

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.

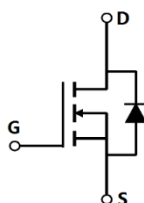
GreenMOS<sup>®</sup>



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Parameter	Value	Unit
$V_{DS, min} @ T_{j(max)}$	700	V
$I_{D, pulse}$	33	A
$R_{DS(ON), max} @ V_{GS}=10V$	380	
$Q_g$	13.3	nC

Product Name	Package	Marking
OSG65R385DTF	TO252	OSG65R385DT



**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	$I_D$	11	A
Continuous drain current <sup>1)</sup> , $T_C=100$ °C		7	
Pulsed drain current <sup>2)</sup> , $T_C=25$ °C	$I_{D, pulse}$	33	A
Continuous diode forward current <sup>1)</sup> , $T_C=25$ °C	$I_S$	11	A
Diode pulsed current <sup>2)</sup> , $T_C=25$ °C	$I_{S, pulse}$	33	A
Power dissipation <sup>3)</sup> , $T_C=25$ °C	$P_D$	63	W
Single pulsed avalanche energy <sup>5)</sup>	$E_{AS}$	150	mJ
MOSFET dv/dt ruggedness, $V_{DS}$ 480 V	dv/dt	50	V/ns
Reverse diode dv/dt, $V_{DS}$ 480 V, $I_{SD}$	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	1.9	°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, $I_D=250$ A
		700				$V_{GS}=0$ V, $I_D=250$ A, $T_j=150$ °C
Gate threshold voltage	$V_{GS(th)}$	2.9		3.9	V	$V_{DS}=V_{GS}$ , $I_D=250$ A
Drain-source on-state resistance	$R_{DS(ON)}$		0.33	0.38		$V_{GS}=10$ V, $I_D=3$ A
			0.79			$V_{GS}=10$ V, $I_D=3$ 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	$C_{iss}$				pF	$V_{GS}=0\text{ V}$ , $V_{DS}=50\text{ V}$ , 100 kHz
Output capacitance	$C_{oss}$		62.7		pF	
Reverse transfer capacitance	$C_{rss}$		2.2		pF	
Turn-on delay time	$t_{d(on)}$		30.7		ns	$V_{GS}=10\text{ V}$ , $V_{DS}=400\text{ V}$ , $R_G=2\ \Omega$ ( $I_D=6\text{ A}$
Rise time	$t_r$		33.9		ns	
Turn-off delay time	$t_{d(off)}$		61.3		ns	
Fall time	$t_f$		25		ns	

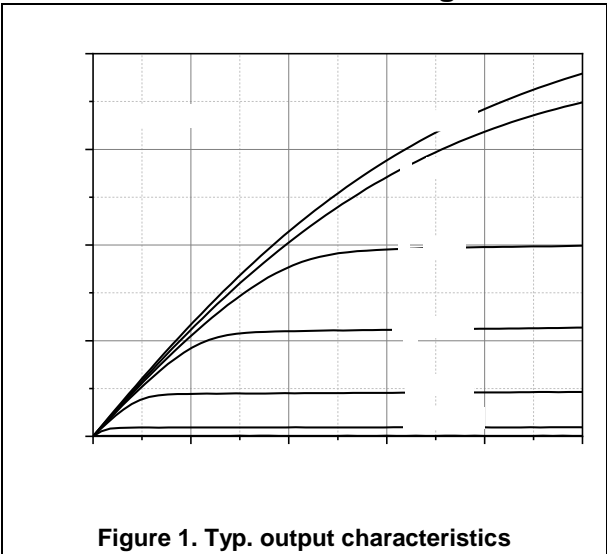
**Gate Charge Characteristics**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	$Q_g$		13.3		nC	$V_{GS}=10\text{ V}$ , $V_{DS}=400\text{ V}$ , $I_D=6\text{ A}$
Gate-source charge	$Q_{gs}$		2.2		nC	
Gate-drain charge	$Q_{gd}$		5.4		nC	
Gate plateau voltage	$V_{plateau}$		6		V	

