

The GreenMOS<sup>®</sup> 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<sup>®</sup> 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.

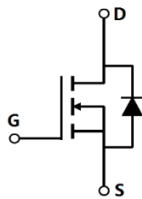
GreenMOS<sup>®</sup>



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Parameter	Value	Unit
$V_{DS, min} @ T_{j(max)}$	850	V
$I_D, pulse$	33	A
$R_{DS(ON)}, max @ V_{GS}=10V$	380	
$Q_g$	22.2	nC

Product Name	Package	Marking
OSG80R380HF	TO247	OSG80R380H



**Absolute Maximum Ratings** at  $T_j=25$  unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	$V_{DS}$	800	V
Gate-source voltage	$V_{GS}$	$\pm 30$	V
Continuous drain current <sup>1)</sup> , $T_C=25$ °C	$I_D$	11	A
Continuous drain current <sup>1)</sup> , $T_C=100$ °C		6.9	
Pulsed drain current <sup>2)</sup> , $T_C=25$ °C	$I_{D, pulse}$	33	A
Continuous diode forward current <sup>1)</sup> , $T_C=25$ °C	$I_S$	11	A
Diode pulsed current <sup>2)</sup> , $T_C=25$ °C	$I_{S, pulse}$	6.9	A
Power dissipation <sup>3)</sup> , $T_C=25$ °C	$P_D$	151	W
Single pulsed avalanche energy <sup>5)</sup>	$E_{AS}$	400	mJ
MOSFET dv/dt ruggedness, $V_{DS}$ 640 V	dv/dt	50	V/ns
Reverse diode dv/dt, $V_{DS}$ 640 V, $I_{SD}$	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	0.82	°C/W
Thermal resistance, junction-ambient <sup>4)</sup>	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	$BV_{DSS}$	800			V	$V_{GS}=0$ V, $I_D=250$ A
		850				$V_{GS}=0$ V, $I_D$ , $T_j=150$ °C
Gate threshold voltage	$V_{GS(th)}$	2.9		3.9	V	$V_{DS}=V_{GS}$ , $I_D=250$ A
Drain-source on-state resistance	$R_{DS(ON)}$		0.30	0.38		$V_{GS}=10$ V, $I_D=5.5$ A
			0.69			$V_{GS}=10$ V, $I_D=5.5$ 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	$I_{DSS}$			10	A	$V_{DS}=800$ V, $V_{GS}=0$ V

## Dynamic Characteristics

## Electrical Characteristics Diagrams

**Figure 1. Typ. output characteristics**

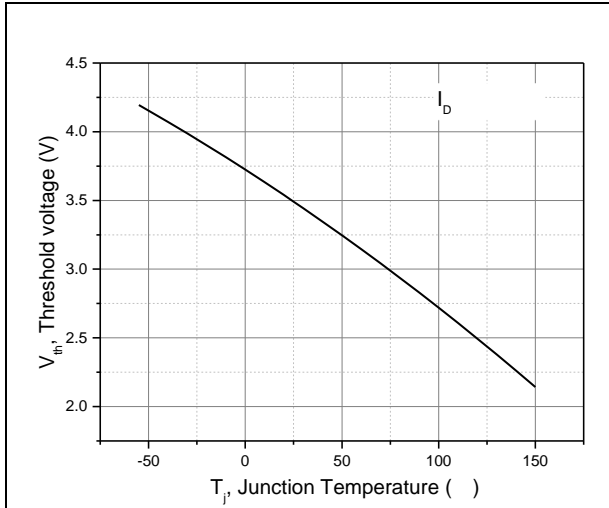
**Figure 2. Typ. transfer characteristics**

