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®

RoHS

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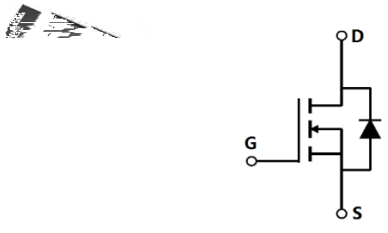
Parameter	Value	Unit
$V_{DS,\ min}$ @ $T_{j(max)}$	960	V
$I_{D,\ pulse}$	15	A
$R_{DS(ON)\ ,\ max}$ @ V_{GS}=10V	1.2	
Q_g	12.5	nC

Product Name	Package	Marking
OSG90R1K2KF	TO263	OSG90R1K2K



Absolute Maximum Ratings at T_j=25 unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	9	

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		7		pF	V_{GS}=0 V, V_{DS}=50 V, 00 kHz
Output capacitance	C_{oss}		37.5		pF	
Reverse transfer capacitance	C_{rss}		1.7		pF	
Turn-on delay time	$t_{d(on)}$		33.2		ns	V_{GS}=10 V, V_{DS}=400 V, R_G=33 I_D=5 A
Rise time	t_r		26.5		ns	
Turn-off delay time	$t_{d(off)}$		44		ns	
Fall time	t_f		17.6		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		12.5		nC	V_{GS}=10 V, V_{DS}=400 V, I_D=5 A
Gate-source charge	Q_{gs}		3.8		nC	
Gate-drain charge	Q_{gd}		4.3		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=5 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		265.9		ns	, I_S=5 A,
Reverse recovery charge	Q_{rr}		2.9		C	
Peak reverse recovery current	I_{rrm}		19.5		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

Electrical Characteristics Diagrams

Figure 1. Typ. output characteristics	**Figure 2. Typ. transfer characteristics**

