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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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GreenMOS®

RoHS compliant

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- ([FHOOHQW\EHQLWLW\ DQG XQLIRUPLW\

- XOMU

- 3& SRZHU
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- 7HOHFRP SRZHU
- 6HUYHU SRZHU
- (9 &KDUJHU
- 6RODU 836

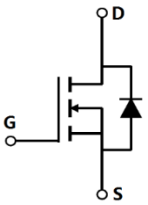
7 R YMO MMY

Parameter	Value	Unit
$V_{DS,\ min}$ @ $T_{j(max)}$	700	V
$I_{D,\ pulse}$	75	A
$R_{DS(ON)\ ,\ max}$ @ V_{GS}=10V	125	P
Q_g	41.9	nC

9MWUS5R YMU

Product Name	Package	Marking
OSG65R125PF	TO220	OSG65R125P

MOWWS U 5R YMU



Absolute Maximum Ratings at T_j=25 ƒ &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 °C	I_D	25	A
Continuous drain current[1], T_C=100 °C		16	
Pulsed drain current[2], T_C=25 °C	$I_{D,\ pulse}$	75	A
Continuous diode forward current[1], T_C=25 °C	I_S	25	A
Diode pulsed current[2], T_C=25 °C	$I_{S,\ pulse}$	75	A
Power dissipation[3], T_C=25 °C	P_D	219	W
Single pulsed avalanche energy[5]	E_{AS}	730	mJ
MOSFET dv/dt ruggedness, V_{DS} « 9	dv/dt	50	V/ns
Reverse diode dv/dt, V_{DS} « 9 SD,”p	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 -&	0.57	°C/W
Thermal resistance, junction-ambient[4]	R -$	62	°C/W

Electrical Characteristics at T_j=25 ƒ &unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	650			V	V_{GS}=0 V, I_D=1 mA
		700	740			V_{GS}=0 V, I_D=1 mA, T_j=150 °C
Gate threshold voltage	$V_{GS(th)}$	2.9		3.9	V	V_{DS}=V_{GS}, I_D=1 mA
Drain-source on-state resistance	$R_{DS(ON)}$		0.115	0.125		V_{GS}=10 V, I_D=12.5 A
			0.278			V_{GS}=10 V, I_D=12.5 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}			1	A	V_{DS}=650 V, V_{GS}=0 V

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		2390.8		pF	V_{GS}=0 V, V_{DS}=50 V, ¦ 00 kHz
Output capacitance	C_{oss}		154.1		pF	
Reverse transfer capacitance	C_{rss}		3.9		pF	
Turn-on delay time	$t_{d(on)}$		32.4		ns	V_{GS}=10 V, V_{DS}=400 V, R_G I_D=12.5 A
Rise time	t_r		30.8		ns	
Turn-off delay time	$t_{d(off)}$		63.2		ns	
Fall time	t_f		4.9		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		41.9		nC	V_{GS}=10 V, V_{DS}=400 V, I_D=12.5 A
Gate-source charge	Q_{gs}		10.4		nC	
Gate-drain charge	Q_{gd}		14.1		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}			1.4	V	I_S=25 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		365.2		ns	I_S=12.5 A, G L G W
Reverse recovery charge	Q_{rr}		4.7		C	
Peak reverse recovery current	I_{rrm}		24.9		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 1. Typ. output characteristics