**Figure 3. Typ. capacitances**

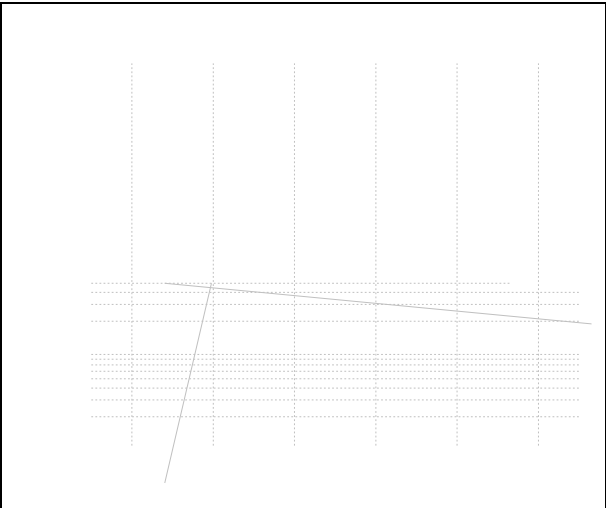
**Figure 4. Typ. gate charge**

**Figure 5. Drain-source breakdown voltage**

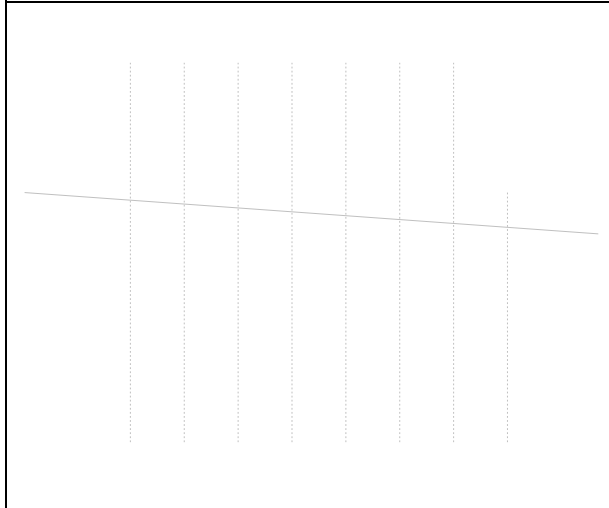
**Figure 6. Drain-source on-state resistance**



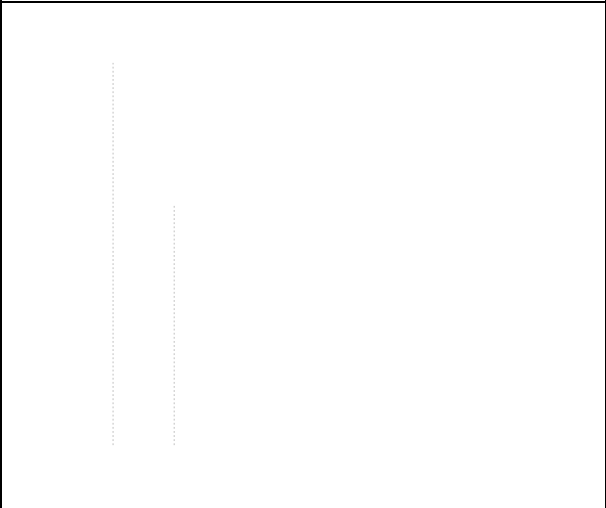
**Figure 7. Threshold voltage**



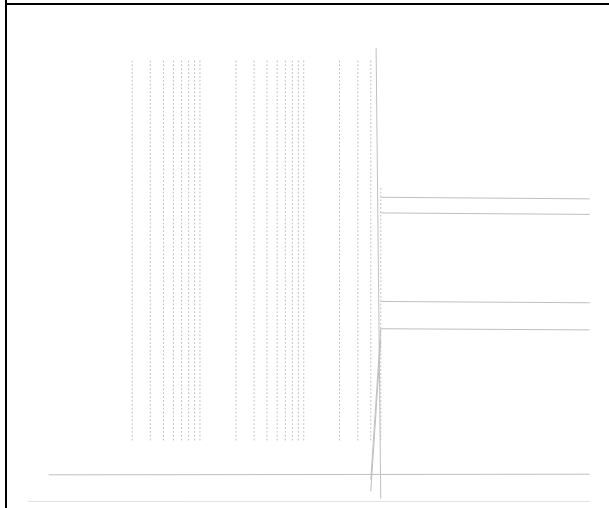
**Figure 8. Forward characteristic of body diode**



