

## General Description

The GreenMOS<sup>®</sup> 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<sup>®</sup> 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.

## Features

- Low  $R_{DS(ON)}$  & FOM
- Extremely low switching loss
- Excellent stability and uniformity

## Applications

- PC power
- LED lighting
- Telecom power
- Server power
- EV Charger
- Solar/UPS

## Key Performance Parameters

Parameter	Value	Unit
$V_{DS, min} @ T_{j(max)}$	700	V
$I_{D, pulse}$ $R_{DS(ON), max} @$	45	A

**Absolute Maximum Ratings** at  $T_j=25^{\circ}\text{C}$  unless otherwise noted

Parameter	Symbol	Value	Unit
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### Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	$C_{iss}$		1066		pF	$V_{GS}=0\text{ V}$ , $V_{DS}=50\text{ V}$ , Hz
Output capacitance	$C_{oss}$		73		pF	
Reverse transfer capacitance	$C_{rss}$		2.2		pF	
Turn-on delay time	$t_{d(on)}$		25.7		ns	$V_{GS}=10\text{ V}$ , $V_{DS}=400\text{ V}$ , $R_G$ $I_D=8\text{ A}$
Rise time	$t_r$		6.5		ns	
Turn-off delay time	$t_{d(off)}$		32.6		ns	
Fall time	$t_f$		3.9		ns	

### Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	$Q_g$		15.6		nC	$V_{GS}=10\text{ V}$ , $V_{DS}=400\text{ V}$ , $I_D=8\text{ A}$
Gate-source charge	$Q_{gs}$		5.6		nC	
Gate-drain charge	$Q_{gd}$		5.2		nC	
Gate plateau voltage	$V_{plateau}$		6.9		V	

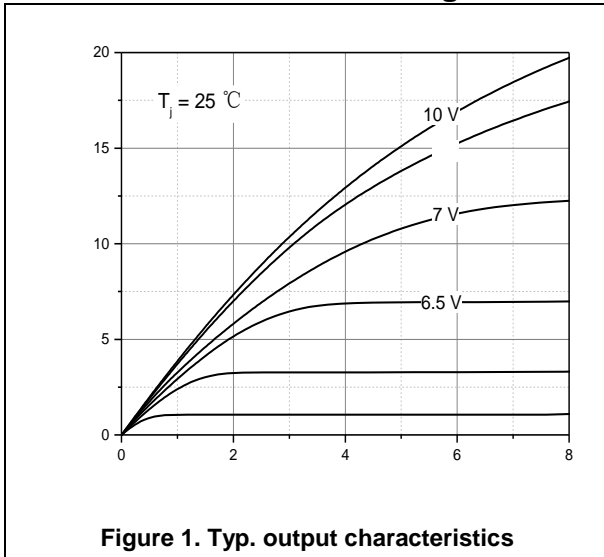
### Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage	$V_{SD}$			1.3	V	$I_S=15\text{ A}$ , $V_{GS}=0\text{ V}$
Reverse recovery time	$t_{rr}$		103		ns	$I_S=8\text{ A}$ , '
Reverse recovery charge	$Q_{rr}$		0.5		C	
Peak reverse recovery current	$I_{rrm}$		9.5		A	

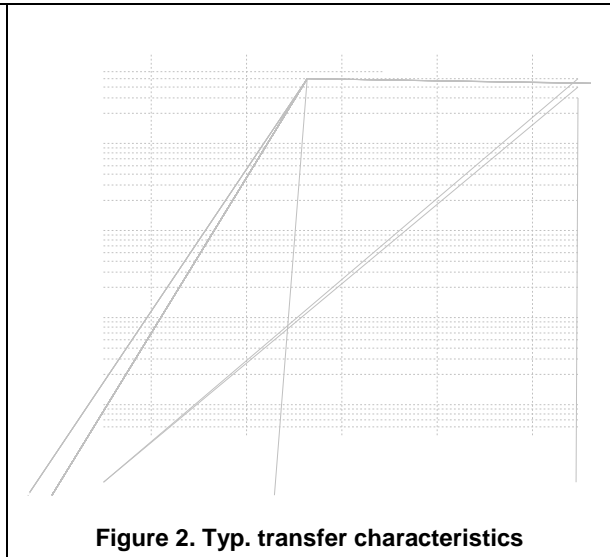
### Note

- 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  $R_{\theta}$  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  $T_j=25\text{ }^\circ\text{C}$ .

