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.

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GreenMOS®

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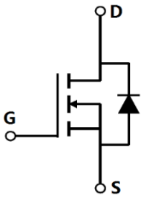
RoHS compliant

Parameter	Value	Unit
$V_{DS,\ min}$ @ $T_{j(max)}$	650	V
$I_{D,\ pulse}$	90	A
$R_{DS(ON),\ max}$ @ V_{GS}=10V	108	
Q_g	37.1	nC

Product Name	Package	Marking
OSG60R108PZF	TO220	OSG60R108PZ



Absolute Maximum Ratings at T_j=25 unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	600	V
Gate-source voltage	V_{GS}	±30	V
Continuous drain current[1)], T_C=25 °C	I_D	30	A
Continuous drain current[1)], T_C=100 °C		19	
Pulsed drain current[2)], T_C=25 °C	$I_{D,\ pulse}$	90	A
Continuous diode forward current[1)], T_C=25 °C	I_S	30	A
Diode pulsed current[2)], T_C=25 °C	$I_{S,\ pulse}$	90	A
Power dissipation[3)], T_C=25 °C	P_D	101	W
Single pulsed avalanche energy[5)]	E_{AS}	1000	mJ
MOSFET dv/dt ruggedness, V_{DS}	dv/dt	50	V/ns
Reverse diode dv/dt, V_{DS} $_{SD}$ $_{D}$	dv/dt	50	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	1.24	°C/W
Thermal resistance, junction-ambient[4)]	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}	600			V	V_{GS}=0 V, I_D=1 mA
		650				V_{GS}=0 V, I_D=1 mA, T_j=150 °C
Gate threshold voltage	$V_{GS(th)}$	3		4.5	V	V_{DS}=V_{GS}, I_D=1 mA
Drain-source on-state resistance	$R_{DS(ON)}$		0.085	0.108		V_{GS}=10 V, I_D=15 A
			0.2			V_{GS}=10 V, I_D=15 A, T_j=150 °C
Gate-source leakage current	I_{GSS}			100	nA	V_{GS}=30 V
				-100		V_{GS}=-30 V

°C

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		2674.5		pF	V_{GS}=0 V, V_{DS}=50 V, Hz
Output capacitance	C_{oss}		246.0		pF	
Reverse transfer capacitance	C_{rss}		9.6		pF	
Turn-on delay time	$t_{d(on)}$		67.4		ns	V_{GS}=10 V, V_{DS}=400 V, R_G I_D=16 A
Rise time	t_r		71.1		ns	
Turn-off delay time	$t_{d(off)}$		103.9		ns	
Fall time	t_f		33.4		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		37.1		nC	V_{GS}=10 V, V_{DS}=400 V, I_D=16 A
Gate-source charge	Q_{gs}		11.0		nC	
Gate-drain charge	Q_{gd}		13.8		nC	
Gate plateau voltage	$V_{plateau}$		6.7		V	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage	V_{SD}			1.4	V	I_S=30 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		123.0		ns	I_S=16 A,
Reverse recovery charge	Q_{rr}		0.73		uC	
Peak reverse recovery current	I_{rrm}		11.0		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=80 mH, starting T_j=25 °C.

