

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[®] S series is optimized for its switching characteristics to achieve aggressive EMI standards. It is easy to use for smaller power supply systems t

Features

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



Applications

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

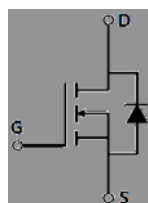
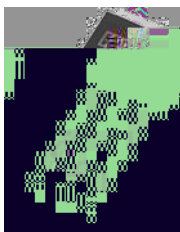
Key Performance Parameters

Parameter	Value	Unit
$V_{DS, min} @ T_{j(max)}$	650	V
$I_D, pulse$	6	A
$R_{DS(ON), max} @ V_{GS}=10V$	2.2	
Q_g	4.8	nC

Marking Information

Product Name	Package	Marking
OSG60R2K2ASF	TO251	OSG60R2K2AS

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	2	A
Continuous drain current ¹⁾ , $T_C=100^\circ\text{C}$		1.25	
Pulsed drain current ²⁾ , $T_C=25^\circ\text{C}$	$I_{D, pulse}$	6	A
Continuous diode forward current ¹⁾ , $T_C=25^\circ\text{C}$	I_S	2	A
Diode pulsed current ²⁾ , $T_C=25^\circ\text{C}$	$I_{S, pulse}$	6	A
Power dissipation ³⁾ , $T_C=25^\circ\text{C}$	P_D	20	W
Single pulsed avalanche energy ⁵⁾	E_{AS}	60	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
Operation and storage temperature	T_{stg}, T_j	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	R_{JC}	6.3	$^\circ\text{C/W}$
Thermal resistance, junction-ambient ⁴⁾	R_{JA}	62	$^\circ\text{C/W}$

Electrical Characteristics at $T_j=25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	600			V	$V_{GS}=0\text{ V}$, $I_D=250\ \mu\text{A}$
		650				$V_{GS}=0\text{ V}$, $I_D=250\ \mu\text{A}$, $T_j=150^\circ\text{C}$
Gate threshold voltage	$V_{GS(th)}$	2.9		3.9	V	$V_{DS}=V_{GS}$, $I_D=250\ \mu\text{A}$
Drain-source on-state resistance	$R_{DS(ON)}$		1.6	2.2		$V_{GS}=10\text{ V}$, $I_D=1\text{ A}$
			3.6			$V_{GS}=10\text{ V}$, $I_D=1\text{ A}$, $T_j=150^\circ\text{C}$
Gate-source leakage current	I_{GSS}			100	nA	$V_{GS}=30\text{ V}$
				-100		$V_{GS}=-30\text{ V}$
Drain-source leakage current	I_{DSS}			1	μA	$V_{DS}=600\text{ V}$, $V_{GS}=0\text{ V}$

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		117.6		μF	$V_{GS}=0\text{ V}$,

