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Email :-info@vpelectronics.net Website:-www.vpelectronics.net

OSG65R035HF_Datasheet

GreenMOS™

Green PRODUCT

RoHS compliant

Enhancement Mode N-Channel Power MOSFET

Features

- Advanced GreenMOS™ technology
- Low $R_{DS(on)}$ & FOM
- Excellent low switching loss
- Excellent stability and uniformity
- Easy to drive

Applications

- PC power
- Server power supply
- Telecom
- Solar invertor
- Super charger for automobiles

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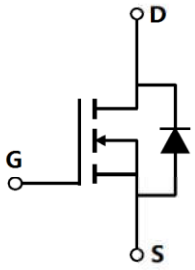
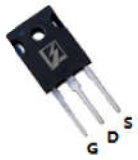
■ General Description

OSG65R035HF uses advanced GreenMOS™ technology to provide low $R_{DS(ON)}$, low gate charge, fast switching and excellent avalanche characteristics. This device is suitable for active power factor correction and super charger applications.

- ◆ $V_{DS,\ min@Tjmax}$ 700 V
- ◆ $I_{D,\ pulse}$ 240 A
- ◆ $R_{DS(ON),\ max\ @\ VGS=10\ V}$ 35 mΩ
- ◆ Q_g 173 nC

■ Schematic and Package Information

Schematic Diagram	Pin Assignment-Top View
	
	TO247
	OSG65R035HF

■ 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 ℃	I_D	80	A
Continuous drain current[1], T_C=100 ℃		50	
Pulsed drain current[2], T_C=25 ℃	$I_{D,\ pulse}$	240	A
Power dissipation[3], T_C=25 ℃	P_D	500	W
Single pulsed avalanche energy[5]	E_{AS}	2900	mJ
MOSFET dv/dt ruggedness, V_{DS}=0...480 V	dv/dt	50	V/ns
Reverse diode dv/dt, V_{DS}=0...480 V, I_{SD}≤I_D	dv/dt	15	V/ns
Operation and storage temperature	T_{stg} , T_j	-55 to 150	℃

■ Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	$R_{\theta JC}$	0.25	℃/W
Thermal resistance, junction-ambient[4)]	$R_{\theta JA}$	62	℃/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=2 mA
		700	750			V_{GS}=0 V, I_D=2 mA T_j=150 ℃
Gate threshold voltage	$V_{GS(th)}$	2.0		4.0	V	V_{DS}=V_{GS}, I_D=2 mA
Drain-source on-state resistance	$R_{DS(ON)}$		0.031	0.035	Ω	V_{GS}=10 V, I_D=40 A
			0.074			V_{GS}=10 V, I_D=40 A, T_j=150 ℃
Gate-source leakage current	I_{GSS}			100	nA	V_{GS}=30 V
				-100		V_{GS}=-30 V
Drain-source leakage current	I_{DSS}			1	μA	V_{DS}=650 V, V_{GS}=0 V

■ Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		7816		pF	V_{GS}=0 V, V_{DS}=50 V, f=100 kHz
Output capacitance	C_{oss}		537		pF	
Reverse transfer capacitance	C_{rss}		7.7		pF	
Turn-on delay time	$t_{d(on)}$		48.1		ns	V_{GS}=10 V, V_{DS}=400 V, R_G=2 Ω, I_D=40 A
Rise time	t_r		88.6		ns	
Turn-off delay time	$t_{d(off)}$		124.6		ns	
Fall time	t_f		9.8		ns	

■ Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		173		nC	I_D=40 A, V_{DS}=400 V, V_{GS}=10 V
Gate-source charge	Q_{gs}		32.5		nC	
Gate-drain charge	Q_{gd}		70.7		nC	
Gate plateau voltage	$V_{plateau}$		5.8		V	

■ Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward current	I_S			80	A	V_{GS}<V_{th}
Pulsed source current	I_{SP}			240		
Diode forward voltage	V_{SD}			1.3	V	I_S=80 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		435.2		ns	I_S=30 A, di/dt=100 A/μs
Reverse recovery charge	Q_{rr}		9.0		μC	
Peak reverse recovery current	I_{rrm}		38.4		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 $R_{\theta JA}$ 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 ℃.
5) V_{DD}=300 V, R_G=90 Ω, L=40 mH, starting T_j=25 ℃.