Electrical Characteristics Diagrams

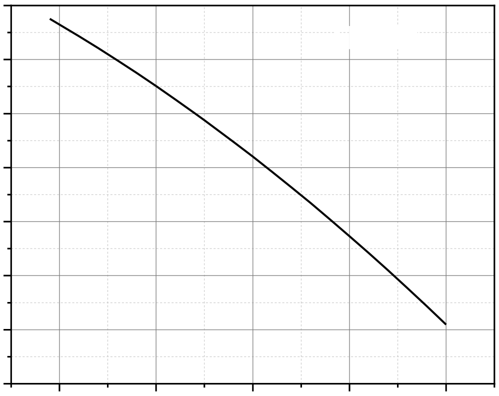


Figure 7. Threshold voltage

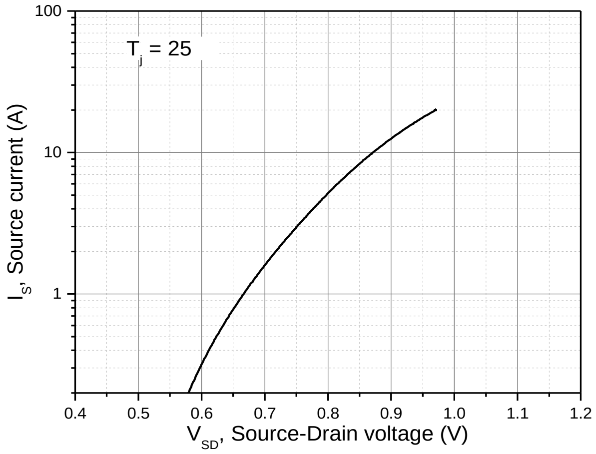


Figure 8. Forward characteristic of body diode

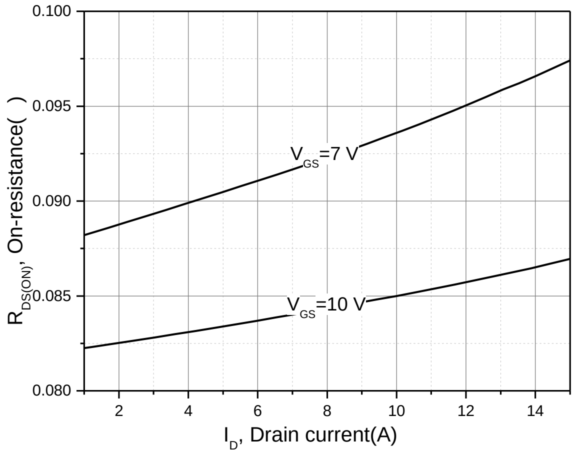


Figure 9. Drain-source on-state resistance

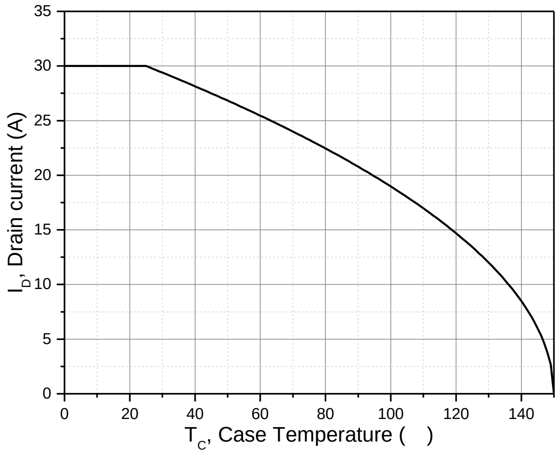


Figure 10. Drain current

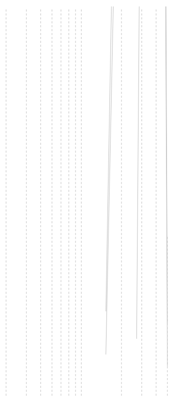


Figure 10. Safe operation area Tc=25 °C

Figure 12, Max. transient thermal impedance