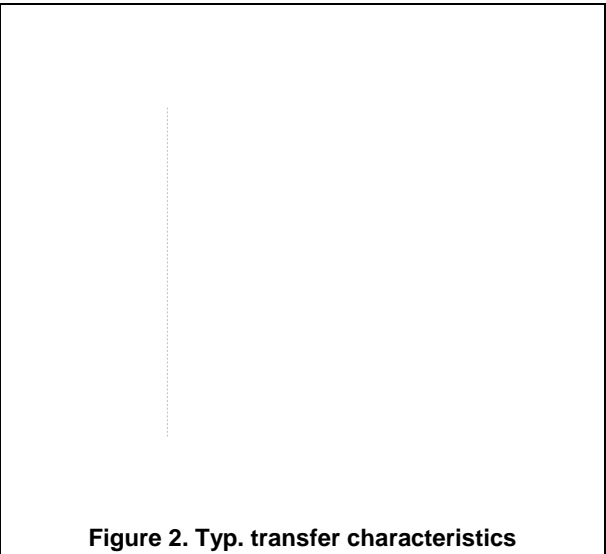
**Body Diode Characteristics**

Parameter	Symbol	Min.	Typ.	Max.
			1.0	1.480

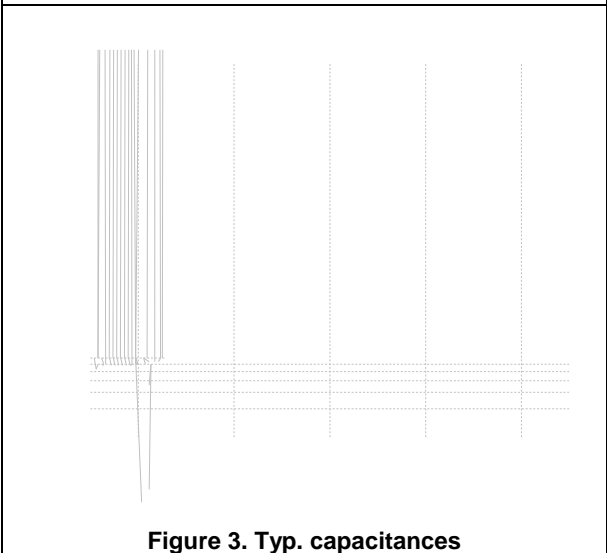
**Electrical Characteristics Diagrams**



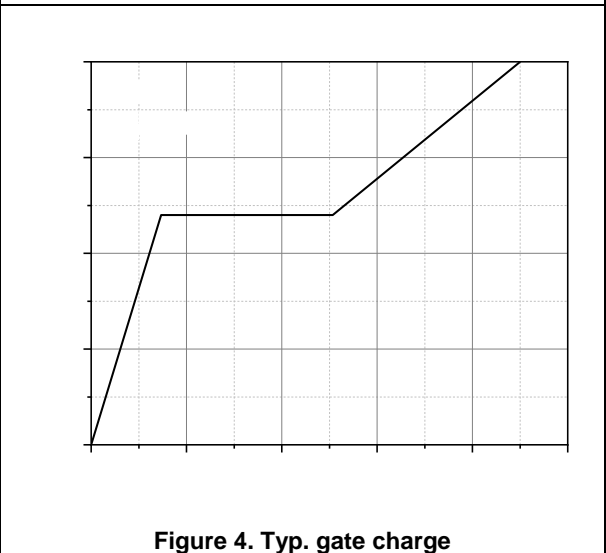
**Figure 1. Typ. output characteristics**



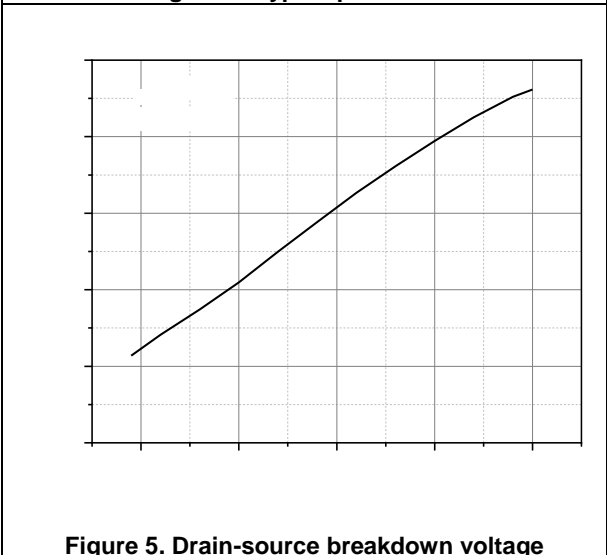
**Figure 2. Typ. transfer characteristics**