**Figure 9. Drain-source on-state resistance**

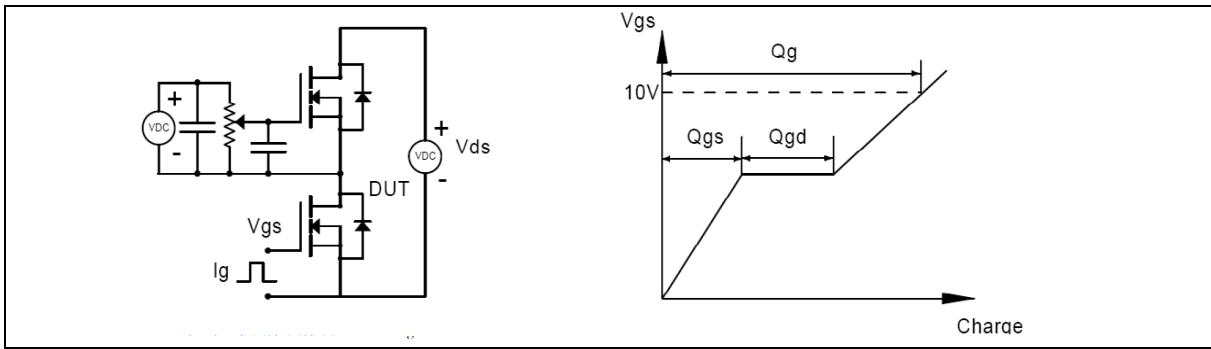


**Figure 10. Drain current**

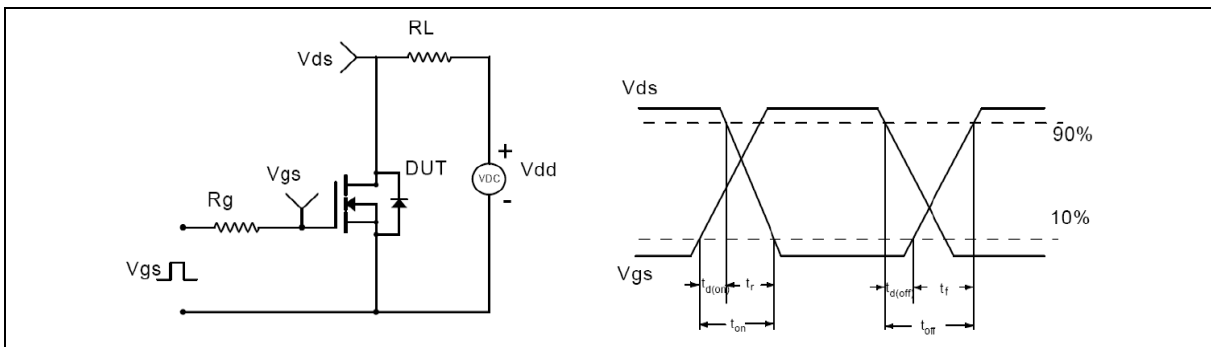


**Figure 11. Safe operation area T<sub>c</sub>=25 °C**

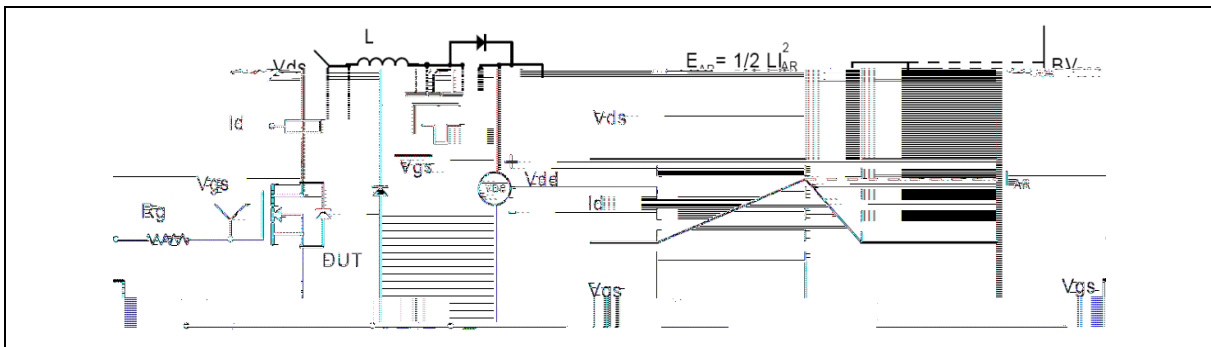
**Test circuits and waveforms**



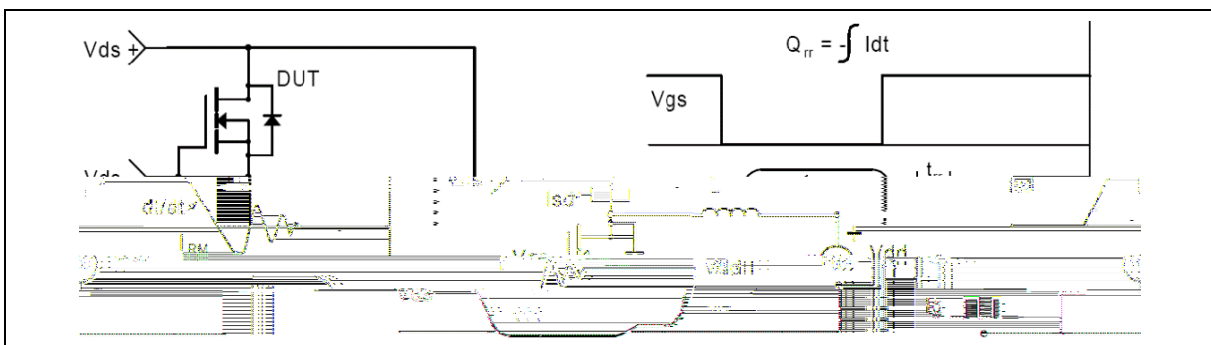
**Figure 1. Gate charge test circuit & waveform**



**Figure 2. Switching time test circuit & waveforms**

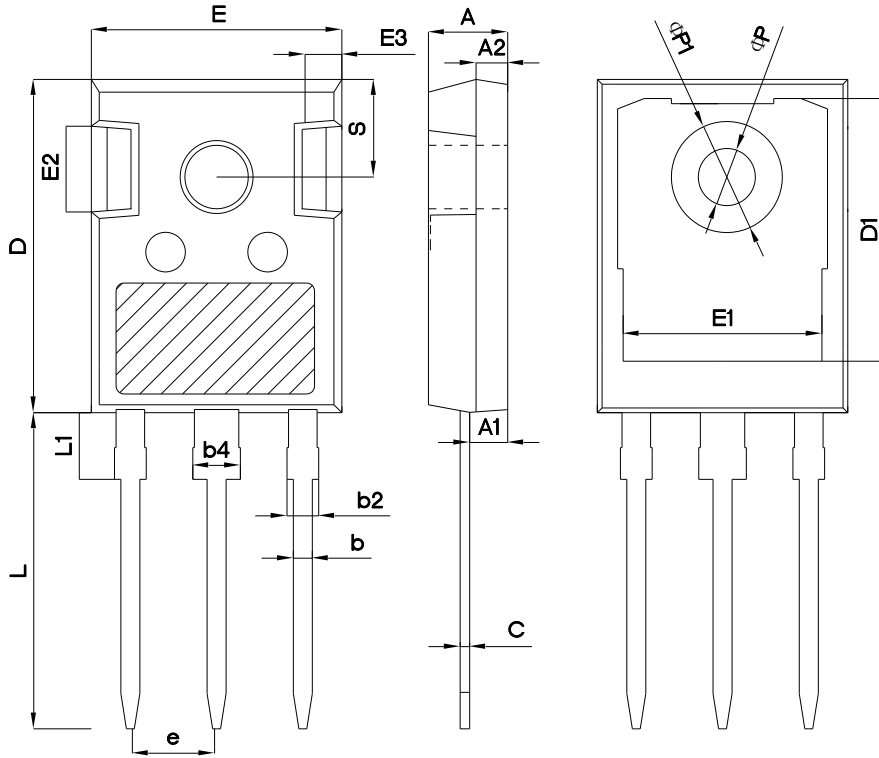


**Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms**



**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		

Version 1: TO247-C package outline dimension

## 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			



### 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
TO247-J	30	20	600	5	3000

### Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG80R380HF	TO247	yes	yes	yes