Electrical Characteristics Diagrams

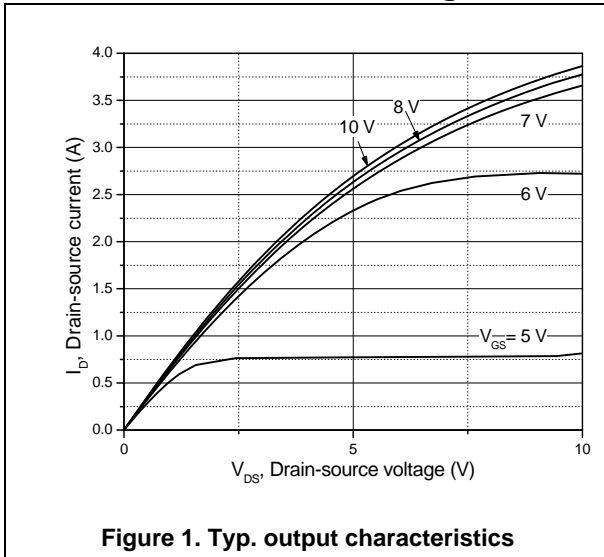


Figure 1. Typ. output characteristics

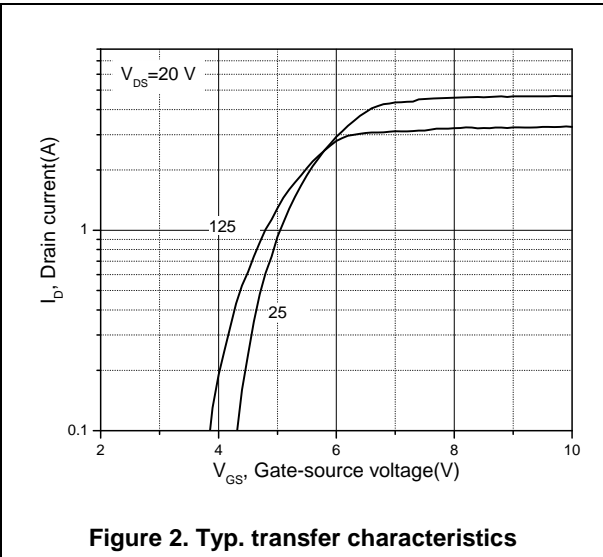


Figure 2. Typ. transfer characteristics

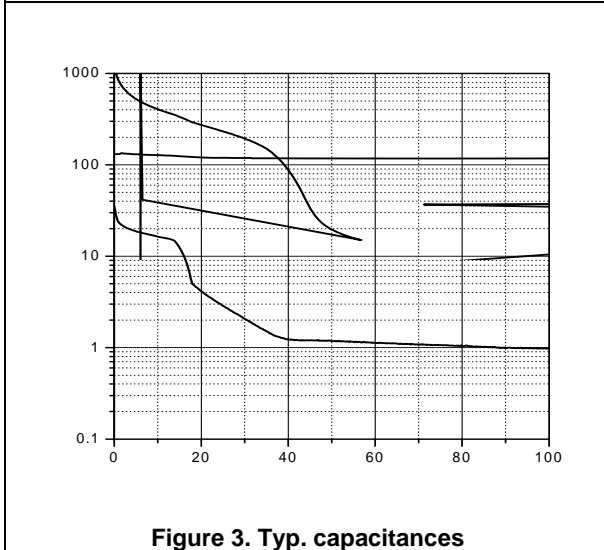


Figure 3. Typ. capacitances

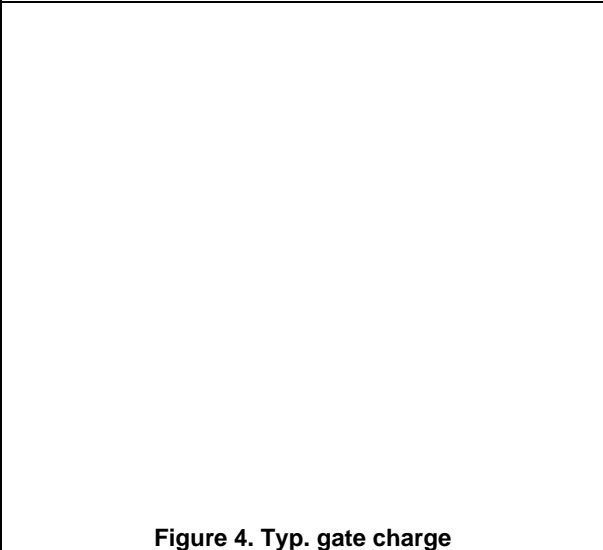


Figure 4. Typ. gate charge

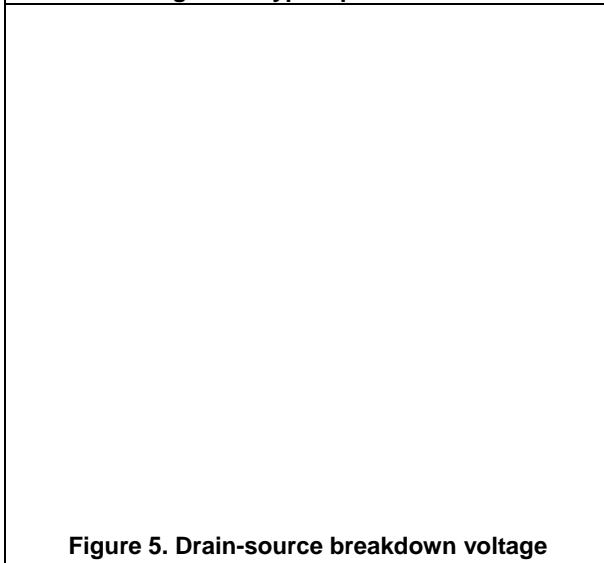


Figure 5. Drain-source breakdown voltage

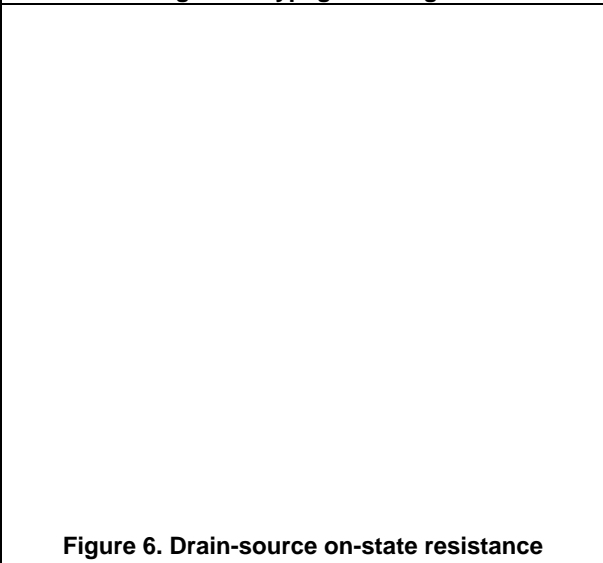