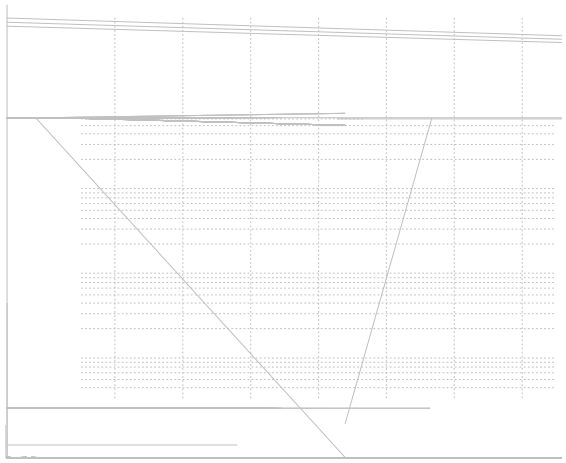


Figure 2. Typ. transfer characteristics

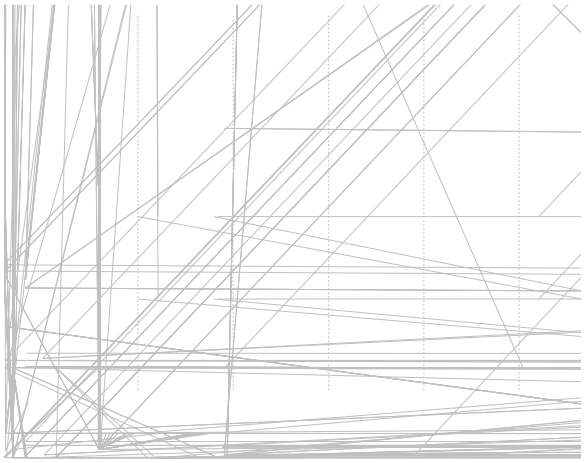


Figure 3. Typ. capacitances

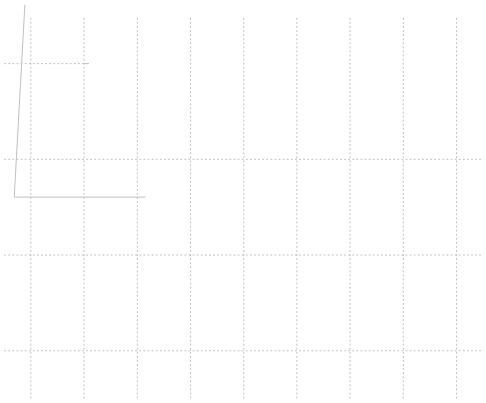


Figure 4. Typ. gate charge

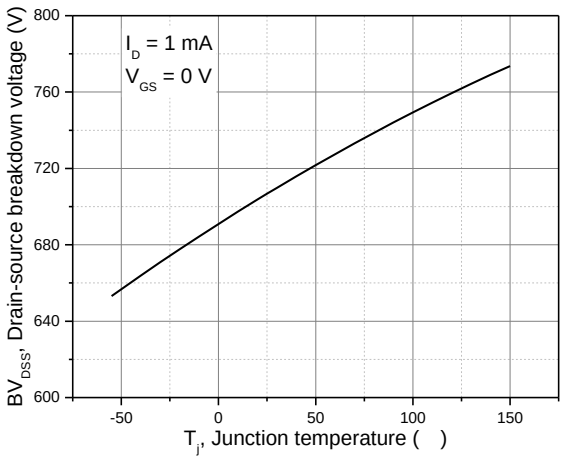


Figure 5. Drain-source breakdown voltage

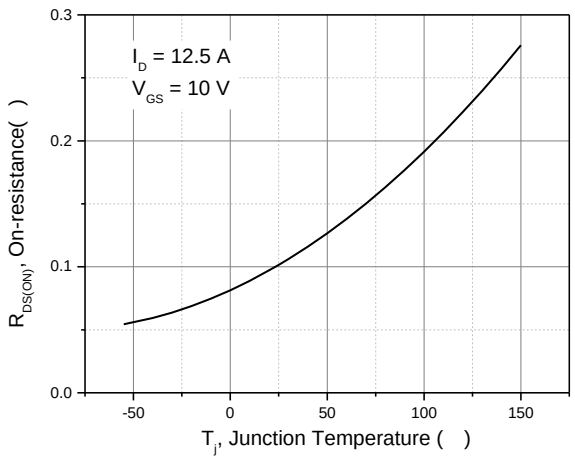


Figure 6. Drain-source on-state resistance

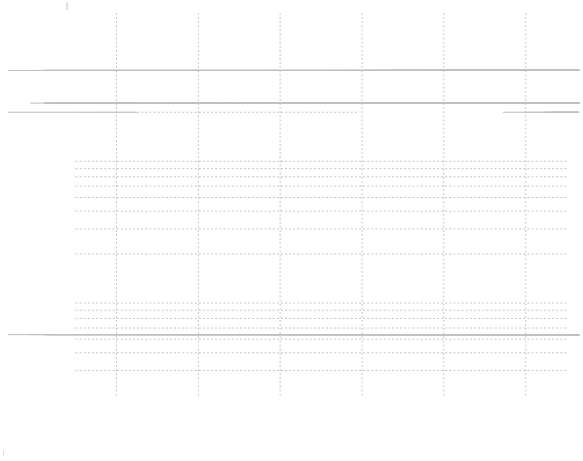


Figure 7. Forward characteristic of body diode

Figure 8. Drain-source on-state resistance

