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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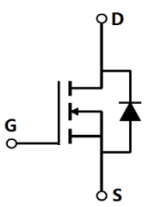
Parameter	Value	Unit
$V_{DS,\ min}$ @ $T_{j(max)}$	700	V
$I_{D,\ pulse}$	33	A
$R_{DS(ON),\ max}$ @ V_{GS}=10V	380	
Q_g	15	nC

Product Name	Package	Marking
OSG65R380FEF	TO220F	OSG65R380FE



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Symbol	Value	Unit
V_{DS}	650	V
V_{GS}	±30	V
I_D	11	A
	7	
$I_{D,\ pulse}$	33	A
I_S	15	A
$I_{S,\ pulse}$	45	A
P_D	31	W
E_{AS}	200	mJ
dv/dt	50	V/ns
dv/dt	15	V/ns
T_{stg}, T_j	-55 to 150	°C

Symbol	Value	Unit
R	4	°C/W
R	62.5	°C/W

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ax.	Unit	Test condition
	V	V_{GS}=0 V, I_D=250 A

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		761.3		pF	V_{GS}=0 V, V_{DS}=50 V, MHz
Output capacitance	C_{oss}		62.0		pF	
Reverse transfer capacitance	C_{rss}		2.5		pF	
Turn-on delay time	$t_{d(on)}$		31.0		ns	V_{GS}=10 V, V_{DS}=400 V, R_G=2 I_D=6 A
Rise time	t_r		18.8		ns	
Turn-off delay time	$t_{d(off)}$		58.3		ns	
Fall time	t_f		6.5		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		15.0		nC	V_{GS}=10 V, V_{DS}=400 V, I_D=6 A
Gate-source charge	Q_{gs}		3.7		nC	
Gate-drain charge	Q_{gd}		5.8		nC	
Gate plateau voltage	$V_{plateau}$		5.7		V	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage	V_{SD}			1.3	V	I_S=11 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		239.7		ns	, I_S=6 A, di/dt=10
Reverse recovery charge	Q_{rr}		2.5		C	
Peak reverse recovery current	I_{rrm}		21.2		A	

Note

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) Pd is based on max. junction temperature, using junction-case thermal resistance.
4) The value of R 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 °C.
5) V_{DD}=100 V, V_{GS}=10 V, L=10 mH, starting T_j=25 °C.