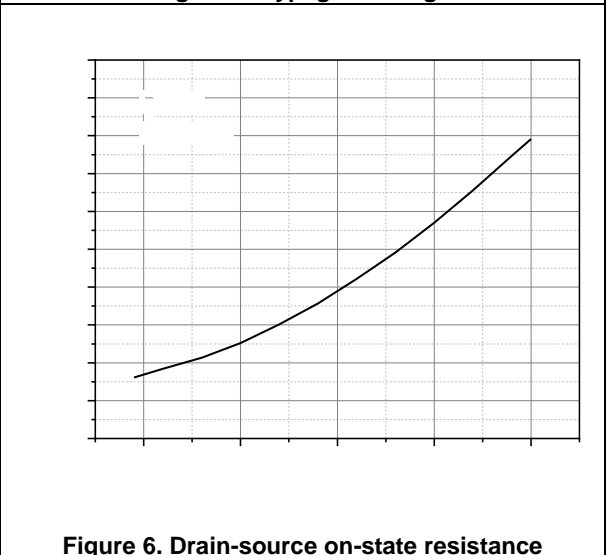
**Figure 3. Typ. capacitances**



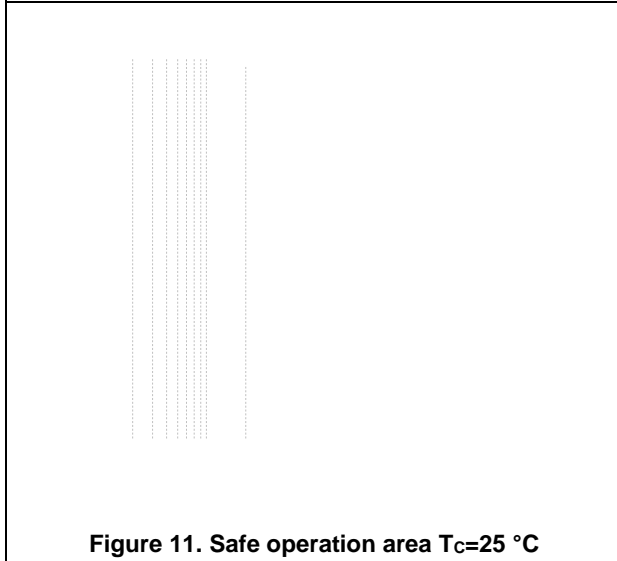
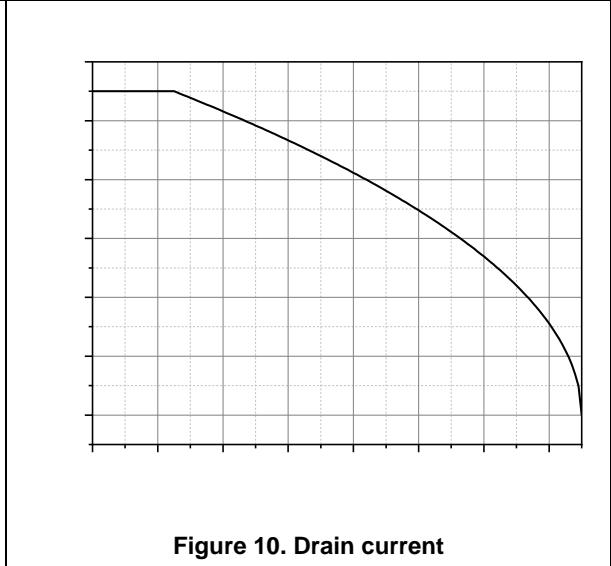
