

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.

GreenMOS[®]

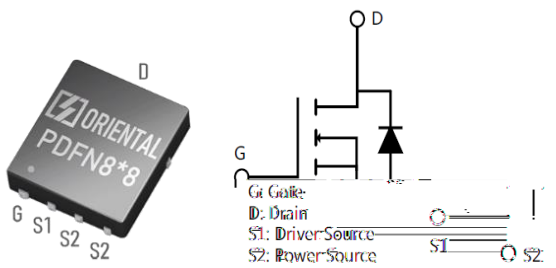


- 8 0 2; 9
- 1
- 1

- /
- 810
- @
-
- 1B /
- A

Parameter	Value	Unit
V _{DS, min} @ T _{j(max)}	700	V
I _{D, pulse}	75	A
R _{DS(ON), max} @ V _{GS} =10V	125	
Q _g	41.9	nC

Product Name	Package	Marking
OSG65R125JF	PDFN 8x8	OSG65R125J



Absolute Maximum Ratings at $T_j=25$ / 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}) B	dv/dt	50	V/ns
Reverse diode dv/dt, (V_{DS}) B $\text{SD} \text{ S}$	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	$R_{\theta j-c}$	0.57	°C/W
Thermal resistance, junction-ambient ⁴⁾	$R_{\theta j-a}$	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}	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	$V_{GS}=0\text{ V}$, $V_{DS}=50\text{ V}$,) 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	$V_{GS}=10\text{ V}$, $V_{DS}=400\text{ V}$, R_G) $I_D=12.5\text{ A}$
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	$V_{GS}=10\text{ V}$, $V_{DS}=400\text{ V}$, $I_D=12.5\text{ A}$
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	$I_S=25\text{ A}$, $V_{GS}=0\text{ V}$
Reverse recovery time	t_{rr}		365.2		ns	$I_S=12.5\text{ A}$,) -
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) 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) $V_{DD}=100\text{ V}$, $V_{GS}=10\text{ V}$, $L=80\text{ mH}$, starting $T_j=25\text{ }^\circ\text{C}$.

