

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.

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Parameter	Value	Unit
$V_{DS, min} @ T_{j(max)}$	700	V
$I_D, pulse$	240	A
$R_{DS(ON), max} @ V_{GS}=10V$	38	m
$Q_g$	175	nC

71 TET 29.93 0.48 0.48.72 ref67.584 329.93 0.4

**Absolute Maximum Ratings** at  $T_j=25$  unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	$V_{DS}$	650	V
Gate-source voltage	$V_{GS}$	$\pm 30$	V
Continuous drain current <sup>1)</sup> , $T_C=25$ °C	$I_D$	80	A
Continuous drain current <sup>1)</sup> , $T_C=100$ °C		50	
Pulsed drain current <sup>2)</sup> , $T_C=25$ °C	$I_{D, pulse}$	240	A
Continuous diode forward current <sup>1)</sup> , $T_C=25$ °C	$I_S$	80	A
Diode pulsed current <sup>2)</sup> , $T_C=25$ °C	$I_{S, pulse}$	240	A
Power dissipation <sup>3)</sup> , $T_C=25$ °C	$P_D$	500	W
Single pulsed avalanche energy <sup>5)</sup>	$E_{AS}$	2900	mJ
MOSFET dv/dt ruggedness, $V_{DS}$	dv/dt	100	V/ns
Reverse diode dv/dt, $V_{DS}$	dv/dt	50	V/ns
Operation and storage temperature	$T_{stg}, T_j$	-55 to 150	°C

**Thermal Characteristics**

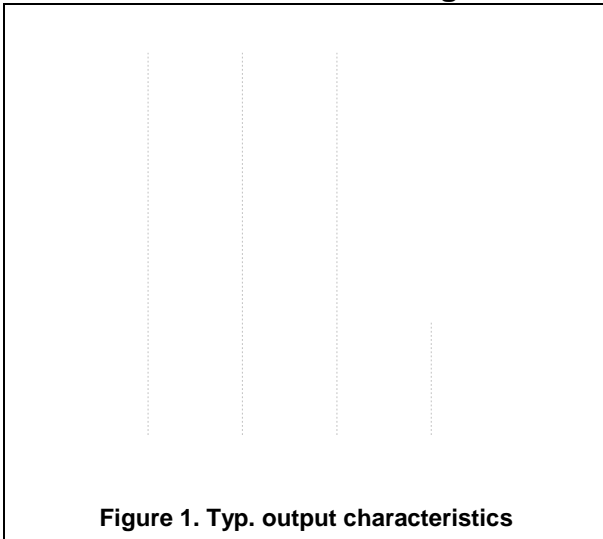
Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	R	0.25	°C/W
Thermal resistance, junction-ambient <sup>4)</sup>	R	62	°C/W

**Electrical Characteristics** at  $T_j=25$  unless otherwise specified

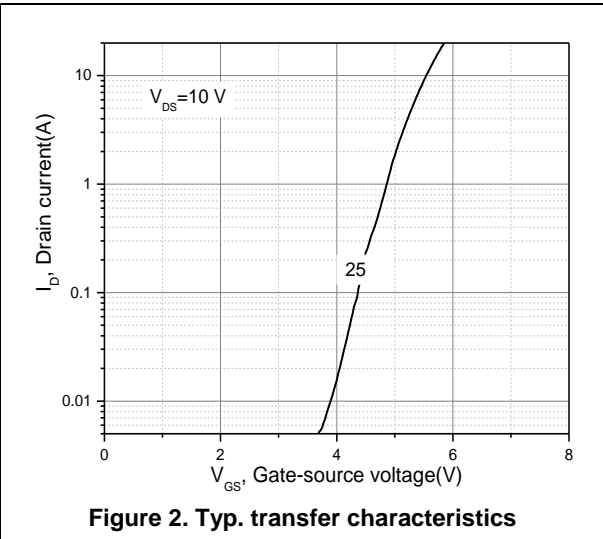
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	$BV_{DSS}$	650			V	$V_{GS}=0$ V, $I_D=2$ mA
		700	770			$V_{GS}=0$ V, $I_D=2$ mA, $T_j=150$ °C
Gate threshold voltage	$V_{GS(th)}$	3.0		4.5	V	$V_{DS}=V_{GS}$ , $I_D=2$ mA
Drain-source on-state resistance	$R_{DS(ON)}$		0.032	0.038		$V_{GS}=10$ V, $I_D=40$ A
			0.083			$V_{GS}=10$ V, $I_D=40$ 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	$I_{DSS}$			10	A	$V_{DS}=650$ V, $V_{GS}=0$ V
Gate resistance	$R_G$		2.1			