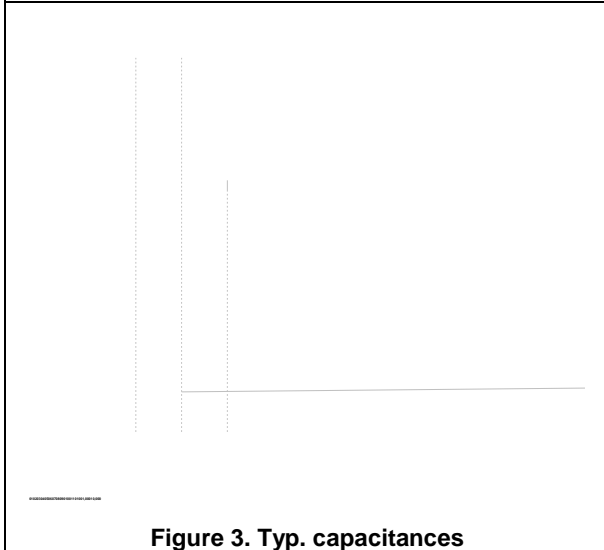
**Electrical Characteristics Diagrams**



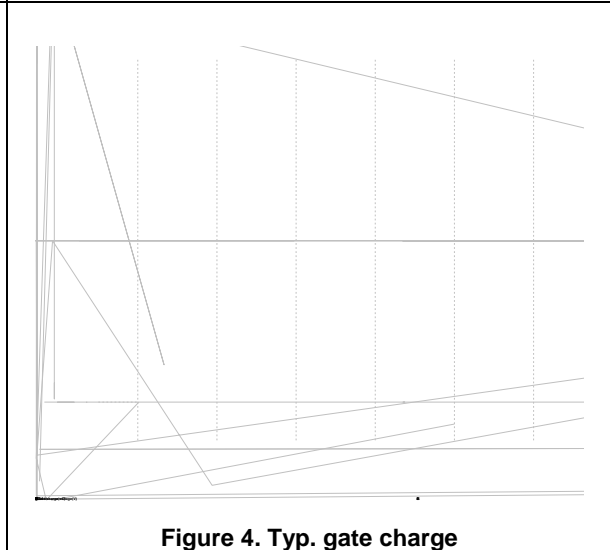
**Figure 1. Typ. output characteristics**



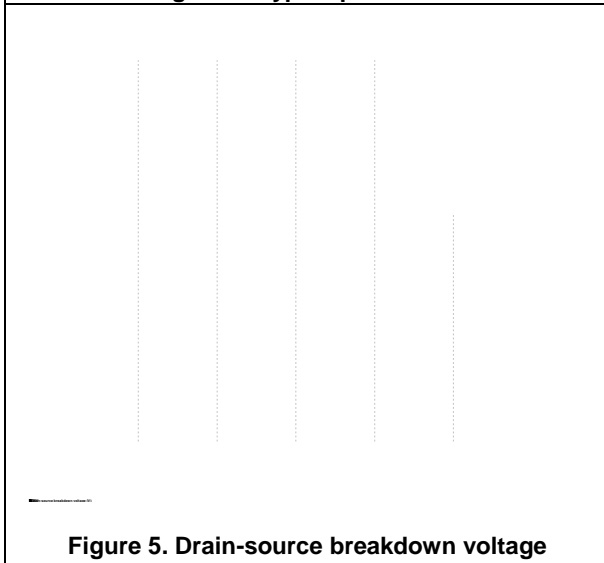
**Figure 2. Typ. transfer characteristics**