Figure 6. Drain-source on-state resistance

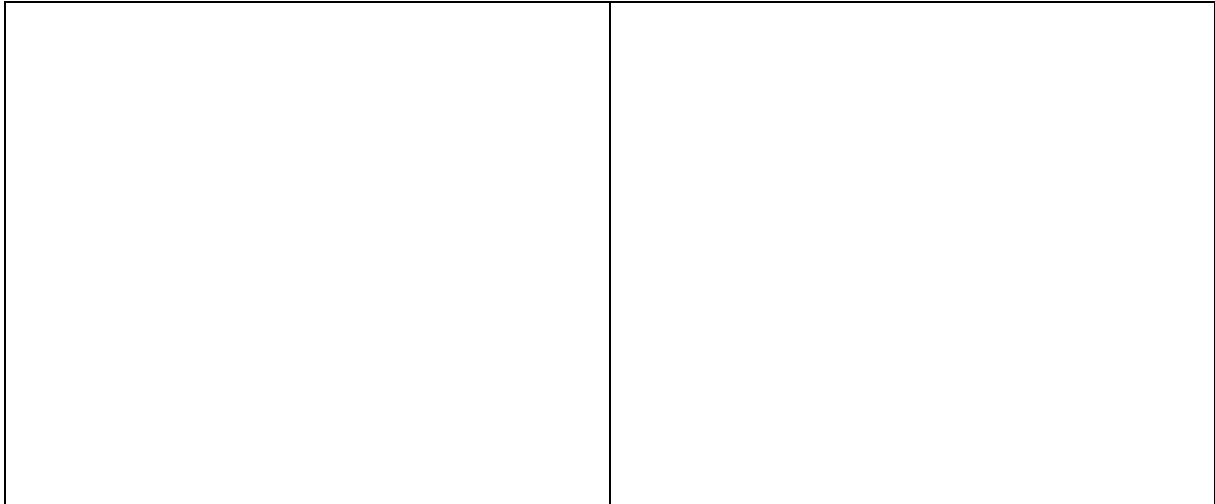


Figure 7. Forward characteristic of body diode

Test circuits and waveforms

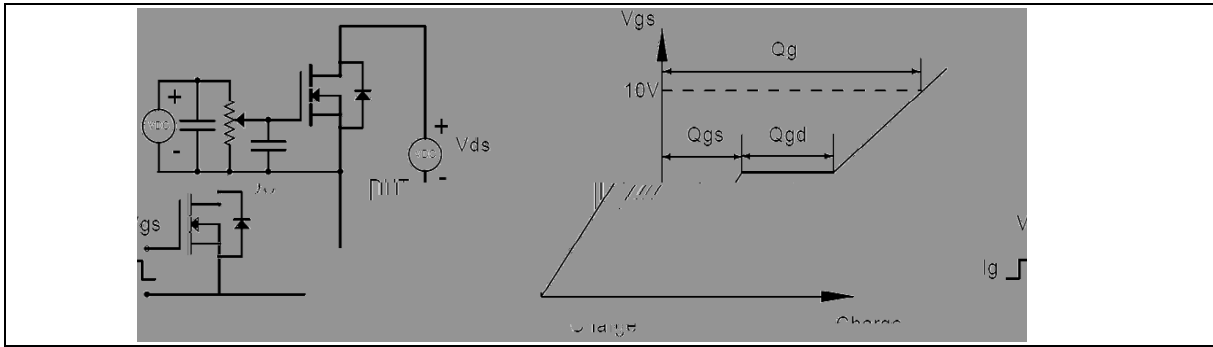


Figure 1. Gate charge test circuit & waveform

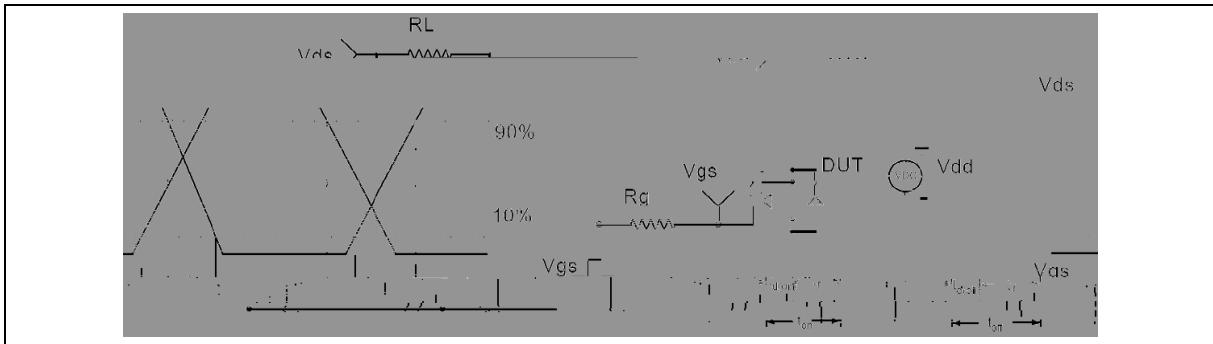


Figure 2. Switching time test circuit & waveforms

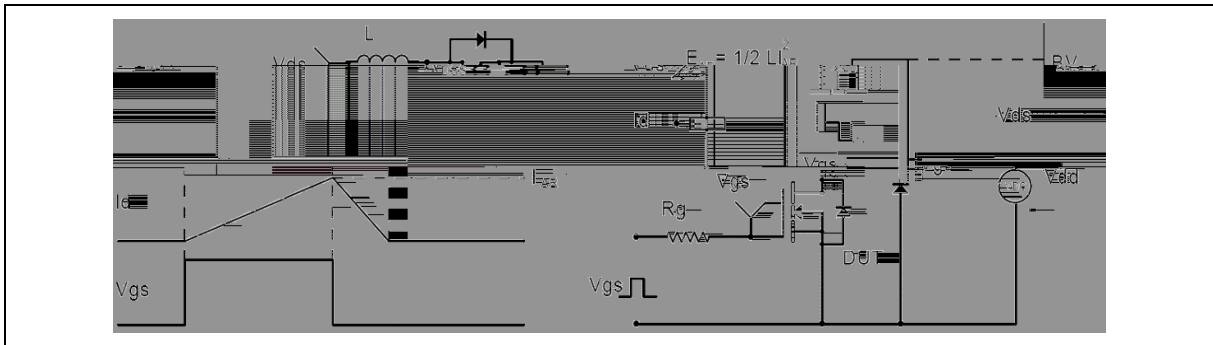


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