Electrical Characteristics Diagrams

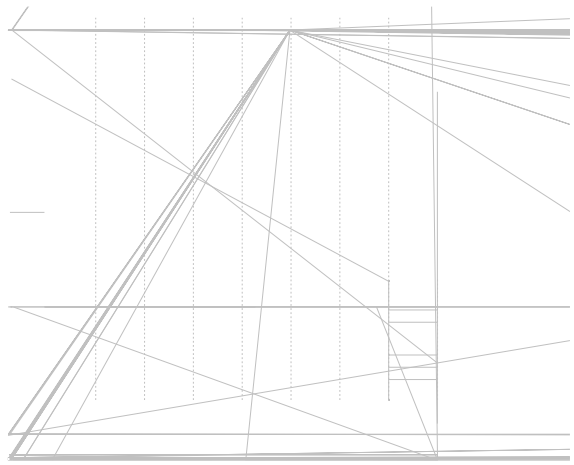


Figure 1. Typ. output characteristics

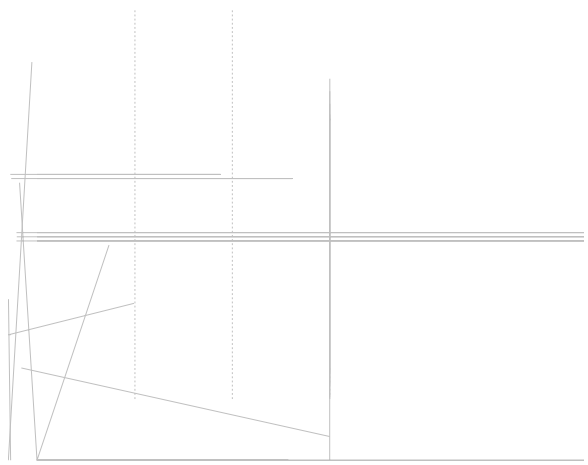


Figure 2. Typ. transfer characteristics

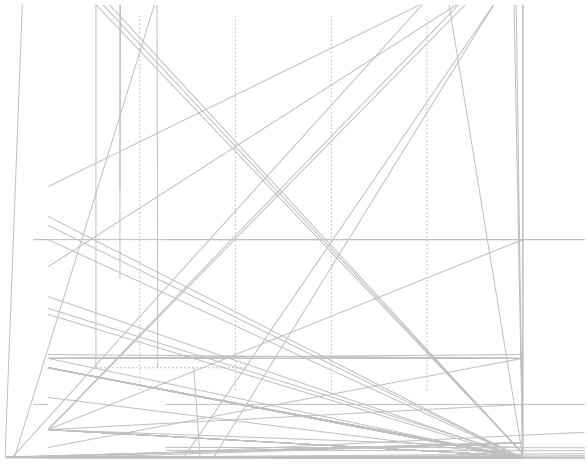


Figure 3. Typ. capacitances

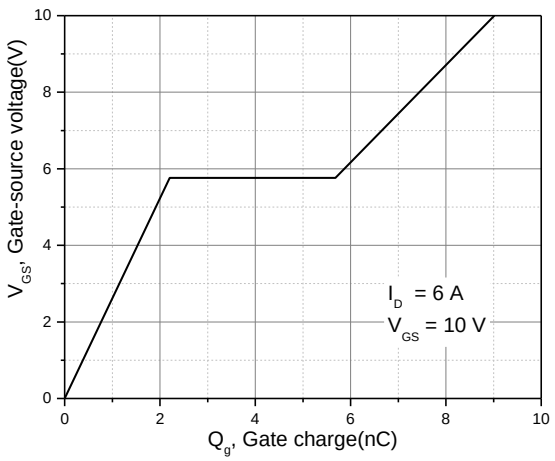


Figure 4. Typ. gate charge

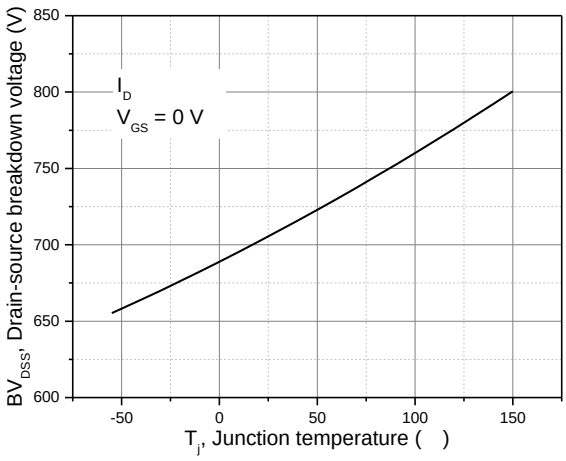


Figure 5. Drain-source breakdown voltage

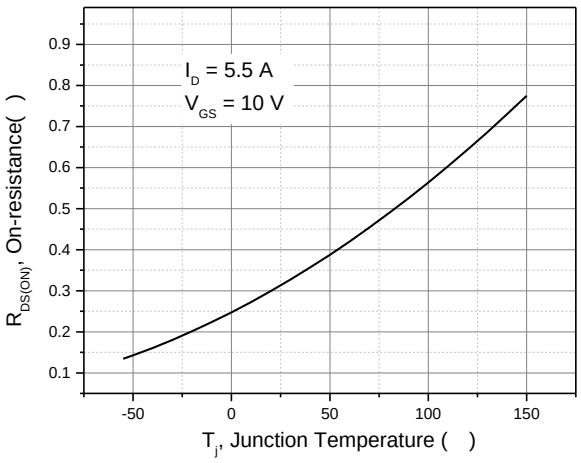


Figure 6. Drain-source on-state resistance