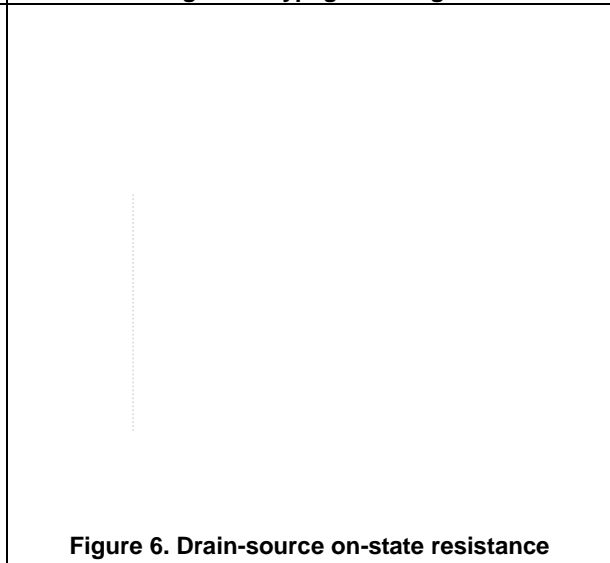
**Figure 3. Typ. capacitances**



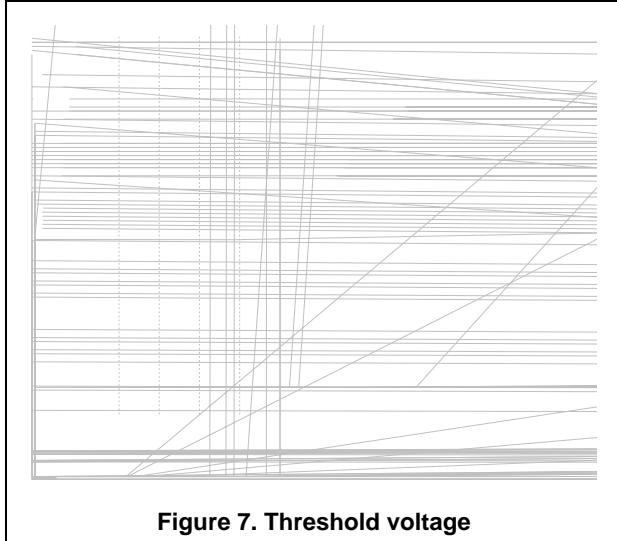
**Figure 4. Typ. gate charge**



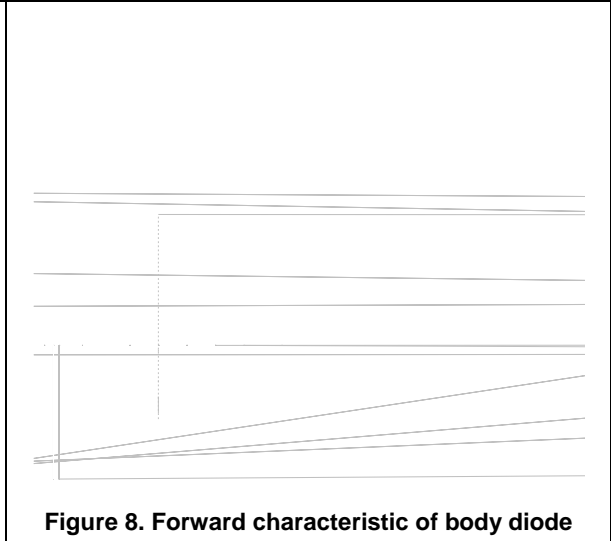
**Figure 5. Drain-source breakdown voltage**