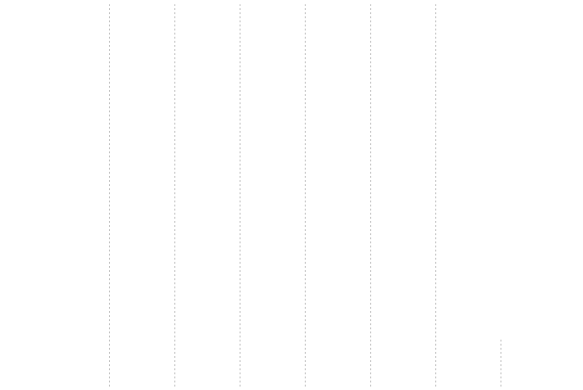


Figure 9. Drain current

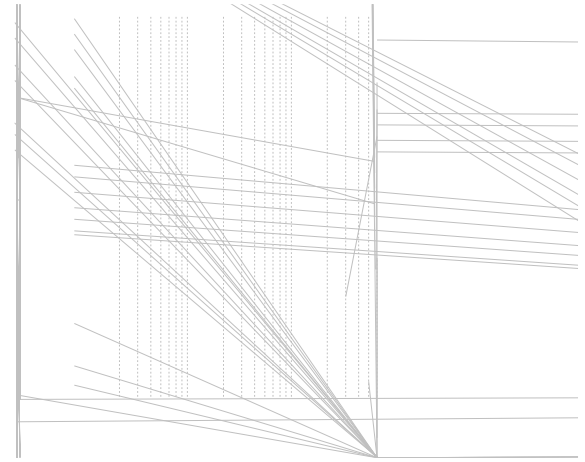


Figure 10. Safe operation area T_C=25

Test circuits and waveforms

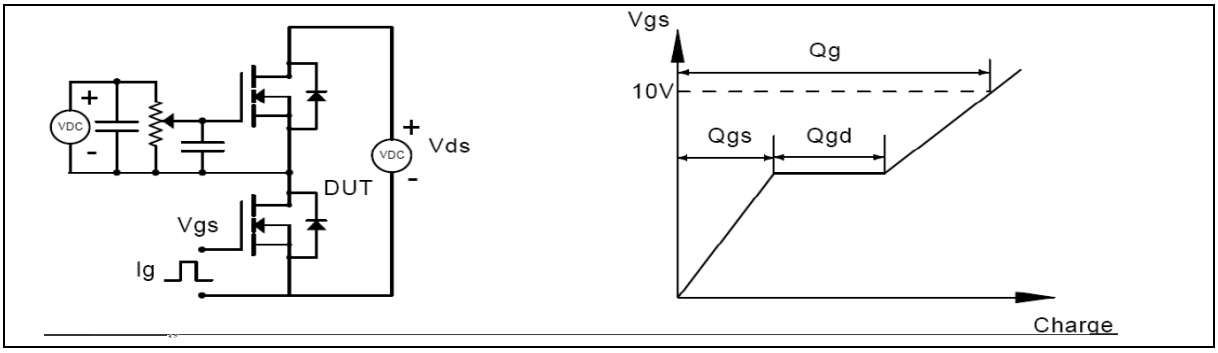


Figure 1. Gate charge test circuit & waveform

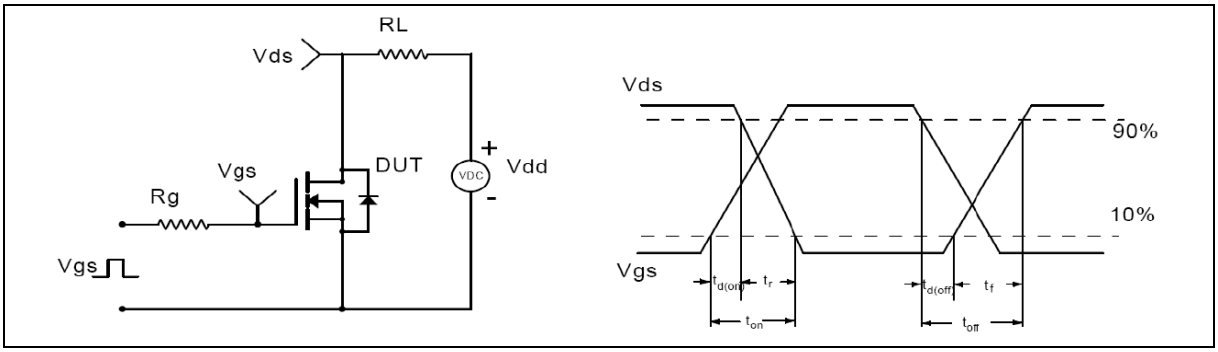


Figure 2. Switching time test circuit & waveforms

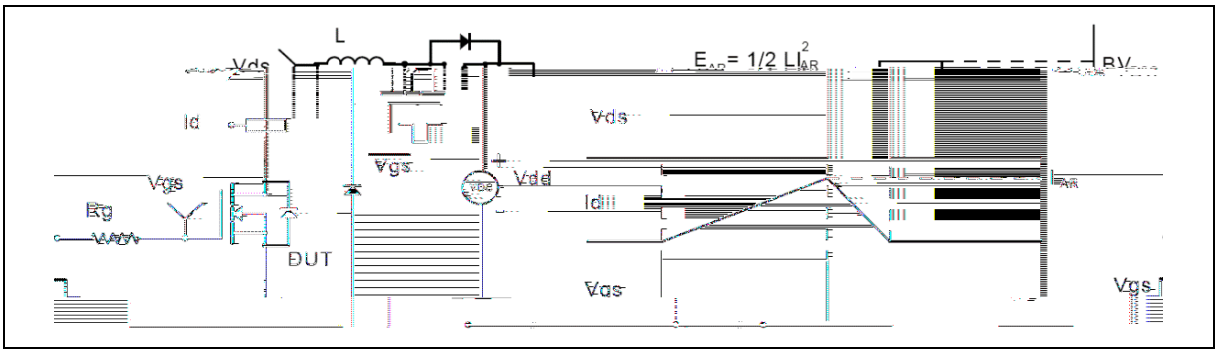


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

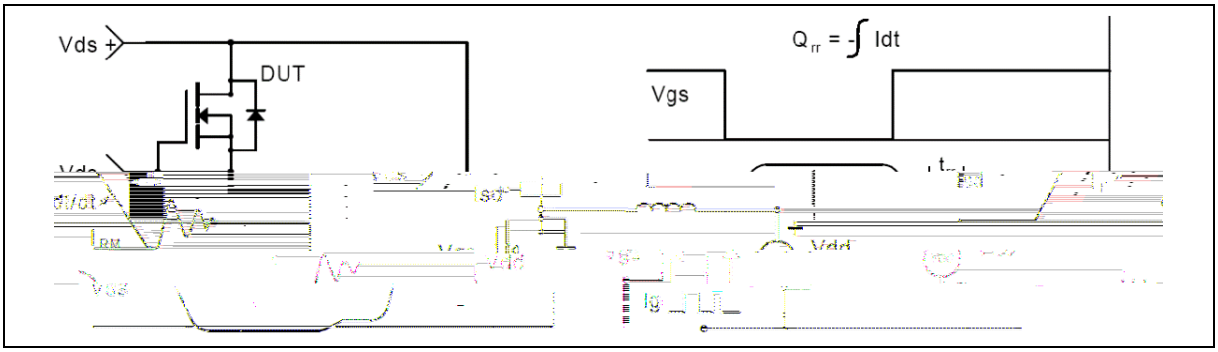


Figure 4. Diode reverse recovery test circuit & waveforms

Package Information

Symbol	mm		
	Min	Nom	Max
A	4.40	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		

Ordering Information

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

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG65R125PF	TO220	yes	yes	yes

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YDOXHV VWDWHG KHUHLQ DQG RU DQ\ LQIRUPDWLRQ UHJDUGLQJ WKH DSS
6HPLFRQGXFWRU KHUHE\ GLVFODLPV DQ\ DQG DOO ZDUUDQWLHV DQG OLDE
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