■ Electrical Characteristics Diagrams

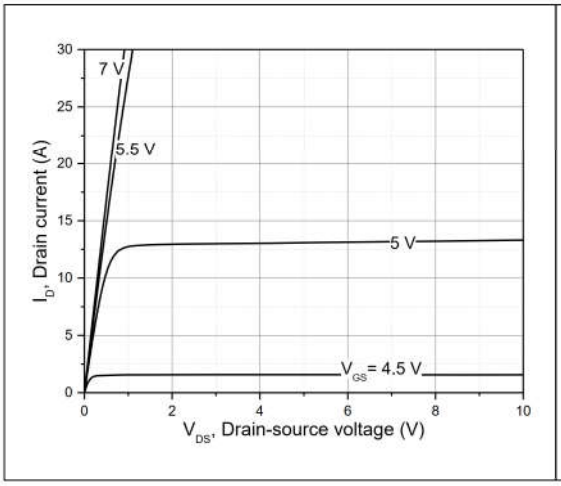


Figure 1, Typ. output characteristics

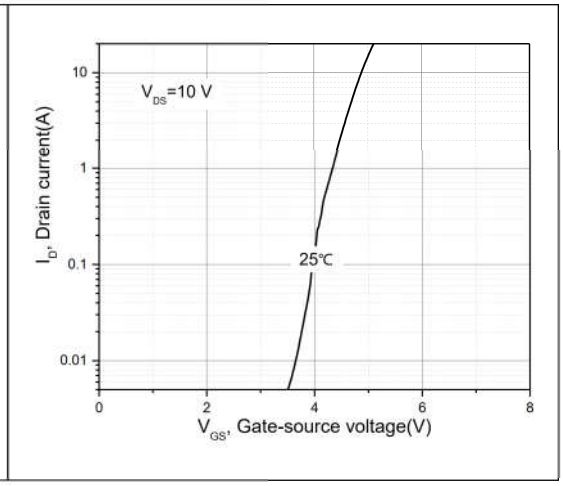


Figure 2, Typ. transfer characteristics

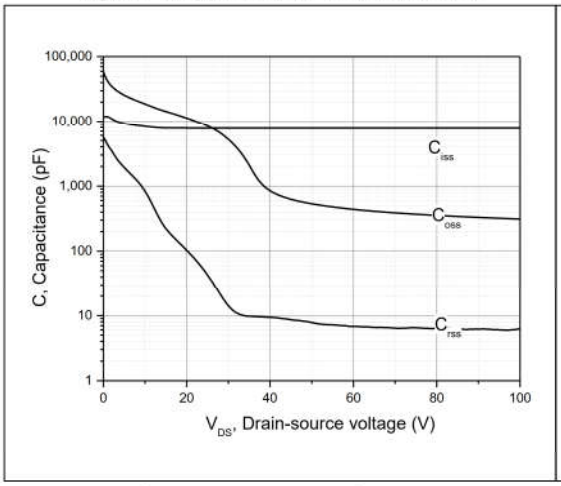


Figure 3, Typ. capacitances

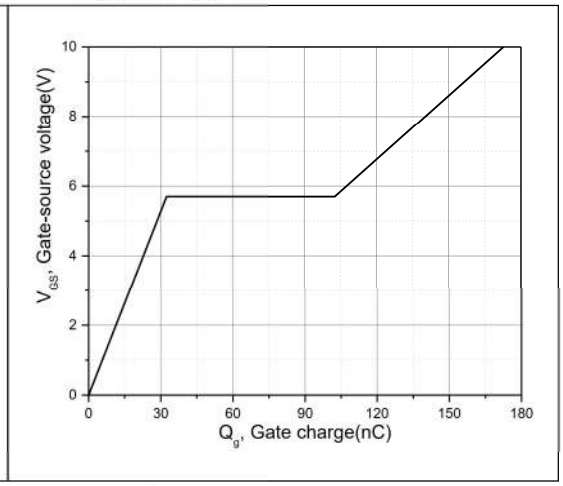