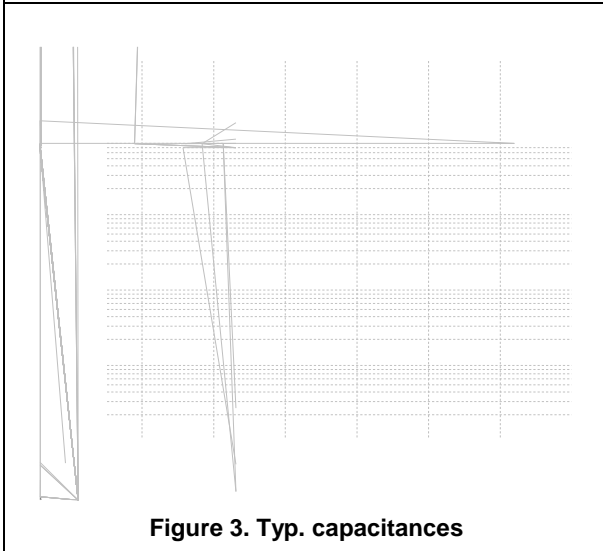
**Electrical Characteristics Diagrams**



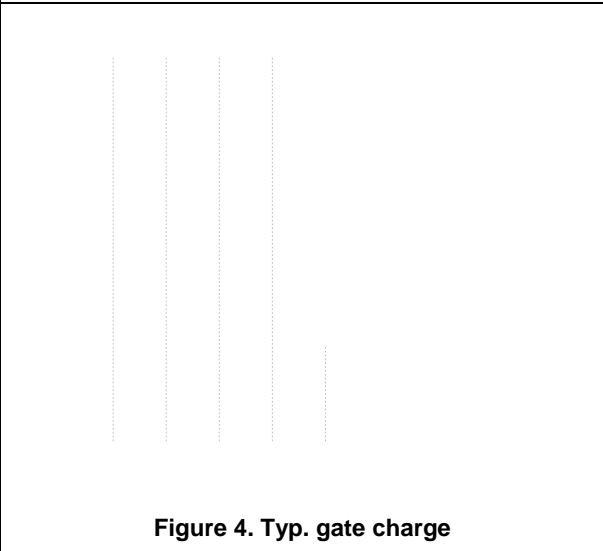
**Figure 1. Typ. output characteristics**



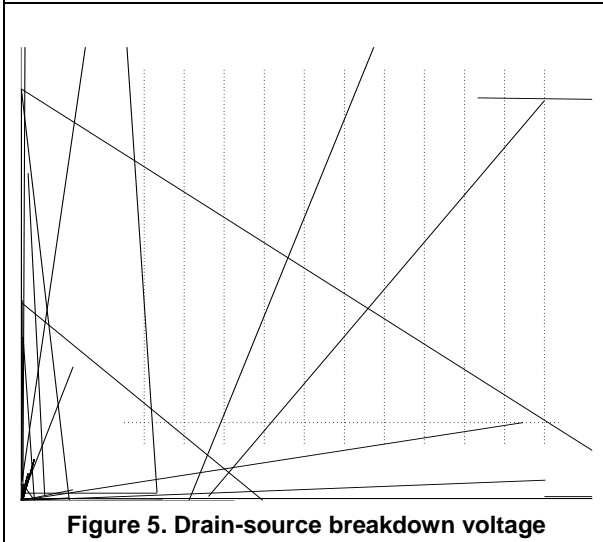
**Figure 2. Typ. transfer characteristics**