Enhancement Mode N-

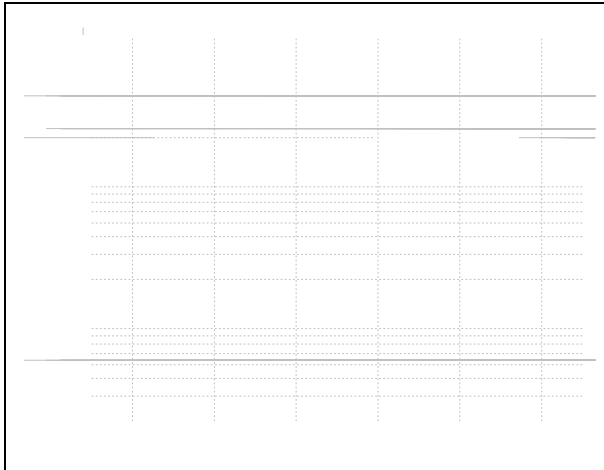


Figure 7. Forward characteristic of body diode

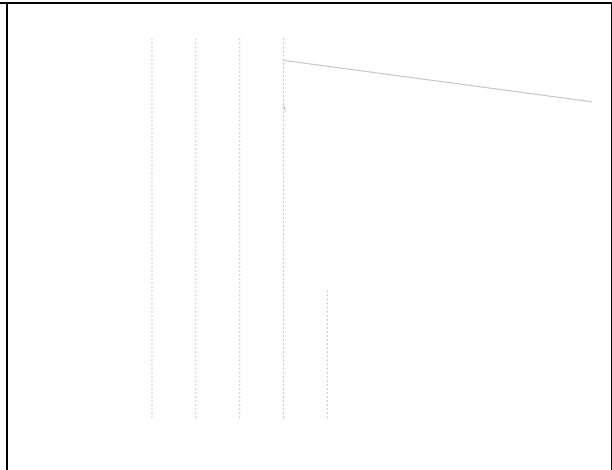


Figure 8. Drain-source on-state resistance

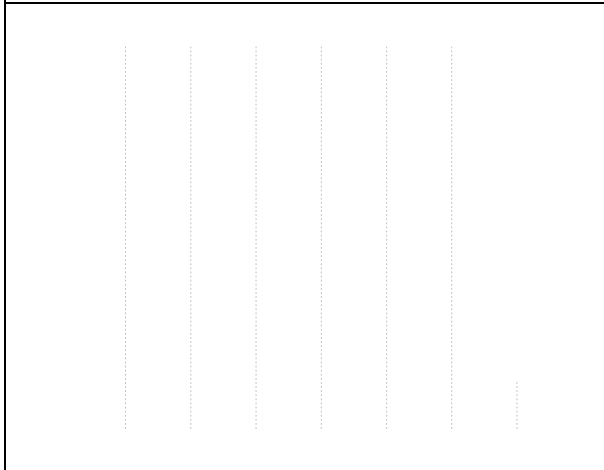


Figure 9. Drain current

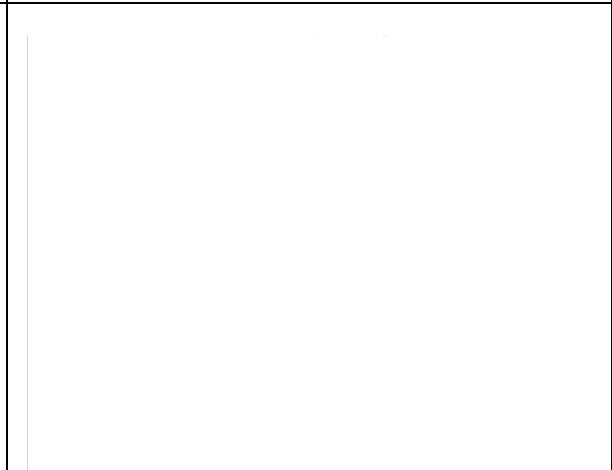


Figure 10. Safe operation area T_c=25

Test circuits and waveforms

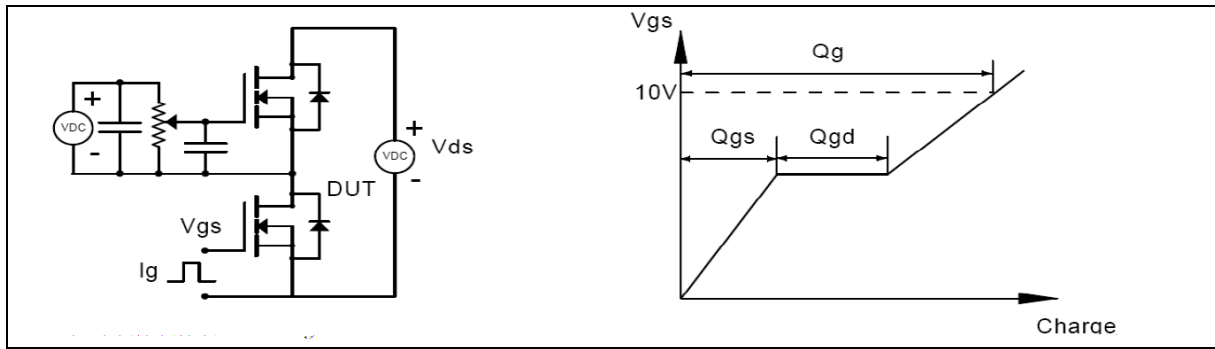


Figure 1. Gate charge test circuit & waveform

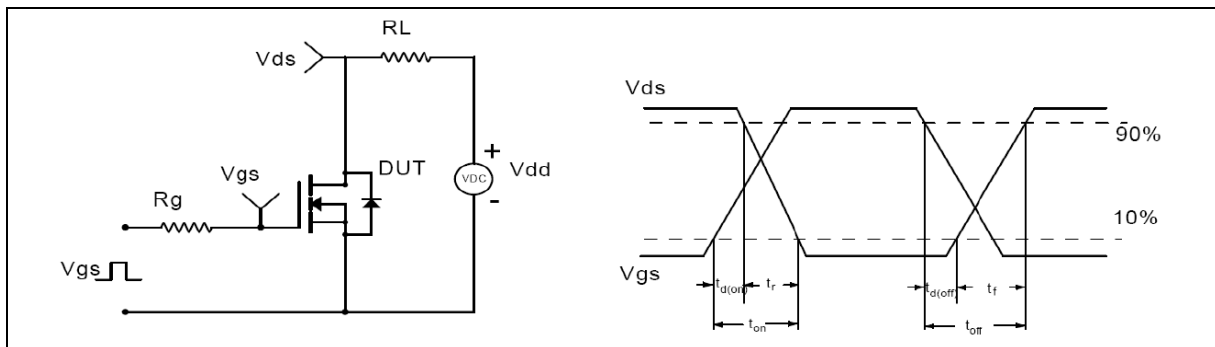


Figure 2. Switching time test circuit & waveforms

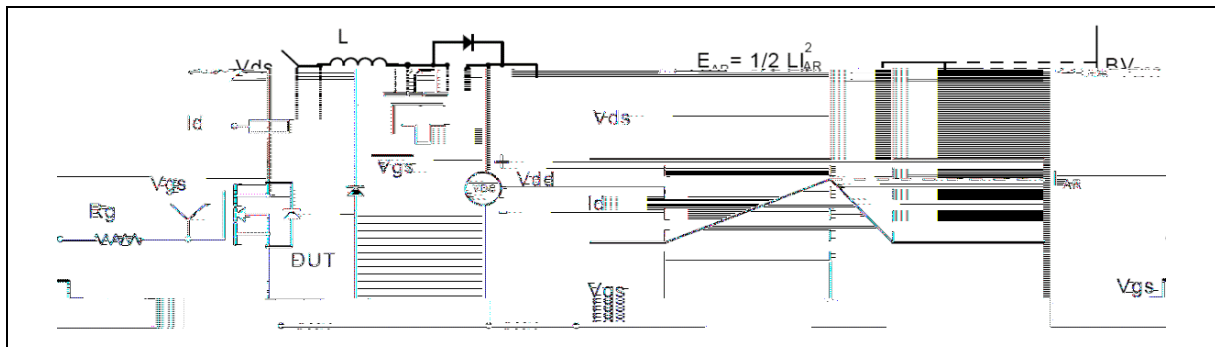


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms



Figure 4. Diode reverse recovery test circuit & waveforms

Package Information

Symbol	mm		
	Min	Nom	Max
A	0.90	1.00	1.10
b	0.90	1.00	1.10
b1	0.00	0.02	0.05
C	0.2 REF		
D	7.90	8.00	8.10
D1	7.10	7.20	7.30
E	7.90	8.00	8.10
E1	4.65	4.75	4.85
E2	2.65	2.75	2.85

Ordering Information

Package Type	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
PDFN 8x8-L	2500	2	5000	5	25000
PDFN 8x8-S	3000	1	3000	1	