Figure 4, Typ. gate charge

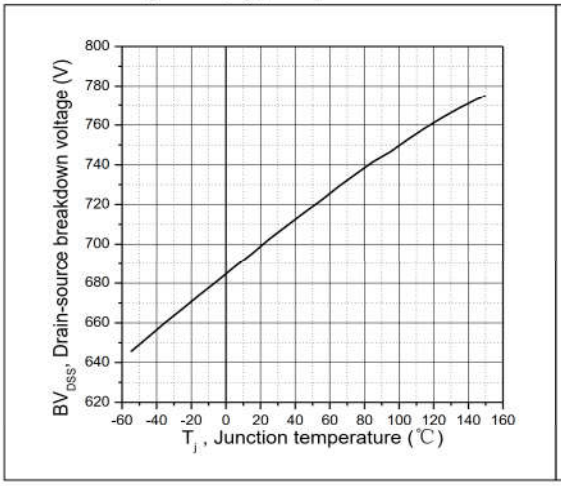


Figure 5, Drain-source breakdown voltage

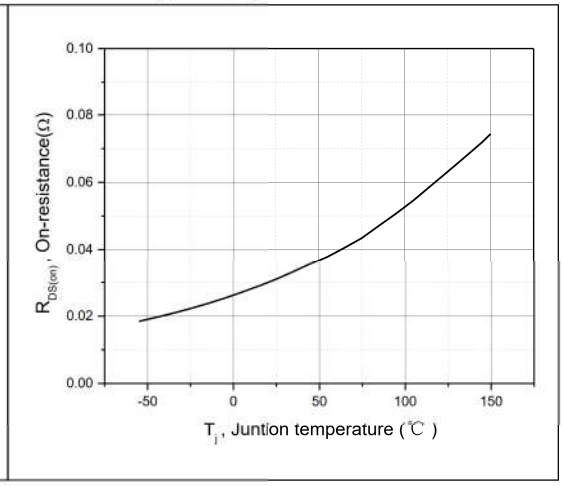


Figure 6, Drain-source on-state resistance

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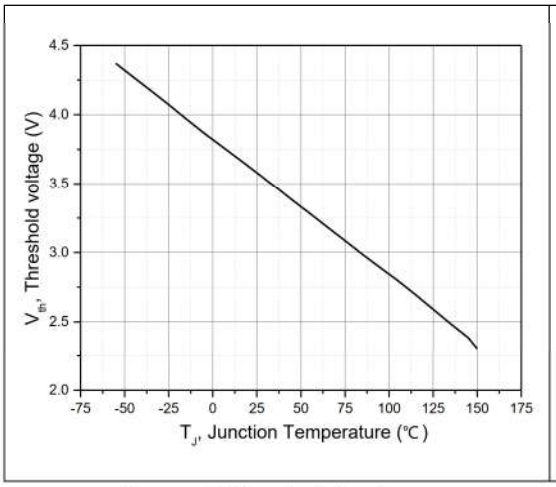