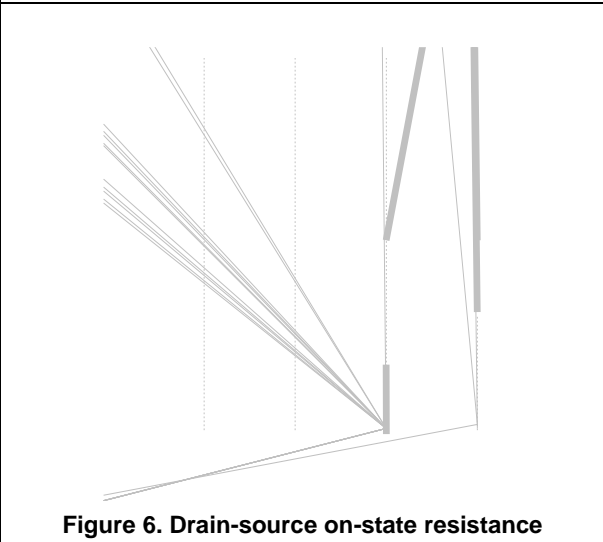
**Figure 3. Typ. capacitances**



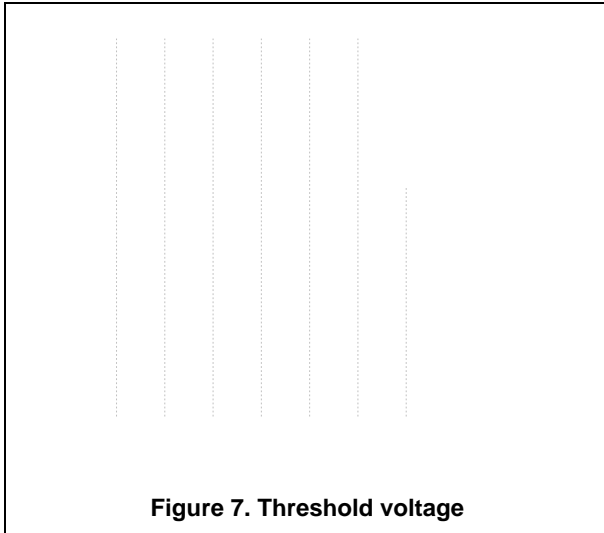
**Figure 4. Typ. gate charge**



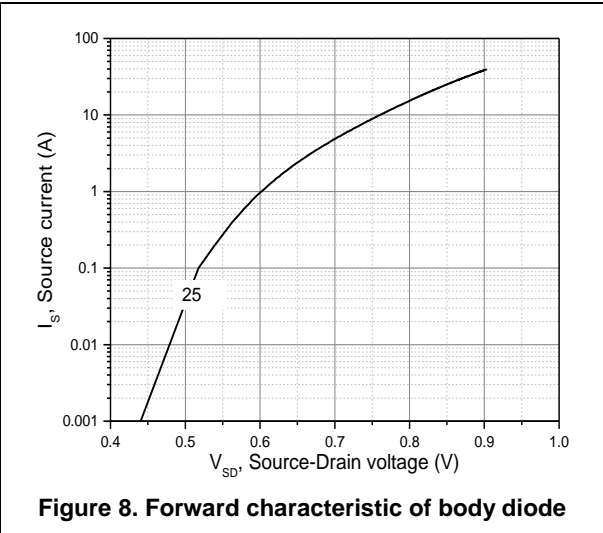
**Figure 5. Drain-source breakdown voltage**



