

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.

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Parameter	Value	Unit
$V_{DS, min} @ T_{j(max)}$	600	V
$I_{D, pulse}$	33	A
$R_{DS(ON), max} @ V_{GS}=10V$	380	m
Q_g	12.5	nC

Product Name	Package	Marking
OSG55R380PF	TO220	OSG55R380P

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		549.3		pF	$V_{GS}=0\text{ V}$, $V_{DS}=50\text{ V}$, MHz
Output capacitance	C_{oss}		63.1		pF	
Reverse transfer capacitance	C_{rss}		2.1		pF	
Turn-on delay time	$t_{d(on)}$		28		ns	$V_{GS}=10\text{ V}$, $V_{DS}=400\text{ V}$, $R_G=2$ $I_D=6\text{ A}$
Rise time	t_r		22.8		ns	
Turn-off delay time	$t_{d(off)}$		60.3		ns	
Fall time	t_f		18		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		12.5		nC	$V_{GS}=10\text{ V}$, $V_{DS}=400\text{ V}$, $I_D=6\text{ A}$
Gate-source charge	Q_{gs}		2.6		nC	
Gate-drain charge	Q_{gd}		5.7		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	$I_S=11\text{ A}$, $V_{GS}=0\text{ V}$
Reverse recovery time	t_{rr}		199		ns	$V_R=400\text{ V}$, $I_S=6\text{ A}$,
Reverse recovery charge	Q_{rr}		1.7		C	
Peak reverse recovery current	I_{rrm}		17.4		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_{θ} 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) $V_{DD}=100\text{ V}$, $V_{GS}=10\text{ V}$, $L=10\text{ mH}$, starting $T_j=25\text{ }^\circ\text{C}$.

