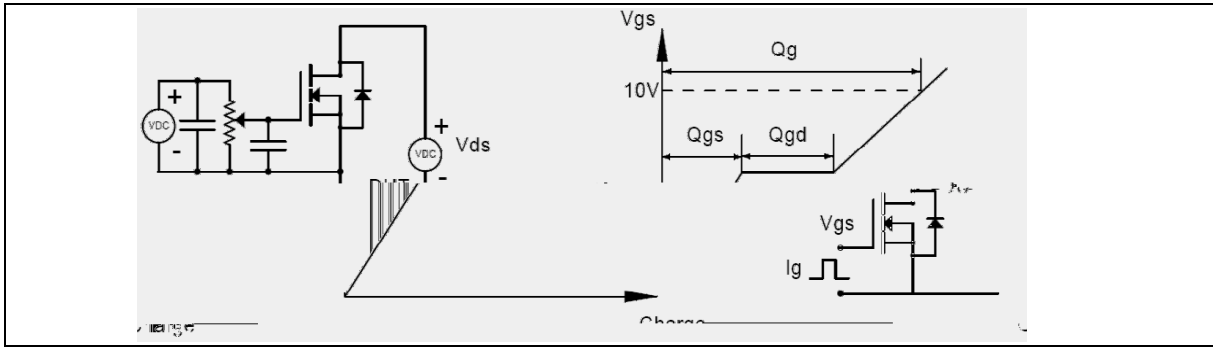


Figure 1. Gate charge test circuit & waveform

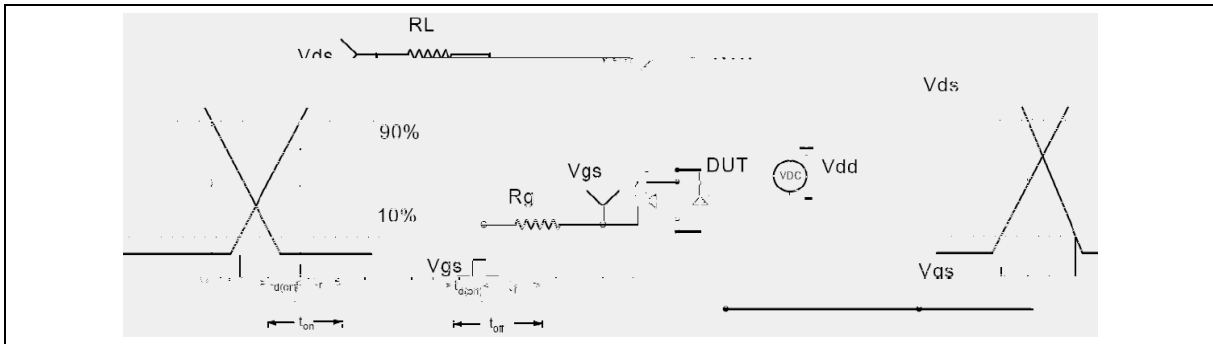


Figure 2. Switching time test circuit & waveforms

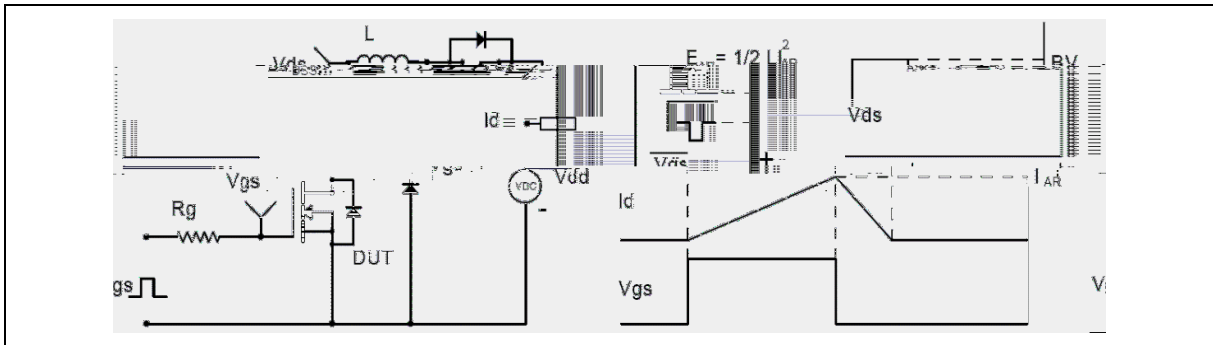


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

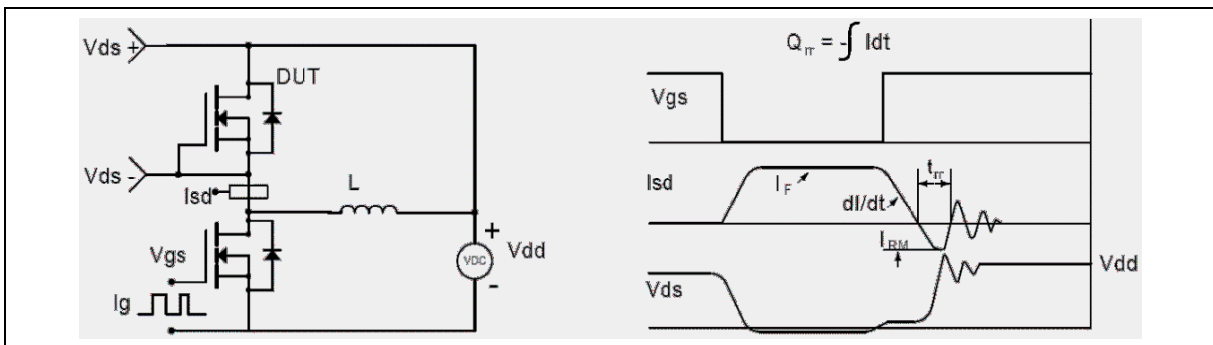


Figure 4. Diode reverse recovery test circuit & waveforms

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	2.90 REF		
L2	0.508 BSC		
L3	0.90	-	1.25
L4	0.60	0.80	1.00
L5	0.15	-	0.75
L6	1.80 REF		
	0°	-	8°

Ordering Information

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

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG07N65DF	TO252	yes	yes	yes

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or