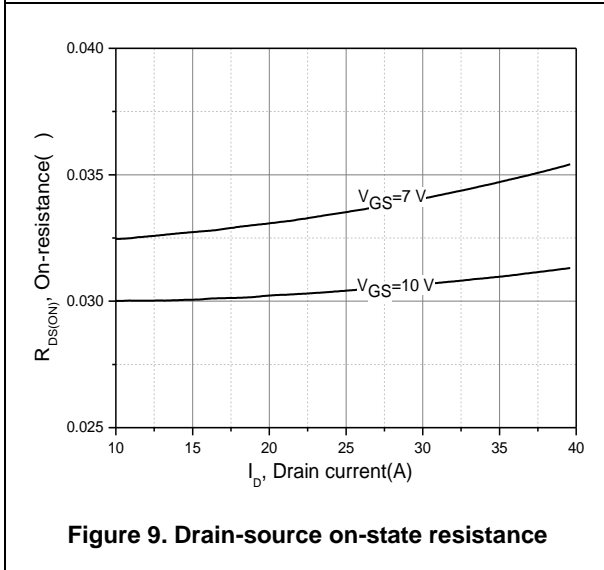
**Figure 6. Drain-source on-state resistance**



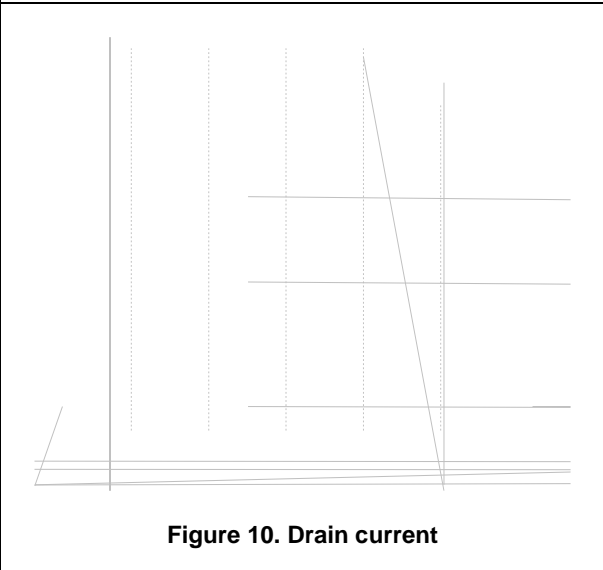
**Figure 7. Threshold voltage**



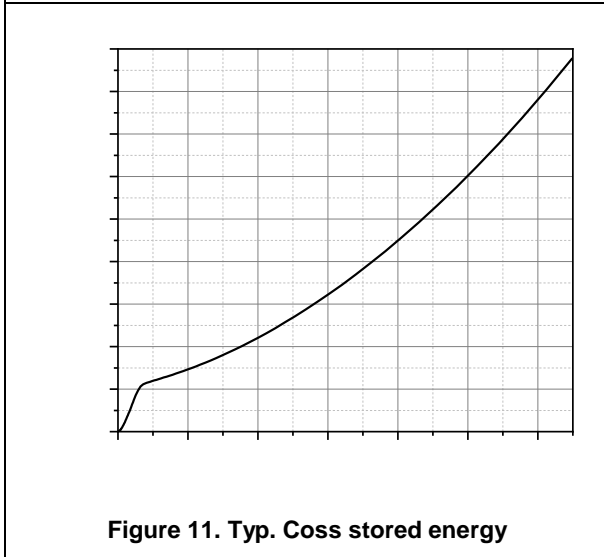
**Figure 8. Forward characteristic of body diode**



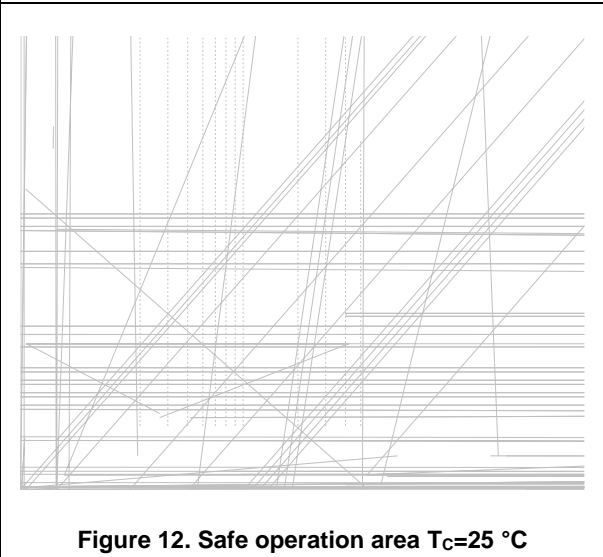
**Figure 9. Drain-source on-state resistance**