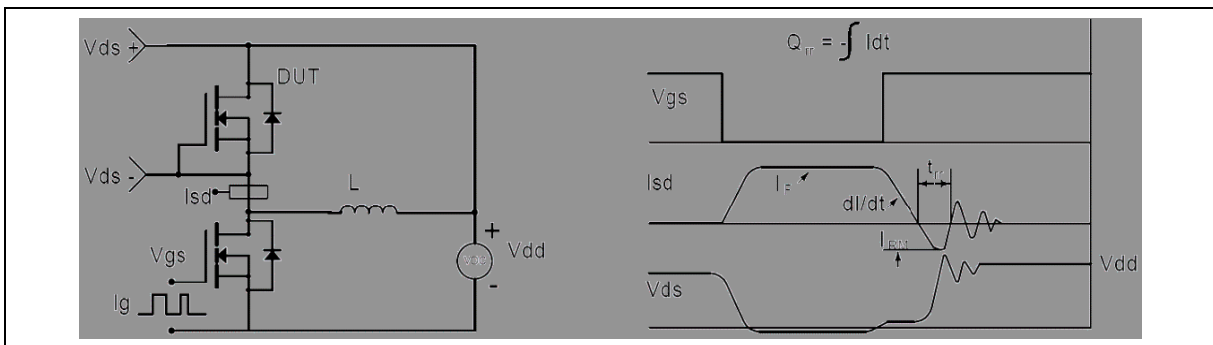
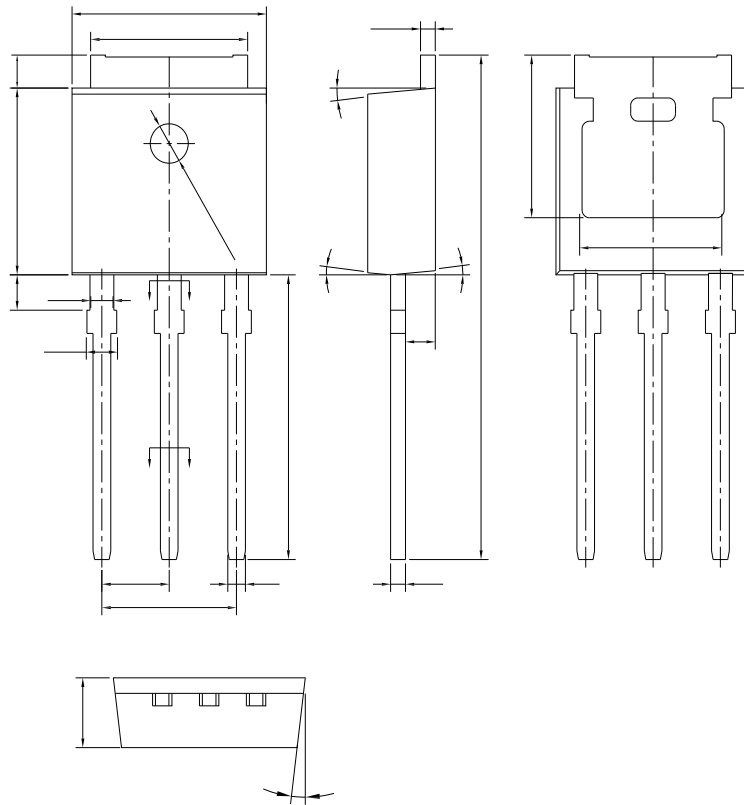


Figure 4. Diode reverse recovery test circuit & waveforms

Package Information


Symbol	mm		
	Min	Nom	Max
A	2.20	2.30	2.35
A1	0.90	1.01	1.10
b	0.56	-	0.69
b1	0.55	0.60	0.65
b2	0.77	-	0.90
b3	0.76	0.81	0.86
b4	5.23	5.33	5.43
b5	-	-	1.05
c	0.46	-	0.59
c1	0.45	0.51	0.55
c2	0.46	-	0.59
D	6.00	6.10	6.20
D1	5.20	-	-
E	6.50	6.60	6.70
E1	4.60	4.83	5.00
e	2.24	2.29	2.34
e1	4.47	4.57	4.67
H	16.18	16.48	16.78
L	9.00	9.30	9.60
L1	0.95	1.16	1.35
L2	0.90	1.08	1.25
1	3°	5°	7°
2	1°	3°	5°

Version 1: TO251-J package outline dimension

Ordering Information

Package Type	Units/ Reel	Reels / Inner Box	Units/ Inner Box	Inner Box/ Carton Box	Units/ Carton Box
TO251-J	75	60	4500	5	22500

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG60R2K2ASF	TO251	yes	yes	yes

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