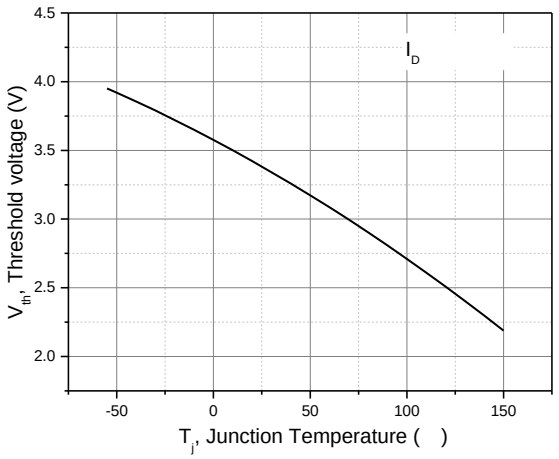


Figure 7. Threshold voltage

Figure 8. Forward characteristic of body diode

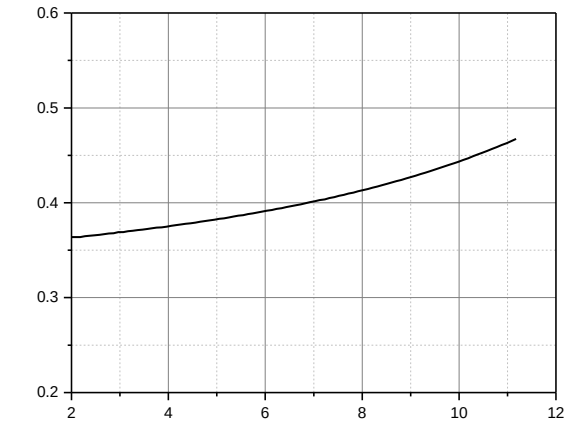


Figure 9. Drain-source on-state resistance

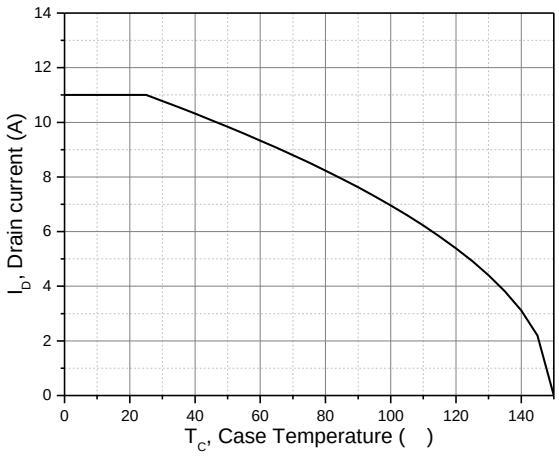


Figure 10. Drain current

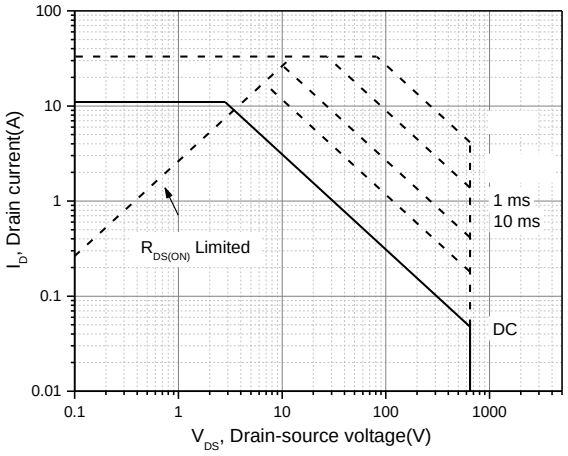


Figure 11. Safe operation area T_C=25 °C

Test circuits and waveforms

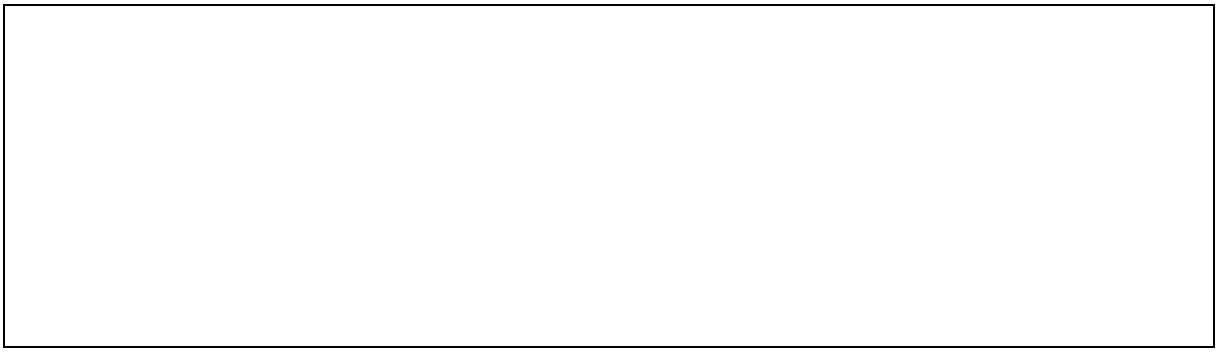


Figure 1. Gate charge test circuit & waveform