**Figure 10. Drain current**

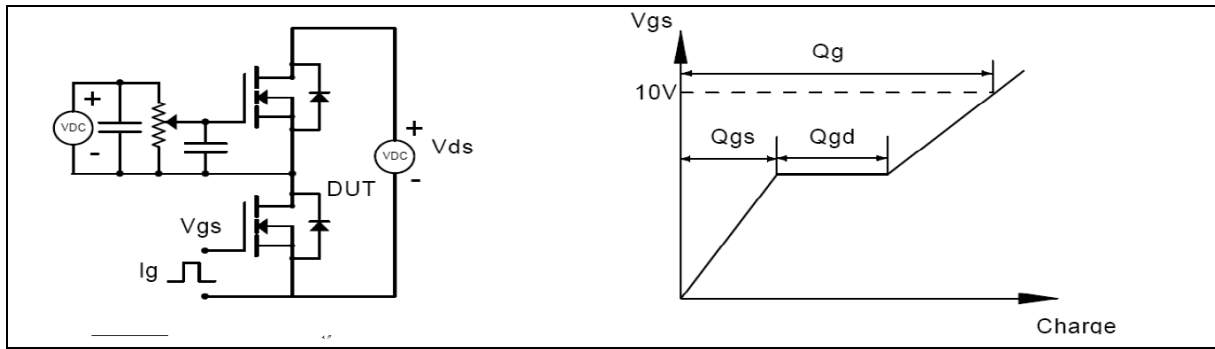


**Figure 11. Typ. Coss stored energy**



**Figure 12. Safe operation area T<sub>c</sub>=25 °C**

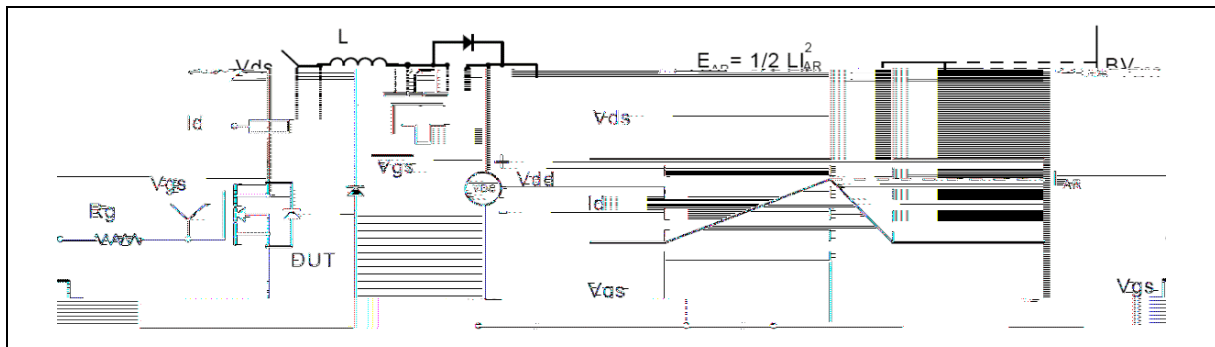
**Test circuits and waveforms**



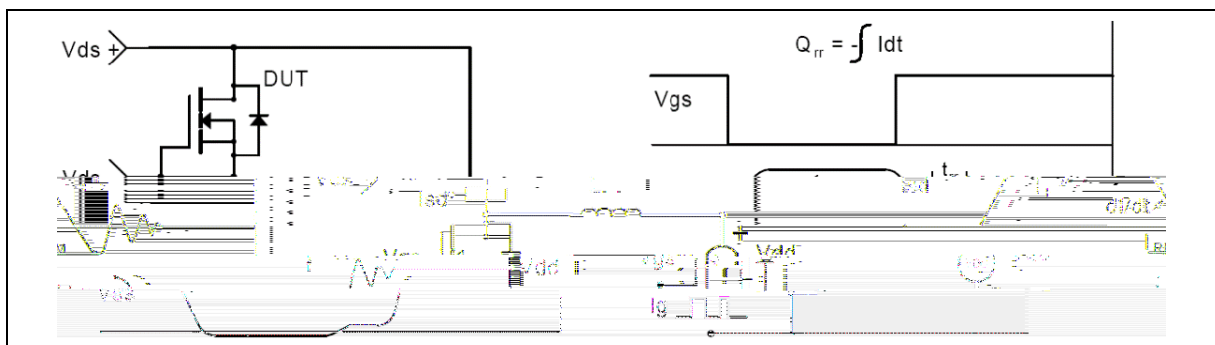
**Figure 1. Gate charge test circuit & waveform**



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

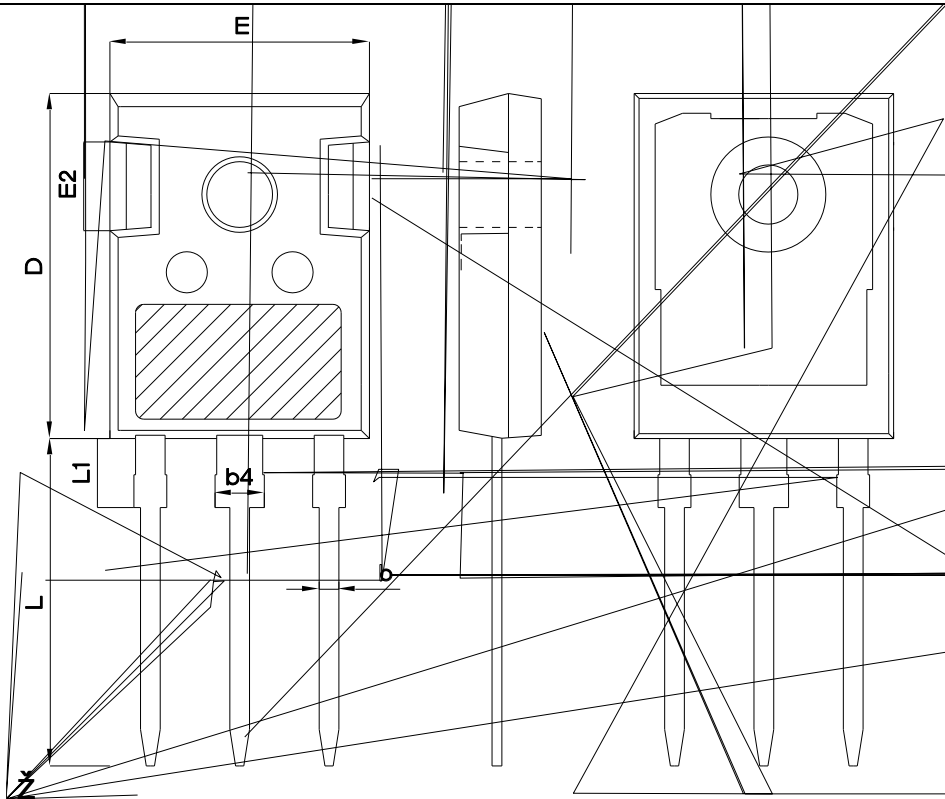


**Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms**



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

**Package Information**



Symbol	mm		
	Min	Nom	Max
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
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	20.80	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	5.44 BSC		
L	19.82	19.92	20.22
L1	-	-	4.30
	3.40	3.60	3.80
	-	-	7.30
S	6.15 BSC		

Version1, TO247-C outline dimension

**Ordering Information**

Package Type	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO247-C	30	11	330	6	1980

**Product Information**

Product	Package	Pb Free	RoHS	Halogen Free
OSG65R038HZF	TO247	yes	yes	yes