Test circuits and waveforms

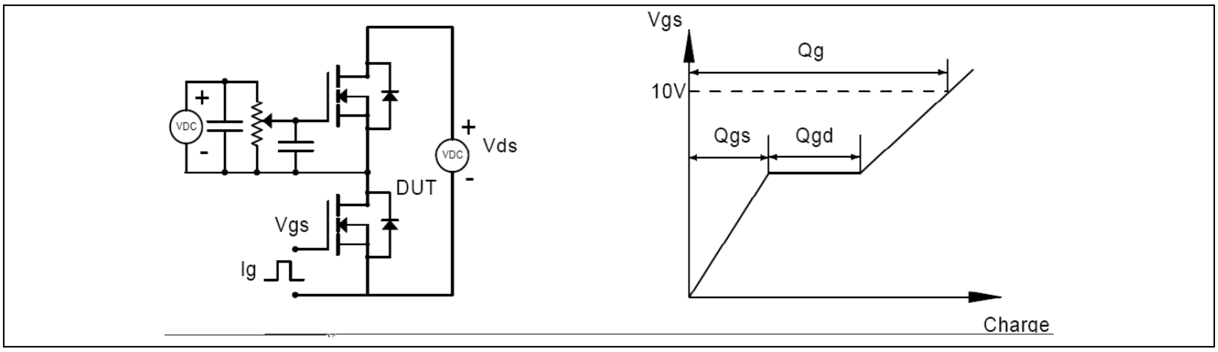


Figure 1. Gate charge test circuit & waveform

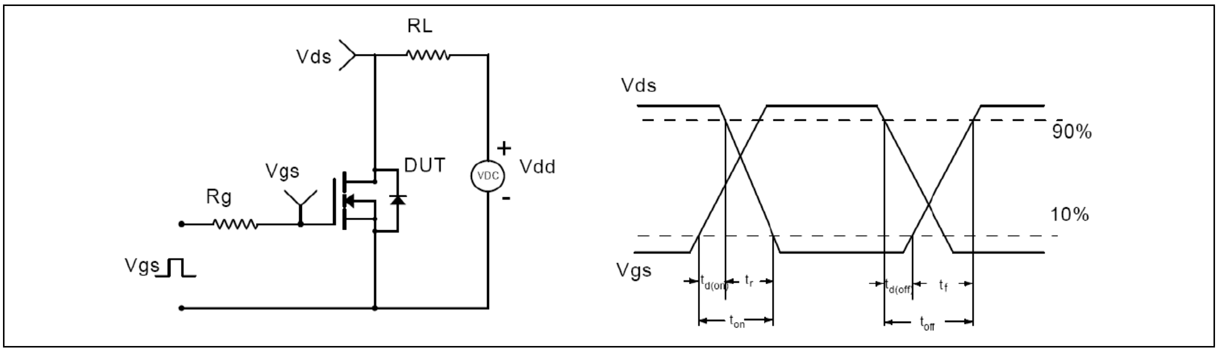


Figure 2. Switching time test circuit & waveforms

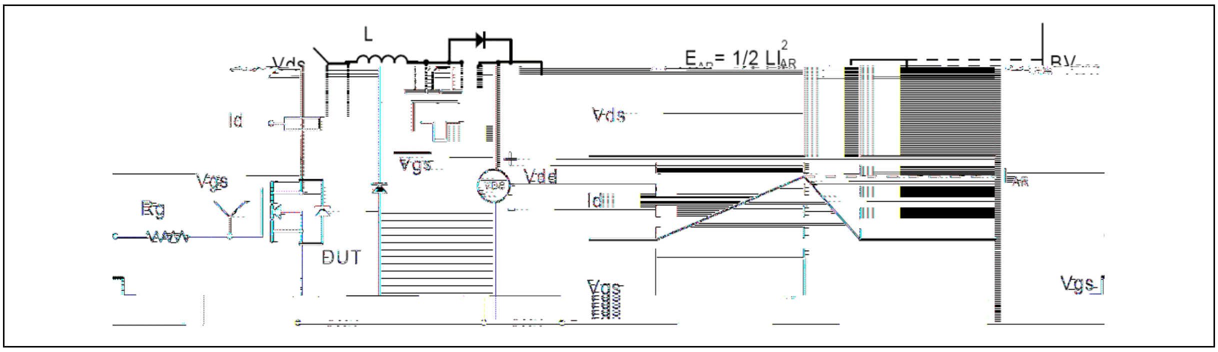


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

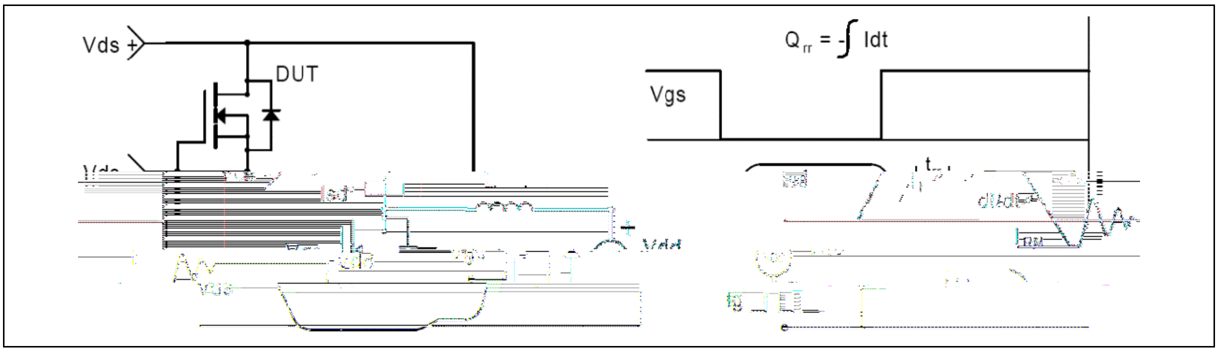
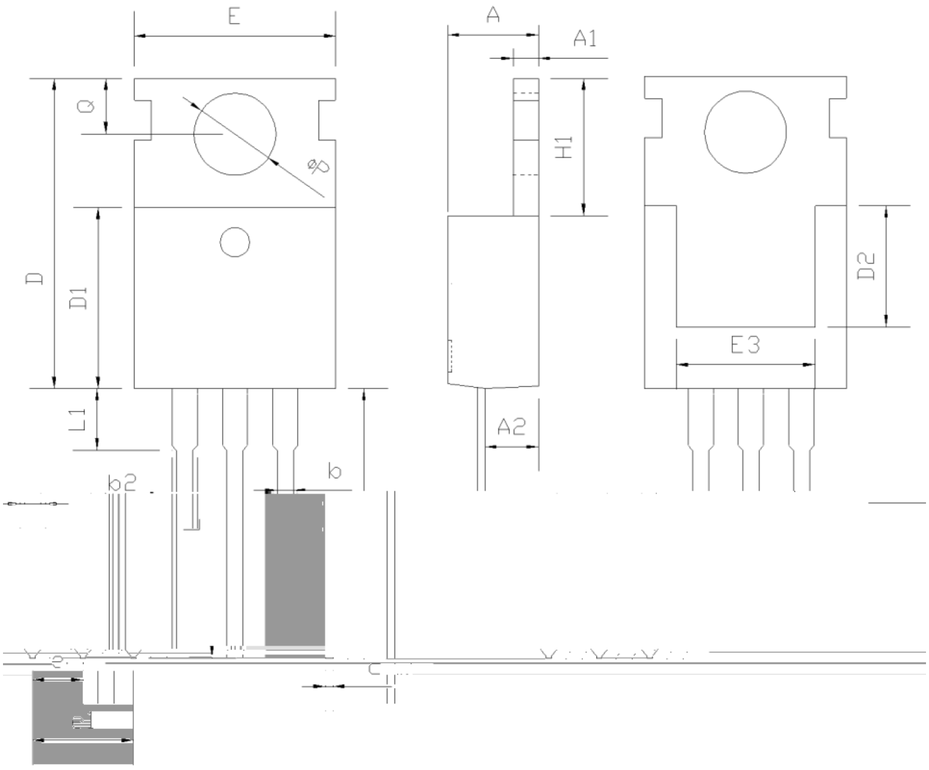


Figure 4. Diode reverse recovery test circuit & waveforms

Package Information



Symbol	mm		
	Min	Nom	Max
A	4.37	4.57	4.77
A1	1.25	1.30	1.45
A2	2.20	2.40	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	13.50	13.80
L1	-	3.10	3.40
	3.40	3.60	3.80
Q	2.60	2.80	3.00

Version 1: TO220-P outline dimension

Ordering Information

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

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG60R108PZF	TO220	yes	yes	yes

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