Figure 7. Threshold voltage

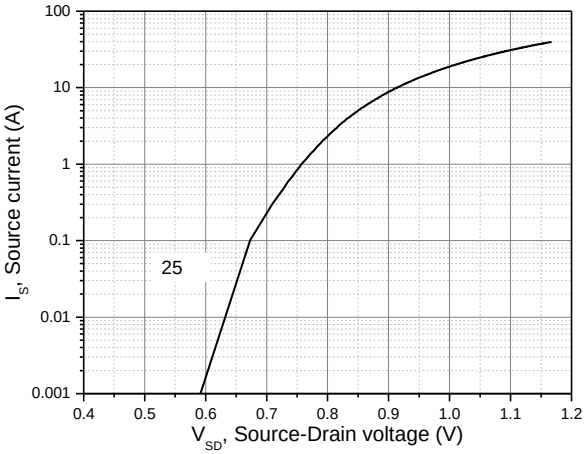


Figure 8. Forward characteristic of body diode

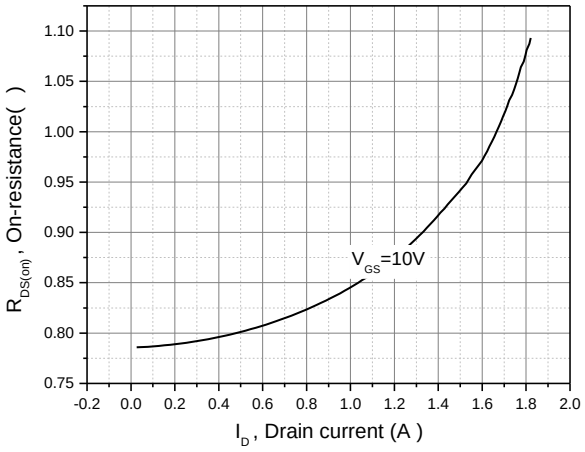


Figure 9. Drain-source on-state resistance

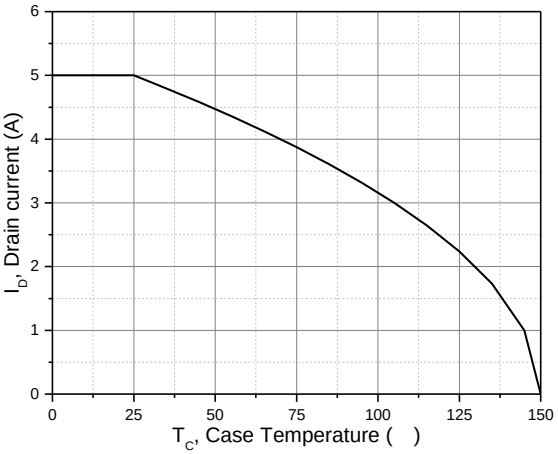


Figure 10. Drain current

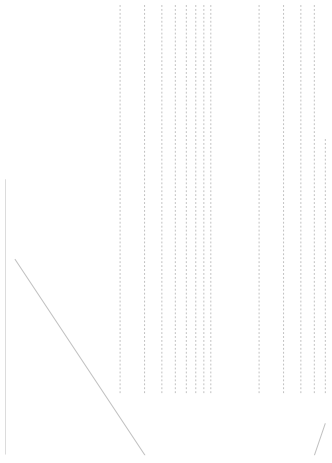


Figure 11. Safe operation area T_C=25 °C

Test circuits and waveforms

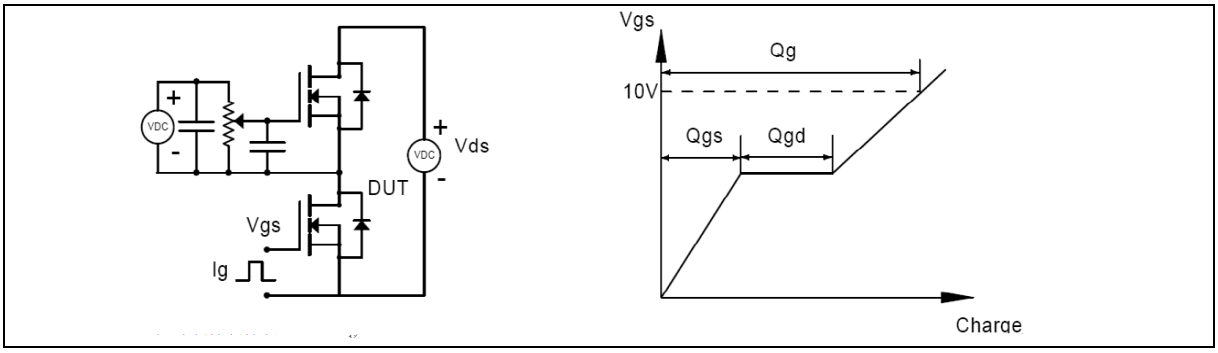


Figure 1. Gate charge test circuit & waveform

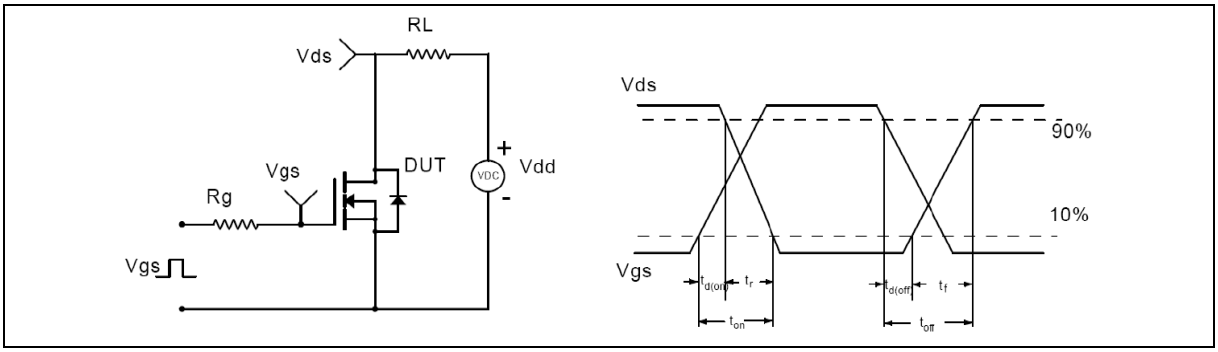


Figure 2. Switching time test circuit & waveforms

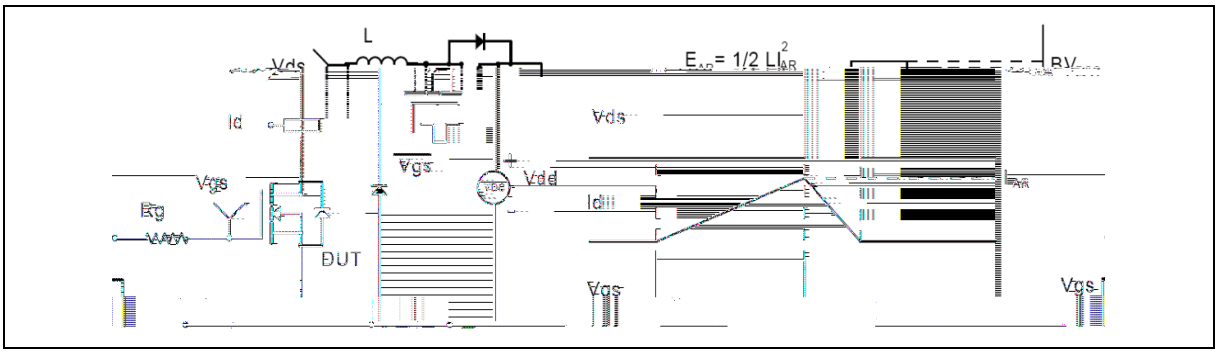


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

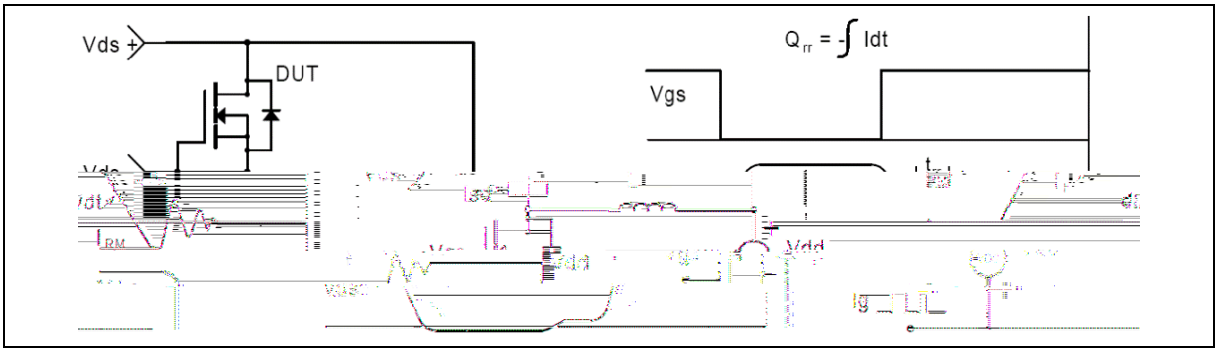


Figure 4. Diode reverse recovery test circuit & waveforms

Ordering Information

Package Type	Units/ Reel	Reels/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO263-C	800	1	800	5	4000

Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG90R1K2KF	TO263	yes	yes	yes