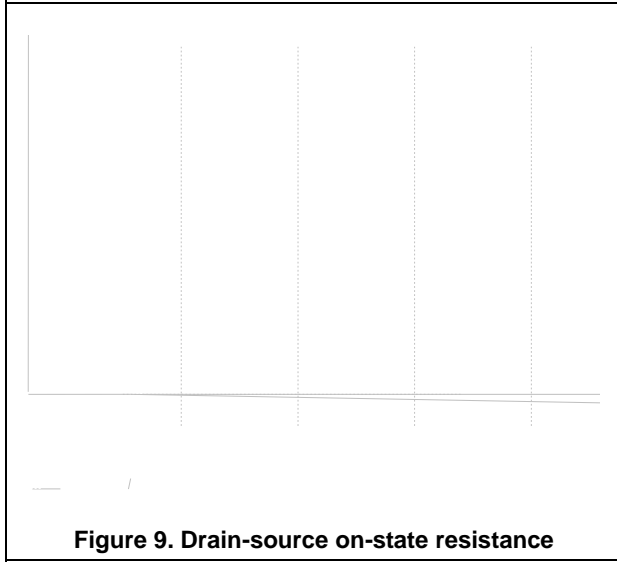
**Figure 6. Drain-source on-state resistance**



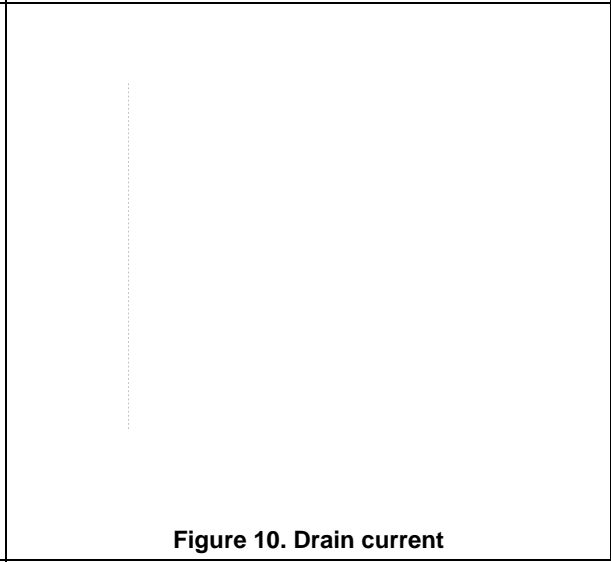
**Figure 7. Threshold voltage**



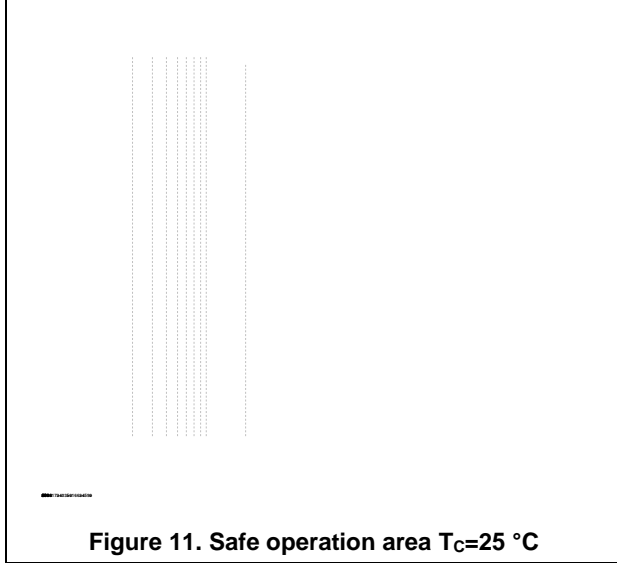
**Figure 8. Forward characteristic of body diode**