Figure 7, Threshold voltage

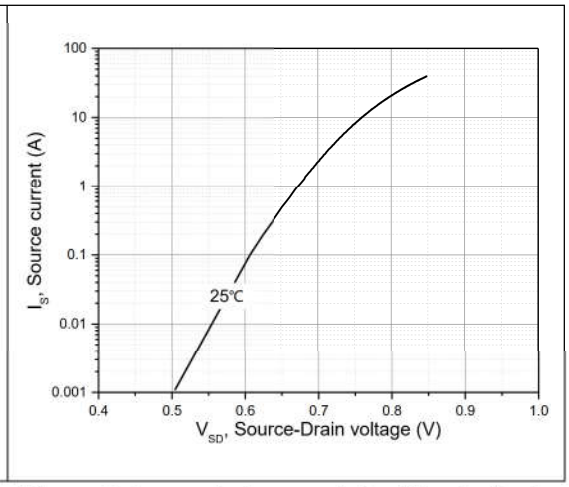

Figure 8, Forward characteristic of body diode

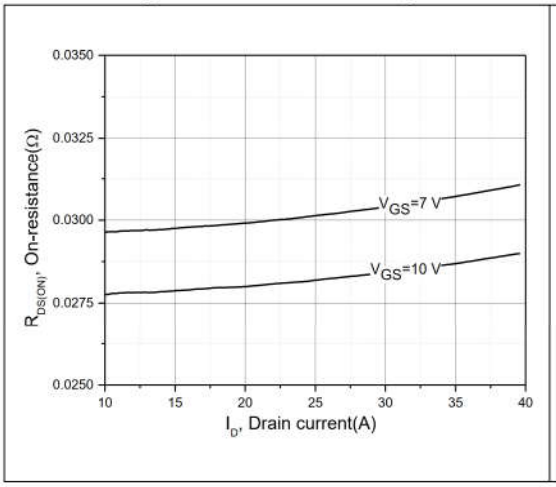

Figure 9, Drain-source on-state resistance

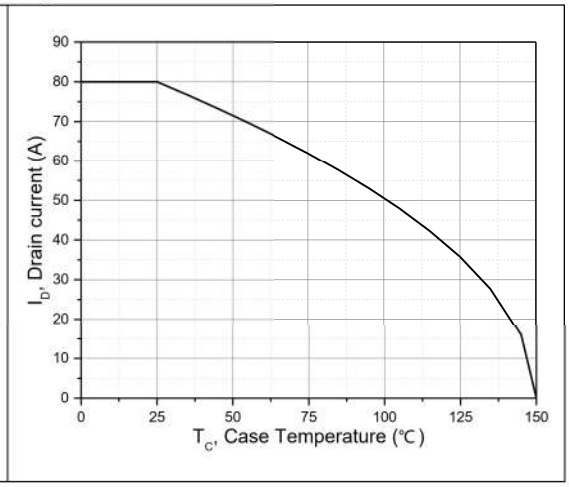

Figure 10, Drain current

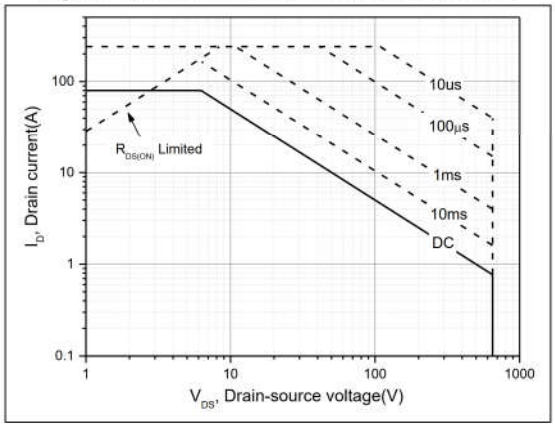

Figure 11, Safe operation area T_C=25 ℃

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■ Test circuits and waveforms