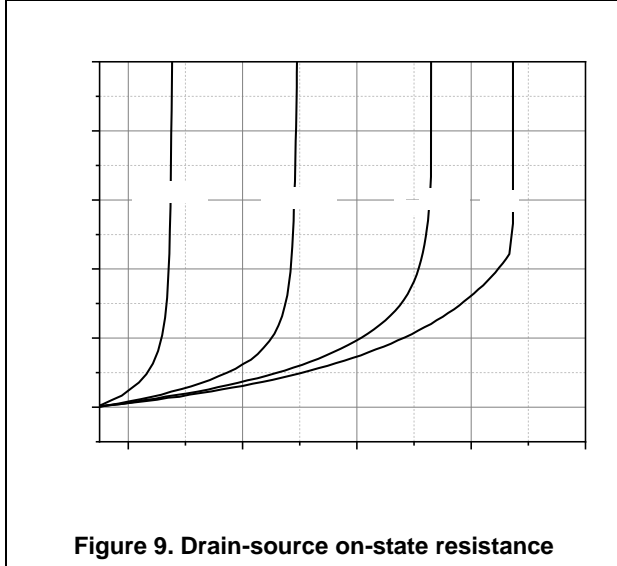
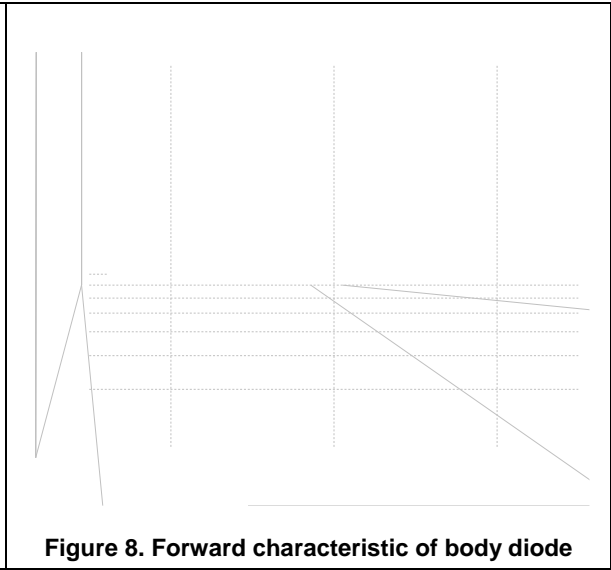
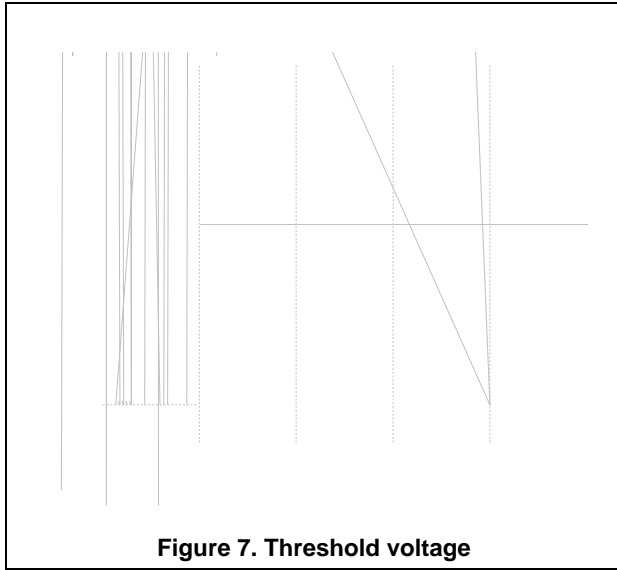
**Figure 4. Typ. gate charge**