Electrical Characteristics Diagrams

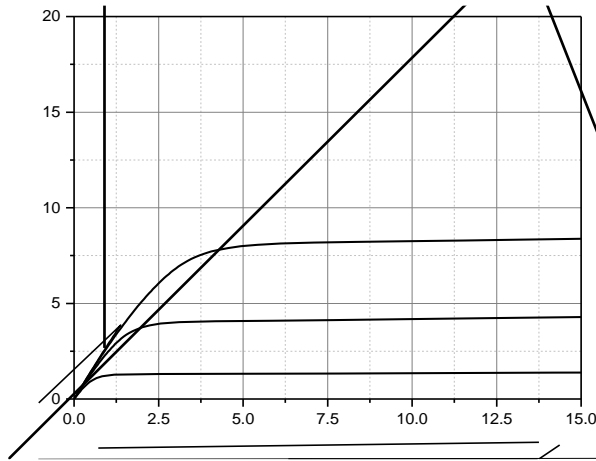


Figure 1. Typ. output characteristics



Figure 2. Typ. transfer characteristics



Figure 3. Typ. capacitances

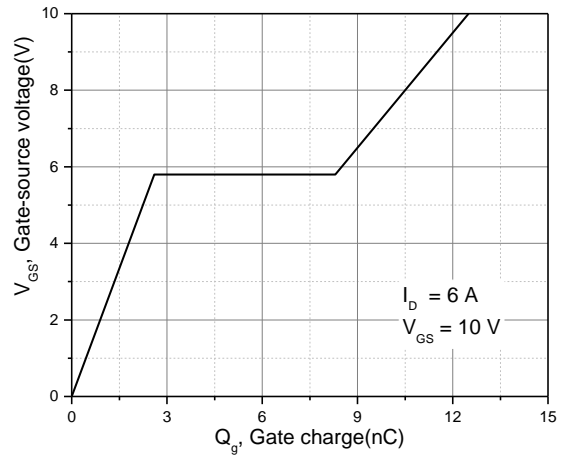


Figure 4. Typ. gate charge

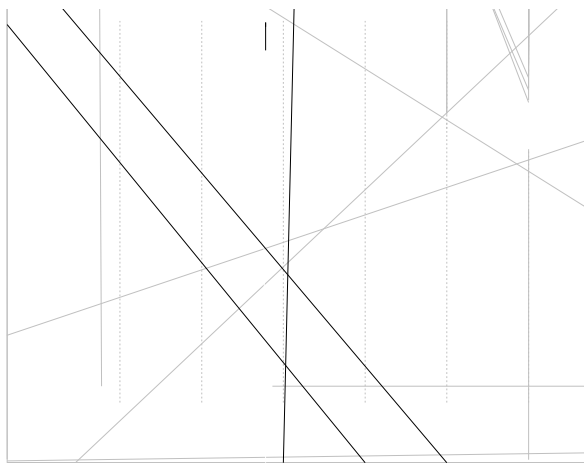


Figure 5. Drain-source breakdown voltage

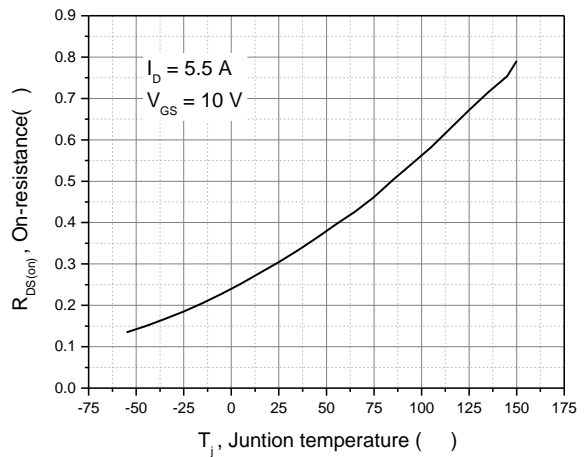


Figure 6. Drain-source on-state resistance

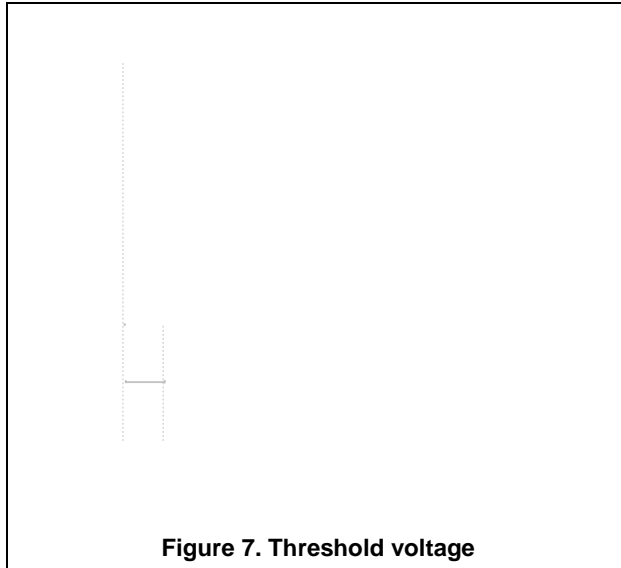


Figure 7. Threshold voltage

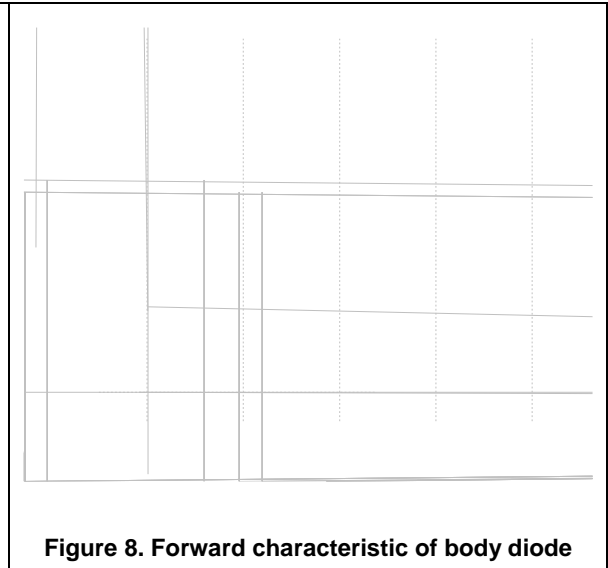


Figure 8. Forward characteristic of body diode

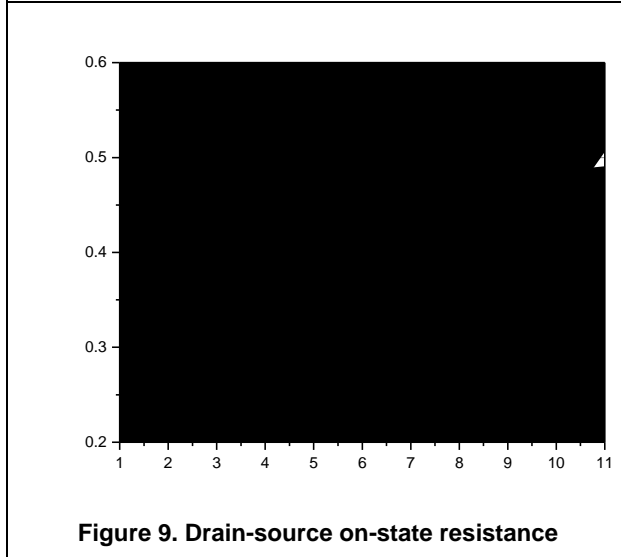


Figure 9. Drain-source on-state resistance

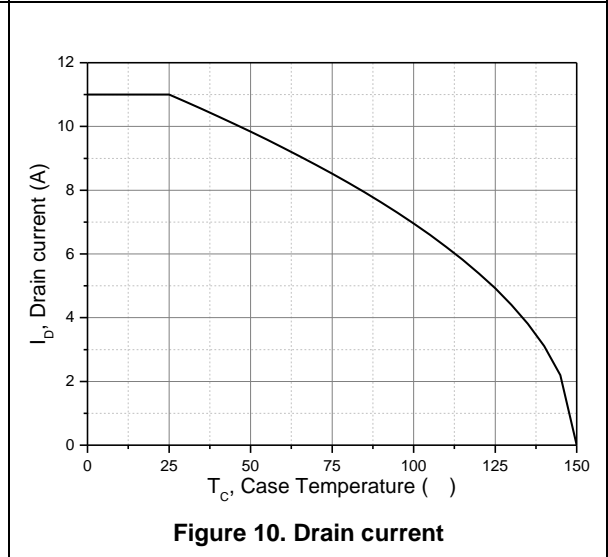


Figure 10. Drain current

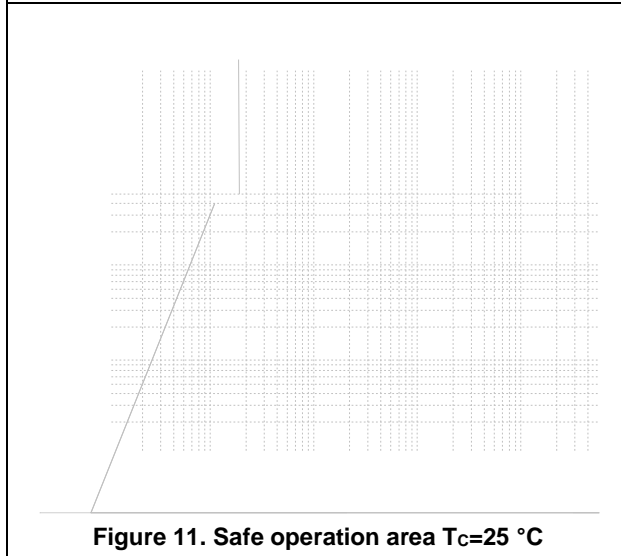
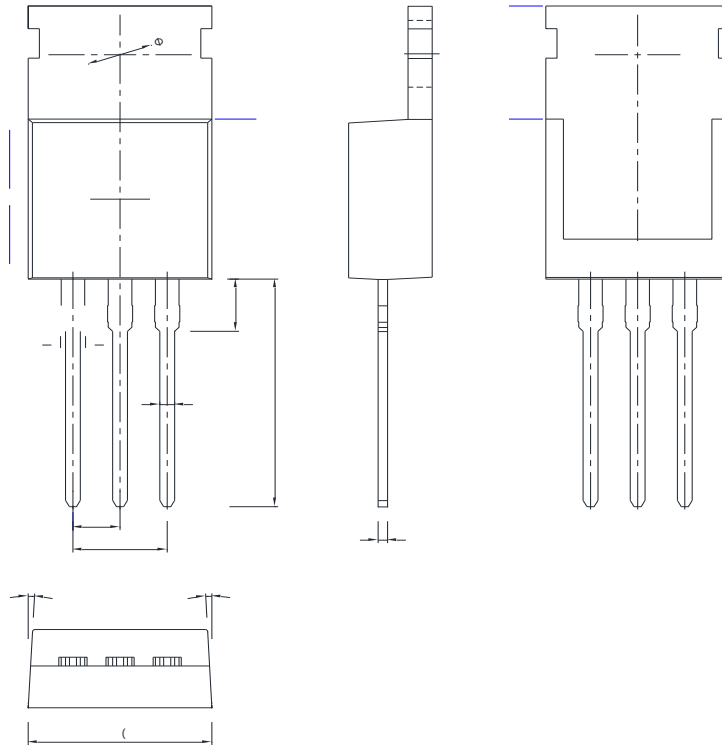


Figure 11. Safe operation area T_C=25 °C

Package Information

Symbol	mm		