**Figure 9. Drain-source on-state resistance**

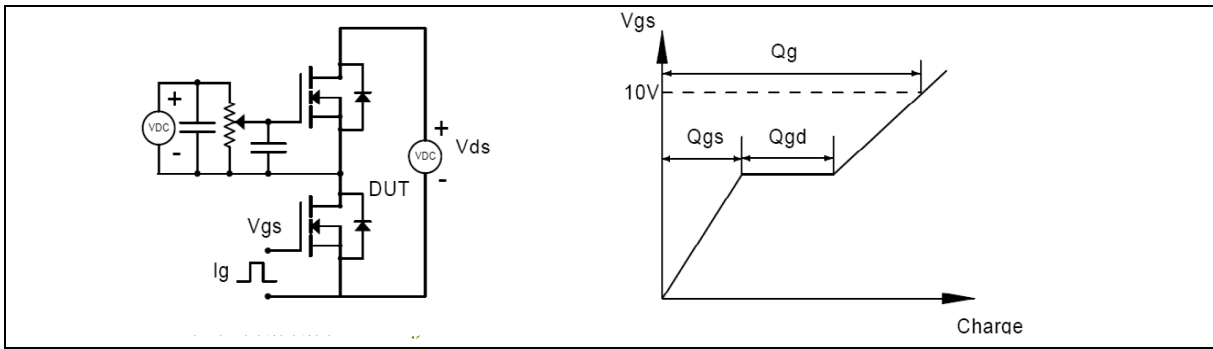


**Figure 10. Drain current**



**Figure 11. Safe operation area  $T_c=25\text{ }^\circ\text{C}$**

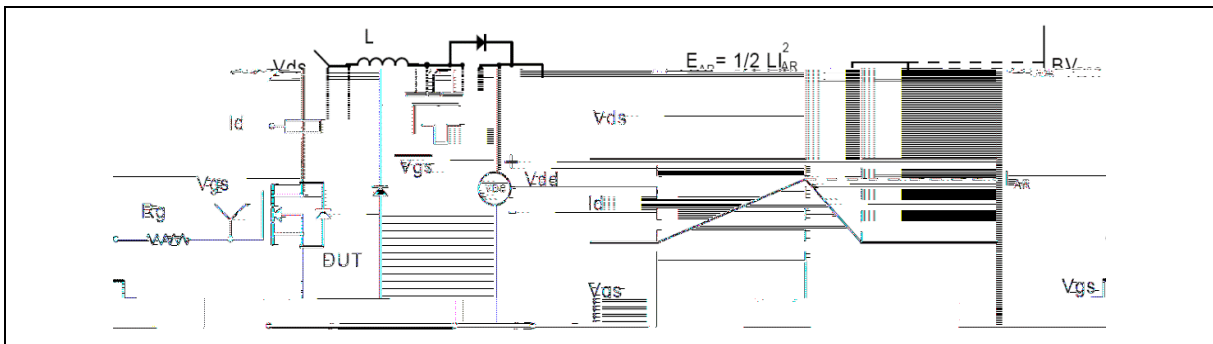
**Test circuits and waveforms**



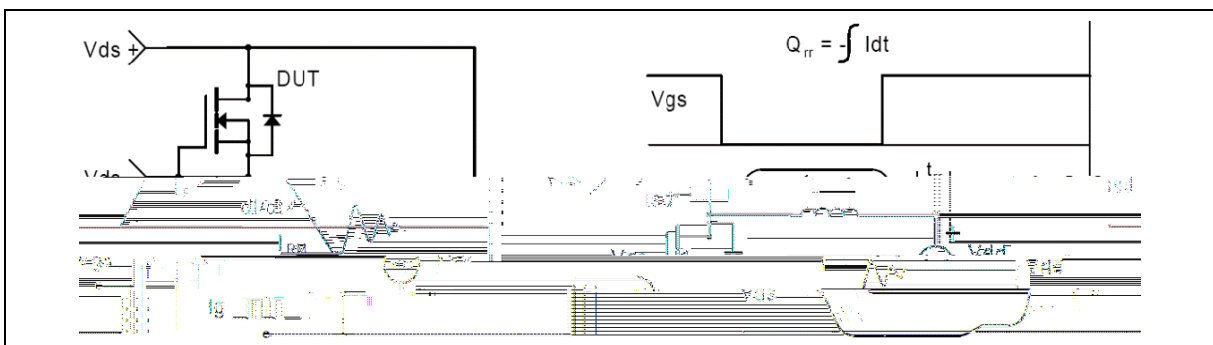
**Figure 1. Gate charge test circuit & waveform**