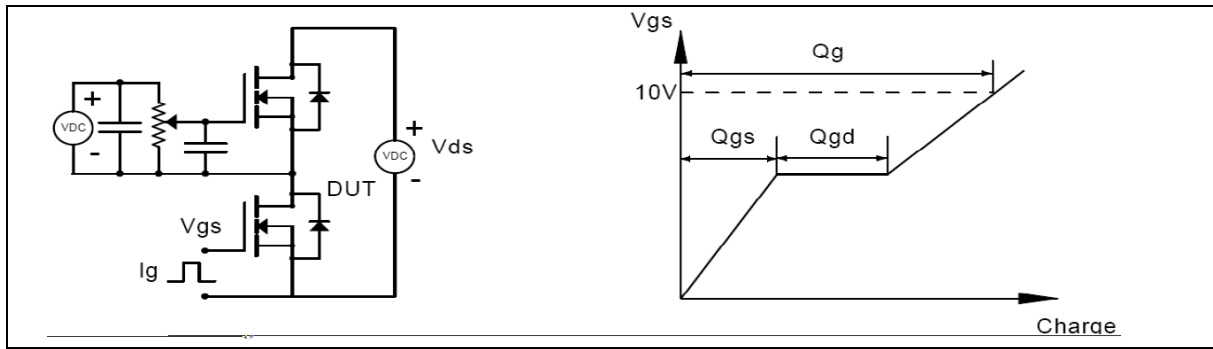
**Figure 5. Drain-source breakdown voltage**



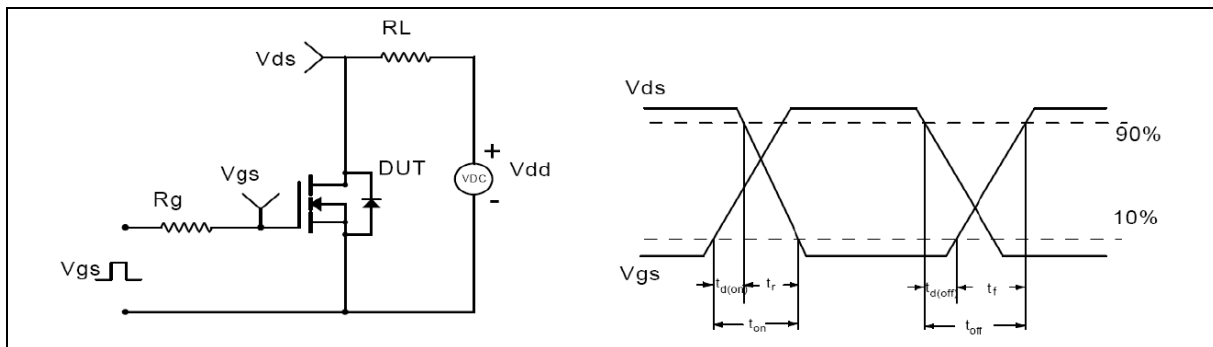
**Figure 6. Drain-source on-state resistance**