	Min	Nom	Max
A	4.37	4.57	4.77
A1	1.25	1.30	1.45
A2	2.20		2.60
b	0.70	0.80	0.95
b2	1.17	1.27	1.47
c	0.40	0.50	0.65
D	15.10	15.60	16.10
D1	8.80	9.10	9.40
D2	5.50	-	-
E	9.70	10.00	10.30
E3	7.00	-	-
e	2.54 BSC		
e1	5.08 BSC		
H1	6.25	6.50	6.85
L	12.75	13.98	16.00

Package Information



Symbol	mm		
	Min	Nom	Max
A	4.40	4.50	4.60
A1	1.27	1.30	1.33
A2	2.30	2.40	2.50
b	0.70	-	0.90
b1	1.27	-	1.40
c	0.45	0.50	0.60
D	15.30	15.70	16.10
D1	9.10	9.20	9.30
D2	13.10	-	13.70
E	9.70	9.90	10.20
E1	7.80	8.00	8.20
e	2.54 BSC		
e1	5.08 BSC		
H1	6.30	6.50	6.70
L	12.78	13.08	13.38
L1	-	-	3.50
L2	4.60 REF		
	3.55	3.60	3.65
Q	2.73	-	2.87
1	1		

Version 2: TO220-J outline dimension

Ordering Information

Package Type	Units/ Tube	Tubes / Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO220-C	50	20	1000	6	6000
TO220-J	50	20	1000	5	5000

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG55R380PF	TO220	yes	yes	yes