**Figure 2. Switching time test circuit & waveforms**

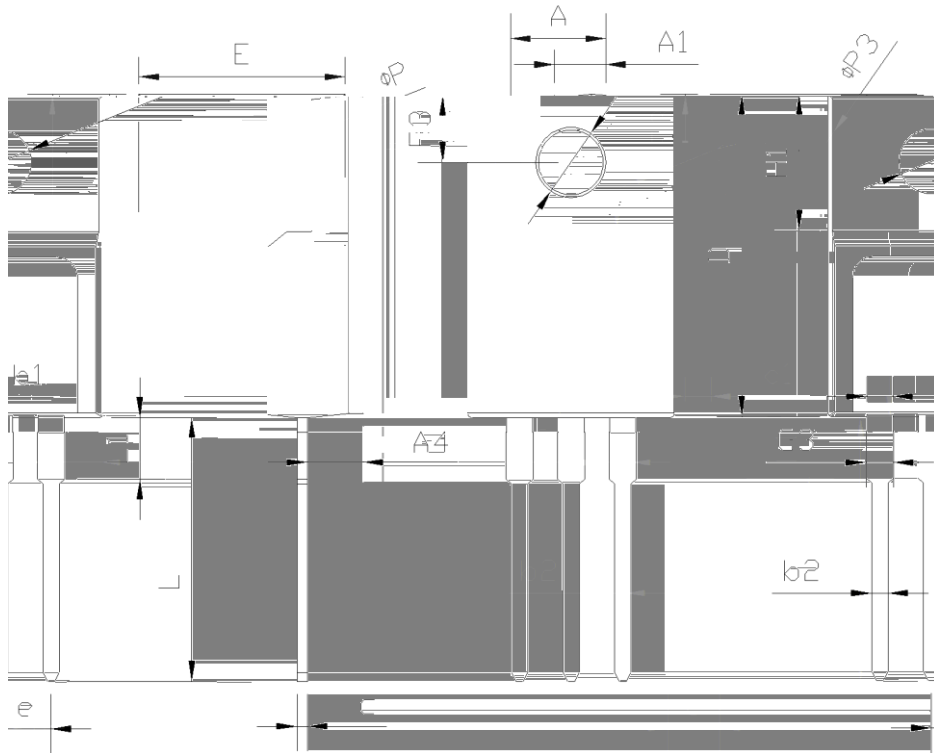


**Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms**



**Figure 4. Diode reverse recovery test circuit & waveforms**

**Package Information**



Symbol	mm		
	Min	Nom	Max
E	9.96	10.16	10.36
A	4.50	4.70	4.90
A1	2.34	2.54	2.74
A4	2.56	2.76	2.96
c	0.40	0.50	0.65
D	15.57	15.87	16.17
H1	6.70 REF		
e	2.54 BSC		
L	12.68	12.98	13.28
L1	2.88	3.03	3.18
	3.03	3.18	3.38
	3.15	3.45	3.65
F3	3.15	3.30	3.45
G3	1.25	1.35	1.55
b1	1.18	1.28	1.43
b2	0.70	0.80	0.95

Version 1: TO220F-C package outline dimension

### Ordering Information

Package Type	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO220F-C	50	20	1000	6	6000

### Product Information

Product	Package	Pb Free	RoHS	Halogen Free
OSG65R340FZF	TO220F	yes	yes	yes

### Legal Disclaimer

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