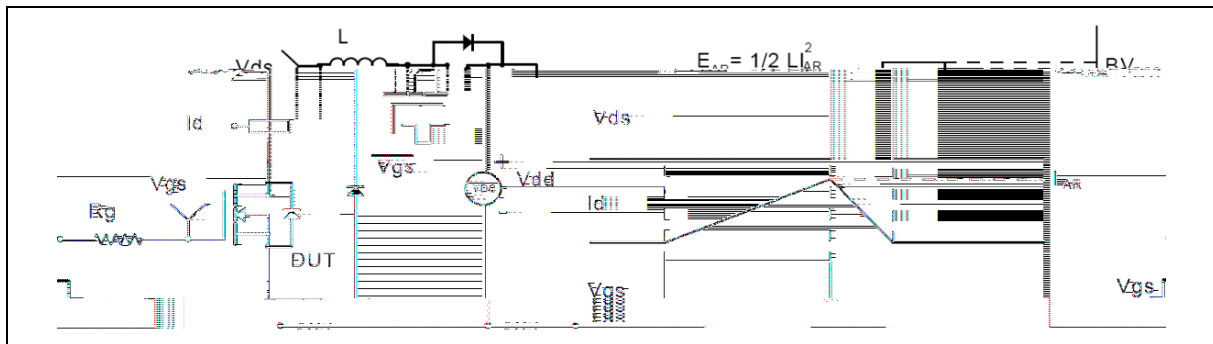
**Test circuits and waveforms**



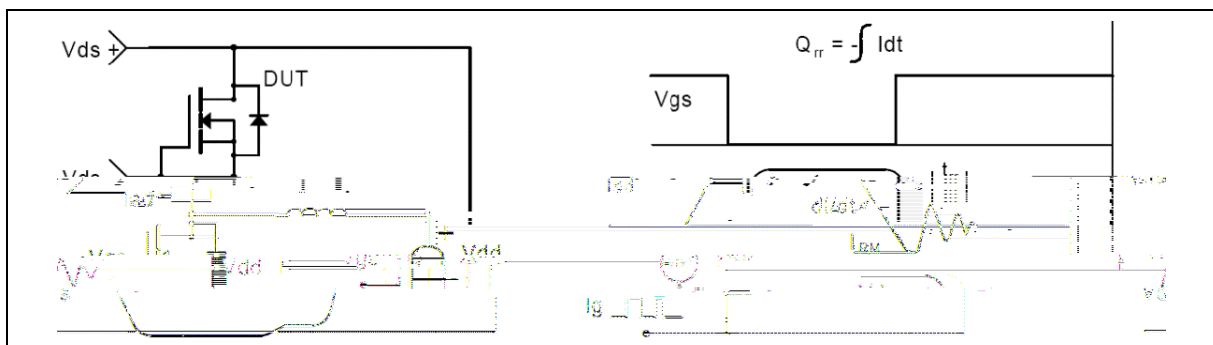
**Figure 1. Gate charge test circuit & waveform**



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

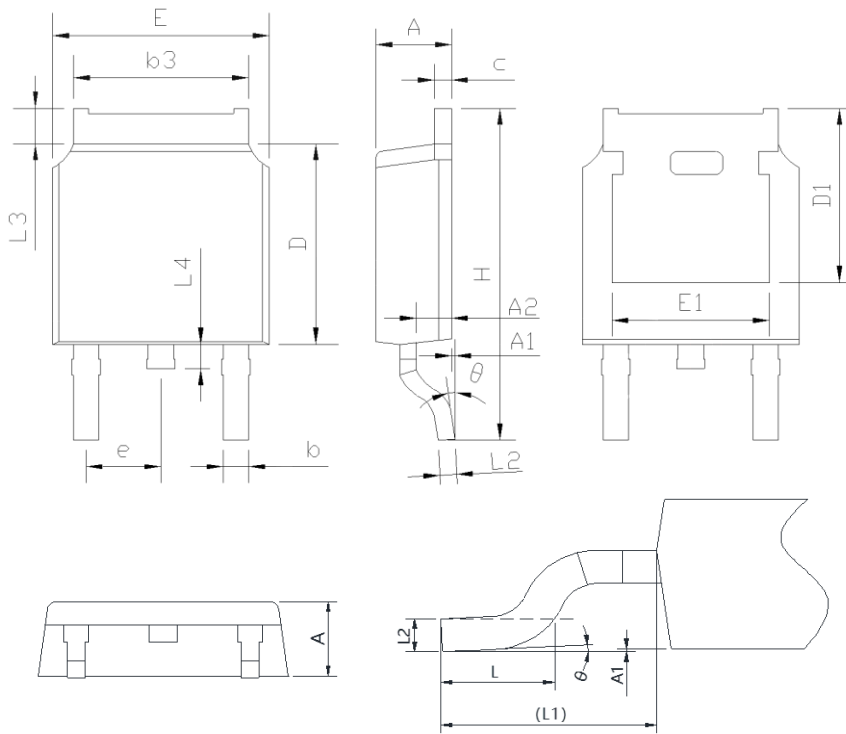


**Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms**



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

**Package Information**



Symbol	mm		
	Min	Nom	Max
A	2.20	2.30	2.38
A1	0.00	-	0.20
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b3	5.20	5.33	5.46
c	0.43	0.53	0.61
D	5.98	6.10	6.22
D1	5.30 REF		
E	6.40	6.60	6.73
E1	4.63	-	-
e	2.286 BSC		
H	9.40	10.10	10.50
L	1.38	1.50	1.75
L1	2.90 REF		
L2	0.51 BSC		
L3	0.88	-	1.28
L4	0.50	-	1.00
	0	-	

Version1: TO252-C package outline dimension

**Ordering Information**

Package Type	Units/ Reel	Reels / Inner Box	Units/ Inner Box	Inner Box/ Carton Box	Units/ Carton Box
TO252-C	2500	2	5000	5	25000

**Product Information**

Product	Package	Pb Free	RoHS	Halogen Free
OSG65R385DTF	TO252	yes	yes	yes

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