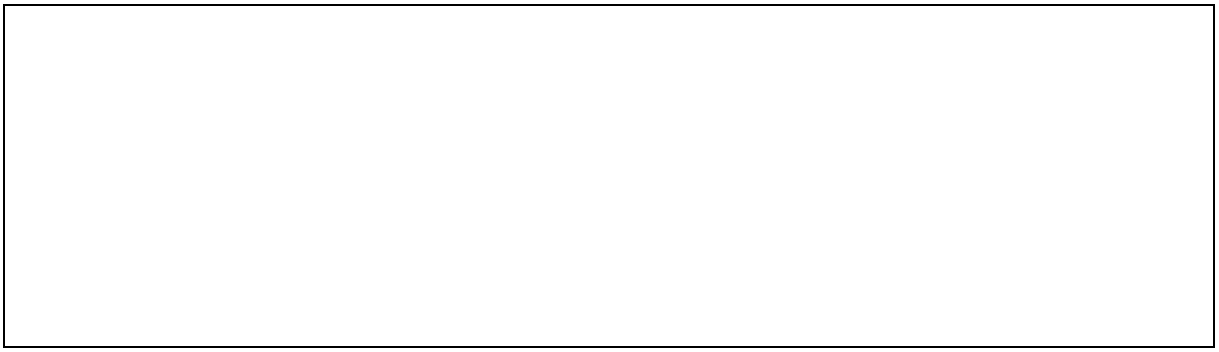


Figure 2. Switching time test circuit & waveforms

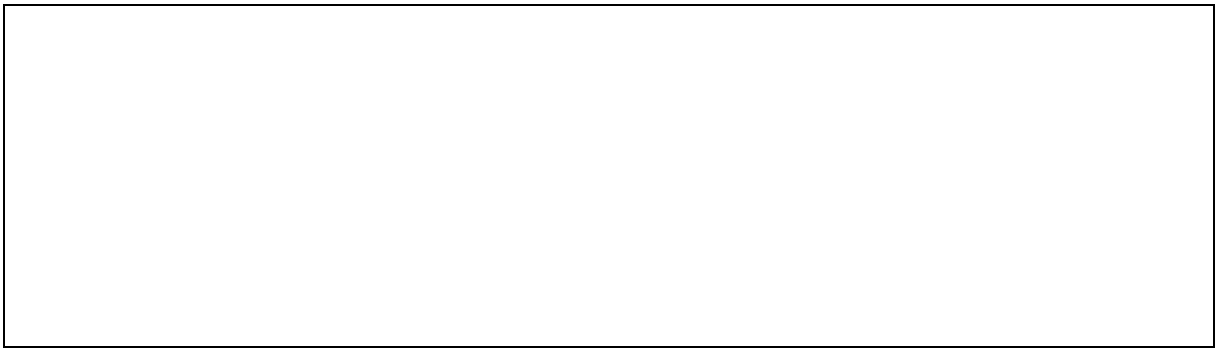


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

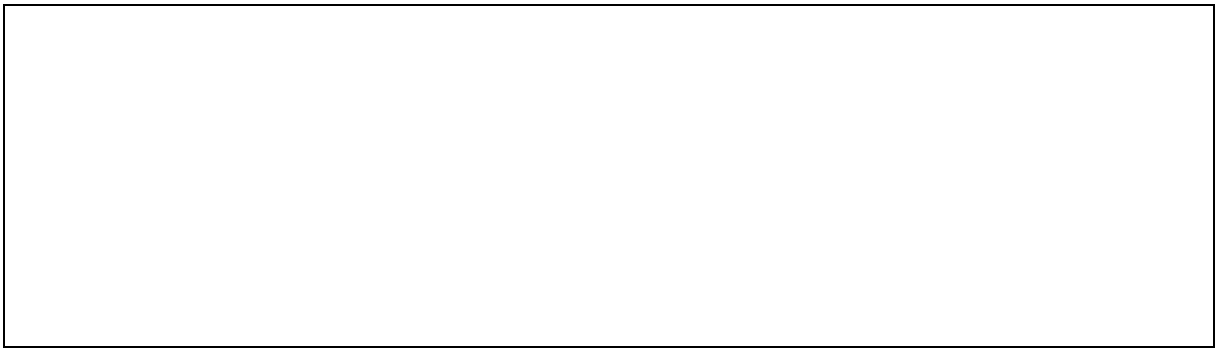
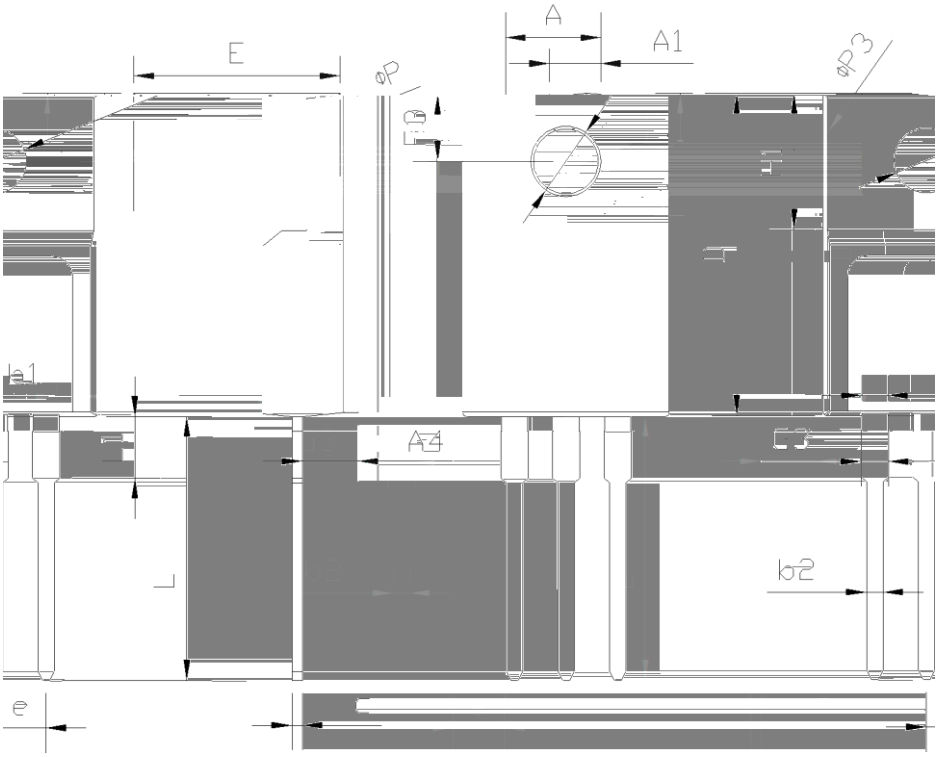


Figure 4. Diode reverse recovery test circuit & waveforms

Package Information



Symbol	mm		
	Min	Nom	Max
E	9.96	10.16	10.36
A	4.50	4.70	4.90
A1	2.34	2.54	2.74
A4	2.56	2.76	2.96
c	0.40	0.50	0.65
D	15.57	15.87	16.17
H1	6.70 REF		
e	2.54 BSC		
L	12.68	12.98	13.28
L1	2.88	3.03	3.18
	3.03	3.18	3.38
	3.15	3.45	3.65
F3	3.15	3.30	3.45
G3	1.25	1.35	1.55
b1	1.18	1.28	1.43
b2	0.70	0.80	0.95

Version 1: TO220F-C package outline dimension

Symbol	mm		
	Min	Nom	Max
A	4.50	4.70	4.83
A1	2.34	2.54	2.74
A2			

Ordering Information

Package Type	Units/ Reel	Reels/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO220F-C	20	20	1000	6	6000
TO220F-J	50	20	1000	5	5000

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG65R380FEF	TO220F	yes	yes	yes