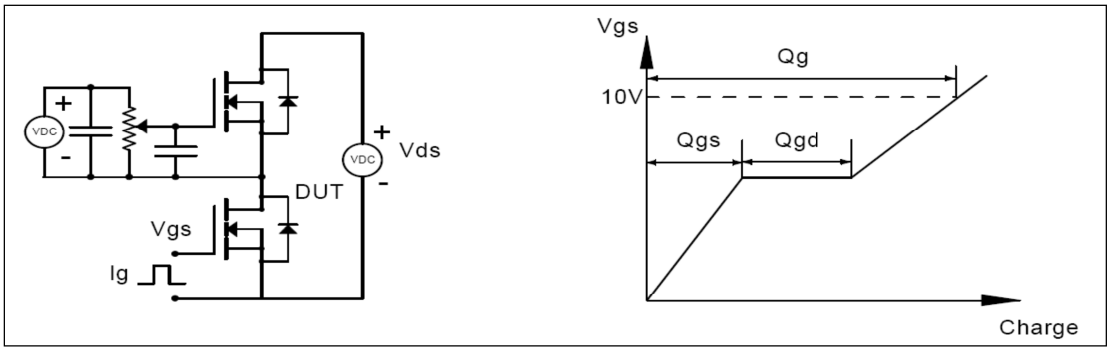

Figure 1, Gate charge test circuit & waveform

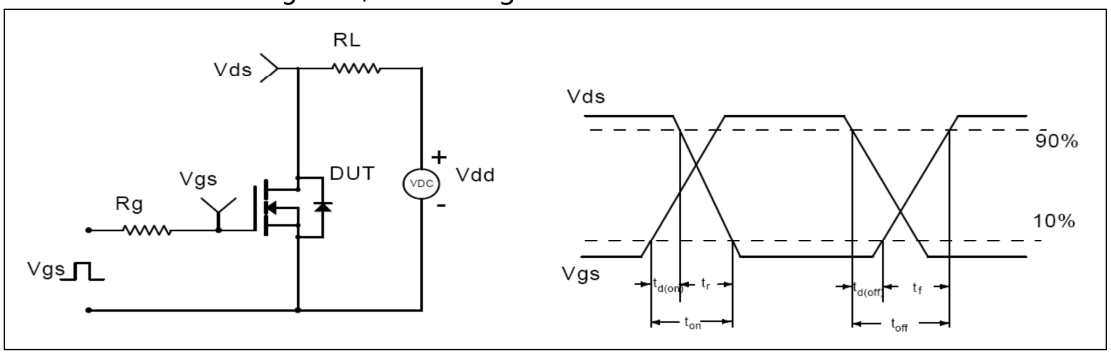

Figure 2, Switching time test circuit & waveforms

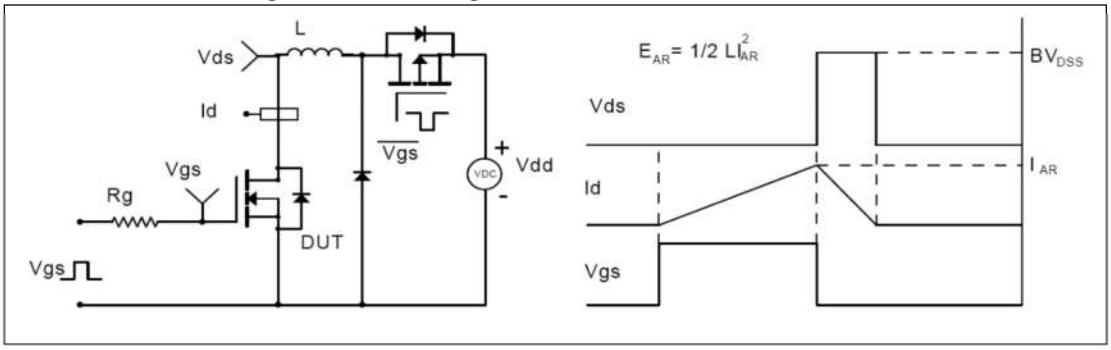

Figure 3, Unclamped inductive switching (UIS) test circuit & waveforms

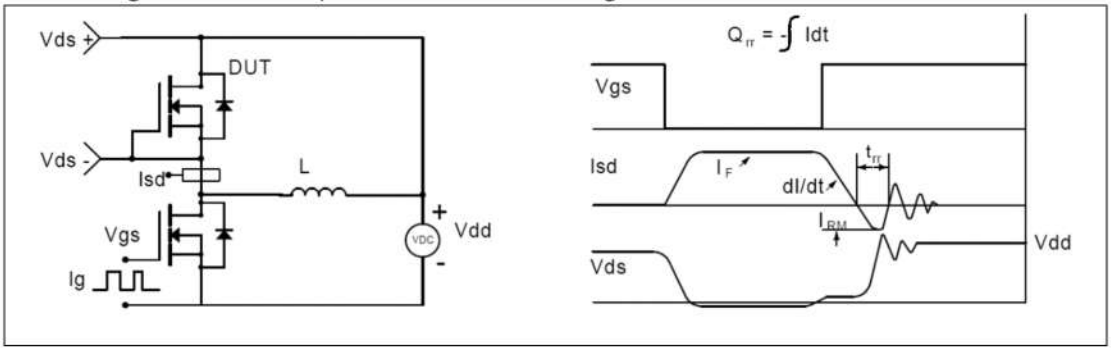

Figure 4, Diode reverse recovery test circuit & waveforms

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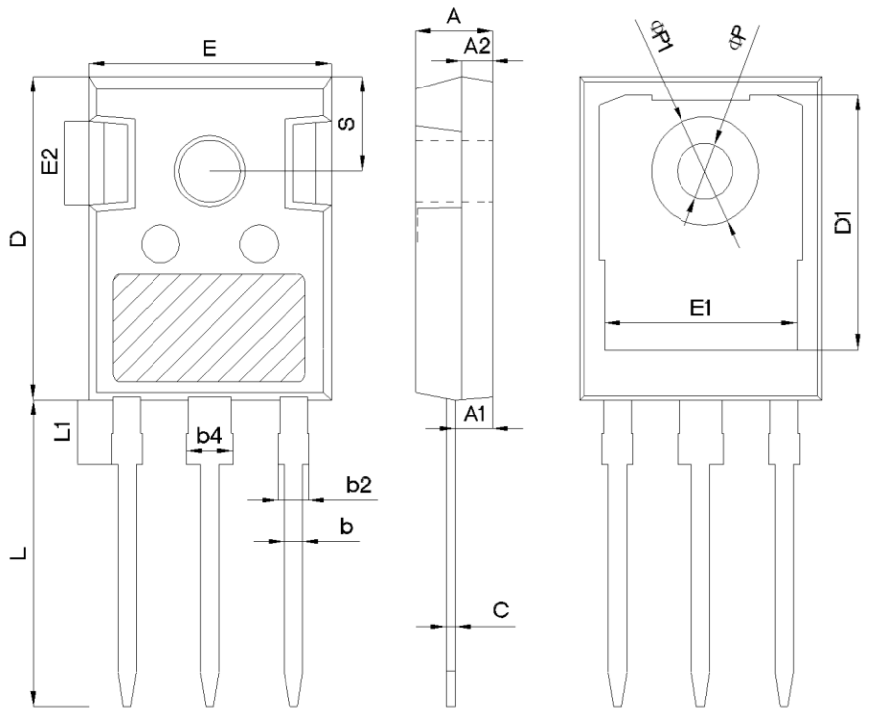
■ Package Information

TO247 package outline dimension



SYMBOL	mm		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.61
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
b4	2.91	3.01	3.21
c	0.51	0.61	0.75
D	20.70	21.00	21.30
D1	16.25	16.55	16.85
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e	5.44BSC		
L	19.62	19.92	20.22
L1	-	-	4.30
ΦP	3.40	3.60	3.80
ΦP1	-	-	7.30
S	6.15BSC		

■ Ordering Information

Package	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Box/Carton Box	Units/Carton Box
TO247	30	11	330	6	1980

■ Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG65R035HF	TO247	yes	yes	yes